CURRENT ACCOUNT SUSTAINABILITY IN EMERGING MARKETS: AN ANALYSIS WITH LINEAR AND NONLINEAR PANEL UNIT ROOT TESTS

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Abstract: This study examines the sustainability of current account deficits of eight emerging market economies, namely Brazil, Colombia, Czech Republic, Hungary, Indonesia, Peru, Russia and South Africa, over the period of 1996Q1-2009Q4 by employing linear and nonlinear panel unit root tests along with sequential panel selection method. While the results of the linear panel unit root test give evidence of the stationarity for the current accounts of Russia and Indonesia, the nonlinear panel unit root test indicates that only the current account of Indonesia is stationary. In this respect, the main contribution of the paper to related literature is to indicate the importance of distinguishing the linear and nonlinear adjustment processes in examining the current account sustainability.

Keywords: Current Account Sustainability, Nonlinearity, Panel Unit Root Tests, Sequential Panel Selection Method.

GELİŞMEKTE OLAN ÜLKELERDE CARİ AÇIĞIN SÜRDÜRÜLEBİLİRLİĞİ: DOĞRUSAL VE DOĞRUSAL OLMAYAN BİRİM KÖK TESTLERİYLE BİR İNCELEME

Özet: Bu çalışma doğrusal ve doğrusal olmayan panel birim kök testleriyle birlikte ardışık panel seçim tekniğini kullanarak, sekiz gelişmekte olan ülkenin, Brezilya, Kolombiya, Çek Cumhuriyeti, Macaristan, Endonezya, Peru, Rusya, Güney Afrika, cari açıklarının sürdürülebilirliğini çeyrek dönemlik verilerle 1996-2009 dönemi için araştırmaktadır. Doğrusal panel birim kök testinin sonuçları Rusya ve Endonezya'nın cari işlemler hesabının durağan olduğuna dair kanıtlar sunarken, doğrusal olmayan panel birim kök testi sadece Endonezya'nın cari işlem dengesinin durağan olduğunu göstermektedir. Bu bağlamda, çalışmanın ilgili literatüre temel katkısı cari hesabın sürdürülebiliğinin araştırılmasında doğrusal ve doğrusal olmayan uyum süreçlerinin ayrıştırılmasının önemine işaret etmektir.

Anahtar Kelimeler: Cari Açığın Sürdürülebilirliği, Doğrusal Dışılık, Panel Birim Kök Testleri, Ardışık Panel Seçim Yöntemi.

I. Introduction

The position of current account deficits is an important indicator of economic performance and macroeconomic stability for the emerging market economies. For an open economy linked to the global markets, one important aspect of intertemporal plans is the time path of the current account which measures changes in national net indebtedness. The concept of current account sustainability means that whether an economy is capable of meeting its intertemporal budget constraint (IBC) in the long run without a drastic change

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in private-sector behaviour or in government policy. Trehan and Walsh (1991) states that the sustainability also refers to stationarity of the current account balance over time, whereas nonstationarity implies that the country violates its IBC. In addition, the stance of the current account reflects the saving-investment ratio and is closely related to the status of the fiscal balance and private savings, which are key factors of economic growth. Pointing out the importance of current account sustainability, Aristovnik (2006) emphasizes that the emerging market economies have been involved in catching-up process, which includes financing a huge amount of productive investment without harming their external sustainability and external debt. Since such economies suffer from relatively low domestic saving rates, they need to turn to foreign savings which have generally induced high and even growing current account deficits. The behaviour of the current account indicates the accumulation and sustainability of external debt as well as the potential exchange rate realignment. As stated by Wu (2000) temporary current account deficits are not considered necessarily damaging since they show the reallocation of capital to countries where capital is more productive. On the contrary, persistent deficits can have serious effects, such as high domestic interest rates relative to foreign counterparts and simultaneously impose an excessive burden on future generations since the accumulation of larger debt implies increasing interest payments and thus lowering the standard of living. The deficits provide a signal of macroeconomic imbalance, calling for devaluation and/or tighter macroeconomic policies. In other words, once the country is unable to cover the current account deficits, it will be forced to take actions such as reducing public deficits, a sharp depreciating of exchange rates or increasing private savings to correct current account balance.

It is interesting and significant to study the stationarity of the current account for two main reasons: First, a stationary current account is consistent with the sustainability of external debts. A policy of decreasing imports as a means of reducing current account deficits is regarded as unacceptable by emerging market economies due to their growth and development objectives. Accordingly, the emerging market economies wish to fund widening current account deficits via further borrowing but this will led to high debt to export ratios. Although it is possible to sustain current account deficits by borrowing from abroad in the short-run, the ability of the economy to service external obligations probably will be questioned in case such deficits persist for a long-run. The current account deficits, therefore, contribute to debt of the country and a potential downward spiral of negative basic transfer such as loss of foreign exchange and a net outflow of capital, decreasing foreign reserves and damaged development prospects. High levels of current account deficits which become unsustainable could cause a sudden reversal in capital flows or might necessitate adjustments in interest rates or exchange rates. In contrast, a stationary current account may indicate there is no incentive for the country to default on its external debts (Holman, 2001). Second, the stationarity is consistent with the intertemporal model of the current account sustainability, and hence supports its validity. As stated by Obstfeld and Rogoff (1995), the modern intertemporal model of current account determination treats the current account balance as the end product of forward looking savings and investment decisions and predicts that transitory shocks to output are primarily reflected in national savings while aggregate consumption is smoothed. Hence, any deviations of the actual series from their respective optimal benchmarks are quantifiable and can be attributed to either agents failing to fully smooth their consumption expenditure intertemporally (under no obstacles to free capital movement) or the country failing to satisfy its external borrowing constraint in present value terms or both. Eventually, this implies that the current account should be stationary. The stationarity also has an important policy implication: if trade accounts are stationary, then even temporary (short-run) trade deficits will not pose significant problems in the long run. However, if it is not, trade imbalances are not sustainable and thus policies must be implemented to prevent the trade imbalances from increasing. In a nutshell, if current account follows a stationary process, then it has a tendency of reverting to its long run equilibrium path over time and this feature is particularly useful in predicting its future behavior. On the other hand, a random walk process implies that any shock to the current account has a permanent effect and there is no tendency to revert to its equilibrium level. Hence, observations of past behavior cannot predict the future behavior of current account. Since current account balance determines the stock of net claims (or liabilities) of a country, it reflects the intertemporal path of debts in an open economy. Lau et al. (2006) features the empirical studies generally concentrate on the intertemporal sustainability constraint rather than the size of the current account or international debts of an economy at any particular time. Following the theoretical results of the intertemporal sustainability approach which focuses on the long run path of the current account, the stationary current account is consistent with sustainable imbalances between internal savings and domestic investments, and also accumulation of debt. In this case, there is no incentive for a country to default on its international debts and the macroeconomic policies are in line with its IBC and all external debts will ultimately be repaid.

As stated by Clarida et al. (2007), the mean-reverting process of the current account adjustment has different characteristics depending upon whether the process is linear or nonlinear. When the time path of current account is a linear stationary process, there is no threshold beyond which policy changes and/or market activities will force a reversal of the deficit and below which adjustment is absent. In this case, the adjustment is symmetric above and below the long-run equilibrium and the speed of the adjustment is independent of the size of the deviation from the long-run equilibrium. As a result, there is no reason to focus on the adjustment to large deficits as providing no different or more information than episodes of adjustment to small deficits; in other words, all episodes provide the same information at linear stationary process. By contrast, if the mean-reverting process that governs the current account adjustment to the long run equilibrium is nonlinear stationary process, then the adjustment process depends upon both the size and sign of the current account imbalance.

The literature on the sustainability of the current account examines the question within alternative approaches. One approach considers a time series perspective where researchers investigate the long run relationship between exports and imports or the stationarity of the current account deficit, for example, Trehan and Walsh (1991), Husted (1992), Irandoust and Sjöö (2000), Apergis et al. (2000), Arize (2002), Baharumshah et al. (2003), Irandoust and Ericsson (2004), Narayan and Narayan (2005), Herzer and Nowak-Lehmann (2006), Kónya (2009). These studies have applied individual unit root and cointegration tests to each country's time series data. However, it is well known that such individual tests lack power with small samples. Therefore, exploiting cross sectional information may increase the power of unit root tests. Motivated by the statistical power of the advances in panel unit root and panel cointegration tests, an increasing number of authors have applied these tests to examine whether or not the current account imbalance is sustainable in the long run, for example, Wu (2000), Wu et al. (2001), Lau and Baharumshah (2005), Lau et al. (2006), Kalyoncu (2006), Holmes (2004) and Chu et al. (2007), Hamori (2009), Holmes et al. (2010) among others. In addition, if the current account adjusts in a nonlinear way, then these tests also suffer from a loss of power, which may lead to the acceptance of nonstationarity when the current account is actually sustainable. Therefore, a growing body of researches, such as, Chortareas et al. (2004), Clarida et al. (2007), Mishra et al. (2008), Kim et al. (2009), Christopoulos and León Ledesma (2010) and Chen (2010), turn their attention to adopt more sophisticated nonlinear models to test the current account sustainability (Since there are no studies covering the same sample as in ours, we do not have opportunity to make comparison with any any other works. Therefore, we just mentioned the papers that are leading due to their econometric methodology in the related literature).

The aim of this study is to investigate whether the current accounts of Brazil, Colombia, Czech Republic, Hungary, Indonesia, Peru, Russia and South Africa is stationarity (The sample countries are selected according to 'Morgan Stanley Emerging Markets Index' classification and data availability). To this end, we employ recently developed linear and nonlinear panel unit root tests with sequential selection method. Our contribution to the sustainability literature is two-fold. First, we focus on a group of countries which having similar capital market characteristics. Second, we use a new methodology that captures the possibility of nonlinear mean-reversion in the current account to GDP ratio. The structure of the paper is as follows. In the next section, we build up the analytical framework used in empirical analysis, and the third section presents information about the linear and nonlinear panel unit root tests. The fourth section discusses the empirical results, and the final section concludes the paper and offers some policy implications.

II. Analytical framework for testing sustainability

Milesi-Ferretti and Razin (1996) specifies three different but interrelated concepts: solvency, sustainability and deficit excessiveness of current account. An economy is accepted as solvent if the present discounted value of the future trade surplus is equal to the current external indebtedness. The concept of intertemporal solvency implies that all debts will be repaid in the long-run and relies on future events and policy decisions without imposing any restriction on them. Therefore, a country can remain technically solvent even while running large external deficits as long as policies are adjusted as needed in the future to bring about the required surpluses that enable debt to be repaid. The intertemporal solvency is not appropriate for evaluating the current account sustainability for two reasons. First, it just considers the ability to pay but ignores the willingness to pay. The present discounted value of the future trade surplus may be sufficient to repay the country's external debt, yet the country may not wish to divert output from domestic to external use to satisfy its debt. Second, it is based on the assumption that the foreign lenders are ready to lend to the country on current terms. This assumption, hovewer, may fail since lenders' behavior may be change due to the uncertainty about country's willingness to meet its obligations, or due to a shift in expectations following shocks. If a country has persistent current account deficits, and thus accumulating external debt, the solvency requires a turning point but does not specify timing and nature of this change. This circumstance indicates that the solvency concept does not include any structure on future events and/or policy making.

A current account, on the other hand, is sustainable if the continuation of the current government policy stance and/or of the present private sector behaviour will not violate solvency constraints. The sustainablity adds on to the notion of solvency the idea that policies remain constant for the indefinite future. Thus, an external position is sustainable if, under the assumption that policies do not change, the country does not violate its intertemporal solvency constraint. The sustainablity of current account can be also formulated considering that whether the turning point from trade deficits to trade surpluses occurs smoothly or sharply. If it occurs smoothly, then the stance of current policy is sustainable such that the continuation of the current government policy stance and/or of the present private sector behaviour will not entail a need for a drastic policy shift or a balance of payments (or currency) crisis. By contrast, if an unchanged policy stance eventually requires a radical policy change to reverse the trade balance position, e.g., a policy tightening causing recession, or lead to financial crisis, e.g., an exchange rate collapse causing an inadequacy to meet obligations, then the current policy is unsustainable. Radical changes in policy stance or crisis that can be triggered by a domestic or an external shock cause a change in lender's confidence, and then a reversal of international capital flows. In addition, in case of crisis (possibly in case of changing of policy stance) there may be a sharp contradiction in national income and consumption, in connection with the correction of the trade balance, together with an inability to meet outstanding obligations.

An unsustainable deficit should be distinguished from an excessive one, i.e., a deficit which is too large to be explained in the terms of any given model of consumption, investment and production. As Landeau (2002) states, the notion of 'excessive' current account deficits is based on deviations from an 'optimal' benchmark, which can be calculated under some rigid assumptions such as perfect capital mobility and/or efficient financial markets. The difficulty in this framework is that its benchmark does not consider market imperfections; therefore, it is problematic to understand that whether deviations from the benchmark reflect the existence of liquidity constraints or market imperfections.

To determine the sustainability of the current account, we follow Husted (1992) and use a small open economy which produces and exports a single composite good. In addition, it can borrow and lend in international markets at a given world rate of interest and faces the following current-period budget constraint,

$$C_t = Y_t + B_t - I_t - (1+r_t)B_{t-1} \tag{1}$$

where C_t, Y_t, B_t, and I_t denote current consumption, income, net borrowing and investment, respectively. r_t is the one-period world interest rate which is assumed to be stationary with an unconditional mean r and $(1+r_t)B_{t-1}$ is the net debt from the previous period. Eq. (1) should hold in every time period and can therefore be solved forwards to derive the IBC:

$$B_0 = \sum_{t=1}^{\infty} \psi_t (X-M)_t + \lim_{n\to\infty} \psi_n B_t \tag{2}$$

where X_t and M_t refer to exports and imports respectively, so $(X-M)$ indicates the trade balance $(=Y_t - C_t - I_t)$. ψ_t is the discount factor defined as the product of the first t values of $\left(1/1+r_t\right)$, in other words it equals to $\prod_{s=1}^{t}\left(1/1+r_t\right)$. Eq. (2) states that the current value of the country's external debt is equal to the present value of all its future trade balances, in case the second term on the right-hand side is zero. If the limit term is nonzero and B is positive, then the current stock of external debt is bigger than the present value of future trade balances. In this case, the country is said to be bubble-financing its external debt, and the current account is not sustainable. Conversely, if the limit term is nonzero and B is negative, the country is making Pareto inferior decisions, which means that the welfare could be raised by lending less. Thus, a natural question to ask is whether the data are consistent with $\lim_{n\to\infty}\psi_n B_n = 0$. Assuming that the world interest rate is stationary with unconditional mean r and $Z_t = M_t + (r_t - r)B_{t-1}$, Husted (1992) rewrites Eq. (1) and derives a testable empirical model:

$$Z_t + (1+r)B_{t-1} = X_t + B_t \tag{3}$$

Eq. (3) denotes that imports plus additional interest payments on debt dependent on whether the world interest rate is above or below the long-run meanvalue indicated by r. Solving forwards the Eq. (3), we obtain

$$M_t + r_t B_{t-1} = X_t + \sum_{j=0}^{\infty}\lambda^{j-1}\left[\Delta X_{t+j} - \Delta Z_{t+j}\right] + \lim_{n\to\infty}\lambda^{t+j}B_{t+j} \tag{4}$$

where $(MM_t + r_t B_{t-1})$ indicates expenditure on imports plus interest payments on the net foreign debt, $\lambda = \left(1/_{1+r_t} \right)$ and Δ is the first difference operator. If X_t is subtracted from both sides of Eq. (4) and each side is multiplied by minus one, then the left hand side becomes the economy's current account. Assuming that X_t and Z_t follow both nonstationary processes, each integrated of order 1,

$$X_t = \delta_1 + X_{t-1} + \varepsilon_{1t} \tag{5}$$

$$Z_t = \delta_2 + Z_{t-1} + \varepsilon_{2t} \tag{6}$$

where δ_j are drift parameters (possibly equal to zero) and ε_{jt} are stationary processes. Substituting Eq. (5) and (6) into Eq. (4) and rearranging yield Eq. (7):

$$X_t = \delta + (MM_t + r_t B_{t-1}) - \lim_{n\to\infty}\lambda^{t+j}B_{t+j} + \varepsilon_t \tag{7}$$

where, $\alpha = \left[(1+r^2)/r\right](\delta_2 - \delta_1)$, $MM_t = M_t + r_t B_{t-1}$, $\varepsilon_t = \sum \lambda^{j-1}(\varepsilon_{2t} - \varepsilon_{1t})$. Assuming $\lim_{n\to\infty}\lambda^{t+j}B_{t+j} = 0$ (This transversality condition means that the present value of the expected stock of debt when *t* tends to infinity must equal zero. This is also referred to as a non-Ponzi game condition), the relation between imports and exports can be shown as in Eq.(8):

$$X_t = a + \beta MM_t + \nu_t \tag{8}$$

Hence, this model implies that if the current account balance is stationary, with unchanged policies, the current account balance will not grow without limit where the discounted deficit will converge to zero. The sustainability, therefore, requires that v_t should be stationary, β equals to one and a is a constant, implying that the export and import would never drift too far apart. In contrast, the current account balance is said to be unsustainable if exports and imports will lead to the violation of the IBC, and in this case, there may be a need for the government to change policy and engage in corrective action, otherwise a crisis may be emerged. Defining the current account balance for country i as CA_{it}, the relation between X and MM is shown as in Eq. (9):

$$CA_{it} = X_{it} - MM_{it} \tag{9}$$

where X and MM are both expressed as a proportion of gross domestic product, $i = 1, 2, ..., N$ countries and $t = 1, 2, ..., T$ time periods, so testing the stationarity of CA_{it} can provide information about the sustainability of the current account. In this regard, we examine stationarity of CA_{it} via linear and nonlinear panel unit root tests which will be explained in the next section.

III.Econometric Methodology and Analysis

A. Im, Peseran and Shin Test

To employ Im et al. (2003) (IPS) panel unit root test, we estimate a separate Augmented Dickey Fuller (ADF) regression for each cross section:

$$\Delta y_{i,t} = \alpha_i + \delta_i y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j} \Delta y_{i,t-1} + \varepsilon_{i,t} \tag{10}$$

where y_i shows the ratio of current account balance to GDP, $\delta_i - 1 = \rho_i$ denotes autoregressive coefficient for series i and ε_i is the error term. The null hypothesis of a unit root for all cross sections is tested against the alternative of at least one individual is stationary, which can be represented as follows:

$H_0 : \delta_i = 0$, $\forall i$

$H_A : \delta_i < 0$, for some i.

IPS suggests using following standardized t-statistic to test the hypotheses:

$$t_{IPS} = \frac{\sqrt{N}\left(\bar{t}_{NT} - E\left[t_{iT} \mid \rho_i = 0\right]\right)}{\sqrt{Var\left[t_{iT} \mid \rho_i = 0\right]}} \tag{11}$$

where $\bar{t}_{NT}$ shows the t-statistics for δ_i from individual ADF regressions and $E\left[t_{iT} \mid \rho_i = 0\right]$, $Var\left[t_{iT} \mid \rho_i = 0\right]$ indicate the first and seconds moments of the

ADF regression t-statistics respectively. IPS tabulated the critical values and also the values of $E\left[t_{iT} \mid \rho_i = 0\right]$, $Var\left[t_{iT} \mid \rho_i = 0\right]$ in their study.

B. Uçar and Omay Test

The nonlinear panel unit root test of Uçar and Omay (2009) (UO) uses Kapetanios et al. (2003) (KSS) equations instead of ADF equations in the IPS test. While the null hypothesis of UO test is the same with the IPS tests, which is a unit root for all cross sections, there is a difference between the alternative hypotheses of two tests. We test the alternative of "at least one of the members follow a stationary exponential smooth transition (ESTAR) process" in the UO test, unlike IPS panel unit root test which assumes linearity under the alternative. Suppose $y_{i,t}$ follows the following panel ESTAR process with fixed effect parameter (α_i):

$$\Delta y_{i,t} = \alpha_i + \gamma_i y_{i,t-1}\left[1-\exp\left(-\phi_i y_{i,t-1}^2\right)\right] + \sum_{j=1}^{p_i} \beta_{i,j}\Delta y_{i,t-1} + \varepsilon_{i,t} \qquad (12)$$

where $\phi_i > 0$ shows the speed of mean reversion for all i, $i = 1,2,3,...,N$ and $t = 1,2,3,...,T$. As well as the lag orders (p_i), parameters ($\beta_{i,j}$) may vary across units. To eliminate possible autocorrelation, we add extra lagged terms of the dependent variable to the right side of the Eq. (12). The null hypothesis of the UO test is a unit root for all i ($H_0 : \phi_i = 0$), against the alternative of stationary for some i; however, γ_i cannot be directly tested since it is not identified under the null hypothesis. Thus, UO follows Kapetanios et al. (2003) and reparameterises Eq. (12) by taking first-order Taylor expansion around $\phi_i = 0$ to obtain:

$$\Delta y_{i,t} = \alpha_i + \delta_i y_{i,t-1}^3 + \sum_{j=1}^{p_i} \beta_{i,j}\Delta y_{i,t-1} + \varepsilon_{i,t} \qquad (13)$$

where $\delta_i = \phi_i \gamma_i$. We can rewrite the aforementioned hypotheses as follows.

$H_0 : \delta_i = 0$ for all i

$H_A : \delta_i < 0$ for some i

UO proposes testing the null by employing following test statistic:

$$\bar{Z}_{NL} = \frac{\sqrt{N}\left(\bar{t}_{NL} - E\left[t_{i,NL}\right]\right)}{\sqrt{Var\left[t_{i,NL}\right]}} \qquad (14)$$

where $\overline{t}_{NL}$ shows the average of the t-statistics of δ_i from Eq. (13). The values of $E\left(t_{i,NL}\right)$ and $Var\left(t_{i,NL}\right)$ for the different number of T are tabulated in Table 1 of UO. The necessary critical values are also tabulated in Table 3 of UO.

C. Data and empirical results

In this study, we use linear and nonlinear panel unit root tests to examine the current account sustainability of eight emerging market economies; Brazil, Colombia, Czech Republic, Hungary, Indonesia, Peru, Russia and South Africa over the period of 1996Q1-2009Q4. The data comprises the ratio of current account balance to GDP and is obtained from International Financial Statistics.

The rejection of the null hypothesis of the IPS and the UO tests indicate at least one of the series is characterized by a stationary process as mentioned before, which is accepted as a weakness since a small number of stationary series might maintain the rejection of the null (Murthy and Anoruo, 2009; Lee, 2010). However, it is possible to eliminate this restriction by following Chortareas and Kapetanios (2009), who propose sequential panel selection method (SPSM). In this sense, at the first step, we test all current account series in the panel using the panel unit root test. If we reject the null of unit root, we continue the procedure reducing the dataset, by dropping the series with the minimum individual test statistic. This procedure is maintained until the null of unit root cannot be rejected; thus, we can distinguish the stationary members from the nonstationary members of the panel.

We use Schwartz's information criteria to select the optimal lag and bootstrap approach to overcome the dependence over cross-sectional units in implementing both linear and nonlinear panel unit root tets. Table 1 shows the results of the IPS panel unit root test by employing SPSM.

Table 1: *Results of the IPS test*

Sequence	Test Statistics	I(0) Series [Min. ADF Statistics]
1	-2.6228 (0.0105)	Russia [-3.02479]
2	-2.0816 (0.0361)	Indonesia [-3.0099]
3	-1.4757(0.1047)	

I(1) Series: Brazil, Colombia, Czech Republic, Hungary, Peru and South Africa.

Note: Numbers in the parantheses show the bootstrap p-values which obtained using 10.000 replications.

At the first step of the SPSM, we find the whole panel as stationary, thus drop Russia who has the minimum individual test statistic and then pass to the second step. Again, we find the remaning panel as stationary, so drop Indonesia who has the minimum test statistic. We find that the remaining panel has a unit root, which shows that only the current accounts of Russia and Indonesia are sustainable since we find them as stationary.

Table 2: *Results of the UO test*

Sequence	Test Statistics	I(0) Series [Min. KSS Statistics]
1	-1.4373 (0.0364)	Indonesia [-3.1378]
2	-0.8664 (0.1134)	

I(1) Series: Brazil, Colombia, Czech Republic, Hungary, Peru, Russia and South Africa.

Note: Numbers in the parantheses show the bootstrap p-values which obtained using 10.000 replications.

Table 2 shows the results of the UO panel unit root test along with the SPSM. At the first step, we again find the whole panel as stationary, so we drop Indonesia who has the minimum test statistic and retest the remaining panel. Since we find the remaining panel has a unit root, we stop the procedure at this step and conclude that only the current account of Indonesia is a nonlinear stationary process.

IV. Conclusions

This paper analyzes the sustainability and mean-reverting behaviour of the current accounts of eight emerging market economies via linear and nonlinear panel unit root test approaches. The empirical results suggest that the IBC will not hold for Brazil, Colombia, Czech Republic, Hungary, Peru and South Africa in both linear and nonlinear setting, and hence indicates a red signal which means that the current account deficits observed during the period were probably not on a sustainable path. While the current accounts of Russia and Indonesia are stationary and hence sustainable in linear setting, in nonlinear setting only the current account of Indonesia is stationary and hence sustainable.

The most important policy implication from our findings is that for countries for which panel unit root tests indicate that the current account deficit is unsustainable, the government may has have an incentive to use monetary or fiscal policies to reduce the current account. The policies should be oriented towards stimulating savings in order to adjust the current account deficit otherwise it may be high and possibly increasing for a longer period of time.

Furthermore, persistent deficits may lead to increased domestic interest rates to attract foreign capital. Therefore, the accumulation of external debt due to persistent deficits implies increasing interest payments that impose an excess burden on future generations.

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