The Theory of the Current Accounts and the Developing World: An Exploratory Empirical Analysis *

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Abstract

The question of the determinants of the current account has received enormous attention and has spawned an entire generation of papers for the industrialised countries [3]. However, the explanatory power of the theories put forward in explanation of the CA behaviour have been, at best, weak. There has, been very little work on the CA behaviour of developing countries, insofar as empirical evaluation of the competing theories are concerned. In this paper, an attempt has been made to explain the CA behaviour of the develpoing countries in a framework developed and evaluated for the advanced industrialised countries. Preliminary results indicate that these models do not possess any significant degree of explanatory power and are not suited, in their current form, to analyse the CA behaviour of the developing world. The surmise is that government consumption as well as differing institutions, tastes and other factors affect these countries differently and any model that does not,explicitly, account for these disparities is unlikely to have significant explanatory power.

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1 Introduction

A country's current account balance over any time period is the increase in resident's claims on foreign incomes or output, less the increase in similar foreign-owned claims on home income or output. Thus, in theory, the current account includes not only exports less imports but also net capital gains on existing foreign assets. There has been a vast literature on the current account balance and its determinants in the industrialised countries for quite a period of time but there has been very little rigorous work on the same for developing countries, mainly due to the lack of reliable data.

The current study attempts to evaluate, empirically, whether the various models that have been developed to explain the behaviour of the current account in the industrialised countries is also able to explain the behaviour of the current account in the developing countries. If they are not able to fully explain the cross-country as well as inter-temporal variation in the behaviour of the current account, then the theories may well have to be modified in order to account for the various factors that affect the current account behaviour in the these countries.

The current study follows the inter-temporal optimising approach and stresses the presence of investment risk and of adjustment costs as central to understanding the current account. There is considerable variation in the current account, both between countries as well as within countries over a period of time.

On average, these countries ran a *current account deficit* of 5.1%, with a *standard deviation* of 9.05. These average figures, however, do not reveal the full extent of the variation, with the minimum being a *deficit* of 52% and the maximum, a *surplus* of 58%.What are the factors that explain these large variations in the current accounts between and within countries? Any explanation of the variation in the behaviour of the current account must consider, in detail, the vast differences in the Institutions and histories of these countries.

However, it must surely be possible to discern some common strand in them since the behaviour of any economic variable must follow, to some extent at least, the same broad patterns and therefore there must be some common explanation of the behaviour of the current account.

In the current study, an attempt has been made to carry out an empirical evaluation of the current account behaviour of 97 *developing countries*, to check whether there is any change in the results that have been obtained with developed country data and if, in addition, there are any commonalities in the current account behaviour of these countries. These countries are as disparate a group as can be imagined and if, in their behaviour, some overall pattern emerges that is consistent with the theoretical predictions, it augurs well for the explanatory power of that theory.

In addition, there is the famous *Feldstein-Horioka puzzle* that the *Investment-savings correlation*, at least for the developed countries, is *very high* (near enough one) and this, the paper claims, is evidence that the assumption of perfect capital mobility is not valid in practice. (This constitutes one of the major puzzles in Macroeconomics and has generated a lot of work explaining why, or why not, this is a puzzle). In the case of developing countries, with limited access to the world capital markets as well as high (perceived) risks of investing in these countries, the correlation between investment and savings is expected, a priori, to be very high (near unity).

The paper is organized as follows: In section 2, there is a brief survey of the relevant literature while Section 3 provides a brief overview of some of the empirical aspects of the paper. Section 4 discusses the results of the estimation and further analysis is carried out while Section 5 concludes (details regarding the number of countries and explanation of the variables, including the data sources are presented in the appendix).

2 Literature Review

The formal inter-temporal approach to the current account models the current account as the outcome of forward-looking behaviour of economic agents. These models, popularised in the 1980's, were motivated, theoretically, by the *Lucas'* critique, which suggested that models would yield reliable policy conclusions if they were based on forward-looking decisions of economic agents rather than on an ad hoc econometric approach. However, most of the inter-temporal models of the day either impose simplifying assumptions which do not go well with stylised facts or develop complex models in which testing is generally by means of simulation only.

Ventura [5] develops an extension to the basic theory of the current account and argues that the present approach to the current account does not consider the factors of *Investment risk* (which is assumed away by means of rational expectations as well as the assumption of perfect substitutability of domestic and foreign assets) while this is significant in terms of determining the investment in any economy.

In the real world, investors always face a trade-off between maximizing the return to their portfolio and minimizing the risk associated with it. Thus, the axiom of how countries choose their portfolio is modified to include an explicit risk premium, in order to compensate for the risk that they undertake.

In the classical theory, currently in vogue, the wealth of a nation is not among the determinants of the capital stock and this result is obtained since the investors can invest either in capital stock at home or can lend the same abroad; thus wealth merely determines the portfolio of a nation but not its capital stock, which is determined by the productivity of the country and the (world) real interest rate. The only channel through which the wealth of a country can affect its capital stock is the *real interest rate*. But in view of the frictionless international borrowing and lending, world supply of capital is relatively unchanged by increases in the wealth of a small country and hence, R is unchanged. This theory is then immediately confronted with empirical evidence and the correlation between the current account and the savings is estimated (for a sample of 21 OECD countries).

A-prioir,the expectation is that the coefficient on savings must be one, since (exogenous) changes in the savings must lead to a corresponding changes in the current account, in the absence of any rise in investment. However, the coefficient is found to be, in all cases, *much less than 1* (in fact, 0.2 is the average estimate of the coefficient) and this conclusion is unchanged whether the behaviour considered is within or between countries.

However, due to the fact that there are common sources of variation in savings as well as investment, once these common sources are controlled for, changes in savings must lead to *corresponding changes* in the current account. Even after controlling for these, however, the result is unchanged: the coefficient is well below unity (around a third, in fact). The paper then goes on to a regression of the current account on investment and finds that the coefficient is much less than -1.

In addition, an important finding here is that investment and the CA are *uncorrelated* between countries but *negatively correlated* (with coefficient less than 1) within countries. The paper then poses two questions that are to be addressed if any theory is able to be fully accepted:

Why are saving and the investment so highly correlated both in the long run as well as in the short run?

Why are investment and the current account negatively correlated in the short run and not correlated at all in the long run?

Thus, basic theory, as it stands, seems unable to provide a convincing explanation of the behaviour of the current account. The paper then proposes two modifications to the basic framework that is expected to explain the questions posed of it.

Investment risk is then explicitly introduced into the model, generating the result that wealth now does affect the level of capital stock. This is because, for any level of wealth, an increase in capital stock would mean that the correlation between return to capital and return to portfolio has increased (since the portfolio now contains more capital), raising the risk premium that investors require to hold additional units of capital. Thus, the RP is *rising* in capital stock. In addition, for the same level of wealth, countries with different levels of productivity may have the similar levels of capital stock.

In case diminishing returns are weak while investment risk is strong, changes in wealth must lead to changes in capital stock that keeps the country portfolio unchanged. This is referred to as "portfolio growth". Thus, increases in savings (exogenous) lead to changes in the current account that are *proportional* to the share of *foreign assets* in the country portfolio.

The theory, when empirically tested, proved that this was indeed the case between countries but the model failed to explain the behaviour of the current account within the countries. In order to account for this, the approach of incorporating *adjustment costs* to capital stock is posited. If investments have a negative impact on the marginal product of capital, as they are likely to in the long run, ie. marginal product declines with investment rate, the short run behaviour is also accounted for. Thus, the proportion of K in the country portfolio *declines* with an increase in the investment rate, and the capital stock grows by lesser than that predicted by the

new rule. As investment returns to normal, the country portfolio shifts back to the original level as the MP rises.

Thus, this modification must explain the dynamic behaviour of the current account. When confronted with data, this model was found to successfully explain the dynamic behaviour of the current account. The paper, thus, attempts to model the behaviour of the current account with a few modifications to the existing theory and proves that, at least for the G-7 countries, the modified model explains the behaviour of the current account.

One drawback of this study is the very limited number of countries that have been included in the study, with neither the full OECD countries nor any of the developing countries included.

Glick and Rogoff [2] propose the use of an empirically tractable inter-temporal optimising model of the current account. The model proposed by them follows, to an extent, the existing literature *(Sachs (1981), Obstfeld(1986), Frenkel and Razin (1987))* but they depart from them in the following two ways:

- Developing and implementing a highly tractable empirical formulation
- Emphasis on the distinctions between global and country specific productivity shocks.

Global productivity shocks are to affect investment but not the current account but these shocks account for only about 50% of the variance in total productivity and appear to be an important explanation of the CA-I correlation not being unity but this, they argue, is not a full explanation, since even after controlling for these global shocks, an interesting puzzle remains.

A fundamental implication of the inter-temporal model is that a permanent country-specific productivity shock will induce a rise in CA deficit *in excess* of the corresponding rise in investment (due to the fact that it takes time for the capital stock to adjust, permanent income rises by *more* than the current income; this implies that domestic savings should fall, giving rise to a double effect on the current account).

Empirically, however, it is found that, despite the *near random walk* behaviour of country-specific productivity shocks, the effect on the investment tends be two to three times *larger* than that on the CA. However, once mean reversion of country-

specific productivity shocks is allowed for, the puzzle can be resolved. Another point to note is that the current account response is found to be quite sensitive to the *degree of persistence* of the shocks. The paper models productivity shocks in the following way: the solow residuals are estimated for each of the G-7 countries:

$$LnY - pLnL \tag{1}$$

where p is the share of labour in manufacturing output. The data used covers only the manufacturing sector.

The global productivity measure is formed by taking the GNP-weighted average of the productivity of each of the G-7 countries and the country specific productivity is the deviation from the Global average. Both, Global as well as country-specific productivity is assumed to follow a random walk, with a coefficient 1 (and empirical estimates tend to support this hypothesis).

An important point to note here is the importance of the *exogenity* of the country-specific productivity shocks. To the extent that these shocks are endogenous, the interpretation of the results would be affected.

3 The Empirics of the Paper

Empirically, there are *two* approaches to the current account, the more formal inter-temporal approach and the less formal, *Feldstein-Horioka* approach. In fact, the latter argue against the practical relevance of the inter-temporal approach. Most papers on the behaviour of the current account begin with the feldstein-horioka regressions, purely to bring out the basic fact that capital mobility, across countries, is less than perfect. Feldstein-Horioka [1] argue that, given limited capital mobility, any changes in savings is fully reflected in the investment and, as evidence, they reported cross-sectional regressions of the investment ratio on the savings ratio [1] and found that the coefficient was quite close to unity. The current paper, therefore, begins with the feldstein-horioka results and attempts to verify if the claim of a unit coefficient can be rejected or not. The current paper in a sense integrates the framework of both

[1] These ratios suffer from the usual conceptual deficiencies

Ventura [5] as well as that of Glick and Rogoff [2] to evaluate which of these provide the better explanation of the current account behaviour of developing countries or if both turn out to be equivalent. We first turn to the Feldstein-Horioka regressions.

3.1 The Feldstein-Horioka approach

The pooled regression of the investment ration on the savings ratio is estimated. This is expected to provide a rough guide to the value of the coefficient over the entire sample.

$$I/Y = \alpha + \beta(S/Y) \tag{2}$$

It is alos however the case that in a group as heterogeneous as this, in order to control for factors specific to countries/regions, we include a vector of control variables and check the robustness of the specification.

$$I_{c_t}/Y_{c_t} = \alpha + \beta(S_{ct}/Y_{c_t}) + \gamma(Z_{ct}) \tag{3}$$

In addition, we control for all other unobserved factors by including dummies for regions.

$$I_{c_t}/Y_{c_t} = \alpha + \beta(S_{ct}/Y_{c_t}) + \gamma(Z_{ct}) + \delta D_{c_t} \tag{4}$$

However, the Feldstein-Horioka conention that this (coefficient of unity) holds true over the long run is then checked by means of regressing the decadal averages.

3.2 The Ventura approach

3.2.1 Savings and the Current account

First, the (pooled) regression of the CA on the savings is estimated:

$$CA_{ct} = \alpha + \beta S_{ct} + U_{ct} \tag{5}$$

To control for all the time and country specific effects, the equation (5) is re-estimated using a vector of control variables, *productivity growth*, and *population growth*.

$$CA_{ct} = \alpha + \beta S_{ct} + \beta' Z_{ct} + U_{ct} \tag{6}$$

Then, the same equations are estimated in a panel framework ie. the "between" and the "within" regressions, with and without the vector of control variables.

3.2.2 Investment and the Current account

The Sachs regression

The following regression was first carried out by *Sachs* (1981), with the argument that this regression yields a negative coefficient (at least in the between regression). *Penati and Dooley (1984)* however, showed that this result depended crucially on a few outliers and was not in general true. *Ventura [5]* also found that (for the 21 OECD countries) that the CA and I are uncorrelated between countries but negatively correlated within countries, with a coefficient much lesser than 1 (the a-priori expectation).

$$CA_{ct} = \alpha + \beta I_{ct} + U_{ct} \tag{7}$$

The usual vector of control variables is used to check if, after controlling for these, the regression has any explanatory power.

$$CA_{ct} = \alpha + \beta I_{ct} + \beta' Z_{ct} + U_{ct} \tag{8}$$

(7) and (8) are then estimated using,first the pooled approach and then the between and within estimators.

3.2.3 The Extended model (with Investment risk)

$Ventura$ then introduces an explicit *risk premium*. In the presence of this, changes in the savings should lead to a change in the current account *proportional* to the share of $foreign$ (net) $assets$ in the country portfolio.

$$CA_{ct} = \alpha + \beta X_{ct} S_{ct} + U_{ct} \tag{9}$$

A–priori, if the theory predicts correctly, the coefficient on savings should be +1.

$$CA_{ct} = \alpha + \beta X_{ct} S_{ct} + \beta' Z_{ct} + U_{ct} \tag{10}$$

(9) and (10) are then estimated using the pooled the between and within estimators.

3.2.4 The Extended model (with investment risk and adjustment costs)

The dynamic model

The prediction of this model is that, with a rise in investment, there is an initial fall in the MP of capital, which later rises to its original level.

$$PR = CA - XS$$

$$PR_{c,t} = \alpha_I + \sum PR_{c,t-v} + \sum \gamma_v S_{c,t-p} + \beta' Z_{c,t} + U_{c,t} \tag{11}$$

The equation (11) is then estimated in a dynamic panel framework.

3.3 The Glick and Rogoff Inter-temporal optimising approach

3.3.1 Random walk behaviour of the country-specific productivity shocks (ρ =1)

I estimate the two "difference" structural equations for the CA and I using:

- The Pooled model.
- The between and the within regressions.

$$\Delta CA_{c,t} = \gamma_1 I_{t-1} + \gamma_2 \Delta A_{C_t} + (r-1) CA_{t-1} \tag{11}$$

$$\Delta I_t = (\beta_1 - 1) I_{t-1} + \beta_2 \Delta A_{C_t} + \beta_3 \Delta A_{W_t} \tag{11}$$

where both ΔA_{C_t} and ΔA_{W_t} follow a *random walk*.

$$A_{C_t} = \rho \Delta A_{C_t} + \epsilon_t \tag{11}$$

3.3.2 Mean reversion of the country-specific productivity shocks ($\rho \leq 1$)

The Equation for investment remains the same but that for the current account changes to:

$$\Delta CA_{c,t} = \gamma_1 I_{t-1} + \gamma_2' A_{C_t} + \gamma A_{C_{t-1}} + (r-1)CA_{t-1} \tag{11}$$

4 Results and Analyses

4.1 The Feldstein-Horioka Regressions

Investment ratio	All Regions included	Region 1 and 7 dropped
Savings Ratio	0.5198∗	0.60989∗
R^2	0.2261	0.2918
N.Obs	1926	1275

Table 1: The Feldstein-Horioka Regression

It is immediately apparent that the coefficients [2] are much lower than unity and this is quite contrary to the a priori expectation of a very high correlation for these countries since these do not have high capital flows [3] and it is more or less expected that domestic investments are driven by domestic savings. The regions 1 and 7 are dropped since these were found to be outliers when regressions were perfromed regionwise [4].

	Pooled	*Between*	*Within*
Savings Ratio	0.4602409	0.546802	0.4616388
R^2	0.6819	−−	−−
N.Obs	1926	−−	−−

Table 2: The Pooled and Panel regressions

Table 1 indicates that this has had the effect raising the coefficient marginally. As table 2 indicates, a panel analysis does not make much difference to the value of the coefficient (in fact, it is much smaller than before).

[2] * denotes significance at 5% level ** denotes significance at 10% level

[3] They could be considered closed for a major portion of the time period considered

[4] Coefficient on region 1 was insignificant and that on region 7, negative

An attempt is then made to control for regional variations and re-estimate the regressions. The result is no different from the previous cases, with the dummies for region 1 and 7 not being significant.

	regional & time dummies	*regional dummies only*
Savings Ratio	0.5589∗	0.5522∗
Region 1	*No*	*No*
Region 2	*Yes*	*Yes*
Region 3	*Yes*	*Yes*
Region 4	*Yes*	*Yes*
Region 5	*Yes*	*Yes*
Region 6	*No*	*No*
R^2	0.299	0.2622
N.Obs	1912	1912

Table 3: Controlling for Regional Variations

The actual Feldstein-Horioka regressions are then carried out on *decadal* averages of the variables. The coefficients are rising over time [5] but are still nowhere near the

	All regions			Excluding Regions 1 &7		
	$D1$	$D2$	$D3$	$D1$	$D2$	$D3$
savings ratio	0.4482	0.5320	0.5384	0.6612	0.59026	0.6337
R^2	0.1306	0.2002	0.3581	0.217	0.2455	0.4722
N.Obs	387	788	751	249	539	501

Table 4: Regression with *Decadal averages*

expected magnitude of unity [6]. Thus, quite contrary to expectations, the Feldstein-Horioka results do *not* for the developing countries.

Many explanations may be put forth for this seemingly striking result,based on the inter-temporal optimising model. One of the reasons could be that, given that the developing countries cannot be considered to be at their stochastic steady state, as regards their holding of foreign assets, gains through borrowing for investment purposes may cause a non-stationary distribution of foreign assets.

In addition, it is quite plausible that in coutries with high savings rate, the cost of capital *maybe* lower as well with the marginal product, higher. [7] It is also unlikely

[5]Except for decade 2 when the regions 1 and 7 are dropped

[6]The lagged savings was also tried but was insignificant in *all* the regressions

[7]This depends on various factors and is hence, difficult to attribute any *causation*.

that changes in demography, as posited by the consumption theories, may have had this effect since these have already been controlled for.

These explanations, though plausible, do not convincingly pin-point the reasons for the apparent anomaly.

4.2 The Ventura Approach

4.2.1 CA-Savings Relationship

$--$	$pool$ (1)	$pool-c$ (2)	$betw$ (3)	$with$ (4)	$pool$ (5)	$pool-c$ (6)	$betw$ 7	$with$ 8
$sav\ ratio$	0.4928*	0.4945*(0.47*)	0.3338*	0.4896*	0.4994*	.5011	0.4886*	0.4886*
$prod\_gr$	-	-	-	-	-0.3384**	-.0004*	-0.0187**	-0.1878**
$popu\_gr$	-	-	-	-	-0.1558	-.0014	-0.3187**	-0.3187**
R^2	0.577	0.5777	0.2153	0.2455	0.581	0.5821	0.2484	0.2653
$N.Obs$	2159	2137	2159	2159	1981	1959	1981	1981

Table 5: CA-Savings

The top panel of all the regressions show the coefficient on savings. It is seen that, in all the cases, the coefficient is significantly *lesser* than unity, the a-priori expectation. In other words, in the sample under consideration, changes in savings are associated with changes in the current account that are only about a $half$ of what the theory predicts.

This relationship holds whether we compare the behaviour of savings and the CA between or within countries. Interestingly, regardless of whether the regression is estimated using the within or the between variation, the estimates of the coefficients do not differ by much. The results are unaltered even after controlling for productivity and population growth rates which, theory posits, are the main sources of variation in investment and saving. In some specifications, the controls are statistically significant but these have no effect on the value of the coefficient. Thus, basic theory fails to explain the relationship between the current account and savings.

The results seem to be remarkably robust since even after controlling for regional effects, effects of oil-producing nations [8] and even size, the coefficents do not at all

[8]Table provided in the Appendix C.

vary significantly.

4.2.2 CA-Investment Relationship

	pool (1)	*pool − c* (2)	*betw* (3)	*with* (4)	*pool* (5)	*pool − c* (6)	*with* (7)
Inv ratio	-.1385*	-.1384*	-0.18899*	-0.1612*	-0.149*	-0.1025*	-.1359
prod_gr	-	-	-	-	.0000759	.0000782	0.004724
popu_gr	-	-	-	-	0.00225	0.00222	0.02866
R^2	0.4843	0.4841	-	-	0.4878	0.4877	-
N.Obs	2004	1990	1853	2004	1844	1839	1853
$P(Value)$[9]	0.118	-	0.5602	0.1148	-	-	-

Table 6: CA-Investment

Basic theory would predict the estimate of β close to *minus one*, since changes in investment should not affect savings. However, as is seen from the top panel in the table, the relationship is either very weakly negative or not significant at all (in fact, it is not significant at all in any case, whatever the technique of estimation). Even after controlling for the usual variables that affect investment, the results are totally unaltered.Even after controlling for regional,oil and size effects [10], the results are totally unaltered, indicating once again the robustness of the results so-obtained.

In essence, this table documents the failure of the basic model to explain *any variation* at all in the current account-investment behaviour. This result is somewhat different from that obtained by Ventura [5] who finds that the current account and investment are uncorrelated between countries but are correlated across countries. In this case, however, it is seen that the two are uncorrelated both, between and across countries. This may be due to the large variations in the investment as well as current behaviour due to the various shocks received by these countries (such as debt, BoP crises etc).

The lack of significance of these two regressions are not, however, unexpected; the Feldstein-Horioka results in fact *predict* these very results. This is because the lack of a very strong relationship between investment and savings will, necessarily, translate into an equally weak relationship between ca and savings and investment.

[10]The effect of these dummies was found insignificant.

4.2.3 Testing the New Rule

The new rule (eqn (9) and (10)) predicts that, with the addition of *investment risk*, changes in savings lead to changes in the current account that are *proportional* to the proportion of *(net) foreign assets*. Thus, a priori, the coefficient on the interaction variable should be unity. However, a glance at Table 7 indicates that in no case is the coefficient anywhere near unity.

Either the coefficient is insignificant or, if significant, statistically significantly different from 1. This result is unchanged after controlling for productivity and population growth, as well as controlling for regional, Oil and size effects. Thus, the new theory is as ineffective at explaining the current account-savings relationship as the basic one.

	Pooled (1)	*Between* (2)	*Within* (3)	*Pooled* (4)	*Between* (5)	*Within* (6)
$Share\ of\ NFA * Savings$	0.006411*	0.0777	0.00732*	0.005925*	0.089	0.00707*
$Prod\_growth$	-	-	-	-0.000412	0.2546	0.0045
$Popu\_growth$	-	-	-	0.0178	-0.0991	-0.0896
R^2	0.4707	-	-	0.4775	-	-
N.Obs	1891	1891	1891	1743	1743	1891

Table 7: Testing the New Rule

4.2.4 Incorporating adjustment costs to investment

Table 8:The Dynamic Regression-Effect of Adjustment costs

PR	Lag ofPR						
	1	2	3	4	5	6	7
$Coefficient$	-.0542**	-0.0097	-0.003	-0.0178	-0.1973*	-0.0223	-0.0246

Savings	Lag of Savings		
	current	1	2
$coefficient$	-1.243*	1.266*	0.2395

- Current saving as well as the first lag has a significant effect on *portfolio rebalancing*. Current saving has a negative impact whereas first lag has positive

impact. This implies that as the current saving increases, portfolio rebalancing would decrease whereas if the saving in the previous year is high then the portfolio rebalancing would increase.

- There exists a lagged effect on portfolio rebalancing. From the Table 4, we see that the first and the fifth lags have a significant *negative* effect on portfolio rebalancing at 10% and 5% respectively.

It is therefore seen that with the incorporation of the adjustment costs to investment, the behaviour of the current account is much better explained than in the case of investment risk.

4.3 The Glick-Rogoff Intertemporal optimising approach

4.3.1 The Random Walk Hypothesis [11]

The coefficients on many variables are not of the "correct" signs. For example, the coefficient B2 and B3 are of the incorrect sign. $A - priori$, these are expected to *positively* affect investment. However, these results are quite contrary to what *Glick and Rogoff* have obtained for the $G-7$ countries. In addition, the coefficient on country Specific Productivity shocks is greater than that on the global productivity, which is what the theory predicts. The inclusion of controls for regions, size and oil-producing countries causes the coefficients' magnitude to further fall

However, overall, this theory seems much worse off in explaining the relationship between the current account and investment than the conventional approach. This seems consistent with the random walk hypothesis of the productivity shocks.

ΔZ	B_1	B_2	B_3
ΔI	0.0000838*	-0.0000216*	-1.000*
ΔCA	-0.00294*	0.00135	- -0.2407

Table 9: Random Walk Hypothesis

The Equation Estimated:

$$\Delta Z_T = B_0 + B_1 \Delta A_{C_T} + B_2 \Delta A_{W_T} + B_3 I_{T-1} \tag{11}$$

[11] For most of the countries, the coefficients on the lagged variable was quite low.

4.3.2 Mean reverting country shocks

Once again, the coefficients on CA turn out not to have the correct signs. Thus, while the investment equation remains unaltered in the case of mean reverting country productivity shocks, the current account equation changes and the changed specification too is unable to explain the relationship between the current account and Investment and savings. In this case controlling for regional, size and effects of oil producing nations does not changes either the magnitude or the significance of the coefficients.

ΔZ	B_1	B_2	B_3	B_4
ΔCA	-0.00153*	0.0002911	-0.264	0.00140*

Table 10: Mean Reverting Country Shocks

The Equation Estimated:

$$\Delta Z_T = B_0 + B_1 A_{C_T} + B_2 A_{W_T} + B_3 I_{T-1} + B_4 A_{C_{T-1}} \tag{11}$$

5 Conclusions

Earlier attempts at empirical estimation of industrial country current account behaviour has met with a limited degree of success. However, due to various problems such as data availability and instability in the relationships between the economic variables (due to debt, BoP and other crises), there has not been much work done on the developing country current account behaviour, in an overall framework of some theory. The current study is an attempt to test which of the theories currently used, or newly developed, are better suited to explain the case of the developing countries.

It is however seen that none of the alternative theories, from the basic to the advanced inter-temporal versions, are able to explain the current account behaviour in the developing countries. One of the reasons for this maybe the problems in data, in the sense that the data may not be accurate in which case the regressions may turn out to be unproductive. The other, *and more plausible*, reason seems to be that these countries have been subject to different incentive structures, institutions as well as preferences in addition to which, the role of the government, which has been so far neglected, is very significant. Without controlling, and accounting, for these factors

any analysis of the current account may lead to extremely unsatisfactory results.

Obtaining an accurate picture of the CA behaviour is of some importance mainly due to its policy implications; the policy mix may well be extremely varied to obtain some "desired" level or atleast direction of the CA. [12]

Indeed, the behaviour of the current account is *inextricably* linked with that of the other significantr variables such as forex reserves, capital flows as well as the degree of openness to trade. Given the growing importance of these in the framework of openness of economies, and also given that the current account is a determinant of the BoP, a crucial issue for the developing world, the significance of the behaviour of the CA cannot be overestimated.

The picture of ambiguity of this behaviour, as emerges from the current study, may well hide patterns that are not amenable to the framework adopted.

A time-series analysis of the data , a larger vector of control variables, including reserve accumulation and government consumption, may be some of the conceivable ways in which more meaningful results may be generated.

[12]The approach of current account targetting, pursued by the US in the early 1980's, is an example of this.

References

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Appendix

A The List of Countries

The following table gives the list of countries studied. A total of 97 countries were chosen, based on availability of data for the variables used.

Time period considered: *1970-2000*

Algeria	Ghana	Panama
Antigua and Barbuda	Guatemala	Papua New Guinea
Argentina	Guinea-Bissau	Paraguay
Bahrain	Guyana	Peru
Bangladesh	Haiti	Philippines
Belize	Honduras	Rwanda
Benin	Hungary	Saudi Arabia
Bhutan	India	Senegal
Bolivia	Indonesia	Seychelles
Botswana	Iran,Islamic Rep.	Solomon Islands
Brazil	Jamaica	South Africa
Burkina Faso	Jordan	Sri Lanka
Burundi	Kenya	St. Kitts and Nevis
Cameroon	Kiribati	St. Lucia
Central African Republic	Korea,Rep.	St. Vincent and the Grenadines
Chad	Lesotho	Sudan
Chile	Liberia	Suriname
China	Libya	Swaziland
Colombia	Madagascar	Syrian Arab Republic
Comoros	Malawi	Thailand
Congo,Dem. Rep.	Malaysia	Togo
Congo,Rep.	Mali	Tonga
Costa Rica	Mauritania	Trinidad and Tobago
Cote d'Ivoire	Mauritius	Tunisia
Dominica	Mexico	Turkey
Dominican Republic	Morocco	Uganda
Ecuador	Mozambique	Uruguay
Egypt,Arab Rep.	Nepal	Vanuatu
El Salvador	Nicaragua	Venezuela,RB
Ethiopia	Niger	Zambia
Fiji	Nigeria	Zimbabwe
Gabon	Oman	
Gambia,The	Pakistan	

B Definition of the Variables

Data source: World Bank's *World Development Indicators*

Name of the Variable	*Definition*
Savings	Gross national Savings as a %age of GDP
Current Account	Current account balance as a %age of GDP
GDP	GDP in 1995 US $
World GDP	1995 US $
Labour Force	Millions
GCP	Gross Capital Formation, 1995 US $
Investment ratio	Difference in GCP
Productivity	Ratio of GDP to Labour
pgr	Productivity growth rate
NFA	Net Foreign Assets, 1995 US $
wp	World Productivity=wgdp/wlabour
wpg	World productivity growth rate
X	Foreign loans in country portfolio=nfa/(gcp+nfa)
PR	current account ratio-X*savings ratio

Note: Size effect was captured the following way:

- The average labour force was obtained for each country.
- If the average labour force was less than 10 million, the country was defined to be a small country and the dummy took the value 1.

The following are the regions defined:

- Region 1 - Latin America
- Region 2 - South East Asia
- Region 3 - Africa
- Region 4 - South Asia
- Region 5 - Middle East
- Region 6 - Europe
- Region 7 - Other Asia

C Miscellaneous Tables

C.1 The Glick Rogoff tables, with Only regional dummies

	without regional controls			with controls		
ΔZ	B_1	B_2	B_3	B_1	B_2	B_3
ΔI	0.0000838*	-0.0000216*	-1.000*	7.72e-06*	-8.89e-06*	-0.0215376**
ΔCA	-0.00294*	0.00135	- -0.2407	-0.000011*	2.60e-06	-0.0103757

Table 11: Random Walk Hypothesis

	without regional controls				with controls			
ΔZ	B_1	B_2	B_3	B_4	B_1	B_2	B_3	B_4
ΔCA	-0.00001*	5.72e-06	-0.0108	-7.70e-07	-0.00001*	5.62e-06	-0.0104	-7.63e-07

Table 12: Mean Reverting Country Shocks

C.2 The Ventura approach with dummies for regions, time and size

$--$	$pool-ro$ (1)	$pool-ros$ (2)	$betw-ro$ (3)	$betw-ros$ (4)
sav ratio	0.5010*	nc	0.3624*	0.3624*
prod_gr	-0.0003*	nc	-0.00134	-0.0011
popu_gr	-0.0013	nc	0.00377	0.0049
R^2	0.5821	nc	0.3142	0.3612
N.Obs	1957	nc	1959	1957

Table 13: CA-Savings