A (supporting) note on the new rule for the current account

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Abstract

Some aspects of the new rule for the current account have been called into question recently both theoretically and empirically. This note supports the validity of the new rule (and the extended new rule) to analyze the behavior of current accounts. First, even if the new rule does not strictly hold in a two-country world, it is easily extended to a two-country dynamic general equilibrium model just adding an extra term along what the new view dictates. Moreover, the extended new rule exhibits a two-way asset trade, which is consistent with the empirical evidence. Second, the cross-sectional empirical evidence is related to the new rule or the extended new rule since the steady state may not even exist and, even if it does, it implies that growth rates in both countries are equal despite it may not be, and in fact, it is not the case. In addition, some argument is needed to support that the empirical evidence is being generated by the steady state, given the pace of financial integration. Finally, the cross-section (between) regression of the new rule or the extended new rule remains valid to analyze the behavior of current accounts since the accounting-based “approximate” regression proposed is not, in fact, a good approximation to the true regression.

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1 Introduction

Some aspects of the new rule for the current account, pioneered by Kraay and Ventura (2000)\(^1\) (KV hereinafter), have been called into question recently both theoretically and empirically [Guo and Jin (2009) GJ hereinafter; Tille and van Wincoop (2010) TVW hereinafter]. The new rule points out that when a transitory income shock (fluctuations in output, for example) takes place the response of the current account is equal to the amount of savings originated by the shock in the domestic economy multiplied by the ratio of net foreign assets over domestic wealth, since the marginal unit of wealth originated by the transitory income shock is invested as the average one. The challenge for the validity of the new rule has come from two fronts. Firstly, TVW (2010) cast doubts on whether the new rule is adequate for a two-country general equilibrium setting. Two are the main points of their paper:

- The new rule does not hold in a two-country dynamic general equilibrium model. Furthermore, TVW (2010, p. 90) point out that “the new rule could only hold in a model with one-way capital flows, i.e. where the domestic country can invest in foreign assets but not the other way around. This is clearly counterfactual.”

- “In the steady state of the general equilibrium model the current account is equal to savings times the ratio of net foreign assets to wealth.” (p. 96).

Therefore, the cross-sectional empirical evidence supporting the new rule is a characteristic originated by the model in a steady state, and thus it has nothing to do with testing the new rule, which is about the impact of transitory income shocks on the current account.

Secondly, GJ (2009) claim that the empirical evidence found by KV (2000, 2003) does not provide a support for the new rule: “[...] the cross sectional variations in the current account are mainly driven by an accounting approximation, so that the only piece of evidence that remains provides little meaningful empirical support for the “new rule” ” (p. 33).

The new rule provides a different view to the traditional rule for the current account (where the impact of transitory income shocks on the current account would be given by the amount of savings generated by the shock), since the latter was (and is) at odds with the empirical evidence, in contrast to the new rule. Recent research has extended the new rule to a not-so-small open economy [Erauskin (2009)]\(^2\): the response of transitory income shocks on the current account is equal to the new rule plus the saving generated by the shock in the foreign economy multiplied by the foreign country’s share of domestic capital in foreign total assets. The extended new rule provides a good description about how current accounts behave, and is even better than the new rule, which would be rejected by recent evidence.

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\(^1\)See also Kraay and Ventura (2003), Ventura (2001, 2003).

\(^2\)The original work dates back to Erauskin (2004).
This paper is a short note supporting the validity of the new rule and the extended new rule to analyze the behavior of current accounts. Additionally, it offers new empirical evidence on this issue. Three are the basic arguments of this note. First, even though the new rule does not strictly hold in a two-country world, it is easily extended to a two-country dynamic general equilibrium model just adding an extra term along what the new view dictates (the marginal unit of wealth is invested as the average one). Moreover, the extended new rule exhibits a two-way asset trade, in line with the empirical evidence. Second, the cross-sectional empirical evidence is related to the new rule or the extended new rule since the steady state suggested by TVW (2010) may not even exist and, even if it does, it implies that both countries grow at the same rate despite there is no reason why that should be the (restrictive) case. Actually, it is not. In addition, TVW need also some argument to support that the empirical evidence for OECD countries is indeed being generated by such a steady state, given the tremendous changes in cross-border holdings of assets and liabilities. Third, the cross-section (between) regression of the new rule or the extended new rule remains valid to analyze the behavior of current accounts since the accounting-based “approximate” regression proposed by GJ (2009) is not, in fact, a good approximation to the true one.

The outline of this note is as follows. In Section 2 a simple framework of analysis is described. Section 3 discusses whether the new rule holds in a two-country world. An analysis on the steady state in a two-country world is pursued in Section 4. The evidence implied by the between regression is discussed in Section 5. Finally, we conclude.

2 A very simple framework

Now we present the new rule in an approach as simple as possible avoiding cumbersome details in order to discuss the scope of the recent criticism. The reader is referred to KV (2000) for the original characterization of the new rule and the complete details underlying the model for a small open economy. The extension of the new rule to a not-so-small open economy can be found in Erauskin (2009), to whom we follow in this section.

2.1 Some accounting relationships

We start with a simple two-country (domestic and foreign), one-good, three-assets (domestic capital, foreign capital, and bonds) model. Unstarred variables refer to the domestic economy, whereas the starred variables refer to the foreign economy. Both domestic capital, $K$, and foreign capital, $K^*$, can be owned by the domestic representative agent or the foreign representative agent. The subscript $d$ denotes the holdings of assets of the domestic representative agent and the subscript $f$ denotes the holdings of assets of the foreign representative.
agent. It must be satisfied, therefore, that

\[ K = K_d + K_f \]

\[ K^* = K_d^* + K_f^*. \]

Domestic (foreign) production is obtained using only domestic (foreign) capital. Capital is subject to diminishing returns. The production flow is subject to standard stochastic disturbances.

The domestic economy can be lending to (and thus \( B > 0 \)) or borrowing from (and thus \( B < 0 \)) the foreign economy. Thus \( B \) denotes the net position of risk-free loans. The wealth of the domestic representative agent, \( W \), and the wealth of the foreign representative agent, \( W^* \), therefore will be

\[ W = K_d + K_d^* + B \]

\[ W^* = K_f + K_f^* - B. \]

The net foreign asset position for the domestic economy, \( P \), is defined as

\[ P = K_d^* - K_f + B, \tag{1} \]

where changes in any of those variables lead to changes in the net foreign asset position.

The current account of the domestic economy, \( CA \), is defined as the variation in its net foreign asset position given by (1), \( dP \). Thus we have that

\[ CA = dP = dK_d^* - dK_f + dB. \tag{2} \]

This means that, for instance, the current account is positive if and only if the variation in \( K_d^* \) and \( B \) is higher than the variation in \( K_f \).

We can convert equation (2) into

\[ CA = dW - dK = dW - dW \frac{\partial K_d}{\partial W} - dW^* \frac{\partial K_f}{\partial W^*}. \tag{3} \]

Thus equation (3) is the national account identity: the current account balance is equal to the variation in domestic wealth minus the variation in domestic capital. Please note that the variation in domestic wealth, \( dW \), is equal to the national savings for the period, \( S \), that is, national income minus (private and public) consumption. Additionally, the variation in domestic capital, \( dK \), is equal to the domestic net investment for the period.

### 2.2 How countries behave

Now we consider how countries invest the marginal unit of the saving generated by a transitory income shock. The domestic and foreign representative agents maximize a standard isoelastic intertemporal utility function (which depends on the degree of risk aversion) subject to their dynamic budget restrictions. The
solution is obtained when the equilibrium portfolio shares and the consumption-wealth ratio are derived both for the domestic and the foreign economy. An important characteristic of the equilibrium is that “the world risk-free interest rate is time-varying. It depends on the autarky risk free rates, on the world distribution of wealth, on the value of the parameters related to risk aversion, and so on. Since world risk-free interest rate is time-varying, portfolio shares and growth rates are also time-varying” (Erauskin, 2009, p. 537).3

For simplicity, the traditional case is understood as the behavior that the marginal unit of domestic wealth is invested into foreign wealth, that is, it is not invested in domestic capital,

$$\frac{\partial K_d}{\partial W} \to 0.$$  \hspace{1cm} (4)

This is adequate regarding situations where diminishing returns to capital are strong and risk associated with investment is low. Since diminishing returns are strong, investing abroad becomes more attractive, whereas low investment risk makes the investor willing to change portfolio behavior.

On the other hand, if countries behave following the new view, the marginal unit of wealth is invested as the average one4,

$$\frac{\partial K_d}{\partial W} \to \frac{K_d}{W}.$$  \hspace{1cm} (5)

This is a satisfactory behavior when investment risk is strong and diminishing returns are weak. As diminishing returns are weak, purchasing new capital is as attractive as existing capital, while high investment risk makes portfolio composition more difficult to change. Furthermore, when the foreign economy behaves as the new view dictates, then

$$\frac{\partial K_f}{\partial W} \to \frac{K_f}{W^2}.$$  \hspace{1cm} (6)

Finally, it should be noted that an open economy implies that foreign holdings of domestic capital are constant:

$$dK_f = 0.$$  \hspace{1cm} (7)

This assumption is unrealistic for a two-country world economy, even though it is an useful benchmark for a small open economy.

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3See Devereux and Saito (1997) for a similar result in an open economy (and logarithmic utility) where countries invest in their own capital and in bonds (but not in the capital of the other country).

4Please note that an intermediate case between the traditional rule and the new rule exists as well. See KV (2000, p. 1148), for instance.
3 On whether the new rule does hold or not in a two-country world

In case the domestic economy is a small open economy, as analyzed by KV (2000), the impact of transitory income shocks on the current account [combining equations (3), (5), and (7)] is equal to

\[ CA = dW \left( \frac{K^*_d + B}{W} \right). \]  

(8)

This is the new rule, based on the original insight by KV (2000): the impact of transitory income shocks on the current account is given by the amount of savings originated by the shock multiplied by the ratio of the net foreign asset position to domestic wealth.

The first objection to the new rule is that the new rule does not hold in a two-country dynamic general equilibrium model [TVW (2010)]. As they point out, “but the conclusion by KV that the new rule then holds hinges on the assumption that only home investors invest abroad. In that case the ratio of net foreign assets to wealth corresponds to the portfolio share of foreign assets from the perspective of the domestic country. This correspondence is not valid when investors in both countries hold international assets as is clearly the case in the data. The ratio of net foreign assets to wealth is then no longer a portfolio share of the domestic country as it also depends on the portfolio allocation of the foreign country as well as the relative wealth of the two countries. We show that the new rule could only hold in a model with one-way capital flows, i.e. where the domestic country can invest in foreign assets but not the other way around. This is clearly counterfactual” (pp. 89-90). Their result can be seen focusing on the ratio of the net foreign asset position to domestic wealth [TVW (2010, p. 96)]

\[ \frac{P}{W} = \frac{K^*_d - K_f + B}{W} = \frac{K^*_d + B}{W} - \frac{K_f W^*}{W}. \]  

(9)

This is a straightforward implication of a two-country world\(^5\). KV (2000) were fully aware of this issue even though their original analysis was focused on a small open economy\(^6\). Moreover, related to the claim that the new rule does not hold, TVW (2010, p. 96) point out that “Most critically, it [the new rule] requires that there is no distinction between gross and net foreign asset positions. This means that there are only one-way capital flows. There are either capital inflows or outflows, either external assets or liabilities, but not both. This is not consistent with the observed pattern of financial integration with large values of both external assets and liabilities that far out-shadow the net foreign asset position (Lane and Milesi-Ferretti, 2007).”

\(^5\)Earlier working paper versions of TVW (2010) also provide some argument why the new rule may not hold in a small open economy (partial equilibrium approach). However, since the published paper does not consider this issue, we will not pursue the analysis further.

\(^6\)See KV (2000, p. 1145, footnote 7) especially.
However, it becomes evident that, even though the result by TVW (2010) is strictly true, generalizing the behavior posited by the new view (the marginal unit is invested as the average one) to a not-so-small open economy, the new rule is easily extended to a two-country world. Combining equations (3), (5), and (6), the impact of a transitory income shock on the current account is equal to the new rule plus a new term [Erauskin (2009)]. The additional term captures the saving generated by the shock in the foreign economy multiplied by the share of foreign holdings of domestic capital over foreign wealth. Therefore, the impact on the current account is given by

\[ CA = dW \left( \frac{K^*_d + B}{W} \right) - dW^* \frac{K^*_f}{W^*}. \] (10)

Equation (10) captures, of course, the fact that the net foreign asset position depends also on the behavior of the foreign economy. Furthermore, the extended new rule clearly exhibits a two-way asset trade, in line with the empirical evidence. Therefore, the extended new rule responds adequately to the first objection.

4 On the steady state in a two-country world

The second objection raised to the new rule is that “in the steady state of the general equilibrium the current account is equal to saving times the ratio of net foreign assets to wealth.”, labeled as Result 5 in TVW (2010, p. 96). They go on arguing that “this result is simply due to the fact that along a balanced growth path the ratio of flows (current account and saving) is equal to the ratio of corresponding stocks (net foreign assets and wealth). This is a quite general result that will hold in other models as well as along a balanced growth path.” Therefore, according to TVW (2010), the cross-sectional empirical evidence supporting the new rule is a feature of the model in a steady state and it has nothing to do with testing the new rule, which captures the impact of transitory income shocks on the current account. Their focus is on the between estimation of the regression equation (8)\(^7\).

A basic problem with this result is that in order to argue that the favorable empirical evidence for the new rule is explained by the steady state of a model, TVW need also some argument to support that the empirical evidence for OECD countries is indeed being generated by such a steady state\(^8\). This seems very hard to argue since "international financial integration has accelerated enormously in recent years, which has implied a tremendous change in the magnitude of cross-border holdings of assets and liabilities." (Erauskin, 2009, p. 529).

Another problem with this objection has to do with the existence of a steady state or, in case it exists, with what it implies. If we go back to the extended

\(^7\) TVW (2010, p. 90) refer to the results on the between estimates as a motivation for their paper.

\(^8\) We thank Aart Kraay for pointing out this to us.
new rule [equation (10)], it is evident that the Result 5 in TVW (2010) does not hold. The extended new rule then may be criticized on the grounds that since the ratio of net foreign assets over domestic wealth is not constant the size of some countries (in terms of GDP) would shrink to zero. However, it is important to note that a crucial feature of the extended new rule is that, since the world risk-free interest rate (for bonds) is time-varying, portfolio shares (and growth rates as well) are also time-varying. As a result, there may not be a steady state in the sense that all variables grow at the same rate along a balanced growth path.

Furthermore, some steady state may exist if we simplify the model. For example, if bonds are kept out of the model, and we consider domestic and foreign capital only, the equation (10) for the current account is converted into

$$CA = dW \frac{K_f^*}{W} - dW^* \frac{K_f}{W^*}. \quad (11)$$

Since the world risk-free rate would be constant\(^9\) there may be a steady state. However, this equation differs also from Result 5 in TVW (2010) again.

The only case that the result suggested by TVW (2010) can be achieved in a two-country world can be seen rearranging equation (11) as

$$CA = dW \frac{P}{W} - K_f \left( \frac{dW^*}{W^*} - \frac{dW}{W} \right). \quad (12)$$

Therefore, Result 5 holds only when the growth rate of wealth is equal for both countries, assuming that \(K_f \neq 0\). Thus equation (12) becomes

$$CA = dW \frac{P}{W},$$

that is, in the steady state the current account balance is equal to the amount of savings multiplied by the ratio of net foreign assets over domestic wealth. However, as it has been shown, such a steady state requires assuming that both countries grow at the same rate, but there is no reason why that should be the case. In fact, the assumption is wrong, as is shown in Table 1, based on a sample of 19 OECD countries for the period 1970-2004\(^10\). We estimate the between regression (that is, in terms of the mean values of the variables) of the ratio of savings to wealth in the domestic economy, \(dW/W\), with respect to that in the foreign economy, \(dW^*/W^*\),

$$\frac{dW_{ct}}{W_{ct}} = a_0 + a_1 \frac{dW^*_{ct}}{W^*_{ct}} + u_{ct}, \quad (13)$$

where \(u_{ct}\) is the error term for country \(c\) at time \(t\). We find a strong negative relationship between both rates, even when some control variables such as population and GDP per capita (both in levels and growth rates) are included in

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\(^9\)See Devereux and Saito (1997).

\(^10\)See Erauskin (2009) for more details on the data sources.
the regression. Additionally, the null hypothesis that both rates are equal is comfortably rejected, as shown in Table 1.

Summing up, some reasoning is required to support that the favorable empirical results for the new rule are being generated by the steady state of a model. In addition, the extended new rule implies that there may not be a steady state. Moreover, the steady state suggested by TVW (2010) is restricted enormously to situations where growth rates in both countries are equalized, while that needs not to be and, in fact, is not the case. Therefore, the argument that the empirical evidence on current accounts is, in fact, related to the steady state of the model and thus it has nothing to do with testing the new rule seems unwarranted: the new rule and the extended new rule do help to explain the behavior of current accounts.

5 On the evidence implied by the between regression

The third objection is based on the argument that the favorable evidence found on the between regression for the new rule does not really provide a support for the new rule since the between regression is, in fact, very similar to an “accounting approximation” [GJ (2009, p. 35)]. Let us see why following GJ (2009). They depart from the accounting identity

\[ \frac{K_{d,cT} + B_{cT}}{W_{cT}} = \frac{P_{c0} + CA_{c1} + CA_{c2} + ... + CA_{cT}}{W_{c0} + S_{c1} + S_{c2} + ... + S_{cT}}, \]

where, by definition, the net foreign asset position of country \( c \) at time \( T \), \( \frac{K_{d,cT} + B_{cT}}{W_{cT}} \), is equal to the net foreign asset position at time, \( P_{c0} \), plus the variations in the net foreign asset position in each period (which are equal to the current account in each period) divided by initial wealth of country \( c \) at time \( T \), \( W_{c0} \), plus the variations in wealth in each period (which are equal to the amount of savings in each period). If initial values for the net foreign asset position and wealth, \( P_{c0} \) and \( W_{c0} \), are relatively small comparing to their variations, then this equation is approximately true

\[ \frac{K_{d,cT} + B_{cT}}{W_{cT}} = \frac{P_{c0} + CA_{c1} + CA_{c2} + ... + CA_{cT}}{W_{c0} + S_{c1} + S_{c2} + ... + S_{cT}} \approx \frac{\overline{CA}_{ct}}{\overline{S}_{ct}}, \] (14)

where \( \overline{CA}_{ct} \) and \( \overline{S}_{ct} \) denote the average of the current account balance, and the average of the amount of savings, respectively, for country \( c \) over time. This approximation does not require a long time horizon for the sample given the relatively huge variations in foreign asset position and wealth with respect to their initial values in recent times. Rearranging equation (14) we get

\[ \overline{CA}_{ct} = \frac{K_{d,cT} + B_{cT}}{W_{cT}} \overline{S}_{ct}, \] (15)
where the average of the current account balance of country \( c \) over the sample period is equal to the net foreign asset position at time \( T \) (that is, at the end of the sample period) multiplied by the average of savings over the same period. This is the first approximation suggested by GJ (2009): even though not identical, equation (15), is very similar to the original regression [equation (8)] suggested by KV (2000) for the new rule

\[
CA_{ct} = a_0 + a_1 \left( \frac{K_{d,ct}^* + B_{ct}}{W_{ct}} \right) S_{ct} + u_c, \tag{16}
\]

where \( \left( \frac{K_{d,ct}^* + B_{ct}}{W_{ct}} \right) S_{ct} \) denotes the average of the net foreign asset position times the amount of savings, for country \( c \) in the sample period, and \( u_c \) is the error term for country \( c \). Therefore, the regression equation (16) would not be valid to test the new rule due to its similarity to an accounting approximation. Then GJ (2009) propose another approximate regression equation

\[
CA_{ct} = a_0 + a_1 \left( \frac{K_{d,ct}^* + B_{ct}}{W_{ct}} \right) S_{ct} + u_c, \tag{17}
\]

where \( \left( \frac{K_{d,ct}^* + B_{ct}}{W_{ct}} \right) \) denotes the average of the net foreign asset position, for country \( c \) in the sample period. Equation (17) is essentially the same as the new rule [equation (16)] and it is easily converted into regression equation (15) when the time horizon of the sample is not too long since the ratio of the net foreign asset position to domestic wealth for the end-of period of the sample, \( \left( \frac{K_{d,cT}^* + B_{cT}}{W_{cT}} \right) \), is not very different from the average value \( \left( \frac{K_{d,ct}^* + B_{ct}}{W_{ct}} \right) \) [GJ (2009, p. 35)]. Furthermore, GJ (2009) argue that the point estimate of \( a_1 = 1 \) in the proposed regression equation (17) is a direct implication of an accounting approximation when the time dimension of the data is not too long, even if the new rule does not hold. Putting it another way, GJ (2009, p. 35) claim that since the equation (16) is essentially equal to equation (17) and this, in turn, is an accounting approximation, then “while \( \beta_1 = 1 \) [\( a_1 = 1 \) in this paper] is certainly consistent with the “new rule”, \( \beta_1 = 1 \) is, in fact, consistent with any rule. Therefore, it cannot be taken as evidence for, or for that matter against, the “new rule”. They suggest that this seems to be case even if there does not exist a steady state as well. However, the most surprising thing of all is that, having claimed GJ (2009) that the true regression can be approximated by both regressions [equations (15) and (17)], they have not estimated those regressions to check whether their claims hold empirically or not, even though they have performed other empirical exercises. Some evidence on the estimation of their proposed regressions will be provided below\(^1\).

\(^{11}\)GJ (2009) also test the new rule with regressions expressed in levels (i.e. not divided by GDP). However, those regressions tend to be dominated by country size (we thank Aart Kraay for pointing this to us) and thus it may not offer relevant information. This issue
KV (2009) have riposted to GJ (2009): “this claim is simply wrong, and reflects an elementary misunderstanding of econometrics. Approximations are mis-measured versions of the true variables. Any textbook discussion of measurement error shows that the slope coefficient estimated using mis-measured data will be biased relative to the slope coefficient using actual data, and that the nature of these biases will depend on the variances of the measurement errors and their covariances with the actual data. Yet GJ totally ignore this simple point and instead claim, with no justification, that the slope coefficient in Equation (6) [equation (15) in this paper] will be a good approximation to the slope coefficient in Equation (2) [equation (16) in this paper]” (pp. 5-6).

The empirical evidence on regression equation (15) provided by KV (2009, p. 9, Table 1) supports this crucial point, while they do not estimate the regression based on equation (17).

Now, we add new empirical evidence on whether or not the “approximate” regressions are, in fact, good approximations of the true one, based on a sample of 19 OECD countries for the period 1970-2004\(^\text{12}\). The first column in Table 2 shows the results for the estimation of the between regression for the new rule [equation (16)] when control variables are not taken into account. The estimate of \(a_1\) is 0.82.\(^\text{13}\) The estimate for the approximate regression equation (17) proposed by GJ (2009) is very similar: \(a_1\) is 0.80 (second column in Table 2). However, if the accounting approximation regression equation (15) is tested we get that the point estimate of \(a_1\) is 0.35, as shown in the third column of Table 2. If some control variables such as population and GDP per capita (both in levels and growth rates) are included, results do change somewhat, but the main results keep unaltered, as Table 3 captures\(^\text{14}\). Thus, even though the suggested approximation equation (17) seems to hold, it is clear that the accounting approximation regression (15) does not hold. Therefore, the between regression suggested by KV (2009) does, in fact, test the new rule: it is not driven by an accounting approximation.

### 6 Conclusions

Recent research has cast doubts on some aspects of the new rule for the current account both theoretically and empirically. First, it has been argued that the new rule does not hold in a two-country dynamic general equilibrium model.\(^\text{11}\)

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\(^{11}\)is not analyzed in this note, but please note that the results of regressions in levels carried out in our sample (not shown) are very different from those obtained by GJ (2009, p. 34, Table 3).

\(^{12}\)See Erauskin (2009) for more details on the data sources.

\(^{13}\)The results for the pooled regression and the within regression are not shown as they have not been discussed. However, it should be noted that they reject the null hypothesis that the new rule is true.

\(^{14}\)The regression equations shown on both Tables have been based on average values of the corresponding variables (the level of the variables divided by GDP). We have also performed (but are not shown) the regressions based on the average values of the variables (measured in levels) divided by the average values of GDP: results do change, but not much; they are closer to 1.
Moreover, the new rule would include one-way capital flows only. Second, the cross-sectional evidence supporting the new rule is not, in fact, related to testing the new rule. Instead, it has to do with the general equilibrium steady state derived from the underlying model. Third, the favorable results for the new rule do not provide an adequate evidence in support for the new rule since they are implied, in fact, by an accounting approximation.

This note has offered compelling reasons why the new rule and the extended new rule remain valid to analyze the behavior of current accounts. First, even though the new rule does not strictly hold in a two-country world, it is easily extended to a two-country world. In addition, the extended new rule exhibits two-way capital flows, as the empirical evidence points out. Second, we have argued that the cross-sectional empirical evidence does provide a framework to test either the new rule or the extended new rule since the steady state may not even exist. Furthermore, even if it does, the steady state suggested by TVW is restricted to growth rates in both countries being equal, which may not be, and in fact, is not the case. Additionally, some argument is needed to support that the favorable empirical results for the new rule are being generated by the steady state of a model, given the tremendous increases in cross-border holdings of assets and liabilities. Finally, the results obtained by the between regression are relevant to analyze the new rule or the extended new rule since the suggested accounting-based regression is not a good approximation for the original regression.
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References


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Table 1: Growth rates: the domestic economy vs. the foreign economy for the period 1970-2004

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<td><strong>GDP p.c. growth</strong></td>
<td>-0.0026</td>
<td>(.0063)</td>
</tr>
<tr>
<td></td>
<td>(.0063)</td>
<td></td>
</tr>
<tr>
<td><strong>(R^2)</strong></td>
<td>0.3721</td>
<td>0.5139</td>
</tr>
<tr>
<td><strong>No. of observations</strong></td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

Standard errors are in parenthesis.
Sources: International Financial Statistics (IMF), World Development Indicators (WB), Lane and Milesi-Ferretti (2007), Nehru and Dareshwar (1993), and own elaboration.
Table 2: The new rule for the period 1970-2004

<table>
<thead>
<tr>
<th></th>
<th>Original regression (16)</th>
<th>Approximate regression (17)</th>
<th>Approximate accounting reg. (15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate of $a_1$</td>
<td>0.8234</td>
<td>0.8004</td>
<td>0.3453</td>
</tr>
<tr>
<td></td>
<td>(0.1567)</td>
<td>(0.1577)</td>
<td>(0.0546)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.6187</td>
<td>0.6025</td>
<td>0.7016</td>
</tr>
<tr>
<td>No of observations</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

Standard errors are in parenthesis.
Sources: International Financial Statistics (IMF), World Development Indicators (WB), Lane and Milesi-Ferretti (2007), Nehru and Dareshwar (1993), and own elaboration.
Table 3: The new rule (with control variables) for the period 1970-2004

<table>
<thead>
<tr>
<th></th>
<th>Original regression (16)</th>
<th>Approximate regression (17)</th>
<th>Approximate accounting reg. (15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate of $a_1$</td>
<td>0.6809</td>
<td>0.6753</td>
<td>0.2644</td>
</tr>
<tr>
<td></td>
<td>(0.0977)</td>
<td>(0.1000)</td>
<td>(0.0465)</td>
</tr>
<tr>
<td>Population</td>
<td>-5.61e-11</td>
<td>-6.26e-11</td>
<td>2.33e-11</td>
</tr>
<tr>
<td></td>
<td>(3.78e-11)</td>
<td>(3.89e-11)</td>
<td>(4.34e-11)</td>
</tr>
<tr>
<td>Population growth</td>
<td>-0.0125</td>
<td>-0.0125</td>
<td>-0.0139</td>
</tr>
<tr>
<td></td>
<td>(0.0062)</td>
<td>(0.0064)</td>
<td>(0.0072)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>1.79e-06</td>
<td>1.85e-06</td>
<td>1.12e-06</td>
</tr>
<tr>
<td></td>
<td>(3.79e-07)</td>
<td>(3.88e-07)</td>
<td>(4.61e-07)</td>
</tr>
<tr>
<td>GDP p.c. growth</td>
<td>0.0073</td>
<td>0.0068</td>
<td>0.0088</td>
</tr>
<tr>
<td></td>
<td>(0.0070)</td>
<td>(0.0071)</td>
<td>(0.0082)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.9139</td>
<td>0.9096</td>
<td>0.8833</td>
</tr>
<tr>
<td>No. of observations</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

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Sources: International Financial Statistics (IMF), World Development Indicators (WB), Lane and Milesi-Ferretti (2007), Nehru and Dareshwar (1993), and own elaboration.