Do Imports and Exports Adjust Nonlinearly? Evidence from 100 Countries

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ABSTRACT

A country is said to live within its international budget constraint if its exports and imports are cointegrated. Previous studies that tried to verify the cointegration between exports and imports used linear models and supported the theory in almost 50% of countries. In this paper, when we use the nonlinear ARDL approach and asymmetry cointegration method, we support the long-run link between imports and exports in 94 out of 100 countries in our sample. This study is not only the most comprehensive study in the literature, but it is also the first to show that, indeed, trade flows adjust in a nonlinear fashion.

Key Words: Imports, Exports, Asymmetry Analysis

JEL Classification: F14

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I. Introduction

Macroeconomic policies that are used by every country to address their trade deficit are usually classified as income-reducing or income-switching policies. While fiscal and monetary policies fall into the first category, commercial policies such as tariff, subsidy and exchange-rate policies fall into the second category. In most instances, income-reducing policies are used to deal with domestic problems such as recession or inflation, with no attention given to their impact on external positions of a country. On the other hand, commercial policies such as currency devaluations or depreciations are used to address external problems such as reducing trade deficits. Since all policies are applied at all times, it is not easy to isolate the effectiveness of one policy in solving a problem over other polcies. As far as the external poisiton or the trade balance is concerned, one way to infer effectiveness of all policies together is to determine whether or not a country's exports and imports do cointegrate in the long run. If they do, then there is reason to believe that the combined effects of all macro polcies together are effective. The idea was first introduced and tested by Husted (1992), who examined only the U.S. experience and found no evidence of cointegration. He then interpreted his findings as the United States violating her intertemporal budget constrant (p. 164).

Suspecting that Husted's (1992) approach and findings suffer from aggregation bias, Wijeweera and Deskins (2010) disaggregated the U.S. trade flows by its trading partners and investigated cointegration between U.S. imports and exports with each of her 23 partners. They identified a long-run equilibrium relation with many small partners of the U.S., but not so with some of its large partners. They then concluded that "taken together, these results provide evidence that continued growth in the U.S. trade deficit is likely". Others who have followed Husted's (1992), tradition of using aggregate imports and exports data have also provided mixed

results. Example of studies that have found evidence of cointegration include Bahmani-Oskooee (1994), who tested the hypothesis for Australia; Bahmani-Oskooee and Rhee (1997), for Korea; Arize (2002), for 50 countries that supported cointegration in 35 cases; Irandoust and Ericsson (2004), for industrial countries; Keong et al. (2004), for Malaysia; Narayan and Narayan (2004), for Fiji and Papua and New Guinea; Uddin (2009), for Bangladesh; Greenidge et al. (2011), for Barbados; Babatunde (2014), for Nigeria; and Singh (2015), for India.

Example of studies that have failed to support cointegration between imports and exports include Baharumshah et al. (2003), who tested the hypothesis for Asian countries; Narayan and Narayan (2005), for 22 least developed countries; Tang and Alias (2005), for 27 member countries of the Organization of Islamic Conferences, who found support for cointegration in the four countries of Benin, Burkina Faso, Cameroon, and Guyana. Other studies rejecting cointegration between exports and imports include Tang (2006), who used data from Japan; Andreosso-O'Callaghan and Kan (2007), who examined the experiences of crisis-hit Asian countries; Laszlo and Pal (2008), who used Indian data; and Husein (2014), who examined data from nine Middle East and North African (MENA) countries and found evidence of cointegration between the exports and imports of Iran, Israel, Jordan, and Tunisia only.

One common feature of all the above-mentioned studies is that they have assumed that the effects of exports (imports) on imports (exports) are symmetric or that the adjustment of trade flows is linear. However, there are reasons to believe that the effects could be asymmetric. Assume an X% increase in exports leads to a Y% increase in imports. The symmetry assumption implies that an X% decrease in exports will lead to a Y% decline in imports. However, if a country is more dependent upon imports than of inputs, that country may chose to borrow and not to allow its imports to decline by Y%, hence the asymmetric response of imports to exports.

Therefore, our main purpose in this paper is to deviate from previous research and engage in asymmetry analysis or the asymmetric cointegration between imports and exports of as many countries as possible, i.e., 100 countries, which makes our study the most comprehensive study in the literature. Since asymmetry analysis requires applying nonlinear models, our approach, which allows nonlinear adjustment of the trade flows, will be based on the nonlinear ARDL approach of Shin et al. (2014). However, for comparison, we will also apply the linear ARDL approach of Pesaran et al. (2001). These methods are explained in Section II. The results, which mostly favor the nonlinear adjustment hypothesis and the asymmetric cointegration between exports and imports, are presented in Section III. A summary follows in section IV. Finally, data source, list of countries and associated study periods with each country are cited in the Appendix.

II. The Methods

Following all previous studies, we begin with the following long-run relation between imports (M) and exports (X) in a given country:

$$M_t = a + bX_t + \varepsilon_t \qquad (1)$$

If M and X in (1) are to be cointegrated, according Engle and Granger (1987) they both must be integrated of the same order d, I(d), but the residuals as a proxy for linear combination of the two variables must be integrated in an order less than d. For example, if M and X are both I(1) and OLS-based residuals are I(0), imports and exports are said to be cointegrated. In case residuals are also I(1), there is a second channel through which cointegration or long-run convergence between M and X could be detected, and that is through the error-correction representation of (1) that is outlined by (2):

$$\Delta M_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta M_{t-i} + \sum_{i=0}^{n2} \delta_i \Delta X_{t-i} + \lambda \varepsilon_{t-1} + \mu_t \qquad (2)$$

Granger (1988, p. 203) argues that in error-correction model (2) there are two channels through which X causes M. One is through short-run dynamic adjustment where the null of $\sum \delta_i = 0$ must be rejected. The other channel, which is a long-run channel, is through lagged error-correction term. Through this channel, an estimate of λ must be negative and significant. Banerjee et al. (1998) demonstrate that the t-test that is used to test the significance of λ has a new distribution,, for which they tabulate new critical values. They also demonstrate that, if λ is negative and significant, that will be an indication of cointegration between the two variables.

In case one variable is I(1) and the other one is I(0), Pesaran et al. (2001) offer a solution. They solve (1) for ε_t, lag the solution by one period and replace the solution in (2) to arrive at (3):

$$\Delta M_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta M_{t-i} + \sum_{i=0}^{n2} \delta_i \Delta X_{t-i} + \lambda_0 M_{t-1} + \lambda_1 X_{t-1} + \mu_t \qquad (3)$$

Once (3) is estimated by the OLS technique using a set lag selection criterion, long-run effect of X on M is derived by normalizing λ_1 on λ_0 as , which is the estimate of b in equation (1). However, in order for this estimate to be valid, cointegration must be established. Pesaran et al. (2001) propose two tests for cointegration between M and X. One is the F test, applied to determine the joint significance of lagged-level variables as a sign of cointegration. The second is the t-test, or what is known in the literature as an ECM_{t-1} test. Under this alternative test, estimates of b and equation (1) are used to generate the error term that is labeled as ECM. Then linear combinations of lagged-level variables in (3) are replaced by $ECM_{t-1,}$ and this new specification is estimated using the same optimum lags. A significantly negative coefficient

attached to ECM_{t-1} will support cointegration. Since variables are combinations of I(1) and I(0), Pesaran et al. (2001) tabulate new critical values for both tests that account for integrating properties of variables; hence, there is no need for pre-unit root testing on the assumption that all macro variables are either I(1) or I(0).

Recently, Shin et al. (2014) have modified specification (3) so that we test the asymmetric impact of X on M. The modification involves separating increase in X from declines, by using the concept of partial sum. The two partial sum variables are generated as:

$$X_t^+ = \sum_{j=1}^{t} \max(\Delta X_j, 0), \quad X_t^- = \sum_{j=1}^{t} \min(\Delta X_j, 0) \qquad (4)$$

Where X^+ is a new time-series variable that reflects only an increase in X and X^- is another new variable that reflects only a decrease in X. Shin et al. (2014) then recommend going back to (3) and replacing the X variables with two newly generated variables to arrive at:

$$\Delta M_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta M_{t-i} + \sum_{i=0}^{n2} \delta_i^+ \Delta X_{t-i}^+ + \sum_{i=0}^{n3} \delta_i^- \Delta X_{t-i}^- + \rho M_{t-1} + \rho^+ X_{t-1}^+ + \rho^- X_{t-1}^- + \omega_t \qquad (5)$$

Since generating the two partial sum variables introduce nonlinear adjustment of exports, models like (5) are commonly referred to as nonlinear ARDL model, whereas specification (3) is a linear ARDL model. Shin et al. (2014) demonstrate that the Pesaran et al. (2001) approach of estimating (3) and applying the F and the t-test are equally applicable to (5). They even propose treating the two partial sum variables in (5) as a single variable so that when we move from (3) to (5), the critical values of the F test stays at a high level. Once cointegration is established, long-run effects of changes in exports are said to be asymmetric if the Wald test rejects the null hypothesis of $\frac{\hat{\rho}^+}{-\hat{\rho}} = \frac{\hat{\rho}^-}{-\hat{\rho}}$. Short-run effects of exports on imports will be asymmetric if the Wald test rejects the null of $\sum \hat{\delta}_i^+ = \sum \hat{\delta}_i^-$.

So far ,in both the linear and the nonlinear ARDL models, we have treated exports as a loading variable or the exogenous variable. However, it is possible that a country that imports more, especially more of capital goods, will export more. Therefore, in order to determine if the responses of exports to imports are asymmetric, we will switch the two variables and estimate the following linear and nonlinear models, respectively:

$$\Delta X_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta X_{t-i} + \sum_{i=0}^{n2} \delta_i \Delta M_{t-i} + \lambda_0 X_{t-1} + \lambda_1 M_{t-1} + \mu_t \qquad (6)$$

$$\Delta X_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta X_{t-i} + \sum_{i=0}^{n2} \delta_i^{+} \Delta M_{t-i}^{+} + \sum_{i=0}^{n3} \delta_i^{-} \Delta M_{t-i}^{-} + \rho X_{t-1} + \rho^{+} M_{t-1}^{+} + \rho^{-} M_{t-1}^{-} + \omega_t \qquad (7)$$

Where M^+ and M^- are partial sum of positive and negative changes in imports, respectively.[1]

III. The Results

In this section we estimate both the linear models (3) and (6) and the nonlinear models (5) and (7) for each of the 100 countries for which we were able to collect quarterly data. Since the period differed from one country to another, we have provided the study period for each country in Table A in the Appendix. The Appnedix also shows the definition of the variables as well as the source of the data. As can be seen, in all models exports and imports are taken as a % of GDP to make them in real terms. In each case a maximum of eight lags is imposed on each first-differenced variable, and Akaike's Information Criterion (AIC) is used to select an optimum model. Furthermore, using the critical values reported in the notes to each table, if an estimate or statistic is significant at the 10% level, we have used * to identify that estimate. By the same token, ** indicates significance at the 5% level. The results are reported in Tables 1 and 2.

Tables 1 and 2 go about here

[1] For some other application of these methods see Bahmani-Oskooee and Fariditavana (2015, 2016), and Arize et al. (2017).

Let us begin with Table 1, which reports the results of the models in which export is the dependent variable. Due to the volume of the results we have not reported the short-run estimates, but have used them to assess short-run asymmetric effects of changes in imports on exports, which will be discussed below.[2] Consider the estimates from the linear models ,which are reported in the columns headed by L. From Panel A (long-run estimates and Panel B (Diagnostics) we gather that M carries a significant positive coefficient that is supported either by the F test or by the ECM_{t-1} test in 62 out of 100 countries. However, when we move to estimates of the nonlinear model, either M^+ or M^- carries a significant coefficient that, again, is supported by at least of the tests for cointegration in a total of 94 out of 100 countries. This substantial increase in the number of cointegrating cases must be attributed to the nonlinear adjustment of imports. However, the long-run effects of imports on exports are asymmetric only in 54 countries, since the Wald test that is reported as Wald-L in Panel B is significant in 54 nonlinear models.[3] Clearly, the results are country specific. For example, consider the case of Brazil. In the linear model, imports do not carry a significant long-run coefficient. If we were to rely upon only the linear model, we would have concluded that imports do not matter in Brazil's potential to export more. The nonlinear model, however, proves us wrong and reveals that indeed both increases in imports and decreases in imports do matter. Increased imports (especially imports of inputs) help Brazil to produce more exportables. On the other hand, a decline in Brazil's imports will hurt its exports in the long run. However, these effects are not asymmetric, as the normalized long-run coefficient estimate attached to M^+ is not significantly different than the one attached to M^-. The story is somewhat different in the case of France. Increased imports

[2] The short-run results are available upon request.
[3] Note that the short-run effects are asymmetric in 45 countries since the Wald statistic that is reported as Wald-S is significant in these countries.

have significant long-run effects on her exports, but decreased imports do not. In such countries, when imports are declining, domestic producers of exportables use import-substitute inputs.

A few additional diagnostics are reported in Panel B. We report the Lagrange multiplier test as LM to determine whether residuals in any optimum model are autocorrelation free. As can be seen, the LM statistic is hardly significant, supporting lack of serial correlation. We also report Ramsy's RESET test to check if any optimum model suffers from misspecification. This statistic is also insignificant in most models. The stability of both short-run and long-run estimates is established by applying the well-known CUSUM and CUSUMSQ tests to the residuals of each optimum model. These two tests are reported in Panel B as CS and $CS^{2,}$ where stable estimates are identified by "S" and unstable ones by "U". Clearly, almost all estimates are stable. Finally, size of adjusted R^2 is reportedly very high, supporting the importance of the link between imports and exports.

Next we turn to estimates of both models in which each country's imports are the dependent variable. These results are reported in Table 2. From the estimates of the linear models, there are 70 countries in which exports (X) carry a significant coefficient that is supported by one of the tests for cointegration. However, once again, when we shift to estimates of the nonlinear model, either X^+ or X^- carry a significant coefficient that is supported by at least one of the cointegration tests in 94 countries. Again, the increase from 70 to 94 cases must be attributed to the nonlinear adjustment of exports. Like the models in Table 1, these results are also country specific. For example, in the case of Egypt, the X variable carries an insignificant coefficient in the linear model. If we were to rely on this model only we would have concluded that changes in exports have no long-run effects on Egypt's imports. Owing to the fact that Egypt generates its reserves from exporting tourism and oil, which are used to finance imports, it is hard to believe that

exports have no long-run effects on imports. The nonlinear model, however, shows that both an increase in exports and a decrease in exports do have significant impact on imports. Indeed, increased exports raise imports and decreased exports lower them because both partial sum variables carry positive coefficients, in line with our expectations. As for the asymmetric effects of exports on imports, short-run asymmetric effects are supported by the Wald-S test in 45 countries and the long-run effects by the Wald-L tests, in 45 countries.[4]

IV. Summary and Conclusion

A country that exports more is said to earn reserve currency that is mostly used to finance imports. On the other hand, a country that imports more also exports more because a part of imports falls on imported inputs that are used to produce exportables as well as other domestic goods. Thus, we would expect a long-run relation between exports and imports. However, previous research is not unanimous on the link. While some authors have established cointegration between exports and imports for some countries, some have rejected the cointegration. It is safe to say that, indeed, 50% of the studies belong to the first camp, and 50% to the second camp.

One common feature of previous studies is that they have all assumed that imports and exports adjust in a linear fashion toward their long-run equilibrium values. We suspect that introducing nonlinear adjustment of trade flows could change the picture. Thus, in this paper we use the Shin et al. (2014) nonlinear autoregressive distributed lag (ARDL) approach to investigate the long-run link between exports and imports in each of the 100 countries in our sample. For comparison, we also use the Pesaran et al. (2001) linear ARDL approach.

[4] Note that the models in Table 2 pass almost all diagnostics tests; i.e., residuals are autocorrelation free, optimum models are not misspecified, coefficient estimates are stable and they enjoy a good fit.

Our findings could best be summarized by saying that, like previous studies when we relied upon the linear ARDL model, we found support for cointegration in 60% of the models. However, when we relied upon the nonlinear ARDL approach, we found support for asymmetry cointegration in 94% of the countries in our sample. Clearly, introducing nonlinear adjustment of the trade flows yielded relatively more support for a long-run link between imports and exports and made us to move closer to our theoretical expectation. Our findings have important policy implications for all countries in our sample, that export-oriented countries will grow faster and will import more. Increased imports, especially imports of inputs, will help facilitate economic growth and should not be considered as a hurdle.

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Appendix
Data Definition and Source

The IFS database has been used to collect the data.

Variables

M = defined as the ratio of nominal imports / nominal GDP the relevant country.

X = defined as the ratio of nominal exports / nominal GDP of the relevant country.

Quarterly data are used to carry out the empirical exercise. Where Quarerly Nominal GDP data are not available for some countries, therefore we had to generate them by interpolation. We followed the approach suggested in Bergstrom (1990) and Arize, Malindretos and Grivoyannis (2005).

Sno	Country Name	Data Period	
1	Algeria	1973Q3	2013Q4
2	Armenia	1996Q4	2014Q4
3	Australia	1975Q1	2014Q4
4	Austria	1982Q1	2015Q2
5	Bahamas	1976Q1	2012Q4
6	Bahrain	1976Q3	2009Q4
7	Bangladesh	1976Q1	2011Q4
8	Barbados	1974Q2	2011Q4
9	Belarus	1995Q1	2014Q4
10	Benin	1973Q2	2011Q2
11	Bolivia	1887Q2	2015Q1
12	Brazil	1991Q1	2014Q4
13	Bulgaria	1974Q4	2014Q4
14	Burkina Faso	1983Q1	2012Q4
15	Cambodia	1999Q3	2013Q4
16	Cameroon	1974Q4	2012Q4
17	Canada	1974Q4	2014Q4
18	Chile	1972Q4	2013Q4
19	China	1983Q1	2014Q2
20	Coasta Rica	1975Q2	2014Q4
21	Coted de Ivory	1982Q2	2012Q4
22	Croatia	1996Q4	2014Q4
23	Cyprus	1974Q2	2014Q4
24	Czech	1992Q2	2014Q4
25	Denmark	1975Q2	2014Q4

Sno	Country Name	Data Period	
26	Dominica Republic	1984Q1	2013Q4
27	Egypt	1973Q2	2013Q4
28	Equator Guinea	1986Q2	2008Q4
29	Estonia	1995Q1	2014Q4
30	Ethiopia	1972Q2	2010Q4
31	Fiji	1973Q1	2013Q4
32	Finland	1982Q1	2015Q4
33	France	1981Q3	2015Q2
34	Gabon	1983Q2	2008Q4
35	Germany	1974Q2	2014Q4
36	Greece	1982Q2	2015Q2
37	Grenada	1983Q2	2013Q4
38	Guatemala	1983Q1	2014Q4
39	Haiti	1982Q1	2012Q4
40	Honduras	1983Q1	2012Q4
41	Hungary	1974Q3	2014Q4
42	Iceland	1982Q4	2015Q2
43	India	1974Q3	2014Q4
44	Indonesia	1974Q1	2015Q1
45	Iran	1987Q1	2012Q4
46	Ireland	1982Q3	2015Q2
47	Italy	1982Q2	2015Q2
48	Jamaica	1981Q4	2015Q2
49	Japan	1975Q1	2015Q1
50	Jordan	1975Q3	2013Q4

Sno	Country Name	Data Period	
51	Kenya	1973Q1	2012Q4
52	Korea	1974Q3	2014Q4
53	Lao	1983Q4	2013Q4
54	Latvia	1996Q2	2014Q4
55	Libya	1982Q4	2009Q4
56	Lithuania	1994Q4	2014Q4
57	Luxemburg	1982Q4	2013Q3
58	Macedonia	2003Q4	2014Q4
59	Malawi	1982Q4	2012Q4
60	Malaysia	1974Q4	2014Q4
61	Mauritius	1983Q2	2013Q4
62	Mexico	1981Q1	2014Q4
63	Moldova	1995Q1	20014Q4
64	Mongolia	1983Q1	2013Q4
65	Morocco	1982Q3	2014Q3
66	Myanmar	1972Q2	2013Q4
67	Netherlands	1981Q4	2015Q3
68	New Zealand	1974Q3	2014Q4
69	Niger	1982Q4	2010Q4
70	Nigeria	1973Q2	2011Q4
71	Oman	1977Q2	2013Q4
72	Philippines	1975Q1	2014Q4
73	Poland	1983Q1	2014Q4
74	Portugal	1980Q4	2015Q2
75	Romania	1983Q2	2015Q1

Sno	Country Name	Data Period	
76	Russia	1994Q2	2014Q4
77	Rwanda	1973Q2	2012Q4
78	Senegal	1973Q1	2013Q4
79	Seychelles	1975Q2	2014Q4
80	Sierra Leone	1973Q1	2012Q4
81	Singapore	1975Q1	2014Q4
82	Slovak	1993Q4	2014Q4
83	Slovenia	1994Q3	2014Q4
84	South Africa	1980Q4	2015Q1
85	SriLanka	1982Q4	2012Q4
86	Sweden	1973Q1	2013Q4
87	Switzerland	1973Q1	2013Q4
88	Tanzania	1973Q1	2012Q3
89	Thailand	1975Q1	2014Q4
90	Tonga	1982Q4	2011Q4
91	Tunisia	1974Q4	2011Q3
92	Turkey	1989Q2	2015Q1
93	UAE	1982Q3	2013Q3
94	Uganda	1989Q2	2012Q4
95	Ukraine	1995Q1	2013Q4
96	United Kingdom	1975Q1	2014Q4
97	Uruguay	1984Q3	2012Q4
98	US	1975Q2	2014Q4
99	Venezuela	1983Q2	2009Q4
100	Zambia	1973Q3	2011Q4

Table 1: Full Information Estimates of Both Linear ARDL (L-ARDL) and Nonlinear ARDL (NL-ARDL) Models when X= F (M).

Country	Algeria		Armenia		Australia		Austria		Bahamas		Bahrain	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-25.7 (1.37)	12.17 (0.53)	-0.24 (1.86)*	0.18 (1.25)	0.05(2.30)**	0.11 (9.65)**	0.10 (1.38)	0.28 (10.4)**	-0.31(3.34)**	3.09 (8.86)**	0.07 (3.53)**	0.20(10.2)**
M	2.79 (1.79)*		0.92 (3.08)**		0.60(3.50)**		1.26 (6.09)**		0.84(11.6)**		0.67 (5.62)**	
M^+		1.86 (2.41)**		0.38 (1.70)*		0.20 (0.74)		0.97 (4.18)**		0.23 (0.98)		0.40(2.24)**
M^-		0.66 (0.45)		0.37 (1.69)*		0.13 (0.43)		0.89 (3.32)**		0.53 (3.58)**		0.47(2.84)**
ECM_{t-1}	-0.07 (10.0)**	-0.06 (4.41)**	-0.23 (5.49)**	-0.28 (4.00)**	-0.17 (5.38)**	-0.30 (5.40)**	-0.07 (2.06)	-0.12 (2.56)	-0.05(5.94)**	-0.08 (6.02)**	-0.27 (4.70)**	-0.23(7.21)**
Panel B: Diagnostic Statistics												
F	12.05**	6.14**	9.07**	5.58**	4.61**	7.93**	4.48**	6.89**	5.48**	4.81**	5.82**	6.30**
LM	3.15	5.51	4.18	7.76	1.16	7.89	1.51	0.87	2.89	1.68	1.32	2.60
RESET	0.90	0.15	2.96	2.17	1.79	0.39	0.51	0.24	0.01	1.47	3.33	2.54
$\bar{R}^2$	0.98	0.98	0.90	0.89	0.89	0.89	0.99	0.99	0.99	0.99	0.86	0.94
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)
WALD-S		3.87**		0.51		0.01		0.91		0.52		13.10**
WALD-L		0.60		0.08		3.94**		2.78*		9.47**		14.69**

Country	Bangladesh		Barbados		Belarus		Benin		Bolivia		Brazil	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.01(0.03)	0.01 (4.16)**	-0.04 (4.09)**	0.08 (13.97)**	0.11 (2.90)**	9218.8 (19.44)**	0.02 (2.59)**	0.01 (2.37)**	-0.63(0.78)	-0.15 (2.31)**	0.03(0.52)	-0.01 (4.53)**
M	0.63(1.93)*		0.69 (6.82)**		1.12 (298.1)**		-0.12 (1.09)		0.60 (1.12)		0.70 (0.91)	
M^+		0.42(4.93)**		0.67 (6.18)**		0.95 (14.5)**		0.09 (0.90)		-0.15 (5.62)**		2.48 (7.45)**
M^-		0.38(4.11)**		0.67 (6.65)**		1.02 (18.7)**		0.06 (0.67)		-0.36 (6.34)**		2.57 (6.43)**
ECM_{t-1}	-0.06(3.99)**	-0.15(2.53)	-0.27 (4.68)**	-0.38 (7.40)**	-0.86 (42.45)**	-0.53 (7.32)**	-0.17 (6.18)**	-0.21 (6.48)**	-0.05(1.69)	-0.06 (2.77)	-0.09(1.91)	-0.12 (3.81)*
Panel B: Diagnostic Statistics												
F	4.83**	5.24**	7.86**	11.73**	46.13**	6.39**	5.12**	9.23**	10.63**	7.55**	13.33**	10.94**
LM	5.05	4.74	5.24	3.59	11.35**	2.46	9.05	2.46	2.32	6.71	4.29	2.73
RESET	0.99	0.16	1.48	0.26	2.79	0.46	0.42	2.26	0.33	0.23	0.60	1.75
$\bar{R}^2$	0.94	0.94	0.84	0.88	0.99	0.99	0.75	0.75	0.95	0.42	0.86	0.70
$CS\ (CS^2)$	S (S)	S (S)	S (U)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.76		1.42		5.00**		2.18		0.50		0.41
WALD-L		25.78**		0.31		4.89**		2.26		0.06		1.04

Country	Bulgaria		Burkina Faso		Cambodia		Cameroon		Canada		Chile	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.33(3.09)**	0.34 (9.22)**	-0.29 (1.03)	0.01 (1.11)	0.07(1.01)	0.33(9.25)**	0.06(0.99)	0.03 (1.67)*	0.05 (2.06)**	0.12 (0.63)	-0.03 (0.23)	0.28 (10.35)
M	0.19(0.93)		0.80 (1.63)		0.66(5.72)**		-0.33 (0.23)		0.36 (1.36)		0.81 (1.42)	
M^+		0.63 (2.93)**		0.73 (6.85)**		0.95(8.48)**		0.71 (2.33)**		1.26 (0.33)		0.97 (4.18)**
M^-		0.66 (2.95)**		0.64 (6.35)**		1.23(6.41)**		0.54 (1.78)*		1.41 (0.33)		0.89 (3.32)**
ECM_{t-1}	-0.22(6.45)**	-0.23 (6.45)**	-0.10 (1.47)	-0.31 (3.92)**	-0.10(1.99)	-0.20(3.80)*	-0.02(2.01)	-0.09 (2.92)	-0.05 (8.03)**	-0.01 (4.31)**	-0.07 (2.06)	-0.12 (2.56)
Panel B: Diagnostic Statistics												
F	4.45**	4.24*	1.89	15.10**	2.54	3.29	4.07*	4.36**	7.97**	3.78*	4.48**	6.89**
LM	10.33**	7.02	4.29	7.20	5.70	3.58	6.89	4.14	6.02	5.20	3.20	4.74
RESET	3.22	1.96	0.13	0.52	2.64	2.98	0.17	0.02	0.79	0.04	0.51	0.24
$\bar{R}^2$	0.84	0.85	0.72	0.44	0.98	0.99	0.86	0.87	0.95	0.93	0.99	0.99
$CS\ (CS^2)$	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		39.34**		7.53**		0.56		0.06		1.04		0.91
WALD-L		4.91**		13.03**		10.17**		6.77**		0.08		2.78*

Table 1 Continued

Country	China		Costa Rica		Cote d Ivory		Croatia		Cyprus		Czech	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	15413.9 (3.71)**	13805.6 (3.32)**	0.01 (2.56)**	0.23 (13.21)**	0.01 (0.61)	0.09 (18.98)**	0.36 (4.03)**	0.16 (8.34)**	26.28 (0.01)	0.10 (2.41)**	-0.06 (3.38)**	0.01 (2.79)**
M	1.44 (16.42)**		0.59 (6.62)**		1.14 (4.99)**		-0.38 (1.72)*		35.96 (0.01)		1.79 (12.28)**	
M^+		1.89 (4.63)**		0.61 (3.88)**		1.16 (7.49)**		0.24 (1.90)*		0.15 (1.97)**		0.60 (2.91)**
M^-		1.92 (4.35)**		0.63 (3.79)**		1.17 (7.23)**		0.22 (1.77)*		0.17 (2.21)**		0.30 (1.75)*
ECM_{t-1}	-0.26 (4.51)**	-0.18 (4.25)**	-0.21 (2.55)	-0.25 (7.01)**	-0.22 (4.50)**	-0.49 (6.08)**	-0.27 (3.14)	-0.48 (8.04)**	-0.01 (4.44)**	-0.12 (4.53)**	-0.17 (3.56)**	-0.35 (6.22)**
Panel B: Diagnostic Statistics												
F	7.16**	4.67**	9.68**	6.53**	4.61**	9.81**	7.45**	9.63**	7.37**	4.48**	4.68**	3.84
LM	3.10	2.01	4.11	4.43	9.01	1.72	6.28	3.35	5.23	8.13	5.59	4.13
RESET	3.12	0.75	3.34	3.15	0.03	0.22	1.33	1.82	0.03	0.28	0.01	0.59
$\bar{R}^2$	0.99	0.99	0.83	0.91	0.90	0.93	0.76	0.72	0.96	0.95	0.68	0.76
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)	S (S)	S (S)	U (U)	S (S)	S (S)	S (S)
WALD-S		2.27		19.30**		5.83**		5.75**		4.49**		6.87**
WALD-L		0.85		2.55		2.17		1.07		6.91**		20.37**

Country	Denmark		Dominic Republic		Egypt		Equator Guinea		Estonia		Ethiopia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.02 (2.33)**	0.21 (11.99)**	-0.23 (0.21)**	48.41 (2.54)**	12.00 (1.22)	2.97 (4.66)**	-0.01 (4.70)**	-0.06 (2.96)**	0.34 (0.46)	0.23 (2.97)**	0.05 (1.41)	0.07 (4.89)**
M	-1.44 (1.03)		0.79 (1.13)*		-8.56 (1.11)		6.13 (10.8)**		0.34 (0.33)		0.09 (0.60)	
M^+		0.45 (2.37)**		1.98 (2.77)**		-2.27 (3.86)**		1.27 (2.03)**		0.39 (1.83)*		0.40 (1.80)*
M^-		0.34 (1.75)*		1.48 (2.58)**		-1.85 (3.13)**		0.89 (0.84)		0.25 (1.16)		0.48 (0.31)
ECM_{t-1}	-0.03 (2.28)	-0.17 (4.73)**	-0.17 (5.38)**	-0.25 (10.66)**	-0.06 (4.00)**	-0.29 (4.32)**	-0.08 (9.44)**	-0.20 (8.01)**	-0.05 (5.24)**	-0.19 (4.71)**	-0.01 (1.41)	-0.04 (3.20)
Panel B: Diagnostic Statistics												
F	4.69**	7.48**	22.46**	22.74**	4.53**	4.88**	14.99**	4.27*	3.84*	3.86*	3.99*	5.04*
LM	3.53	1.52	2.35	10.04**	8.39	7.91	7.59	9.35	6.39	4.67	51.88**	31.31**
RESET	2.59	3.27	0.33	2.79	2.97	0.02	0.01	0.96	1.14	0.35	2.57	2.57
$\bar{R}^2$	0.71	0.95	0.99	0.99	0.93	0.67	0.92	0.99	0.94	0.93	0.97	0.94
CS (CS^2)	S (S)	S (S)	S (U)	S (S)	U (U)	S (U)	S (S)	U (S)	S (S)	S (S)	S (U)	S (U)
WALD-S		0.12		9.88**		1.37		0.02		2.67		3.27*
WALD-L		38.02**		3.02*		71.55**		23.78**		19.32**		0.48

Country	Fiji		Finland		France		Gabon		Germany		Greece	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.03 (3.47)**	0.06 (13.8)**	0.49 (2.21)**	0.02 (3.43)**	0.12 (3.21)**	0.16 (10.6)*	0.06 (3.46)**	0.33 (3.15)**	-0.04 (1.51)	0.02 (3.81)**	0.01 (1.77)*	0.42 (0.99)
M	0.32 (3.47)**		-0.48 (0.65)		0.33 (1.77)*		-252.67 (2.28)**		1.35 (12.0)**		0.30 (15.08)**	
M^+		0.23 (2.30)**		-0.91 (3.20)**		0.27 (1.66)*		-2.05 (0.97)		1.20 (15.3)**		0.86 (1.85)*
M^-		0.22 (2.15)**		-1.01 (2.88)**		0.24 (1.32)		-2.61 (1.18)		1.16 (12.3)**		0.73 (2.10)**
ECM_{t-1}	-0.30 (3.06)	-0.52 (4.36)**	-0.07 (4.24)**	-0.09 (4.04)**	-0.08 (3.43)	-0.10 (4.06)**	-0.001 (3.50)*	-0.03 (3.71)*	-0.10 (2.85)	-0.12 (3.41)	-0.11 (1.51)	-0.14 (0.99)
Panel B: Diagnostic Statistics												
F	4.05*	5.70**	8.23**	5.82**	5.59**	7.01*	4.41**	4.22**	5.82**	4.73**	11.42**	6.64**
LM	2.32	3.54*	1.21	8.43	2.17	1.10	5.21	8.28	2.85	1.91	6.87	2.68
RESET	0.84	0.52	0.14	1.46	0.94	0.96	0.07	0.78	1.08	0.91	1.92	0.22
$\bar{R}^2$	0.67	0.64	0.95	0.61	0.96	0.97	0.65	0.97	0.99	0.74	0.82	0.97
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	U (U)	U (S)
WALD-S		1.76		4.26**		1.76		0.66		0.01		0.62
WALD-L		1.66		2.43		2.93*		1.89		2.60		1.00

Table 1 Continued

Country	Grenada		Guatemala		Haiti		Honduras		Hungary		Iceland	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.01 (2.24)**	0.04 (3.36)**	-0.15 (3.77)**	7.31(3.22)**	-0.001 (0.32)	0.04 (6.87)**	1.89 (8.20)**	15.43 (12.7)**	-0.18 (1.98)**	0.12 (2.79)**	-0.04 (0.24)	0.24 (2.40)**
M	0.23 (16.47)**		1.76 (3.07)**		0.31 (3.80)**		2.88 (18.7)**		1.37 (2.62)**		1.08 (2.01)**	
M^+		0.21 (5.20)**		1.33(2.95)**		0.42 (5.11)**		2.51 (11.3)**		1.26 (9.61)**		1.24 (1.82)*
M^-		0.23 (5.99)**		1.41(3.09)**		0.45 (4.85)**		2.47 (14.2)**		1.25 (8.93)**		1.23 (1.81)*
ECM_{t-1}	-0.09 (4.22)**	-0.26 (7.00)**	-0.22 (3.82)**	-0.20(6.28)**	-0.19 (3.92)**	-0.23 (4.14)**	-0.45 (6.05)**	-0.71 (11.1)**	-0.06 (2.62)	-0.12 (3.59)*	-0.14 (2.50)	-0.14 (2.21)
Panel B: Diagnostic Statistics												
F	7.12**	4.85**	8.62**	4.08*	5.44**	4.36**	7.43**	14.80**	7.18**	5.91**	5.33**	4.01*
LM	9.52**	7.02	10.01**	6.26	6.65	4.40	2.81	8.81	5.07	5.10	4.20	7.53
RESET	3.32	2.78	3.23	0.86	0.09	0.01	1.11	1.37	1.74	3.40	0.01	0.40
$\bar{R}^2$	0.92	0.98	0.85	0.99	0.76	0.75	0.98	0.98	0.98	0.98	0.76	0.74
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		18.78**		0.74		3.02*		5.03**		6.37**		0.02
WALD-L		4.77**		1.60		2.87*		0.27		1.07		0.04

Country	India		Indonesia		Iran		Ireland		Italy		Jamaica	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.04 (0.39)	0.01(1.93)*	-0.02 (1.48)	0.28 (7.63)**	0.42(1.25)	33.50 (21.94)**	0.24 (142)**	0.71 (8.63)**	-0.006 (0.09)	0.21 (8.99)**	0.03 (0.24)	0.06 (3.15)**
M	0.85 (1.67)		1.49 (5.15)**		0.51(3.03)**		0.91 (2.24)**		1.08 (2.77)**		-0.07 (0.41)	
M^+		1.23(3.28)**		0.41 (1.72)*		-0.61 (2.71)**		1.82 (5.42)**		0.37 (1.86)*		0.17 (2.65)**
M^-		1.41(2.66)**		0.56 (2.65)**		0.33 (5.17)**		1.58 (5.40)**		0.31 (1.52)		0.24 (3.32)**
ECM_{t-1}	-0.02 (2.81)	-0.09 (6.18)**	-0.14 (5.96)**	-0.36 (6.56)**	-0.05(7.20)**	-0.24 (19.34)**	-0.06 (2.73)	-0.14 (3.71)*	-0.04 (4.50)**	-0.09 (4.11)**	-0.13 (5.95)**	-0.46 (3.63)**
Panel B: Diagnostic Statistics												
F	9.53**	6.76**	5.40*	10.88**	4.00*	87.63**	3.91*	10.43**	5.14**	4.52**	15.49**	21.50*
LM	6.03	2.04	9.08	1.02	11.01**	8.78	10.32**	5.75	1.19	0.61	1.93	4.34
RESET	3.31	7.43	0.01	0.03	0.78	2.48	3.73	2.33	3.75	2.05	0.09	1.73
$\bar{R}^2$	0.99	0.99	0.98	0.98	0.99	0.99	0.94	0.95	0.97	0.97	0.78	0.46
$CS\ (CS^2)$	S (S)	U (S)	S (U)	S (S)	S (U)	S (S)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)
WALD-S		6.67**		11.58**		9.53**		0.22		3.86**		0.12
WALD-L		1.22		16.62*		34.72*		17.62**		8.86**		44.43**

Country	Japan		Jordan		Kenya		Korea		Laos		Latvia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.01 (5.97)**	0.001 (2.48)**	0.005 (1.96)*	0.007 (3.51)**	0.37 (1.10)	0.18 (3.03)**	-0.05 (0.51)	0.03 (3.37)**	0.01 (0.21)	0.01 (4.14)**	1.48 (0.39)	0.02 (2.94)**
M	0.73 (8.85)**		-0.66 (2.78)**		0.75 (1.82)*		1.20 (4.10)*		0.44 (0.95)		-2.47 (0.31)	
M^+		0.68 (8.43)**		0.07 (3.15)**		0.69 (3.60)**		0.66 (4.05)**		0.41 (2.81)**		0.17 (3.05)**
M^-		0.78 (7.70)**		0.04 (2.50)**		0.74 (3.86)**		0.55 (3.17)**		0.36 (2.49)**		-0.11 (1.80)*
ECM_{t-1}	-0.17 (4.79)**	-0.06 (2.52)	-0.03 (1.86)	-0.24 (4.21)**	-0.12 (6.28)**	-0.22 (4.04)**	-0.08 (3.15)	-0.23 (4.11)**	-0.12 (4.10)**	-0.41 (4.74)**	-0.03 (5.07)**	-0.21 (4.30)**
Panel B: Diagnostic Statistics												
F	6.10*	3.78*	6.10*	13.31**	5.06**	10.57**	4.05*	4.04*	7.96**	5.34**	4.16*	4.16*
LM	9.71**	0.30	5.62	1.42	3.86	4.45	1.57	2.64	4.67	8.57	1.95	5.04
RESET	3.52	5.79**	3.42	3.59	1.37	3.17	0.04	0.13	0.67	1.85	3.11	0.02
$\bar{R}^2$	0.97	0.77	0.56	0.57	0.87	0.78	0.92	0.51	0.80	0.69	0.97	0.58
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.11		2.78*		1.62		13.70**		0.33		1.26
WALD-L		0.75		25.97**		9.05**		37.07**		26.58**		5.83**

Table 1 Continued

	Libya		Lithuania		Luxemburg		Macedonia		Malavi		Malaysia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	1.86 (0.62)	-2.05 (0.56)	-026 (1.76)*	0.01 (1.89)*	-0.65 (10.19)**	0.20 (2.38)**	0.61 (0.69)	3.73 (8.82)*	0.55 (1.18)	0.06 (2.99)**	022 (1.26)	0.04 (1.61)
M	-0.86 (0.38)		1.22 (4.67)**		1.64 (35.71)**		1.26 (2.45)**		0.69 (1.47)		0.85 (3.39)**	
M^+		2.87 (0.50)		0.29 (7.40)**		1.34 (8.43)**		0.71 (1.20)		4.41 (2.46)**		1.02 (4.20)**
M^-		1.31 (0.37)		-0.01 (5.78)**		1.51 (21.64)**		0.98 (2.03)**		4.89 (2.95)**		1.09 (3.77)**
ECM_{t-1}	-0.002 (1.60)	-0.01 (5.68)**	-0.12 (3.39)	-0.22 (4.03)**	-0.11 (4.76)**	-0.09 (2.40)	-0.41 (3.41)	-0.48 (3.83)**	-0.04 (3.61)*	-0.03 (4.08)**	-0.11 (3.02)	-0.06 (2.25)**
Panel B: Diagnostic Statistics												
F	0.27	18.26**	4.79**	6.55**	5.37**	3.92*	4.50**	3.98*	3.45	3.91*	4.39**	4.87**
LM	2.75	2.22	6.36	3.42	1.92	9.03	1.50	1.66	24.60**	11.35**	2.40	0.11
RESET	0.05	1.05	3.04	0.14	0.001	1.45	0.77	0.07	1.57	1.05	2.33	0.88
$\bar{R}^2$	0.99	0.99	0.98	0.80	0.99	0.88	0.76	0.69	0.97	0.98	0.93	0.47
CS (CS^2)	S (S)	U (S)	U (S)	S (S)	S (S)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		6.13**		1.57		0.003		4.25**		3.94**		0.28
WALD-L		0.44		11.91**		1.77		3.19*		0.27		0.82

Country	Moldova		Mauritius		Mexico		Mongolia		Morocco		Myanmar	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.44 (0.10)	29.66 (3.02)**	-0.01 (0.04)	0.01 (31.26)**	0.01 (2.45)**	0.01 (1.79)*	1.90 (2.39)**	74.6 (36.9)**	0.54 (6.24)**	0.18 (5.49)**	-0.01 (1.38)	0.01 (5.95)**
M	0.98 (2.56)**		1.55 (0.74)		0.73 (7.22)**		0.64 (24.2)**		0.25 (4.67)**		1.05 (28.14)**	
M^+		1.34 (2.91)**		0.67 (2.80)**		-0.74 (1.38)		0.69 (18.7)**		0.13 (2.11)**		0.86 (11.76)**
M^-		1.57 (2.95)**		0.79 (3.42)**		-1.17 (1.69)*		0.72 (31.8)**		0.10 (1.60)		0.85 (12.15)**
ECM_{t-1}	-0.16 (5.44)**	-0.40 (4.19)**	-0.05 (3.76)*	-0.27 (3.32)	-0.15 (3.52)*	-0.10 (7.10)**	-0.18 (5.41)**	-0.29 (7.51)**	-0.33 (4.03)**	-0.40 (4.94)**	-0.96 (11.75)**	-0.94 (10.22)**
Panel B: Diagnostic Statistics												
F	7.51**	22.50**	11.17**	4.90**	4.07*	8.30**	20.40**	38.81**	7.48**	4.39**	34.9**	25.65**
LM	11.93**	6.28	5.86	8.28	3.01	3.81	9.16	6.33	0.74	0.77	3.57	7.57
RESET	18.10**	0.57	0.12	0.03	0.01	1.45	0.93	2.49	1.44	2.07	0.25	2.76
$\bar{R}^2$	0.99	0.99	0.90	0.89	0.95	0.97	0.99	0.99	0.75	0.71	0.99	0.99
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (U)	S (U)	S (S)	S (S)	S (U)	S (U)
WALD-S		0.49		0.39		12.96**		36.81**		0.05		13.03**
WALD-L		6.60**		31.90**		7.07**		3.47*		5.98**		0.42

Country	Netherlands		New Zealand		Niger		Nigeria		Oman		Philippines	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.04 (0.36)	0.54 (42.58)**	0.11 (2.02)**	0.19 (20.95)**	0.12 (4.01)**	0.01 (2.53)**	294.61 (0.66)	-17.97 (2.09)**	0.99 (0.47)	0.04 (1.41)	-61.36 (1.56)	9.34 (2.42)**
M	1.03 (4.42)**		0.49 (2.03)**		0.08 (0.59)		11.80 (1.74)*		0.06 (0.03)		1.07 (7.60)**	
M^+		1.09 (29.14)**		0.25 (1.67)*		-0.02 (1.90)**		1.87 (5.97)**		-0.38 (0.57)		1.06 (10.1)**
M^-		1.05 (25.75)**		0.26 (1.74)*		0.09 (2.60)**		-1.00 (9.25)**		-0.54 (0.20)		1.08 (9.03)**
ECM_{t-1}	-0.06 (3.94)**	-0.32 (4.92)**	-0.21 (4.58)**	-0.37 (7.38)**	-0.06 (3.24)	-0.05 (2.80)**	-0.06 (0.78)	-0.03 (2.20)	-0.03 (1.44)	-0.15 (2.42)	-0.15 (2.74)	-0.16 (4.03)**
Panel B: Diagnostic Statistics												
F	6.37**	4.16*	6.31**	15.04**	3.43	5.01**	0.75	93.83**	0.68	4.95**	5.97**	21.16**
LM	9.50**	6.94	6.53	4.7	7.92	8.98**	3.03	6.49	2.58	2.25	5.63	1.51
RESET	0.19	2.08	0.39	1.06	0.20	1.11	2.62	0.21	0.12	3.30	2.08	1.62
$\bar{R}^2$	0.98	0.99	0.76	0.79	0.98	0.86	0.95	0.76	0.87	0.35	0.95	0.71
CS (CS^2)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.19		1.93		2.58		35.82**		3.17*		3.19*
WALD-L		14.66**		3.33*		1.93		95.56**		0.15		0.74

Country	Poland		Portugal		Romania		Russia		Rwanda		Senegal	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.07 (1.05)	0.02 (3.63)**	-0.64 (0.60)	0.17 (3.39)**	0.06 (0.15)	0.21 (1.90)*	0.11 (0.42)	2.02 (2.08)**	-0.07 (0.09)	9.07 (7.77)**	0.45 (2.50)**	0.20 (5.16)**
M	1.19 (4.62)**		2.22 (1.69)		0.58 (0.52)		0.83 (0.58)		1.45 (5.18)**		0.52 (2.55)	
M^+		1.79 (4.00)**		1.17 (2.39)**		1.03 (15.99)**		-6.25 (1.99)**		0.23 (6.58)**		0.60 (2.66)**
M^-		2.00 (3.69)**		1.16 (2.36)**		1.07 (21.06)**		-5.11 (1.73)**		0.54 (8.82)**		0.65 (2.88)**
ECM_{t-1}	-0.08 (3.87)**	-0.11 (4.20)**	-0.05 (4.14)**	-0.17 (3.09)	-0.04 (0.80)	-0.10 (2.46)	-0.10 (2.21)	-0.03 (1.77)	-0.26 (5.27)**	-0.76 (9.54)**	-0.28 (5.12)**	-0.28 (8.57)**
Panel B: Diagnostic Statistics												
F	4.92**	6.51**	5.63**	4.77**	2.16	5.81**	1.59	3.86*	19.65**	141.69**	8.64**	8.73**
LM	5.34	6.06	4.39	1.65	8.24	3.87	4.49	12.96**	8.55	0.87	8.48	6.19
RESET	1.20	0.48	2.57	2.21	0.34	0.76	2.55	2.35	0.53	0.59	0.01	0.04
$\bar{R}^2$	0.97	0.85	0.89	0.45	0.99	0.76	0.85	0.64	0.91	0.69	0.84	0.73
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		10.89**		4.21**		7.99**		0.57		1.32		1.21
WALD-L		13.15**		0.56		0.54		6.28**		75.19**		1.99

Country	Seychelles		Sierra Leone		Singapore		Slavonic		Slovenia		South Africa	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.56 (1.28)	0.08 (4.32)**	0.54 (1.79)*	0.58 (3.53)**	1.83 (3.48)**	0.08 (3.14)**	-0.06 (0.36)	0.13 (3.20)**	-0.34 (2.16)**	0.45 (5.89)**	0.04 (5.92)**	0.01 (2.41)**
M	1.47 (2.65)**		4.99 (3.14)**		-0.26 (0.75)		1.15 (4.43)**		1.28 (8.85)**		0.33 (2.88)**	
M^+		0.90 (5.56)**		10.75 (4.32)**		0.44 (9.55)**		0.22 (2.83)**		0.98 (15.72)**		0.92 (3.49)**
M^-		0.74 (4.53)**		11.94 (5.18)**		0.34 (8.59)**		0.03 (1.73)*		0.93 (13.69)**		1.03 (3.59)**
ECM_{t-1}	-0.08 (1.88)	-0.37 (6.18)**	-0.13 (4.21)**	-0.38 (3.76)*	-0.06 (3.19)	-0.08 (2.84)	-0.09 (7.83)**	-0.31 (3.13)	0.19 (4.11)**	-0.57 (5.73)**	-0.22 (5.19)**	-0.19 (2.55)
Panel B: Diagnostic Statistics												
F	1.16	6.28**	5.84**	4.64**	11.23**	7.46**	2.48	4.68**	5.46**	4.73**	8.83**	5.19**
LM	5.11	4.62	1.22	7.58	7.50	2.86	7.56**	8.87	3.01	6.42	5.69	8.33
RESET	0.01	1.23	0.39	2.99	2.32	2.17	1.86	0.01	3.33	3.58	0.19	3.80
$\bar{R}^2$	0.91	0.41	0.74	0.27	0.96	0.17	0.98	0.86	0.98	0.88	0.78	0.37
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.03		6.91**		0.78		4.14**		16.75**		0.75
WALD-L		56.63**		1722.40**		5.87**		0.18		25.06**		1465.37**

Country	Sri Lanka		Sweden		Switzerland		Tanzania		Thailand		Tonga	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-1.26 (3.07)**	0.20 (4.44)**	0.73 (0.75)	0.01 (3.30)**	-0.04 (0.31)	0.03 (7.17)**	-0.03 (0.79)	0.20 (4.17)**	-0.04 (0.87)	0.09 (1.79)*	-1.25 (0.60)	1.75 (2.36)**
M	2.11 (6.66)**		3.60 (1.06)		1.11 (2.46)**		1.04 (5.67)**		1.06 (11.23)**		3.19 (1.69)*	
M^+		2.34 (5.07)**		-2.16 (7.09)**		0.03 (9.80)**		1.10 (12.2)**		1.39 (3.26)**		1.50 (2.50)**
M^-		2.95 (3.61)**		-2.30 (6.50)**		-0.01 (9.36)**		1.10 (10.8)**		1.62 (2.56)**		1.99 (3.06)**
ECM_{t-1}	-0.07 (3.92)**	-0.08 (4.43)**	0.02 (0.95)	-0.02 (3.91)**	-0.12 (2.76)	-0.07 (4.04)**	-0.27 (7.06)**	-0.32 (5.48)**	-0.09 (4.43)**	-0.07 (5.27)**	-0.21 (3.66)*	-0.54 (2.56)
Panel B: Diagnostic Statistics												
F	5.03**	6.40**	6.59**	10.06**	5.44**	7.59**	11.41**	9.51**	4.98**	4.35**	4.39**	21.99**
LM	7.20	8.06	2.19	2.22	1.05	4.06	13.60**	15.10**	2.50	5.76	8.27	1.96
RESET	0.04	1.78	0.52	0.08	2.28	1.13	0.20	10.37**	3.09	3.48	2.37	0.33
$\bar{R}^2$	0.99	0.53	0.98	0.87	0.63	0.89	0.80	0.72	0.99	0.99	0.89	0.86
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.64		1.07		21.35**		7.06**		1.73		0.75
WALD-L		0.28		0.40		0.56		1.32		1.08		0.45

Table 1 Continued

Country	Tunisia		Turkey		UAE		Uganda		Ukraine		United Kingdom	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.03 (1.08)	0.22 (8.54)**	0.51 (7.73)**	-0.19 (0.99)	0.82 (2.15)**	0.05 (4.45)**	-0.01 (0.02)	0.10 (3.16)**	-0.01 (0.01)	0.01 (0.63)	-0.01 (0.03)	0.03 (4.30)**
M	1.20 (5.61)**		0.39 (12.99)**		0.06 (0.11)		0.94 (2.69)**		0.82 (1.24)		0.85 (1.30)**	
M^+		0.55 (2.34)**		0.08 (7.99)**		1.07 (14.23)**		0.49 (3.50)**		0.35 (1.91)*		0.58 (1.73)*
M^-		0.49 (1.94)*		0.03 (23.22)**		1.43 (13.40)**		0.41 (1.94)*		0.33 (1.93)*		0.67 (1.99)*
ECM_{t-1}	-0.17 (2.04)	-0.82 (9.43)**	-0.48 (60.84)**	-0.26 (14.26)**	-0.03 (3.20)	-0.08 (3.15)	-0.14 (2.41)	-0.24 (3.81)**	-0.16 (2.65)	-0.24 (5.28)**	-0.06 (1.96)	-0.13 (4.75)**
Panel B: Diagnostic Statistics												
F	1.36	8.27**	21.81**	496.08**	1.61	19.09**	5.06**	9.83**	5.80**	22.25**	3.26	17.88**
LM	7.67	0.58	6.91	8.85**	7.80**	7.36	0.75	2.38	9.34	1.27	1.85	2.89
RESET	3.90	0.18	1.05	0.49	3.65	2.48	2.24	0.18	2.54	0.04	0.31	0.60
$\bar{R}^2$	0.89	0.71	1.00	0.99	0.99	0.88	0.81	0.30	0.83	0.76	0.85	0.76
CS (CS^2)	U (S)	S (S)	S (S)	S(S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		1.47		565.39**		10.35**		0.57		17.94**		0.01
WALD-L		3.94**		1.32		14.64**		2.43		0.65		10.53**

Country	Uruguay		United States		Venezuela		Zambia	
	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates								
C	0.40 (0.93)	30.55 (14.52)**	0.12 (1.68)**	0.07 (4.58)**	1.05 (2.03)**	0.04 (1.93)*	0.47 (1.30)	0.10 (3.36)**
M	0.75 (3.04)**		0.83 (0.88)		0.34 (1.11)		0.29 (0.81)	
M^+		1.25 (1.98)**		0.37 (1.92)**		1.11 (10.6)**		0.10 (1.79)*
M^-		0.21 (11.3)**		0.14 (2.20)**		1.10 (9.42)**		0.08 (1.98)**
ECM_{t-1}	-0.23 (3.14)	-0.30 (14.68)**	-0.07 (3.82)**	-0.11 (5.48)**	-0.08 (3.79)*	-0.06 (3.88)**	0.19 (3.08)	0.20 (4.45)**
Panel B: Diagnostic Statistics								
F	20.00**	290.82**	11.85**	19.68**	12.74**	9.23**	6.21**	13.73**
LM	33.19**	2.66	6.20	0.82	8.49	8.36	5.10	1.63
RESET	2.08	0.06	0.02	1.60	0.27	0.10	0.02	0.48
$\bar{R}^2$	0.99	0.99	0.99	0.70	0.95	0.64	0.59	0.49
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		25.07**		2.58		3.10		0.06
WALD-L		7.29**		3.18*		0.01		1.28

Notes:

Numbers inside the parentheses next to coefficient estimates are absolute values of t-ratios. * and ** indicate significance at the 10% and 5% levels respectively.

a. The upper bound critical value of the F-test for cointegration when there is only one exogenous variables is 4.78 (5.73) at the 10% (5%) level of significance. These come from Pesaran *et al*. (2001, Table CI, Case III, p. 300).

b. The critical value for significance of ECM_{t-1} is -2.91 (-3.22) at the 10% (5%) level when k =1. The comparable figures in the nonlinear model when k =2 are -3.21 and -3.53 respectively. These come from Pesaran *et al*. (2001, Table CII, Case III, p. 303).

c. LM is the Lagrange Multiplier statistic to test for autocorrelation. It is distributed as χ^2 with 4 degrees of freedom since we are testing for first order autocorrelation. The critical value is 7.78 (9.49) at the 10% (5%) level.

d. RESET is Ramsey's test for misspecification. It is distributed as χ^2 with one degree of freedom. The critical value is 2.70 (3.84) at the 10% (5%) level.

e. Both Wald tests are distributed as χ^2 with one degree of freedom. The critical value is 2.70 (3.84) at the 10% (5%) level.

Table 2: Full Information Estimates of Both Linear ARDL (L-ARDL) and Nonlinear ARDL (NL-ARDL) Models when M = F(X).

Country	Algeria		Armenia		Australia		Austria		Bahamas		Bahrain	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	7.38 (3.10)**	10.84 (4.43)**	0.40 (5.60)**	0.79 (8.04)**	0.03(0.52)	0.12 (8.88)**	0.10 (6.94)**	0.28 (29.79)**	0.27(7.57)**	1.76 (6.28)**	-0.11 (1.44)	0.22 (11.9)**
X	0.73 (3.10)**		0.22 (0.51)		0.84(2.16)**		0.75 (16.7)**		0.97(20.1)**		1.55 (3.50)**	
X^+		0.54 (4.17)**		0.81 (2.11)**		0.81 (1.94)*		0.78 (9.07)**		1.20 (7.96)**		0.38 (2.07)**
X^-		0.49 (2.36)**		0.87 (2.30)**		0.78 (1.73)*		0.80 (7.42)**		1.08 (17.5)**		0.47(2.72)**
ECM_{t-1}	-0.21 (6.49)**	-0.27 (7.54)**	-0. 23 (5.20)**	-0.44 (5.60)**	-0.07(1.88)	-0.14 (6.03)**	-0.27 (5.21)**	-0.29 (4.15)**	-0.21(10.4)**	-0.27 (9.81)**	-0.08 (5.13)**	-0.23 (6.58)**
Panel B: Diagnostic Statistics												
F	9.78**	11.57**	6.80**	6.83**	6.39**	3.88*	5.22**	9.93**	20.37**	24.57**	3.67	5.25**
LM	6.93	7.97	2.14	1.18	5.11	4.84	6.27	2.13	5.88	8.21	1.22	1.95
RESET	1.71	0.40	2.99	0.14	0.07	0.39	3.54	3.28	3.28	1.84	2.63	2.39
$\bar{R}^2$	0.98	0.99	0.95	0.94	0.92	0.94	0.97	0.97	0.99	0.99	0.94	0.94
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)
WALD-S		1.64		11.16**		1.56		0.49		0.96		7.39**
WALD-L		0.44		8.23**		0.60		0.27		2.31		19.71**

Country	Bangladesh		Barbados		Belarus		Benin		Bolivia		Brazil	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.01(2.57)**	0.03 (4.11)**	0.08 (4.27)**	0.14(11.5)**	-0.07(2.56)**	8691.8 (43.57)**	0.03(1.76)*	0.11 (5.18)**	0.86(6.56)*	0.57 (5.53)**	-0.06 (6.05)**	0.01 (5.20)**
X	1.35(4.87)**		0.80 (1.79)*		0.94(61.9)**		1.55(1.60)		0.43 (4.09)**		0.25 (2.46)**	
X^+		2.02 (2.12)**		0.56(2.94)**		0.94 (23.12)**		1.67 (2.21)**		0.28 (6.59)**		0.14 (5.80)**
X^-		2.14 (1.99)**		0.62(3.50)**		0.88 40.23)**		1.79 (2.28)**		0.28 (8.46)**		0.08 (4.37)**
ECM_{t-1}	-0.22 (4.48)**	-0.25 (5.52)**	-0.08 (5.37)**	-0.26(3.97)**	-0.6 (19.6)**	-0.88 (7.42)**	-0.13(8.09)**	-0.17 (8.11)**	-0.31(5.85)**	-0.29 (6.12)**	-0.28 (4.11)**	-0.41 (5.71)**
Panel B: Diagnostic Statistics												
F	8.43**	14.14**	11.05**	6.20**	155.44**	6.18**	5.91**	7.18**	23.84**	36.80**	14.67**	31.82**
LM	7.05	6.24	5.51	6.04	9.40	7.34	6.81	6.06	3.63	1.49	1.87	0.25
RESET	3.74	3.40	0.04	1.74	0.33	1.63	0.01	0.07	0.99	3.25	0.88	3.57
$\bar{R}^2$	0.83	0.85	0.89	0.83	0.99	0.99	0.88	0.88	0.86	0.44	0.79	0.62
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.86		0.71		0.04		0.01		33.73**		0.60
WALD-L		0.95		7.28**		5.70**		3.24*		29.07**		17.82**

Country	Bulgaria		Burkina Faso		Cambodia		Cameroon		Canada		Chile	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.18 (0.96)	0.30 (9.47)**	0.03 (3.65)**	0.01 (4.38)**	-0.10 (0.49)	0.37 (25.58)**	0.01 (1.07)	0.07 (5.11)**	0.15(2.76)	0.06 (1.69)*	0.10 (6.94)**	0.07 (3.27)**
X	0.76 (1.69)*		0.68 (1.39)		1.58 (3.02)**		0.58 (2.28)**		0.37 (0.44)		0.63 (5.88)**	
X^+		1.04 (3.96)**		1.08 (5.53)**		1.02 (12.37)**		0.72 (4.54**		1.62 (2.09)**		0.31 (2.95)**
X^-		0.99 (3.82)**		1.14 (5.83)**		0.72 (6.09)**		0.82 (4.48)**		2.00 (2.36)**		0.26 (2.14)**
ECM_{t-1}	-0.20 (4.21)**	-0.28 (5.88)**	-0.21 (3.38)	-0.26 (4.09)**	-0.04 (2.21)	-0.42 (5.09)**	-0.09 (4.67)**	-0.14 (3.26)	-0.11(5.78)**	-0.14 (3.85)**	-0.2 (5.2)**	-0.5 (10.8)**
Panel B: Diagnostic Statistics												
F	3.91*	4.83**	12.16**	28.77**	5.24**	5.95**	7.15**	7.74**	9.87**	0.58**	5.22**	13.76**
LM	6.87	4.10	1.42	4.13	10.24**	4.77	3.44	5.32	5.20	6.42	3.20	11.18**
RESET	0.60	3.27	0.28	0.17	0.94	0.62	1.07	1.06	3.29	0.58	3.54	0.01
$\bar{R}^2$	0.75	0.82	0.78	0.56	0.99	0.99	0.87	0.89	0.79	0.73	0.97	0.81
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (U)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		6.36**		2.35		4.73**		1.28		1.07		2.03
WALD-L		35.03**		8.66**		44.73**		5.97**		9.08**		8.58**

Table 2 Continued.

Country	China		Costa Rica		Cote d Ivory		Croatia		Cyprus		Czech	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	10578.41 (4.64)**	22543.18 (11.10)**	0.14 (1.19)	0.36 (6.44)**	-0.01 (2.81)**	0.01 (5.30)**	0.10 (0.38)	0.61 (5.17)**	-0.21 (1.26)	0.12 (1.65)	0.18 (2.94)**	0.44 (18.7)**
X	0.69 (16.41)**		0.71 (1.66)*		0.89 (6.73)**		2.40 (1.93)*		4.22 (4.90)**		0.35 (10.9)**	
X^+		0.76 (6.77)**		1.41 (4.02)**		0.62 (6.10)**		1.34 (1.33)		4.19 (8.08)**		0.79 (3.75)**
X^-		0.76 (6.21)**		1.41 (3.73)**		0.61 (5.88)**		1.54 (1.45)		4.15 (7.82)**		0.84 (2.92)**
ECM_{t-1}	-0.34 (4.93)**	-0.31 (5.03)**	-0.06 (3.48)*	-0.13 (6.20)**	-0.38 (4.43)**	-0.46 (5.57)**	-0.17 (3.05)	-0.22 (4.82)**	-0.07 (3.20)	-0.21 (8.48)**	-0.23 (3.20)	-0.27 (6.21)**
Panel B: Diagnostic Statistics												
F	7.04**	4.08*	10.88**	27.55**	5.76**	6.79**	3.02	4.45**	5.92**	19.76**	7.21**	9.11**
LM	2.55	3.47	9.30	3.81	2.23	4.54	0.47	1.01	1.47	2.96	0.72	6.46
RESET	1.64	3.69	2.85	1.62	0.43	1.52	3.39	0.19	0.54	0.16	0.97	0.24
$\bar{R}^2$	0.99	0.99	0.89	0.93	0.92	0.93	0.78	0.82	0.94	0.58	0.92	0.98
CS (CS^2)	S (S)	S (S)	U (S)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (U)	S (S)
WALD-S		1.28		10.17**		8.53**		0.01		15.24**		10.56**
WALD-L		0.13		0.02		6.74**		4.84**		2.73*		0.51

Country	Denmark		Dominic Republic		Egypt		Equator Guinea		Estonia		Ethiopia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.01 (1.06)	0.01 (2.01)**	1.16 (6.02)**	46.55 (4.07)**	1.55(8.49)**	1.64 (1.85)*	0.05 (3.44)**	0.04 (3.27)**	0.37 (2.49)**	0.68 (13.03)**	0.37 (2.16)**	0.08 (4.80)**
X	3.43 (0.85)		0.25 (4.92)**		-0.01(0.17)		0.20 (6.66)**		0.55(2.23)**		-1.66 (0.80)	
X^+		2.80 (3.87)**		0.31 (3.47)**		0.30 (1.81)*		-0.19 (2.19)**		0.73 (2.68)**		1.74 (3.58)**
X^-		3.11 (3.88)**		0.36 (6.64)**		0.26 (1.81)*		0.92 (3.60)**		0.83 (2.63)**		0.99 (2.31)*
ECM_{t-1}	-0.01 (1.06)	-0.05 (2.24)	-0.22 (6.39)**	-0.28 (8.08)**	-0.25(5.05)**	-0.28 (7.88)**	-0.12 (7.55)**	-0.09 (5.02)**	-0.15 (4.49)**	-0.32 (4.52)**	-0.01 (2.34)**	-0.07 (3.95)**
Panel B: Diagnostic Statistics												
F	7.23**	4.37**	5.05**	7.17**	5.77**	6.43**	5.35**	14.27**	3.98*	4.66**	4.84**	5.03**
LM	3.89	5.09	11.47**	8.71	1.94	1.21	7.92	7.40	8.94	2.77	33.74**	29.37**
RESET	1.44	0.89	2.65	0.33	0.69	0.26	0.61	2.87	0.01	0.96	3.28	0.74
$\bar{R}^2$	0.72	0.71	0.99	0.99	0.61	0.66	0.99	0.99	0.89	0.88	0.99	0.99
CS (CS^2)	S (S)	S (S)	S (U)	S (S)	U (S)	U (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.07		8.74**		0.95		25.68**		0.19		3.29*
WALD-L		1.07		1.02		2.83**		17.93**		3.37*		75.88**

Country	Fiji		Finland		France		Gabon		Germany		Greece	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.09 (5.34)**	0.08 (4.20)**	-0.01 (2.23)	0.01 (2.29)**	-0.19 (1.18)	0.15 (2.03)**	0.12 (3.37)**	0.19 (11.3)**	0.05 (2.56)**	0.16 (12.1)**	0.02 (3.25)**	1.64 (4.42)**
X	0.52 (1.90)*		2.38 (4.71)**		2.08 (2.46)**		0.14 (2.11)**		0.69 (11.1)**		1.61 (12.2)**	
X^+		1.01 (2.41)**		1.33 (3.62)**		1.77 (2.20)**		0.20 (2.40)**		0.72 (9.09)**		1.23 (1.98)*
X^-		0.99 (2.37)**		1.24 (3.04)**		1.72 (2.06)**		0.21 (2.21)**		0.72 (7.74)**		1.35 (2.68)**
ECM_{t-1}	-0.32 (8.16)**	-0.13 (3.27)	-0.03 (2.24)	-0.06 (2.69)	-0.04 (2.22)	-0.05 (4.16)**	-0.07 (5.99)**	-0.11 (4.88)**	-0.13 (3.18)	-0.14 (3.54)*	-0.54 (5.85)**	-0.22 (5.56)**
Panel B: Diagnostic Statistics												
F	7.44**	4.19*	4.47**	4.05*	4.74**	8.97**	13.04**	5.21**	4.31*	4.82**	6.02**	11.25**
LM	9.81**	7.76	2.87	0.72	1.58	3.64	4.68	1.00	6.59	2.21	8.75	6.73
RESET	1.15	0.99	1.55	2.01	0.01	0.05	1.40	2.02	0.43	0.99	0.10	3.59
$\bar{R}^2$	0.71	0.70	0.55	0.56	0.97	0.98	0.98	0.97	0.98	0.98	0.86	0.97
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)	S (S)	S (S)	S (U)	S (S)
WALD-S		0.01		0.09		0.01		5.48**		1.61		0.28
WALD-L		6.55**		0.96		0.56		0.06		0.001		0.42

Table 2 Continued.

Country	Grenada		Guatemala		Haiti		Honduras		Hungary		Iceland	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.10(3.39)**	0.06(4.46)**	0.13 (4.84)**	4.84 (6.80)**	0.06 (0.43)	0.05 (6.15)**	0.66 (11.4)**	1.05 (2.21)**	0.77 (6.54)**	0.05 (2.76)**	0.15 (2.90)**	0.24 (6.64)**
X	3.34(4.92)**		0.45 (4.98)**		-1.16 (0.12)		0.33 (24.0)**		1.27 (1.83)*		0.52 (2.61)**	
X^+		3.56(2.16)**		0.47 (5.38)**		1.66 (3.03)**		0.31 (3.08)**		0.80 (9.22)**		0.41 (2.09)**
X^-		3.39(2.23)**		0.46 (5.94)**		1.38 (2.57)**		0.30 (3.31)**		0.81 (8.29)**		0.39 (1.94)*
ECM_{t-1}	-0.10(6.13)**	-0.34(4.40)**	-0.28 (4.71)**	-0.26 (6.45)**	-0.02 (4.48)**	-0.19 (3.50)*	-0.48 (6.08)**	-0.28 (2.19)	-0.06 (3.36)	-0.16 (2.74)	-0.25 (2.88)	-0.20 (3.66)*
Panel B: Diagnostic Statistics												
F	5.81**	10.66**	10.72**	10.81**	2.58	4.72**	9.17**	8.33**	6.62**	4.91**	6.34**	6.23**
LM	2.88	1.73	2.87	3.61	9.39	5.53	6.26	6.95	8.85	5.82	0.44	4.10
RESET	3.78	0.26	0.04	2.94	2.53	2.54	3.66	1.03	3.37	1.06	3.83	2.30
$\bar{R}^2$	0.98	0.88	0.62	0.98	0.89	0.86	0.98	0.86	0.98	0.92	0.58	0.64
CS (CS^2)	S (S)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		7.88**		0.19		1.28		2.11		4.94**		2.05
WALD-L		9.05**		0.93		20.02**		0.03		0.32		0.60

Country	India		Indonesia		Iran		Ireland		Italy		Jamaica	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.01 (1.53)	0.03 (4.31)**	0.01 (0.67)	0.10 (2.03)**	-0.75 (3.51)**	36.88 (1.21)	0.14 (0.41)	0.55 (20.92)**	-0.01 (0.10)	0.15 (4.09)**	0.46 (12.27)**	0.07 (2.89)**
X	1.58 (12.6)**		0.57 (24.9)**		1.56 (19.9)**		0.31 (0.54)		-0.08 (2.63)**		-0.40 (2.04)**	
X^+		1.59 (3.71)**		0.69 (2.82)**		1.48 (3.01)**		0.45 (7.34)**		0.81 (1.75)*		0.04 (2.65)**
X^-		1.54 (2.74)**		0.67 (3.25)**		1.05 (1.98**		0.61 (10.08)**		0.77 (1.55)		0.04 (2.45)**
ECM_{t-1}	-0.10 (3.98)**	-0.13 (6.04)**	-0.41 (7.77)**	-0.32 (6.45)**	-0.07 (3.49)*	0.07 (11.73)**	-0.03 (2.64)	-0.29 (4.60)**	1.01 (3.49)*	-0.10 (3.76)*	-0.37 (6.33)**	-0.18 (2.26)
Panel B: Diagnostic Statistics												
F	4.85**	5.39**	24.03**	6.17**	9.06**	22.57**	4.79**	5.95**	4.91**	5.07**	11.80**	13.82**
LM	6.47	5.76	9.44	5.33	11.47**	3.40	7.05	9.83**	5.52	11.06**	7.86	6.01
RESET	3.37	2.80	1.12	1.17	1.47	0.98	0.26	1.26	0.49	0.003	1.03	0.02
$\bar{R}^2$	0.99	0.99	0.98	0.97	0.99	0.99	0.96	0.97	0.95	0.95	0.71	0.42
CS (CS^2)	S (S)	S (S)	S (U)	S (S)	S (U)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		1.27		0.24		0.76		7.57**		0.08		0.59
WALD-L		0.10		0.10		0.29		151.62**		0.53		0.0001

Country	Japan		Jordan		Kenya		Korea		Laos		Latvia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	-0.007 (1.17)	0.0009 (2.50)**	0.09 (3.52)**	0.03 (3.83)**	0.48 (3.72)**	0.14 (3.87)**	0.07 (1.67)*	0.05 (4.08)**	0.07 (3.94)**	0.02 (4.28)**	0.28 (3.97)**	0.09 (3.87)*
X	1.10 (4.87)**		1.10 (2.52)**		0.25 (2.01)**		0.75 (5.26)**		0.21 (0.56)		0.61 (2.58)**	
X^+		1.32 (2.94)**		2.37 (4.59)**		0.65 (4.65)**		0.79 (9.65)**		0.11 (2.80)**		0.70 (4.46)**
X^-		1.28 (2.82)**		2.52 (4.53)**		0.63 (4.67)**		0.83 (9.75)**		0.15 (2.89)**		0.77 (2.84)**
ECM_{t-1}	-0.09 (4.92)**	-0.05 (1.80)	-0.17 (3.26)	-0.25 (4.22)**	-0.15 (4.10)**	-0.23 (3.73)*	-0.12 (2.96)	-0.23 (3.75)*	-0.13 (3.27)	-0.34 (4.59)**	-0.13 (2.20)	-0.21 (3.83)**
Panel B: Diagnostic Statistics												
F	4.99**	11.58**	7.32**	13.01**	6.54**	5.17**	6.88**	4.87**	6.69**	8.71**	4.80**	6.32**
LM	9.55**	10.18**	2.91	4.32	3.46	1.34	4.35	7.31	5.01	9.74	3.70	1.27
RESET	0.40	2.33	1.23	2.35	0.32	1.31	1.20	1.45	0.64	1.69	1.46	0.01
$\bar{R}^2$	0.98	0.62	0.70	0.57	0.70	0.47	0.91	0.59	0.77	0.68	0.92	0.55
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		5.65**		0.05		6.06**		6.42**		0.40		3.71*
WALD-L		0.16		179.61**		5.02**		3.11*		1.78		0.24

Table 2 continued.

Country	Libya		Lithuania		Luxemburg		Macedonia		Malavi		Malaysia	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	1.87 (0.62)	-2.50 (0.56)	0.26 (13.21)**	0.15 (2.12)**	0.41 (17.9)**	-0.001 (3.40)**	0.55 (3.34)**	2.02 (37.92)**	1.42 (4.26)**	1.03 (6.46)**	0.14 (1.19)	0.08 (5.10)**
X	-0.86 (0.68)		0.71 (16.43)**		0.59 (45.5)**		0.41 (7.09)**		-0.29 (1.16)		0.69 (4.80)**	
X^+		2.87 (0.50)		1.75 (5.52)**		0.96 (7.80)**		0.40 (6.53)**		076 (2.02)**		0.57 (5.70)**
X^-		1.31 (0.37)		1.98 (3.74)**		0.85 (18.4)**		0.41 (7.73)**		0.63 (1.90)*		0.57 (5.32)**
ECM_{t-1}	-0.002 (1.60)	-0.007 (5.68)**	-0.48 (6.51)**	-0.12 (2.26)	-0.09 (4.73)**	-0.0001 (2.59)	-0.62 (5.12)**	-0.50 (3.91)**	-0.06 (3.57)*	-0.06 (6.46)*	-0.12 (3.95)**	-0.15 (4.46)**
Panel B: Diagnostic Statistics												
F	0.27	6.09**	6.11**	12.85**	6.19**	4.58**	8.34**	8.26**	4.77**	4.17*	5.10**	5.10**
LM	2.75	2.22	3.69	3.36	8.92	8.77	0.46	3.99	4.17	5.16	7.75	4.58
RESET	0.05	1.05	3.55	1.25	2.66	0.25	0.27	0.41	0.23	0.06	0.93	0.02
$\bar{R}^2$	0.99	0.99	0.97	0.75	0.99	0.89	0.74	0.81	0.95	0.95	0.91	0.43
CS (CS^2)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		2.22		0.72		1.29		2.33		5.38**		3.67*
WALD-L		1.05		2.72*		2.59		0.94		3.89**		0.001

Country	Moldova		Mauritius		Mexico		Mongolia		Morocco		Myanmar	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.36 (1.46)	34.37 (2.65)**	0.01 (5.60)**	0.01 (7.82)**	0.01 (0.32)	0.01 (5.50)**	-0.46 (-0.33)	116.96 (14.3)**	-1.87 (1.32)	0.12 (2.29)**	0.01 (4.08)**	0.01 (2.31)**
X	0.65 (3.30)**		0.29 (3.80)**		1.05 (4.81)**		1.65 (7.56)**		3.77 (2.46)**		0.88 (21.10)**	
X^+		1.16 (3.17)**		0.55 (4.19)**		0.66 (2.65)**		1.37 (2.81)**		0.41 (2.00)**		0.85 (6.12)**
X^-		1.12 (2.78)**		0.54 (4.20)**		0.54 (0.34)		1.57 (7.91)**		0.31 (1.73)*		0.81 (6.47)**
ECM_{t-1}	-0.09 (3.74)*	-0.24 (5.51)**	-0.23 (3.64)*	-0.34 (6.23)**	-.0.08 (6.56)**	-0.10 (2.76)	-0.13 (8.14)**	-0.21 (7.82)**	-0.03 (1.17)	-0.09 (1.95)	-0.98 (10.01)**	-0.56 (7.66)**
Panel B: Diagnostic Statistics												
F	9.76**	3.99*	4.98**	9.47**	3.86*	7.19**	10.73**	23.73**	7.63**	4.83**	16.53**	6.80**
LM	11.07**	5.48	7.97	5.34	6.83	1.77	10.27**	9.62**	9.99**	2.72	1.76	4.13
RESET	0.07	4.21**	0.01	0.32	3.11	0.45	0.07	3.04	1.65	0.26	3.54	3.58
$\bar{R}^2$	0.99	0.99	0.68	0.64	0.98	0.76	0.99	0.99	0.91	0.64	0.99	0.99
CS (CS^2)	S (S)	U (S)	S (S)	S (S)	S (S)	S (S)	S (U)	S (U)	S (S)	S (S)	S (U)	S (S)
WALD-S		1.06		31.62**		16.89**		8.16**		1.11		4.21**
WALD-L		0.62		0.67		1.14		0.43		0.56		1.55

Country	Netherlands		New Zealand		Niger		Nigeria		Oman		Philippines	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.05 (1.72)*	0.12 (5.25)**	0.09 (1.48)	0.29 (10.28)**	1.11 (0.50)	0.01 (1.90)*	-0.11 (0.10)	2.22 (11.40)**	0.38 (2.92)**	0.23 (3.57)**	118.9 (2.01)**	-23.21 (3.99)**
X	0.81 (15.05)**		0.60 (2.08)**		-5.40 (0.39)		0.08 (10.10)**		0.72 (4.46)**		0.76 (3.39)**	
X^+		0.89 (21.3)**		0.75 (3.09)**		1.36 (4.29)**		0.10 (6.59)**		0.94 (2.37)**		0.26 (9.99)**
X^-		0.92 (18.6)**		0.76 (3.11)**		0.63 (2.52)**		0.10 (9.88)**		0.99 (2.19)**		0.56 (8.95)**
ECM_{t-1}	-0.24 (3.99)**	-0.50 (5.50)**	-0.25 (3.29)	-0.29 (4.78)**	-0.01 (1.74)	-0.07 (2.00)	-0.16 (4.66)**	-0.22 (16.9)**	-0.30 (5.30)**	-0.32 (3.58)*	-0.08 (1.91)	-0.05 (4.28)**
Panel B: Diagnostic Statistics												
F	5.25**	4.08*	5.05**	7.33**	0.99	4.39**	16.17**	55.86**	9.25**	4.19*	4.01*	12.19**
LM	2.54	3.65	8.54	9.06	1.68	2.83	2.26	4.92	3.06	1.59	2.64	9.00
RESET	0.15	3.76	2.35	0.95	3.48	1.59	11.11**	1.14	0.01	0.47	1.71	0.01
$\bar{R}^2$	0.97	0.86	0.65	0.66	0.98	0.82	0.99	0.91	0.68	0.34	0.96	0.68
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.01		4.6**		1.15		13.55**		0.04		12.72**
WALD-L		13.45**		7.33**		8.58**		0.65		0.02		0.82

Table 2 Continued.

Country	Poland		Portugal		Romania		Russia		Rwanda		Senegal	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	1.67 (0.16)	0.02 (3.05)**	0.67 (5.57)**	0.15 (2.82)**	0.20 (7.15)**	0.01 (1.49)	0.18 (8.07)**	-0.06 (4.29)**	0.49 (2.30)**	0.62 (4.71)**	0.06 (1.84)*	0.02 (1.29)
X	-5.75 (0.14)		0.29 (2.51)**		0.75 (23.16)**		-0.01 (0.07)		0.41 (13.72)**		0.19 (5.37)**	
X^+		0.52 (5.69)**		0.48 (2.45)**		-0.01 (3.85)**		0.01 (1.53)		0.53 (4.47)**		0.84 (3.91)**
X^-		0.40 (3.97)**		0.48 (2.21)**		-0.02 (2.02)**		0.04 (2.60)**		0.53 (4.80)**		0.79 (3.59)**
ECM_{t-1}	-0.01 (1.47)	-0.17 (3.05)	-0.24 (3.90)**	-0.26 (3.43)	-0.23 (3.44)	-0.04 (3.56)*	-0.33 (4.04)**	-1.25 (4.56)**	-0.37 (6.47)**	-0.37 (6.32)**	-0.09 (2.47)	-0.08 (1.65)
Panel B: Diagnostic Statistics												
F	0.71	4.90**	4.98**	5.43**	8.04**	82.18**	5.29**	6.65**	25.29**	31.12**	2.01	10.26**
LM	5.77	8.54	2.14	7.65	6.02	27.79**	6.87	5.44	2.49	4.09	4.73	6.50
RESET	3.01	0.66	0.26	0.40	0.35	7.85**	2.60	0.31	0.21	0.05	2.55	0.62
$\bar{R}^2$	0.97	0.84	0.74	0.68	0.99	0.85	0.69	0.78	0.89	0.49	0.86	0.68
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (U)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		12.76**		0.45		45.73**		5.49**		3.31*		0.01
WALD-L		75.28**		0.58		2.28		0.48		0.18		2.87**

Country	Seychelles		Sierra Leone		Singapore		Slavonic		Slovenia		South Africa	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.07 (2.45)**	0.04 (1.64)	0.10 (2.38)**	0.01 (1.52)	-0.54 (0.39)	0.15 (4.47)**	0.19 (1.85)*	0.07 (2.31)**	0.26 (1.99)**	0.83 (3.70)**	0.06 (0.97)	0.01 (3.91)**
X	-0.19 (3.17)**		0.01 (0.49)		1.25 (1.10)		0.84 (5.45)**		0.79 (6.83)**		-0.01 (0.01)	
X^+		0.78 (8.89)**		-0.65 ()		1.13 (9.70)**		0.39 (2.30)**		1.02 (3.92)**		0.35 (2.95)**
X^-		0.81 (8.32)**		-0.59 ()		1.29 (10.78)**		0.37 (2.02)**		1.18 (4.29)**		0.21 (2.65)**
ECM_{t-1}	-0.19 (3.17)	0.24 (2.15)	-0.08 (3.96)**	-0.01 (0.65)	-0.03 (1.31)	-0.14 (4.47)**	-0.14 (2.27)	-0.19 (2.81)	0.22 (3.04)	-0.32 (3.76)*	-0.06 (1.89)	-0.23 (4.31)**
Panel B: Diagnostic Statistics												
F	3.31	3.83	5.16**	4.04	9.66**	20.58**	1.68	3.97**	2.99	4.52**	1.17	6.67**
LM	4.66	5.84	1.83	10.39**	3.19	5.78	7.68	1.59	6.63	4.27	2.76	7.82
RESET	0.33	0.21	0.08	0.39	2.42	0.21	2.96	0.01	3.70	0.68	1.13	3.67
$\bar{R}^2$	0.82	0.35	0.94	0.40	0.96	0.71	0.95	0.76	0.97	0.87	0.86	0.34
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.42		1.23		8.13**		0.05		1.75		2.11
WALD-L		8.07**		2.07		51.39**		0.06		389.88**		0.01

Country	Sri Lanka		Sweden		Switzerland		Tanzania		Thailand		Tonga	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.82 (10.04)**	0.15 (4.28)**	0.07 (0.68)	0.01 (1.55)	0.15 (3.23)**	0.03 (5.06)**	0.37 (2.27)**	0.10 (2.39)**	-0.08 (4.87)**	0.17 (10.3)**	0.19 (3.26)**	0.99 (3.14)**
X	0.33 (6.39)**		0.67 (1.79)*		0.55 (3.25)**		0.57 (2.90)**		0.89 (17.3)**		0.01 (0.44)	
X^+		0.39 (3.90)**		0.70 ()		0.76 (7.92)**		0.66 (6.88)**		0.87 (7.24)**		0.19 (3.51)**
X^-		0.36 (1.89)*		0.59 ()		0.77 (7.89)**		0.65 (6.27)**		0.80 (4.71)**		0.19 (3.58)**
ECM_{t-1}	-0.09 (5.63)**	-0.13 (4.17)**	-0.05 (1.35)	0.08 (3.42)	0.10 (3.31)	-0.18 (7.18)**	-0.19 (3.60)*	-0.19 (3.34)	-0.19 (7.85)**	-0.18 (4.87)**	-0.20 (3.72)*	-0.52 (3.30)
Panel B: Diagnostic Statistics												
F	20.91**	7.81**	1.18	8.01**	6.10**	35.16**	2.97	5.52**	7.64**	4.07*	4.53**	4.19*
LM	38.97**	3.50	1.82	6.98	1.05	4.19	16.15**	4.37	5.74	5.18	6.27	6.05
RESET	2.62	1.38	0.07	0.01	0.21	0.36	0.44	0.01	1.23	0.67	1.69	0.11
$\bar{R}^2$	0.99	0.71	0.91	0.66	0.93	0.75	0.82	0.58	0.98	0.98	0.75	0.45
$CS\ (CS^2)$	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		1.87		7.20**		11.93**		0.01		9.74**		10.03**
WALD-L		39.58**		1.63		0.03		21.09**		1.66		25.18**

Table 2 Continued.

Country	Tunisia		Turkey		UAE		Uganda		Ukraine		United Kingdom	
	L	NL	L	NL	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates												
C	0.08 (2.99)**	0.09 (2.29)**	-0.90 (0.74)	54.25 (17.79)**	4.21 (0.20)	0.16 (1.71)*	0.21 (0.86)	0.08 (1.93)*	0.21 (1.87)*	0.05 (5.04)**	0.20 (2.72)**	0.20 (3.09)**
X	0.76 (10.31)**		3.25 (6.32)**		-2.80 (0.16)		0.84 (2.93)**		0.66 (2.22)**		-0.09 (1.20)	
X^+		0.91 (2.25)**		0.11 (9.50)**		0.27 (15.80)**		0.15 (3.03)**		0.26 (4.75)**		0.38 (1.95)*
X^-		0.93 (2.09)**		0.13 (21.29)**		-0.01 (9.49)**		0.03 (1.91)*		0.23 (4.53)**		0.37 (1.98)**
ECM_{t-1}	-0.35 (4.12)**	-0.30 (2.82)	-0.23 (6.04)**	-0.77 (18.01)**	-0.01 (0.23)	-0.03 (1.38)	-0.18 (3.03)	-0.20 (3.78)*	-0.24 (2.88)	-0.77 (5.89)**	-0.08 (2.82)	-0.11 (3.71)*
Panel B: Diagnostic Statistics												
F	5.58**	4.36**	26.94**	1935.70**	1.71	2.56	7.63**	13.06**	8.07**	27.30**	5.72**	9.59**
LM	1.63	2.32	7.49	7.13	5.02	8.04	2.95	2.92	9.47	3.70	7.98	1.92
RESET	0.19	0.42	0.10	0.02	3.21	2.01	1.84	0.04	2.31	0.03	0.94	1.27
$\bar{R}^2$	0.75	0.76	0.99	0.99	0.99	0.67	0.82	0.66	0.73	0.72	0.87	0.66
CS (CS^2)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		0.34		82.37**		1.06		13.86**		3.71*		7.89**
WALD-L		30.43**		0.37		2.30		5.43**		5.05**		0.14

Country	Uruguay		United States		Venezuela		Zambia	
	L	NL	L	NL	L	NL	L	NL
Panel A: Long-Run Estimates								
C	1.08 (2.39)**	185.12 (18.32)**	-0.14 (0.62)	0.02 (3.71)**	1.05 (2.84)**	0.27 (4.71)**	0.70 (2.64)**	0.40 (4.86)**
X	-0.16 (0.43)		1.25 (4.08)**		0.34 (1.53)		0.38 (1.13)	
X^+		-0.49 (9.24)**		0.49 (2.14)**		-0.50 (0.79)		0.65 (3.05)**
X^-		0.32 (22.5)**		0.38 (2.17)**		-0.67 (1.13)		0.66 (3.14)**
ECM_{t-1}	-0.17 (2.68)	-0.50 (18.33)**	-0.03 (1.80)	-0.12 (4.07)**	-0.12 (5.34)**	-0.12 (6.16)**	-0.23 (4.95)**	-0.30 (6.62)**
Panel B: Diagnosic Statistics								
F	26.21**	442.83**	1.74	12.15**	13.13**	23.64**	13.72**	33.46**
LM	64.47**	21.37**	1.71	0.56	3.39	0.99	1.92	1.48
RESET	4.72**	30.22**	0.35	0.35	0.01	0.63	0.44	3.35
$\bar{R}^2$	0.99	0.99	0.99	0.65	0.93	0.52	0.66	0.39
CS (CS^2)	S (S)	S (U)	S (S)	S (S)	S (S)	S (S)	S (S)	S (S)
WALD-S		8.34**		5.45**		0.90		2.90*
WALD-L		83.14**		0.89		5.93**		0.03

Notes:

a. Numbers inside the parentheses next to coefficient estimates are absolute values of t-ratios. * and ** indicate significance at the 10% and 5% levels respectively.
b. The upper bound critical value of the F-test for cointegration when there is only one exogenous variables is 4.78 (5.73) at the 10% (5%) level of significance. These come from Pesaran *et al.* (2001, Table CI, Case III, p. 300).
c. The critical value for significance of ECM_{t-1} is -2.91 (-3.22) at the 10% (5%) level when k =1. The comparable figures in the nonlinear model when k =2 are -3.21 and -3.53 respectively. These come from Pesaran *et al.* (2001, Table CII, Case III, p. 303).
d. LM is the Lagrange Multiplier statistic to test for autocorrelation. It is distributed as χ^2 with 4 degrees of freedom since we are testing for first order autocorrelation. The critical value is 7.78 (9.49) at the 10% (5%) level.
e. RESET is Ramsey's test for misspecification. It is distributed as χ^2 with one degree of freedom. The critical value is 2.70 (3.84) at the 10% (5%) level.
f. Both Wald tests are distributed as χ^2 with one degree of freedom. The critical value is 2.70 (3.84) at the 10% (5%) level.