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HUNT FOR TWIN DEFICITS: CURRENT ACCOUNT AND FISCAL BALANCE IN SOME TRANSITION ECONOMIES

ABSTRACT

This paper is a critical effort assessing the twin deficits concept in the context of the transition economies of the Commonwealth of Independent States. Correlations between current account and fiscal balance must be interpreted with caution. Actual political economy circumstances in the region play important role in explaining external trade positions and public spending in both net exporter and net importer country groups. There are clearly two periods within a bigger transition time frame: early 1990's reforms and post Russian financial crisis through early 2000's. Cumulative weight of such factors, coupled with empirical evidence raises more questions than answers, offering no solid theoretical or empirical grounds for the case of twin deficits in the post-socialist economies of the CIS. Following standard and extended empirical analysis the paper identifies key policy guidelines for the selected transition economies. A more qualitative approach prompts an investigation into structural problems of transition, such as household consumption patterns and its relation to current account and nature of fiscal expenditure. That is the case in the post-socialist transforming economies with consumer societies.

Key Words: fiscal policy, current account, twin deficit, transition economies

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INTRODUCTION

Opening of the borders in the post-socialist economies initiated by the *perestroika* reforms advanced an entirely new set of an open economy issues upon the Commonwealth of Independent States (CIS). Perhaps that should go in history as one of the boldest acts of the advancing globalization. So twenty years into reforms and after substantial social and economic transformation, a more complex research is now appropriate for the transition context, rather than a schematic one confined only to free market reforms review. Hence, in this paper we address aspects of fiscal policy and external trade positions in the CIS, specifically the "twin deficits." The concept is a powerful tool reinforcing opposition to government interventions in the economy. This discussion is a contribution to literature on fiscal policy, balance of payments, and economic development in transition.

Derived from a national income identity, the concept of twin deficit has often been tested on developed economies rather than in the context of a developing or transition economy. Although research on the topic within transition economies is growing, there seems to be a missing consensus on the true nature of the issue. Destruction of the centrally administered economic links of the USSR unveiled individually characteristic patterns of each former republic's productive operations mode. Reflecting on these issues it is possible to classify the twelve economies based on their net export performance in two main categories: *net exporters and net importers.*

In this paper we conduct empirical analysis with a focus on fiscal policy and government debt evolution. Correlations between current account and budget (fiscal) balance must be taken with a grain of salt in the specific case of the transition economies. Actual political economic conditions must be taken into account. In addition there are clearly two periods within a bigger transition time frame considered here. In the end the cumulative weight of such nuances, coupled with empirical evidence raises more questions than answers, offering no solid theoretical or empirical grounds for the case of twin deficit in the post-socialist economies of the CIS.

The rest of this paper is structured as follows. Section 2 offers an empirical analysis of stylized facts of the CIS fiscal budget and current account evolution. Section 3 presents the main model and data used. Section 4 reviews empirical results. Section 5 offers some insightful extensions to our analysis. The paper ends with a Conclusion, Appendix, and References.

THE CIS TRANSITION: SOME STYLIZED FACTS

There is a marked difference in the actual economic performance between the early transition period and more recent years across transition economies of the CIS. Aside from aggregate macroeconomic indicators variations, that difference is observed in the evolution of fiscal and current account balance. Abrupt fiscal withdrawal from traditionally state-supported sectors was part of the early transition to free market. Pirttila (2001), citing work on transition economies by Coricelli (1997), stresses the fact that as government size diminishes under the new policy regime, social, and economic pressures; fiscal revenues fall faster than expenditures. Hence deficits are impossible to prevent in practice. These are amplified under rapid, i.e. *shock therapy*, transition when state-owned assets cease to generate the necessary tax revenue and unemployment grows exponentially as firms shed labor.[1]

Helpful to our discussion is the analytical separation of the twelve CIS economies between net exporters and net importers based on each country's external trade position. A brief reference built based on historical data is shown in Table 1 below. This classification is instrumental in understanding the specifics of each country's development.

One of the key problems impeding successful fiscal adjustment in the CIS economies has been the issue of the administrative center-to-regional government contradiction. Larger countries, especially Russia, seem to suffer from this the most as centrally earmarked funds are channelled in alternative investment projects once reaching the regional accounts. Another issue that stands out has been emergence of large monopolies that benefited from tax privileges in off-shore accounting or as recipients of favorable government treatment.

However fiscal adjustment did not represent an isolated problem inhibiting possibility of economic take off in the early years of market reforms. With advancing trade liberalization and sudden opening of administrative borders to foreign trade, output collapses and the resulting commodity and food deficits of the time were partially compensated by large inflows of imported consumer goods and food products. This in turn has led to significant trade balance deterioration, as practically every post-socialist economy's net exports positions turned negative.[2]

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[1] For example, see Gevorkyan (2008) and Gevorkyan and Gevorkyan (2010) for discussion of various modalities in the CIS, especially applied to issues of regulated labor migration and fiscal policy.

[2] A more accurate statement would be the one suggesting that negative net exports position, with national imports exceeding exports, was the starting point in the free market transition process for the CIS economies, as prior to that most of trade occurred within the closed socialist market, with national income accounting at a greater, USSR, scale.

Table 1: CIS net exporters and net importers groups

| Group	Country	Main export commodity	Main export commodity, % of total exports (avrg 1995-2005)	Main import commodity	Main import commodity % of total import (avrg 1995-2005)	Average share of remittances to GDP (1998-2006)
Net exporters	Azerbaijan	primary (fuels)	77.5%	manufactured (machinery)	67.2%	2.37%
	Belarus	manufactured (machinery)	69.8%	manufactured (machinery)	55.1%	1.27%
	Kazakhstan	primary (fuels)	48.8%	manufactured (machinery)	72.8%	0.49%
	Russia	primary (fuels)	48.3%	manufactured (machinery)	58.6%	0.47%
	Turkmenistan	primary (fuels)	79.2%	manufactured (machinery)	80.3%	16.81%
	Uzbekistan	raw materials (cotton)	41.7%	manufactured (machinery)	81.2%	5.96%
	Ukraine	manufactured (misc)	67.5%	primary (fuels)	53.0%	0.40%
Net importers	Armenia	manufactured (misc)	59.4%	manufactured (machinery)	49.6%	12.13%
	Georgia	primary (food/ores/metal)	47.7%	primary (food/fuels)	50.1%	7.58%
	Kyrgyz Republic	primary (agriculture/food)	43.1%	manufactured (machinery)	54.9%	4.92%
	Moldova	primary (agriculture/food)	63.1%	manufactured (misc)	56.3%	20.63%
	Tajikistan	primary (ores/metal)	44.1%	primary (food/fuels)	52.7%	16.86%

Source: author's calculations based on UNCTAD (2008), IMF (2008), World Bank (2008), CISEC (2008), and OECD (2008). Note: Georgia has recently opted out of the group but is in the sample for the purpose of this study.

To put these developments in perspective, suffice it to say that the average government balance as percent of GDP for all twelve CIS economies in 1992, according to EBRD (2008), was -14.3 percent, while average current account balance as percent of GDP in the same year was -5.8 percent (and already -11.3% in 1993). Country variations were even more significant. For example, Tajikistan, Moldova, and Georgia (the net importers per our classification) entered the first year of transition with general fiscal deficit close to 30 percent of GDP (-31.2%, -26.6%, and -25.4% respectively). Armenia, Georgia, and Kazakhstan had the highest current account deficits in 1992 (-46.3%, -33.5%, and -25% respectively). Of all countries only Turkmenistan recorded official current account surplus of 89.7 percent. In fact removing Turkmenistan from the calculation

results in an almost perfect match between the average CIS fiscal balance to current account deficit around -14.5 percent of GDP.

Things have changed dramatically since the years of first reforms. Figure 1 offers convincing evidence of that. The chart shows evolution of the average fiscal balance and current account balance in relation to GDP over the past sixteen years for all twelve economies. On average fiscal balance has been improving (in relation to the early transition years) since mid 1990s. However, there is a sharp positive spike in the current account balance after 1998.

**Figure 1: Average fiscal and current account balance, as % GDP (1992-2008)**
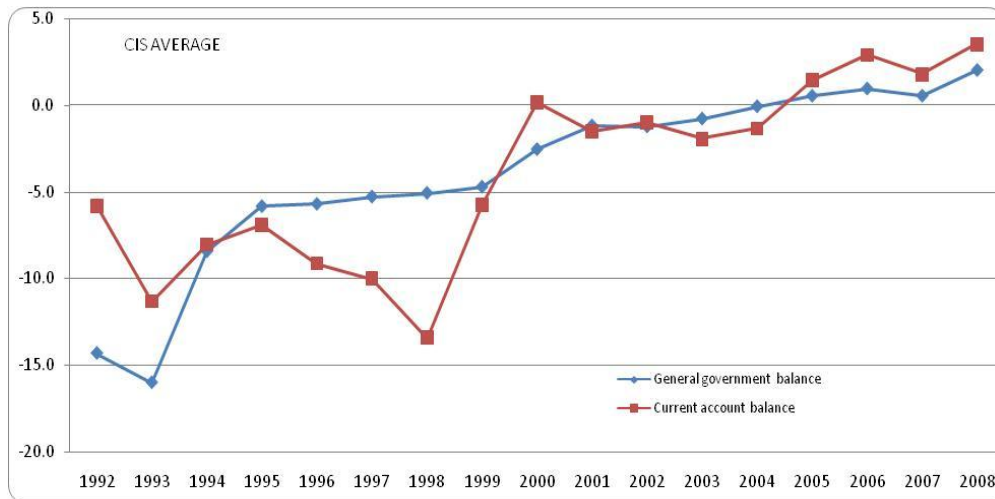
Source: author's calculations based on EBRD (2008) data.

In fact the year 1998 appears to be the symbolic divider between the period of large fiscal deficits and substantial current account deficits and the consequent period of macroeconomic stabilization and overall budget and trade balance improvement. This could be explained, in part, by the Russian financial crisis of 1998, when the Russian government defaulted on its debt, and as a result the Russian rouble (RU) was devalued. In the long run that gave the benefit of lower priced export goods relative to foreign substitutes. The financial crisis reoriented dominant economic strategies of the smaller countries from the Russian towards international market access and more responsible fiscal policy. This, however, did not fully alleviate persistent social problems in the smaller CIS economies, like unemployment, poverty and inequality.

Improvement in fiscal and trade balances after 1998 was primarily due to the economic performance of the countries in the net exporters group, as panel (a) in Figure 2 above indicates. These countries, most notably Russia and Azerbaijan, were able to attain significantly high improvement in a short period of time compared to the net importers group. For example, based on EBRD (2008) data, between 1992 and 1998 net exporters' average fiscal deficit was around -5.7 percent, while the current account deficit was -4.5 percent of GDP. For the period of 1999-2008 these balances are estimated at 1.1 percent and 4.2 percent of GDP respectively. Both positive values indicate fiscal and current account surplus: a significant achievement for the economies undergoing deep core transformation of their industrial capacities and social order.

Figure 2: Average fiscal and current account balance, as % GDP (1992-2008)
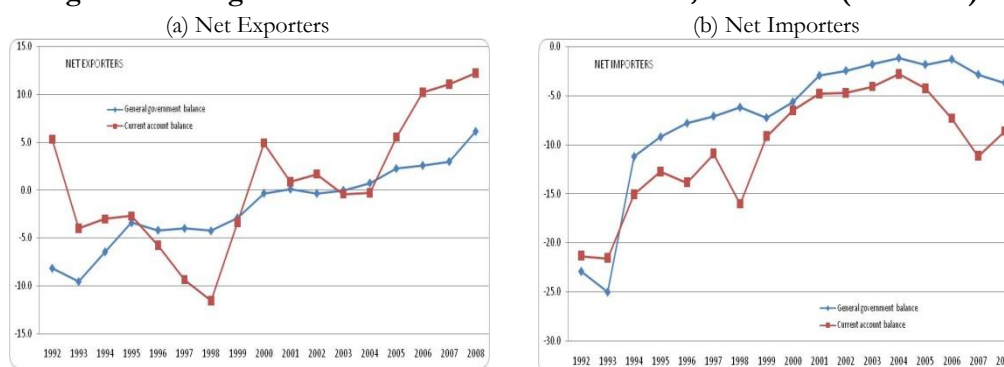
Source: author's calculations based on EBRD (2008) data. Note: simple average. 2007 and 2008 are EBRD (2008) projections.

There is clearly more than one phenomenon occurring in the transition economies that requires a complex analysis. Yet in one of the first focused studies on fiscal policy Pirttila (2001) points to the problematic approach of the bulk of transition literature: informal treatment of transition specific issues. The focus on either growth or analysis of successful liberalization reforms based on various proxies occurred in isolation with a bigger picture. Namely that the previously closed economies are now suddenly subject to the characteristic open economy contagion of financial and international trade risks, must be taken into account.

Following this logic, it might be reasonable to suggest that the presented evidence supports the hypothesis of twin deficits, i.e. current account deterioration resulting in greater borrowing and fiscal deficit to finance increasing consumption. In the next section

we develop this hypothesis further and discuss empirical results. Ultimately we draw attention to the consideration of the complexity and interrelation of the issues involved in the analysis and specific nature of the economic and social transformation in the post-socialist economies.

CONCEPT DISCUSSION AND MAIN THEORETICAL MODEL

There is no lack of publications on the topic of current account and fiscal balance relationship and any effort to mention all would necessarily result in leaving out many others (e.g. Taylor, 2004; Khalid and Guan, 1999; Kim and Roubini, 2008 and numerous other studies). Some studies tilt towards more theoretical than applied analysis; others focus on specific countries, regions, or country groups. For example, some of the work on transition economies (including countries of Central and Eastern Europe in addition to FSU) are papers by Vyshnyak (2000), Fidrmuc (2002) and Aristovnik (2006) among others.

While a detailed literature review on balance of payments and fiscal balance may be engaging, in the interest of space we observe and apply here only the key rationale of some of the relevant work. The core remains that all represent an attempt to investigate a perceived relationship between the current account and fiscal balance. That analysis is usually conducted within national income identity models and more often than not offers interesting conclusions with a diverse set of econometric techniques, and focus on a statistical relationship between two components.

Analysis of existing literature on the topic faces additional unusual complexity due to a clear lack of consensus on results interpretation and causality relationship between fiscal and current account deficits in the transition economies as well as in the developed world. Much of the present day econometric work appears to be stitched within the integrated Polak model in mind (e.g. Polak, 1957, 1997). Despite the implied technical integrity of such approach there is a concern is that the true structural causes may be overlooked. It appears that the composition of net exports and fiscal spending structure play a more crucial role in determining the direction of both fiscal and current account balances than corresponding co-movements. In other words the economics of the economic problem in a purely technical exercise is missing, which leads to quick but inconclusive, in terms of effective policy, results. An insightful discussion along these broader macroeconomic lines may be found in Milberg (2007), Taylor (2004), and others. Some of insightful expertise

gained from additional literature on the twin deficits topic will be mentioned along the discussion below.

Despite obvious limitations of statistical analysis based on a small sample we recognize a need for such to further gauge our economic policy discussion. In this section we briefly describe the core statistical model. The rationale for the core model is derived based on standard national income identities with slight modifications. The task is to determine the type of relationship between current account and government balance in transition economies using the available data covering the past two decades. The core model may be expressed as:

$$CA_{i,t} = c + \beta FB_{i,t} + \gamma I_{i,t} + \varepsilon_{i,t} \qquad (1)$$

Equation (1) states that current account CA, at time t, in the CIS economies is dependent on the fiscal balance FB and investment I, also at time t. The subscripts i and t refer to a country i and year t respectively. Coefficients c, β, and γ refer to a constant term, fiscal balance and investment coefficients respectively; ε is the error term. Assuming (unrealistic in the transition economies context) investment equal saving, coefficient γ may also be referred to as a "savings retention" parameter. For example, Mastroyiannis (2007) offers similar coefficient treatment in testing savings to current account relationship for Greece.

Evidently, this linear regression does not capture all structural issues involved as Obstfeld and Rogoff (1996) observe in their survey. These issues rise in their importance especially in the transition framework with multiple structural adjustments taking place simultaneously. Nevertheless, we believe running the analysis (1) should help us gain an understanding on a possible relationship between fiscal balance and current account. A positive relationship between the two would suggest a possibility of a twin deficit phenomenon.

Identifying a relationship between investment and current account would suggest the possibility of Feldstein-Horioka puzzle-like situation in the context of the transition economies. As a reminder Feldstein-Horioka (1980) in the analysis of OECD economies found a strong correlation between domestic savings and investment. That finding was in contrast to the expectation of a lower correlation that would indicate greater capital mobility for internationally integrated advanced economies. Applicable to our analysis a statistically significant coefficient γ <1 would suggest a possibility of the Feldestein-

Horioka puzzle in the CIS economies case.[3] Low correlation of investment to current account corresponds to a relatively closed nature of the transition economies' capital markets to the international capital. This suggests that post-socialist economies mostly rely on domestic savings to finance their investment activities.

The core model of (1) can be further extended to account for intertemporal effects and liberalization progress (e.g., Obstfeld and Rogof, 1994). These adjustments are incorporated by the main equation modification as in (2) and (3) respectively below:

$$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \varepsilon_{i,t} \tag{2}$$

$$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \lambda REF_t + \varepsilon_{i,t} \tag{3}$$

Equation (2) states that current account in period t (e.g. $t=1$), is determined by fiscal balance and investment in the prior period (i.e. $t=0$). Following similar structure, equation (3) adds a proxy for reforms, REF, in the current period t (i.e. $t=1$). The intuition behind using current period reforms index is explained by two factors: 1) all data is annual; 2) in the experience of transition one year has been sufficient to warrant the adjustment of economic activity indicators to various market policy measures. It would be erroneous to disregard presence of lagged response in the transition to policy changes. However, we can safely omit that in the given case due to REF definition explained earlier.

All data is annual and comes from the EBRD Transition Report (EBRD, 2008), World Bank Development Indicators (2008), and IMF International Finance Statistics (2008). The data covers the period of 1989 through the first quarter of 2008 and includes all twelve CIS countries. The key dependent variable, CA, is defined as a ratio of current account balance to GDP in year t. A negative value indicates current account deficit. General government balance, FB, is similarly a ratio of budget balance to GDP.

Here a negative value indicates fiscal deficit. Investment is derived from gross fixed capital formation taken as a ratio to GDP. Finally, reforms index REF is a simple average of fourteen EBRD transition indicators measured on a scale of one and higher. These annual indicators provide high level measures for such transition reforms such as price liberalization, privatization, banking reform, infrastructure upgrades, etc. A higher REF value indicates greater progress in comparison to prior periods. Given data issues not all countries reported even such basic indicators as GDP or CA. Consequently those

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[3] One of the six puzzles of modern macroeconomics as identified in Obstfeld and Rogoff (2000). For alternative empirical treatment of the FH puzzle in the OECD case see Coakley et al. (1996).

observations had to be excluded from the regression analysis as indicated by the changing number of observations mentioned in the following discussion.

EMPIRICAL RESULTS REVIEW

Results of the core model defined by equations (1), (2), and (3) are shown in Table 2 below. In each case several alternative estimation techniques were applied. As indicated in exercises conducted with similar data by Aristovnik (2006) on transition data, panel data may exhibit heteroscedasticity and serial correlation of the error terms. In this case a random effects model is recommended. Further due to missing data for some indicators there may be fewer observations than countries. Following Beck and Katz (1996) we estimate an OLS regression with panel corrected standard errors (OLS-PCSE). The model relies on LM test to test for cross-sectional correlation effects (Breusch and Pagan, 1980).

Running various OLS estimations produces statistically significant results that initially may be interpreted in support of the twin deficits proposition. Indeed in all cases the fiscal budget coefficient has come up positive and statistically significant suggesting a positive relationship between current account and fiscal balance. The coefficient varied between the values of 0.4 and 0.6 depending on specific model and estimation technique.

Investment is found as negatively related to the current account in the transition economies. Further the statistically significant low negative investment coefficient provides a partial basis for confirmation of the Feldstein-Horioka puzzle. In the CIS economies this takes a form of *not a puzzle* per se but rather of a characteristic aspect of transition development. This is so due to relatively low infiltration of foreign capital in the transition economies in terms of large-scale investment projects with exception of some small countries (most notably Armenia and Georgia). This may be seen as an advantage with a promise of financial stability to the economy barring any abrupt external shocks. Though it is yet to be seen the true impact of the recent economic slump, the external shock to the transition economies. At the same time issues of "crowding out" of private investment due to increased fiscal activity may arise in the same context.

Table 3 shows approximate country correlations between current account and fiscal budget; and current account and investment. These are calculated based on the same data as the main model and cover the period of 1989 through first quarter of 2008. According to these results changes in current account are closely correlated with changes in fiscal balance in Georgia (0.88), Tajikistan (0.79), Russia (0.75), Uzbekistan (0.67), and

Azerbaijan (0.60). In all countries except Turkmenistan the *CA-FB* relationship is positive, implying joint movement of the fiscal balance and current account.

On average for the twelve countries the correlation is a low 0.43. Still on the surface this may yet be interpreted as supportive of the twin deficits concepts. Current account to investment relationship is negative but also very low at 0.23 on average, with highest positive results for Armenia (0.8) and Georgia (0.5) indicating the small republics' reliance on foreign investments, in particular developing these economies' infrastructure projects.

Table 2: Main model (all CIS)

Regressor / Model:	$CA_{i,t} = c + \beta FB_{i,t} + \gamma I_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \lambda REF_t + \varepsilon_{i,t}$		
	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE
Constant [C]	0.649	-0.235	-0.09	0.786	1.847	1.456	3.136	-12.122	-3.825
	(0.29)	(0.12)	(0.04)	(0.35)	(0.69)	(0.48)	(0.71)	(1.87)	(0.64)
Fiscal balance, % GDP [FB]	0.627*	0.500	0.525*	0.665*	0.466*	0.523*	0.685*	0.253***	0.453*
	(6.82)	(5.36)	(5.69)	(6.66)	(3.79)	(4.36)	(6.33)	(1.67)	(3.27)
Investment, % GDP [I]	-0.136**	-0.125	-0.124	-0.949	-0.177***	-0.141	-0.105	-0.194***	-0.140
	(1.53)	(1.57)	(1.6)	(0.99)	(1.69)	(1.39)	(1.11)	(1.87)	(1.39)
Reforms index, [REF]							-0.958	6.353**	2.350
							(0.66)	(2.36)	(1.05)
No. of countries [panels]	12	12	12	12	12	12	12	12	12
No. of observations	176	176	176	182	182	182	182	182	182
LM test			88.68			36.82			34.04
(prob. Chi²)			(0.000)			(0.000)			(0.000)
Hausman test			16.39			8.03			6.11
Chi^2 (prob. Chi²)			(0.0003)			(0.018)			(0.106)

Source: author's calculations. Notes: *, **, *** indicate significance at 1%, 5%, and 10% respectively; t-statistic absolute values are in parenthesis.

Table 3: Current account, fiscal balance, and investment correlation

Country	CA - FB	CA - I	Country	CA - FB	CA - I
Armenia	0.28	0.85	Russia	0.75	(0.56)
Azerbaijan	0.60	(0.46)	Tajikistan	0.79	(0.94)
Belarus	0.15	(0.41)	Turkmenistan	(0.09)	(0.56)
Georgia	0.88	0.50	Ukraine	0.34	(0.59)
Kazakhstan	0.33	(0.31)	Uzbekistan	0.67	0.16
Kyrgyz Rpblc	0.49	(0.28)	Average	0.43	(0.23)
Moldova	0.00	(0.10)			

Source: author's calculations based on EBRD (2008), World Bank (2008), and IMF (2008) data.

Do the above results and those in Table 3 offer convincing support for the twin deficits argument? A conservative answer is that results are ambiguous. On the one side, regression results discussed above (Table 2) offer compelling statistical evidence for joint co-movements of the current account and fiscal balance. Yet, results still do not unveil the

true relationship nor bear any qualitative significance in terms of the causes for either current account or fiscal balance evolution: so that *correlation does not imply causation.*

That is important. We have already covered some specifics of transition development in Section 2. Despite their individuality, all post-socialist economies coped with significant output collapses while further opening the borders and letting imported consumer goods flood domestic markets. Further, in the post reforms institutional vacuum, the government increased its involvement in economic and social matters. At the height of the current financial crisis, some "too-big-to-fail" enterprises and banks have been offered central government financial backing, although exact effects of this measure are yet to be estimated.

In the meantime since late 1990s CIS governments have mainly pursued Keynesian, if anything, policies allowing for proactive state participation in the economy. Pensions and other employee compensations as well as defense and administrative expenditures had to be covered. These had little relation to the increasing CA deficit. In the next section we extend our core model analysis to gain additional perspective on the current account and fiscal balance relationship.

EXTENSIONS TO THE CORE MODEL
Sovereign debt

Here the main regression has been modified to account for sovereign debt term. All regressions are re-estimated assuming that the two decade reform period could be split into sub-periods: 1989-1998 and 1999-2008, i.e. first transition years through the Russian financial crisis of 1998 and post shock therapy period, right after the Russian financial crisis of 1998. Specifically we re-ran the regressions for the second sub-period. Finally the main and extended models for all years and the second sub-period are re-run based on the two broad country categories: net exporters and net importers. We briefly describe these extensions with some details and review results below.

The issue of sovereign debt is an important one in the transition economy context. As recently as 2001 Tajikistan's external debt in relation to GDP exceeded 121 percent (ironically representing a significant improvement from 216 percent level ten years earlier in 1991, according to the EBRD 2008 data). Service on debt outstanding (expressed in relation to exports of goods and services) ranged between 1 and 38 percent during different years. This provides empirical validation for the inclusion of the debt component

in the intertemporal current account analysis discussed earlier. Based on that analysis our extended model now accounts for debt service and its relation to current account. A modified model is:

$$CA_{i,t} = c + \beta FB_{i,t} + \gamma I_{i,t} + \omega(rB_{i,t}) + \varepsilon_{i,t} \qquad (4)$$

$$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \omega(rB_{i,t-1}) + \varepsilon_{i,t} \qquad (5)$$

$$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \lambda REF_t + \omega(rB_{i,t-1}) + \varepsilon_{i,t} \qquad (6)$$

Equations $(4-6)$ are written in the familiar form with added debt service term, where rB is the actual service payment on debt outstanding (given interest rate r) and ω is the corresponding coefficient. As a proxy, we use EBRD's indicator of debt service as a percentage of total exports of goods and services.

Estimation results are presented in Table 4 below. Adding the new term to the main model does not seem to alter the direction of the general government balance relationship to current account. In fact the new results estimated in a consistent manner with the main model produce a statistically more significant positive relationship. Investment still displays a negative relationship with current account evolution and the debt service coefficient is also negative.

Based on the extended model results we are unable to reject statistical coincidence of the fiscal and current account balance deficits. However in terms of qualitative causation the story remains mixed. At best it is safe to assume that the nature of the transition period implies governments' high borrowing from abroad to sustain continued imports flow and financing of various domestic projects through state agencies. This argument is reinforced by considering the notoriously deteriorated tax base in the transition economies and the central government's lack of financial resources, particularly in the smaller economies. Finally those economies able to control their debt payments are most likely to see improvement in their net exports.

Recall that the final debt service balance is a composite of the interest rate and total debt outstanding. Reduction of this figure in relation to total exports corresponds to lower debt burden on the economy. This frees up resources that may be applied elsewhere in the national economy (e.g. infrastructure improvements as reviewed below).

This leads us to another exercise, a review of country performance based on country groups. We estimated regressions (1–3) and (4–6) based on the preceding discussions for the core and extended model separately for each country group. The same tests have also

been carried out for the reduced sample covering the time period of 1999-2008 as mentioned above[4].

Table 4: Extended model, with debt service term

Regressor / Model:	$CA_{i,t} = c + \beta FB_{i,t} + \gamma I_{i,t} + \omega(rB_{i,t}) + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \omega(rB_{i,t-1}) + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta FB_{i,t-1} + \gamma I_{i,t-1} + \lambda REF_{i,t} + \omega(rB_{i,t-1}) + \varepsilon_{i,t}$		
	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE
Constant [C]	9.726	9.476	9.75	8.579	7.938	8.012	11.916	-9.256	7.969
	(2.42)	(4.19)	(3.93)	(3.0)	(2.84)	(2.75)	(2.76)	(1.06)	(1.47)
Fiscal balance, % GDP [FB]	1.195*	1.069*	1.098*	1.011*	0.804*	0.886*	1.036*	0.503***	0.887*
	(10.7)	(8.56)	(8.76)	(7.9)	(5.21)	(5.82)	(7.69)	(2.38)	(5.47)
Investment, % GDP [I]	-0.459*	-0.311*	-0.366*	-0.369*	-0.274*	-0.318*	-0.383*	-0.335*	-0.318*
	(4.67)	(3.73)	(4.52)	(2.99)	(2.65)	(3.26)	(3.26)	(3.15)	(3.25)
Debt service, [rB]	-0.045	-0.257*	-0.168**	-0.023	-0.205**	-0.104	-0.007	-2.49***	-0.104
	(0.6)	(3.17)	(2.2)	(0.29)	(2.03)	(1.15)	(0.09)	(2.45)	(1.12)
Reforms index, [REF]							-1.416	8.23	0.020
							(0.89)	(2.07)	(0.01)
No. of countries [panels]	12	12	12	12	12	12	12	12	12
No. of observations	160	160	160	160	160	160	160	160	160
LM test (prob. Chi²)			54.76			26.45			22.61
			(0.000)			(0.000)			(0.000)
Hausman test Chi^2 (prob. Chi²)			10.60			0.42			11.24
			(0.0141)			(0.937)			(0.024)

Source: author's calculations. Notes: *, **, *** indicate significance at 1%, 5%, and 10% respectively; t-statistic absolute values are in parenthesis.

In general net exporters' results are consistent with the earlier findings, of positive fiscal to current account balance relationship in the larger and shorter samples. Investment and debt service on average report negative coefficient signs as above. The latter results are consistent with economic theory and common sense. This is so considering that net exporters are larger countries better fitted with self-sponsoring of internal capital-intensive projects and reducing their debt service burden. Results are somewhat more ambiguous as we look at the performance of the net importers group. According to the results there appears to be a negative relationship between fiscal balance and current account balance, even when tested using alternative techniques. This is obtained in the smaller sample covering 1999-2008.

The importance of this finding must be assessed with caution. First the negative fiscal to current account balance relationship contradicts the twin deficits argument. Second, the fact that this occurs in the smaller sample that covers the second transition decade of macroeconomic normalization in the CIS reinforces the argument against the twin deficit

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[4] For brevity we do not report results of the extended tests mentioned above.

causality. The second decade of the transition process has been characterized by increased macroeconomic stability and introduction of responsible development policy, specifically fostering of market institutional framework and support of private business across the CIS space as well as the net importers.

The fact that the negative relationship is detected in the net importer economies is also significant for another reason. These five small economies are net recipients of workers' remittances and other financial transfers from abroad. On a microeconomic level, increasing transfers to private recipients alleviate pressures on fiscal agencies. Hence fiscal budgets are cut and public expenditure is allocated towards other priorities. In the meantime, with domestic productive capacities reduced (either due to industrial underdevelopment or price competition) funds procured via private transfer channels are spent on private consumption of imported goods, driving up the current account deficit.

Lack of significant relationship of the fiscal budget and current account may also be captured by correlations calculated based on the same data. These correlation results are shown in Table 5. Based on results in Table 5, fiscal balance to current account relationship is negative in quite a few cases including countries from both groups. On average the association is relatively weak (0.26). However it appears to be strong positive in the case of Uzbekistan, Armenia, Turkmenistan, and Azerbaijan (0.89, 0.80, 0.79, and 0.66 respectively). Similarly fixed capital formation to current account association is also weak in the second transition decade (with exceptions of Armenia and Uzbekistan, at 0.86 and 0.71). Several issues arise from the conducted empirical tests and we summarize those in the concluding section. These issues relate equally to empirical estimation methods and implied theoretical derivations. Importantly they involve considerations of policy measures. First we address some extensions to the core analysis.

Table 5: Current account, fiscal balance, and investment correlation

Country	CA - FB	CA - I	Country	CA - FB	CA - I
Armenia	0.80	0.86	Russia	(0.21)	(0.43)
Azerbaijan	0.66	(0.63)	Tajikistan	0.57	0.46
Belarus	(0.60)	(0.10)	Turkmenistan	0.79	(0.57)
Georgia	0.25	(0.19)	Ukraine	(0.14)	(0.53)
Kazakhstan	(0.06)	(0.42)	Uzbekistan	0.89	0.71
Kyrgyz Rpblc	0.31	(0.57)	Average	0.26	(0.18)
Moldova	(0.13)	(0.76)			

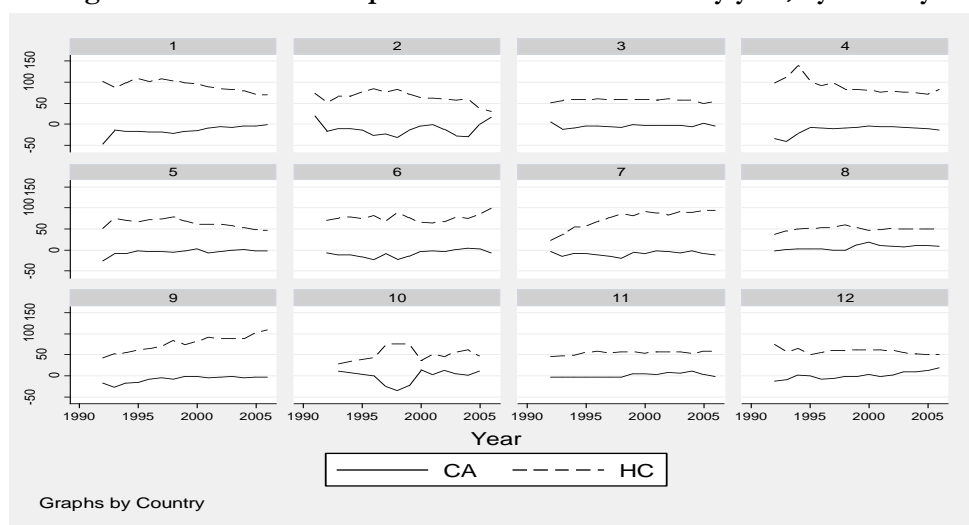Source: author's calculations based on EBRD (2008), World Bank (2008), and IMF (2008) data.

Private consumption relation to current account

Another and perhaps the most important extension to our core model is structured around private household consumption. This is prompted by two factors. The first factor is due to consumption being a major component of the total national income, as in national income identities. Then current account balance as in the equation (7) is expressed in terms of national income, government expenditure, investment and private consumption:

$$X_t - M_t = Y_t - C_t - G_t - I_t \tag{7}$$

This relation is derived from national income decomposition. Hypothetically then with growing income (Y), holding government expenditure (G) and investment (I) constant, a current account surplus (X-M) is negatively related to consumption (C). This implies that any increase in consumption expenditure would result in increasing imports, (i.e. current account deficit). Figure 3 puts this relation in perspective.

Figure 3: Private consumption and current account by year, by country

Source: author's calculations based on data from EBRD (2008), World Bank (2008). Note: one graph per country in alphabetical order.

Negative relationship between current account surplus and private consumption is apparent from Figure 3 above for almost all countries. In the transition economy context this may happen for two obvious but polar reasons. First, increasing consumption may be

seen as an early indication of the economic improvement as a consumer economy takes off. In the short run there may be an increase in imports due to time lag required for the domestic economy to pick up the production pace. In Keynesian terms, growing consumption may then translate into effective demand stimulating development of home-bred production capabilities. In the medium run this may be interpreted from the positive side. The second reason explaining increasing consumption and its negative relation to current account surplus is directly the opposite. The output collapse in the new market economies and resulting inability to satisfy domestic consumption needs with local resources worked as complementary factors influencing increased demand for moderately priced imported goods of better quality and relatively easy accessible compared to the lack of or deficient home-made products.

The second factor prompting analysis of current account in connection with private consumption is derived from the above statement. The nature of transition economies' development is such that there continues to be a high degree of substitution of domestically made goods by better quality and more efficient foreign goods. Despite the fact that some countries run current account surplus they still import final consumer products.

Those with current account surpluses are mainly raw materials exporters. Therefore even in these cases of large economies consumers look for foreign cars, imported durable, clothes, and certain services (e.g. financial services), etc. since the manufacturing production in these sectors remains at its rudimentary stages. In certain smaller countries (e.g. Armenia, Georgia, and Moldova) shares of consumer goods production is even lower than in the larger economies. However, the demand for consumer goods and services must be satisfied and that is done via inflow of imported goods and services. In the development context this has a major implication in terms of industrial growth and development policy.

As many observers have noted, a complex industrial policy largely defined the successes of the Asian Miracle, or even post-war Western Germany or Japan (see for example Amsden, 2001; or Chang, 2002). In transition this is a more recent phenomenon, characteristic of the larger economies rather than being a general trend across all CIS. Therefore private consumption may be the primary determinant of the current account deficit while the government runs a fiscal deficit to support its social programs (e.g. health benefits and education).

This leads us to the conclusion that the primary determinant of current account deficit is not necessarily the fiscal policy as the twin deficits possibility would suggest but consumer spending that is influenced by reasons other than availability of credit or expansionary monetary policy (something more characteristic of the financial systems of the developed capitalist economies of North America and the European Union). In that case there should be a strong negative correlation between consumption spending and current account. Running similar correlation analysis as earlier we confirm this proposition..

Again the separation between the first decade—of transition reforms—and the second decade—period of macroeconomic stabilization, growth, and more Keynesian fiscal policy—is relevant here. The correlation is greater in the second decade. That indirectly supports our statement regarding non-consumer products oriented growth, i.e. while economies get richer and spending rises, that is not necessarily due to an increase in consumer goods domestic manufacturing. In other words, spending is directed towards better quality imports rather than domestic goods. Individual country results offer support for a much stronger relationship (as in the cases of Armenia, and Uzbekistan for example).

Over the longer time period the relationship is weaker on average but is still significant for the net importer countries and some net exporters. Certainly, we must take into consideration (as with any generalization) reliability of the available data. These preliminary results offer support for the consumption to current account relation discussed above.

To gain additional confirmation we construct a new test derived from the initial regression model presented earlier. Our focus on the relationship between household consumption (HC) and current account (CA) in the current period and with a one period lag. In addition we estimate the effects of household consumption and of fiscal balance change over current account surplus. The new model is formally defined as follows:

$$CA_{i,t} = c + \beta HC_{i,t} + \varepsilon_{i,t} \tag{8}$$

$$CA_{i,t} = c + \beta HC_{i,t} + \lambda FB_{i,t} + \varepsilon_{i,t} \tag{9}$$

$$CA_{i,t} = c + \beta HC_{i,t-1} + \lambda FB_{i,t-1} + \varepsilon_{i,t} \tag{10}$$

Similar to the logic of the earlier discussed tests (defined in 1-3 and 4-6) the equations (8) through (10) test for a relationship between current account (CA) in the current period and 1) household consumption in the current period (equation 8); 2) household consumption and fiscal balance change in the current period (equation 9); and 3)

household consumption and fiscal balance evolution with a one period lag (equation 10). As with previous estimations all variables are taken as ratios to GDP and are consistently derived from the same data sources for each economy.

Final results are presented in Table 7 of the Appendix (all countries only; group specific results omitted for space considerations). Estimation was conducted for the full sample of countries, net importers and net exporters groups for two time periods: full two decades time set and for a shorter period of past nine years (covering 1999 through 2008). Regression results indicate a strong negative relationship between household expenditure and current account surplus for all country groups. As before, to test our outcome at least three statistical estimation methods were utilized. Our goal is not to identify the best fit but to illustrate the relationship. On that point, all tests, with exceptions in the reduced net importers case, indicate existence of the negative correlation of current account surplus to household expenditure.

We find these results to be informative and sufficient basis that supports our discussion above regarding the nature of consumption spending and the nature of the current account deficits in the transition economies. These results have clear policy implications in terms of macroeconomy and development targets, especially in the smaller net importer economies but are equally important in the larger, net exporting, economies. We address some of these imminent policy implications in the concluding section below.

Special case: commodities exports in the net exporters group

The final extension to our analysis comes as a special case to the above outlined model. Here we focus on the net exporters group only. Importantly we also add a new factor to the model: commodities exports as percent of GDP (*COM*). The intuition behind this addition is simple. Since much of net exporters' current account surplus is driven by energy and raw materials exports, it is reasonable then to assume that a positive relationship exists between the two. In this section we develop a test that helps us scrutinize the relationship in detail.

Few clarifying remarks on the new data are due. Our estimates for commodities exports are derived from the UNCTAD (2008) dataset and initially included separate information on fuel and metals exports expressed in monetary units. Combining the two and using the annual GDP data we are able to derive a composite estimate of primary commodities exports in relation to GDP by country. Due to limited availability of exports

data by commodity our analysis is constrained with the time period of 1995-2006. Given the seven net exporters countries this is sufficient to adjust our panel set and carry out meaningful analysis.

To skip through specifics covered at length in the previous sections of this paper we define our augmented model along the familiar lines:

$$CA_{i,t} = c + \beta HC_{i,t} + \mu COM_{i,t} + \varepsilon_{i,t} \tag{11}$$

$$CA_{i,t} = c + \beta HC_{i,t} + \lambda FB_{i,t} + \mu COM_{i,t} + \varepsilon_{i,t} \tag{12}$$

$$CA_{i,t} = c + \beta \Delta HC_{i,t} + \mu \Delta COM_{i,t} + \varepsilon_{i,t} \tag{13}$$

$$CA_{i,t} = c + \beta \Delta HC_{i,t} + \lambda \Delta FB_{i,t} + \mu \Delta COM_{i,t} + \varepsilon_{i,t} \tag{14}$$

Equations (11) through (14) follow an already familiar pattern with addition of one new term, i.e. $COM_{i,t}$, the term for the commodities exports as a share of GDP of country i in the year t. All variables in this model are measured in terms of GDP shares.

Equations (13) and (14) also reflect the fact that we are looking at annual change effects of consumption, fiscal balance, and commodities exports and their relation to current account balance in the current year. The implications of this approach are explained below. We are still looking for a linear relation. Using country specific data we are able to derive trend charts for each country, tracking current account and commodities exports changes. These charts are shown in Figure 4 below. The striking observation is the sure positive correlation, at least graphically, between the two factors. Granted commodities exports represent a subset of total exports, hence enter one side (positive) of the current account, an observed positive relation then offers more substance to our investigation.

This relation is profound for such countries as Azerbaijan (#2 in Figure 4), Russia (#8) and Turkmenistan (#10). The net exporters group also includes such countries as Belarus and Uzbekistan. While these are not primary energy or metals exporters (Belarus is mainly a machinery exporter and Uzbekistan is the cotton exporter), the relatively large shares of the two commodities in these countries' total exports warrants the two economies' inclusion in the analysis (fuel and metal exports make up approximately 30 percent and 25 percent of total exports for Belarus and Uzbekistan respectively).

We utilize similar technical tools as earlier to estimate equations (11) through (14). Final estimation results are shown in Table 6. These results confirm our stated hypothesis of positive relation, but these must be treated with caution. Depending on the chosen estimation method the sign on the *COM* variable changed from positive to negative. This

is largely due to the data quality and small number of observations. Consistent and statistically significant coefficients were returned by the fixed effects method. Both coefficients on private consumption and fiscal balance came with signs consistent with our prior investigation.

Figure 4: Commodities exports and current account by year net exporters
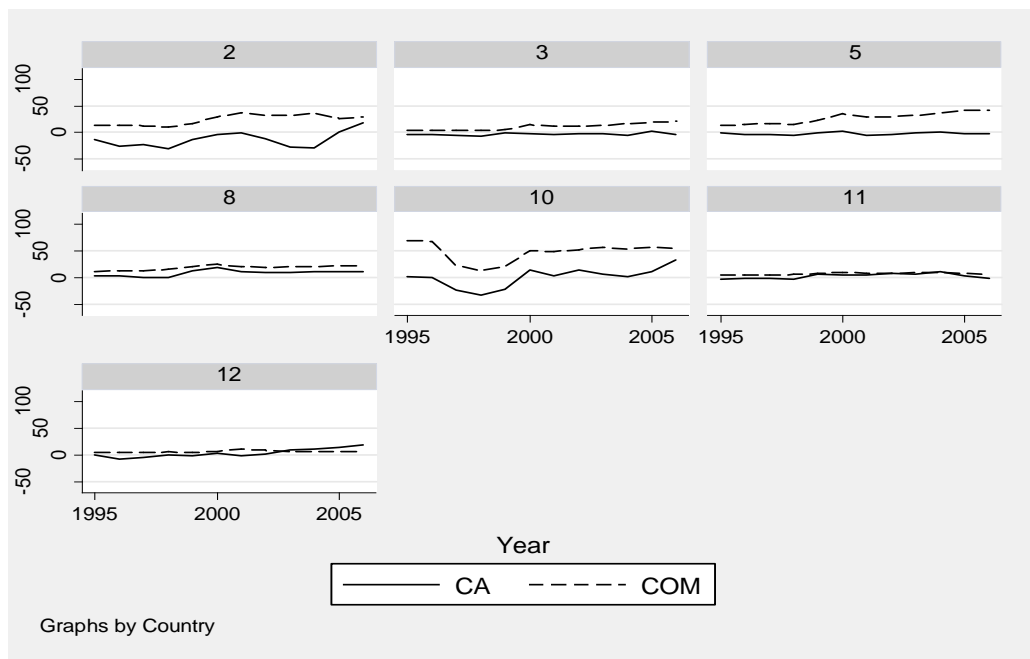
Source: author's calculations based UNCTAD (2008), EBRD (2008), and World Bank (2008). Note: one graph per country; country codes: Azerbaijan – 2, Belarus – 3, Kazakhstan – 5, Russia – 8, Turkmenistan – 10, Ukraine -11, Uzbekistan - 12.

As mentioned, during the process we looked at two relations in terms of time: current year relations and current to a prior year change. These results are easy to locate in Table 6 following the respective equations. The rationale for looking into commodities exports' changes is as follows. Since *COM* make up a large portion of net exports for the economies in question, changes in *COM* (i.e. Δ*COM*) would also imply positive changes in the current account. In fact, that is what we find when estimating equations (13) and (14). Curiously (and crucially) private consumption coefficients, Δ*HC* remain negative.

Table 6: Results with commodities exports (net exporters, 1995-2006)

Regressor / Model:	$CA_{i,t} = c + \beta HC_{i,t} + \mu COM_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta HC_{i,t} + \gamma FB_{i,t} + \mu COM_{i,t} + \varepsilon_{i,t}$		
	OLS - PCSE	**FE**	**RE**	**OLS - PCSE**	**FE**	**RE**
Constant [C]	50.703	30.942	42.292	50.3	30.819	40.87
Fiscal balance, % GDP [FB]				0.095 (0.31)	0.094 (0.37)	0.121 (0.48)
Household Consumption, % GDP [HC]	-0.864* (7.67)	-0.604* (5.11)	-0.747* (7.64)	-0.853* (6.53)	-0.597* (4.94)	-0.721* (6.99)
Commodities exports, % GDP [COM]	-0.101*** (2.51)	0.151*** (1.23)	-0.015 (0.18)	-0.107*** (2.34)	0.1405 (1.11)	-0.011 (0.13)
No. of countries [panels]	7	7	7	7	7	7
No. of observations	82	82	82	82	82	82
LM test (prob. Chi²)			11.78 (0.0006)			12.08 (0.0005)
Hausman test Chi^2 (prob. Chi²)			9.55 (0.008)			6.89 (0.075)

Regressor / Model:	$CA_{i,t} = c + \beta \Delta HC_{i,t} + \mu \Delta COM_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta \Delta HC_{i,t} + \gamma \Delta FB_{i,t} + \mu \Delta COM_{i,t} + \varepsilon_{i,t}$		
	OLS - PCSE	**FE**	**RE**	**OLS - PCSE**	**FE**	**RE**
Constant [C]	-1.607	-1.879	-1.826	-1.857	-1.68	-1.839
Fiscal balance, % GDP [FB]				0.444** (0.92)	-0.359 (0.78)	0.35 (0.60)
Household Consumption, % GDP [HC]	-0.407*** (2.30)	-0.593* (5.03)	-0.549* (4.41)	-0.401 (2.21)	-0.6* (5.06)	-0.425* (2.78)
Commodities exports, % GDP [COM]	0.526* (2.98)	0.568* (4.53)	0.557 (4.19)	0.5032* (2.85)	0.586* (4.58)	0.513* (3.07)
No. of countries [panels]	7	7	7	7	7	7
No. of observations	69	69	69	69	69	69
LM test (prob. Chi²)			60.27 (0.000)			53.28 (0.000)
Hausman test Chi^2 (prob. Chi²)			1.24 (0.538)			7.08 (0.0693)

Source: author's calculations. Notes: *, **, *** indicate significance at 1%, 5%, and 10% respectively; t-statistic absolute values are in parenthesis.

As primary commodities (fuel and metal) exports grow across net exporter countries, private consumption levels also grow but remain negatively correlated to the current account. In the end it becomes the race between an ever increasing private consumption satiated primarily by better quality imported consumer goods and revenue from the primary commodities exports. The latter, being the main net exporters' income, holds the seven economies hostage to the changes in energy and raw materials demand. The immediate implication of this has surfaced in the recent months as the financial and real

economy environment has deteriorated globally. Lower effective demand in the rich primary commodities importers of North America and Western Europe have already caused the international fuel and raw metals prices to fall.

As this process continues the CIS net exporter states are increasingly facing tough choices of scaling back their government sponsored projects, with evident income and job cuts. Finally, declining world demand for primary commodities and the chain of events ensued by it resulting in export revenues drops, reverses the net exporters' fortunes flipping current account balances from surpluses to deficits. Ultimately, there is more to the story of twin deficits than meets the eye.

CONCLUSION

Our analytical discussion of the twin deficits problem has brought up the importance of transition economies-specific macro and structural effects. Additionally we presented evidence on the evolution, from point zero at the initial collapse of the socialist market through now, of the current account and budget balance in the twelve economies based on their classification of net exporters and net importers. Point-in-time analysis indicated some periods of current account and fiscal balance joint movements. Estimating the main model and its extended version with debt service suggested the same positive relationship between the two variables. Additional analysis covering the second transition decade for all twelve countries and net exporter economies offered similar results. These findings were brought into question by low correlations between fiscal balance and current account and more specifically by the negative relationship between the household consumption and current account surplus. This indicates a more complex structural issue that influences current account deficit, rather than a one-to-one fiscal balance to current account relationship apparent from national income identities. Consequently we briefly summarize potential issues facing future similar explorations, as well as policy issues involved.

First, there is a persistent issue of data reliability and lack of observations. Managing around this by relying on EBRD data, we utilized a panel data model in the analysis. Given the existent differences in the economy size among the twelve countries in the sample, a complication in terms of results reliability may occur. Second, while we attempted several OLS specifications the underlying model is clearly more structural in nature and future analysis will have to account for consumption patterns and fiscal expenditure composition as well as net exports composition with more data points than currently available. A basic

initial analysis was attempted in this paper. Third, one should exercise caution in interpreting regression results as solid predictors of the fiscal budget or current account behavior.

It is tempting, using available simple regression results, to declare restrictions on fiscal spending as more of it would possibly lead to further current account deterioration. This conclusion, though, omits key transition (i.e. country-specific) considerations and leads to important policy implications of our analysis.

To begin with, there is no doubt transition economies in the course of their approximately twenty-years reformation period have experienced prolonged instances of current account and fiscal balance deficits. However, the crucial point is to realize that these co-movements were primarily implied by the drastic attempts to transform socialist economies and set them on the path to capitalist development. Therefore at least during that period those observations and derived conclusions made for the case of the advanced economies cannot be applied one-to-one. Hence, a more qualitative analysis rather than pure technical exercises is relevant in the transition economies case.

This view is reconfirmed by our extended model analysis considering household consumption in relation to current account surplus by itself and with connection with fiscal balance. Household consumption served as the primary determining factor while fiscal balance turned out to be secondary. Reformation patterns specific to the countries of the CIS hold the key to explaining such negatively related co-movements, as consumers tend to compensate a lack of domestically produced goods with reasonably priced and higher quality imports while governments engage in administrative restructuring and raising funds for internal public projects. Hence, there is a definite need for proactive economic policy to ensure sustainability of recent economic developments. This may come in the form of more active state involvement in the economy, as the recent crisis prompts, or via further administrative encouragement of a relatively self-regulating market mechanism unique to the transition economies. In fact, the role of the state in that region is the key "country-specific" factor often omitted, and more often objected to, by the outside commentators. We develop this theme further in Gevorkyan (2011).

Finally the extended model is applied as a special case analysis to examine the net exporters circumstances. We find substantial evidence of positive correlations between primary commodities (fuels and ores/metals) exports and current account. The correlations are profound when annual changes in commodities exports are considered.

This result takes the discussion of twin deficit in the transition economies a step further. Strong reliance on raw materials exports creates immediate vulnerability to the economies that primarily rely on revenue derived from these exports. In many CIS net exporter states that revenue goes into state coffers with profits either reinvested in public funds or slated for public projects. Clearly such dependence on primary commodities exports could flip an economy's fortunes with detrimental effects on current account and fiscal balance due to the above reasons.

Transition economies' governments are dealing with multitude of issues in their attempt to create viable, competitive economies integrated with international markets. Open borders and liberalized trade and capital accounts are shaping each country's individual external position. Domestically the governments should be given an opportunity to implement a development strategy best fitting their country model.

In the transition context this necessarily involves significant infrastructure investment, hence possibly increased fiscal expenditure and fiscal deficit, as the state leads the initiative. There is a comforting realization of the importance of the direct link of the infrastructure modification with the real economy's needs and demands. Large scale infrastructure upgrading projects are difficult to implement given financial constraints of transition. Elsewhere we propose *Infrastructure Development Fund* and *Strategic Learning / Innovative Systems* as alternatives to a systemic approach to transition economies modernization (e.g., Gevorkyan, 2011). How governments obtain the necessary financing and whether the current fiscal policy is sustainable given all targets and constraints of development is another relevant question. Alternatives, review of which is beyond the limits of this study, are available and are actively utilized.

For now it is clear that despite indications obtained via regression techniques co-existence of the current account deficit and fiscal balance deficit is not the case of the textbook twin deficits problem; the issue is multidimensional. A more qualitative approach prompts an investigation in more structural problems of the transition, such as household consumption patterns and its relation to current account and nature of fiscal expenditure. That is the case in the post-socialist transforming economies with consumer societies.

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APPENDIX

Table 7: Household consumption to current account surplus relation estimation results: different country groups

(a) All Countries: 1989 - 2008

Regressor / Model:	$CA_{i,t} = c + \beta HC_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta HC_{i,t} + \gamma FB_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta HC_{i,t-1} + \gamma FB_{i,t-1} + \varepsilon_{i,t}$		
	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE
Constant [C]	15.557	9.203	13.65	16.074	15.648	15.674	15.045	5.811	12.343
	(6.1)	(2.51)	(4.52)	(7.00)	(4.86)	(5.47)	(5.29)	(1.30)	(3.38)
Fiscal balance, % GDP [FB]				0.517*	0.588*	0.563*	0.563	0.47*	0.519*
				(5.44)	(6.86)	(6.75)	(5.84)	(3.83)	(4.38)
Household Consumption, % GDP [HC]	-0.309*	-0.216*	-0.281*	-0.283*	-0.271*	-0.274*	-0.251	-.123**	-0.217*
	(9.03)	(4.08)	(6.64)	(8.37)	(5.99)	(6.75)	(6.70)	(1.93)	(4.19)
No. of countries [panels]	12	12	12	12	12	12	12	12	12
No. of observations	177	177	177	176	176	176	182	187	187
LM test (prob. Chi²)			4.52 (0.033)			34.86 (0.000)			3.25 (0.071)
Hausman test Chi² (prob. Chi²)			4.22 (0.040)			8.74 (0.012)			11.79 (0.002)

(a) All Countries: 1999 - 2008

Regressor / Model:	$CA_{i,t} = c + \beta HC_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta HC_{i,t} + \gamma FB_{i,t} + \varepsilon_{i,t}$			$CA_{i,t} = c + \beta HC_{i,t-1} + \gamma FB_{i,t-1} + \varepsilon_{i,t}$		
	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE	OLS - PCSE	FE	RE
Constant [C]	18.966	29.975	25.11	17.098	29.496	24.35	22.138	27.561	24.701
	(5.80)	(5.92)	(5.74)	(4.35)	(5.87)	(5.50)	(5.36)	(27.561)	(5.24)
Fiscal balance, % GDP [FB]				0.416***	0.385***	0.359***	0.2	0.107	0.134
				(1.71)	(1.56)	(1.50)	(0.96)	(0.39)	(0.52)
Household Consumption, % GDP [HC]	-0.3*	-0.463*	-0.391*	-0.265*	-0.449*	-0.373*	-0.332*	-0.414*	-0.371*
	(6.46)	(6.21)	(6.41)	(4.48)	(6.03)	(5.98)	(5.62)	(4.78)	(5.48)
No. of countries [panels]	12	12	12	12	12	12	12	12	12
No. of observations	95	95	95	95	95	95	107	107	107
LM test (prob. Chi²)			43.99 (0.000)			41.61 (0.000)			14.3 (0.000)
Hausman test Chi² (prob. Chi²)			2.81 (0.093)			3.59 (0.166)			0.72 (0.698)

Source: author's calculations. Notes: *, **, *** indicate significance at 1%, 5%, and 10% respectively; t-statistic absolute values are in parenthesis. Left side panels-full sample; right side panels-ten years sample (1998-2008).