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Optimal Fiscal Policy Mix and Current Account Imbalances: the case of Greek Economy

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Abstract

The paper investigates the twin-deficit hypothesis for Greece within a small-scale VECM with a non-trivial fiscal side over the period 2000q1-2011q4. Our approach enables us: firstlyto formulate and explicitly put into hypothesis testing regarding the role of alternative fiscal policy instruments on the trajectory of the current account and secondly to evaluate the effectiveness of the current austerity mix in macroeconomic imbalances. Allowing for a number of factors that influence the long run equilibrium of the current account adjustment we find no evidence against the twin-deficit hypothesis.Still the fiscal deficit pass through into current account imbalances is moderate. Additionally, even though government expenditure reductions are consistent with an improvement in current account position, total taxation increases appear to deteriorate external imbalances despite the positive contribution they have in fiscal deficit reduction. Effectively, this is attributed to the effect that taxation hikes have on price competitiveness. Lastly, when disaggregating the fiscal deficit to its components we find evidence that indirect taxation increases have adverse results compared to direct taxation increases when it comes to reducing existing current account imbalances. At the expenditure side, wages moderation and public investment increases reduce current account imbalances indicating, in the latter case, the existence of significant productivity and competitiveness externalities for the Greek economy.

Keywords: Vector error correction model, current account, twin deficits, fiscal deficit.

JEL: F30, F32

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1. Introduction

After nearly four years of fiscal consolidation and following a steady path of growing external imbalances during the period 2000-2009, the Greek economy is seeking new ways of promoting and funding growth. This is especially important since a significant deleveragingis taking place at the same time. Turning from current account deficit to significant current account surpluses may exhibit a significant contribution in this purpose and contribute to the hugely needed capital accumulation. Following current economic adjustment programs, one needs to describe the implications of alternative fiscal policy instrument and carefully monitor their comparative contribution on current account dynamics.

In this context, we employ a small-scale VECM to address the basic relationship between the current account position, the associated fiscal policy and credit liquidity conditions in Greece. Our investigation stems from the current account inter-temporal approach, which was initially proposed by Sachs (1981) and Buiter (1981) and later extended by Obstfeld and Rogoff (1995). Despite our main interest which focuses on the nexus between current account balance and fiscal policy one cannot ignore the relationship between the current account position and the other factors referred in the relevant literature (i.e.. real effective exchange rate, private investments, demographic factors, andeconomic convergence indicator etc).

Additionally, we contribute tothe relationship between the current account balance and the fiscal policy mix by covering both spending and revenue side. Based on traditional textbook literature, an increase in government expenditures is consistent with disposable income increases (reductions) leading to current account deficit worsening (improvements). On the other hand, total revenue increases may reflect either a positive effect leading to disposable income decreases (again based on the disposable income approach) or a negative effect (the competitiveness effect) resulting to the widening of current account imbalances.

Our results indicate that the twin deficit hypothesis holds for Greece even after the recent years of crisis. According to our estimates the contribution of tax revenue is negative and greater than the relevant public expenditure effect. More specifically, even though taxation increases are consistent with fiscal deficit improvements they do not allow for improvements in the external sector (price competitiveness) since theymitigate the effects of reforms in labour and product market on unit labour cost.

According to our estimates, it is proved that indirect taxation increases (i.e. VAT taxation and other consumption taxations) lead to current account deteriorations as they put a burden on domestic production cost while direct taxation increases apart from deficit improvements lead also to current account improvements due to the income effect that they have. On the spending side, our estimates prove that wage moderation serves both the purposes of fiscal reduction and current account deficitreduction. Lastly, public investment reductions while serving fiscal consolidation have a negative on current account deficit by constraining the productivity and competitiveness of the economy. This differential pass through of disaggregate fiscal policy options to current account adjustment supports the existence of an optimal mixture of fiscal consolidation (expenditures vs revenues) for a significant current account rebalancing.

The paper is organized as follows. In the next section, the current account and the respective balance of payments identity is analysed followed by the recent pattern of current account developments in Greece. In section 3, the theoretical framework is presented along with the open form representation of our empirical model. The next section provides details over the employed data set and the methodology we follow. In section 5, empirical results are presented and in the last section we conclude.

2. Conceptual Framework

a. The Accounting Identity of Current Account Balance

Current account is defined as the difference between the saving and investment of the private and public sector. In terms of national account balance representation, the current account balance incorporates the *trade balance* (the differences between exports and imports), the *service balance*, (which in the case of Greece, mainly reflects tourism, transportation, etc), the *income balance* (reflecting net payments for interest, dividends, profits on foreign investments) and the *current transfers* related to capital inflows and outflows like EU transfers to the Greek economy, structural funds related to the co-financing of the public investment budget and the Greek contribution of the EU budget. In an open economy context, where savings are not necessarily equal to investment and under the assumption of mobile international capital, the current account deficit (i.e. domestic investment exceeds saving) is financed from abroad.

Building on current account, another representation of a country's external position is also the balance of payments which is expressed as the outcome of current account position, capital transfers position (reflecting inflows and outflows with respect to: specific contributions to EU budget, inflows involving EU structural funds and Social cohesion funds) and lastly the *financial accounts* (i.e. the difference between inflows and outflows of direct investments, portfolio investments and lastly the rate of change in foreign reserves).

b. Current Account Developments in Greece

Historically, Greece, and other economies in the euro area have been regarded as countries with significant current account imbalances. However, the magnitude and persistence of such imbalances in the period after the introduction of the euro in 1999 appears to begreater compared with the pre euro period (Barnes, Lawson and Radziwill 2010).

In the eve of the global financial crisis in 2008, dispersion in current account positions for the European Union -especially euro area countries- was greater than OECD average position (Blanchard and Giavazzi, 2002). Most euro area periphery countries did have larger current account deficits compared to core EMU member states, primarily reflecting differences in competitiveness, significantfinancial easing, consumption and import eruption, and the pursue of periphery counties to close infrastructure gap with other EMU countries with massive promotion of investments.

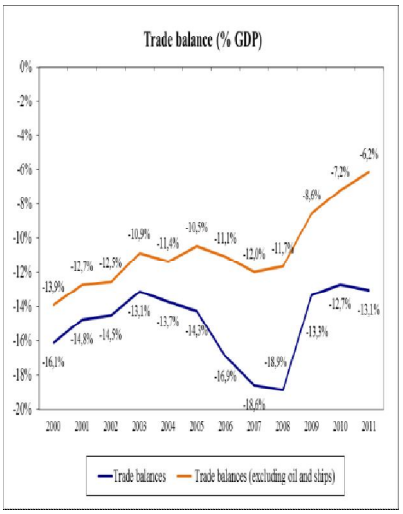
For Greece, the main drivers[3] behind the significant worsening of current account position refer to i) the constant and significant loss of competitiveness due to persistently high inflation vis a vis EMU partners, ii) the followed expansionary fiscal policy reflected in the widening of fiscal deficit and the accumulation of debt, iii) the significant leverage build up that contributed to the increase of domestic demand and real gdp growth. After2008, and following the significant fiscal consolidation program, Greek external imbalances appear to adjust from 15% of GDP in 2008 to below 10% of GDP in 2011.

More specifically, the trade balance (graph 1) in Greece shows a consistent trade deficit during the entire examined period. However, during the last three years (2009-2011) a substantial improvement is recorded due to animport fall mainly reflecting current contraction of domestic demand.

[3] See for example Monokroussos et al. (2012) and Brissimis et al. (2010).

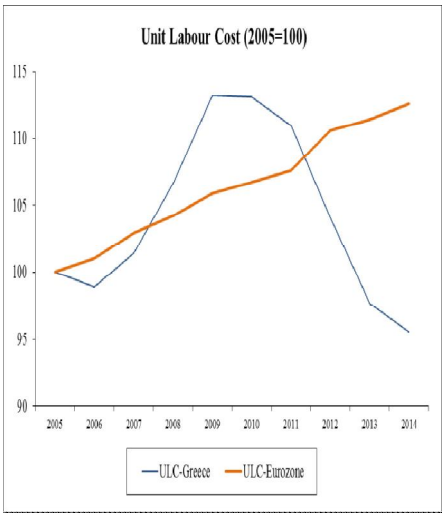
When excluding oil (refineries) and receipts from ships, the reduction of trade deficit becomes more pronounced. Exports are also slightly recovering as a result of lower unit labor costs (graph 2) and the significant structural reforms that are related to the flexibility of the labor market.

Graph 1



Source: Bank of Greece-Eurostat

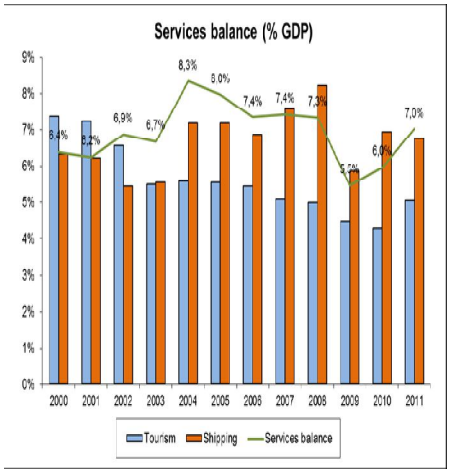
Graph 2



Source: Eurostat

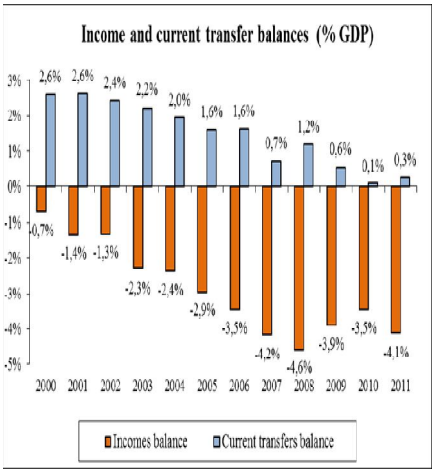
The service balance (graph 3) in Greece has had a positive contribution over the same period. The observed surplus has an upward trend over the last years reflecting positive contributions from the two main value added sectors of the Greek economy that is tourism and shipping. Still, in 2009 the net travel and transportation revenue reflected a huge drop depicting among other factors the significant contraction of the shipping industry following the reduction in global freight rates. Still, despite the observed post 2009 improvement in tourism and shipping balance, both levels remain below their pre 2009 values.

Graph 3



Source: Bank of Greece-Eurostat

Graph 4

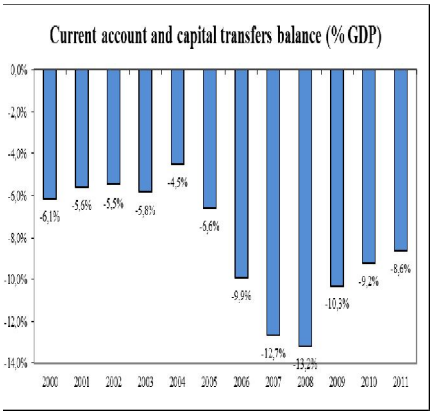


Source: Bank of Greece-Eurostat

As far as income balance is concerned (graph 4), one may observe a constant post-2000 deterioration reflecting mainly increased general government interest payments and profits earned from foreign investments in Greece. Starting from 0,7% of GDP in 2000, income balance rises its negative contribution to 4,6% of GDP in 2008. During the same period current transfers (graph 4) appear to be constantly reduced (2000:2,6% of GDP, 2009:0,6% of GDP, 2011:0,3% of GDP) due to the significant reduction of inflows from EU structural and cohesion funds. The income balance for 2012 is expected to improve due to the recent developments regarding the completion of the PSI and the recent debt buy back operation as well as the lower interest payments of loans from the first and the second economic adjustment program (EU-IMF bailout programs) that reduce interest payments.

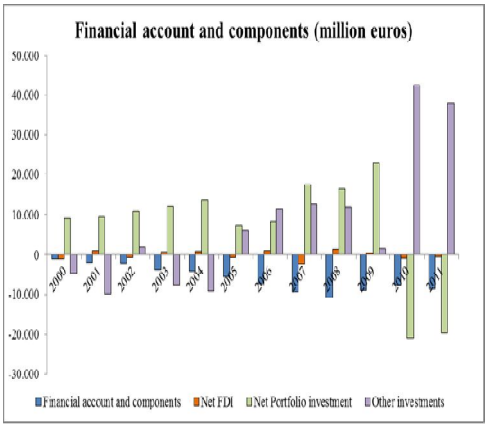
The current account and capital transfer balance(graph 5) depict significant worsening during the entire period 2000-2008 in the aftermath of EMU entrance. This negative contribution is culminated after 2009withthe entrance of Greek economy to recession. As presented previously, falling domestic demand for goods and services (reflected in to falling imports) coupled with limited absorption of the EU structural funds have been key drivers behind this adjustment.

Graph 5



Source: Bank of Greece-Eurostat

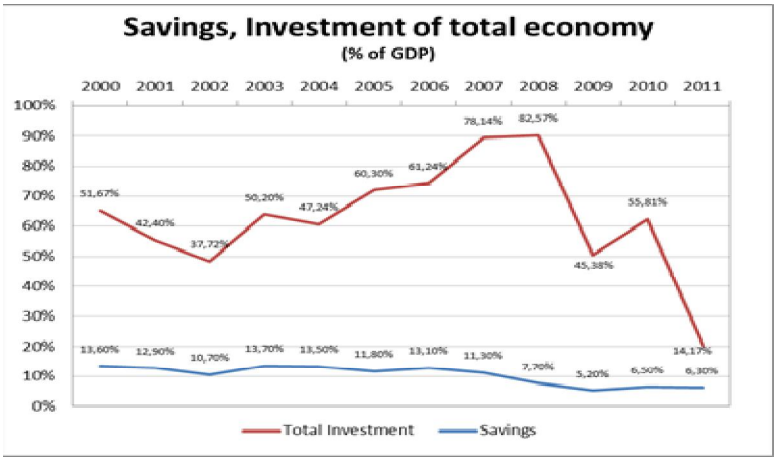
Graph 6



Source: Bank of Greece-Eurostat

Financial account deterioration is explained by the significant portfolio outflows. The significant recent funding to Greece under the EMU-IMF economic adjustment program influences considerably the country's financial account position. furthermore, the recent privatization program, the expected foreign direct investment flows as well as the return of bank deposits and net portfolio outflows is expected to stabilize the financial account and provide adequate financing to the country's balance-of-payment.

Graph 7



Source: ECB, Statistical Data Warehouse, Bank of Greece

Lastly, turning to the savings - investment representation of current account balance, during the period 2000-2011, total investments (financial and gross fixed capital formation investment) are constantly outperforming the savings rate of the economy (graph 7). This gap is reduced only in the beginning of the decade 2000-2002 i.e. until the entrance of Greece into EMU and then follows an expanding path for the period 2002-2008. During the same period current account builds up reaching its 2008 peak (15% of GDP). As expected post crisis developments resulted into the huge rebalancing of investments (from 83% of GDP in 2008 to 14% in 2011)mostly reflected in financial investments and a lower level of total savings (from 13.6% of GDP in 2000 to 6.3% of GDP in 2011). This investment rebalancing of the total economy is the main driver behind the current account readjustment to surplus.

3. Theoretical Framework

Our interest focuses on the way fiscal policy in Greece is related to the current account position. However we cannot ignore the relationship between the current account deficit and the other variables that are stipulated in the respective literature. Based on data availability our explanatory variables mainly include the fiscal deficit in an attempt to investigate, whether or not the twin deficit hypothesis holds, the real effective exchange rate (competitiveness indicator) since an appreciation of the real exchange rate affects the purchasing power and the relative values of assets held by domestic residents, the economic convergence indicator, which is related to the current account position through the capital moves, the dependency ratio[4] (demographic factor) and the private investment. Furthermore, since our interest is concentrated in making inferences about fiscal policy in Greece, we also investigate the way the composition of fiscal deficit is related with the current account position. Thus our estimation output is based on the elaboration of different models which based on the economic rationale could give us some insights about the fiscal policy choices.

Our investigation stems from the inter-temporal approach to the current account, which was initially proposed by Sachs (1981) and Buiter (1981) and later extended by Obstfeld and Rogoff (1995). The inter-temporal model of current account determination constitutes an extension of the rational expectations permanent income hypothesis model of private consumption to an open economy setting.

[4] It is expected that changes in the ratio between the retired and the working age population are related to the consumption/saving behavior and hence to the current account position.

The model treats the current account balance of a country as the outcome of forward-looking consumption and investment decisions (see Gandolfo, 2001), formed on the basis of expectations regarding future developments of macroeconomic variables. The standard inter-temporal model features a small open economy with an infinitely-lived representative agent, who optimally allocates consumption over time by freely lending or borrowing abroad in order to maximize his welfare (i.e. aggregate utility function). The model assumes that the current account will absorb temporary or transitory shocks to net national cash flow (i.e. output minus investment and government spending), primarily reflected in national saving, so that consumption is fully smoothed over time under the assumption of free capital movements. The economy will decrease (increase) national saving by running a current account deficit (surplus) whenever it expects a temporary decrease (increase) in net national cash flow in the future.[5]

Empirical applications of the model have followed two directions (see Bussière*et al*., 2004; Ca' Zorzi and Rubaszek, 2008). On the one hand, several studies have tried to establish evidence in favour of the baseline model using different testing strategies (e.g. see Bergin andSheffrin, 2000; Nason and Rogers, 2006). On the other hand, anumber of papers have examined the long-run relationship between the current account and its fundamental macroeconomic determinants by applying standard econometric techniques (e.g. see Debelle and Faruquee, 1996; Blanchard and Giavazzi, 2002; Chinn and Prasad, 2003; Bussière*et al*., 2004; Hermann and Jochem, 2005; Gruber and Kamin, 2007; Ca'Zorzi*et al*., 2009).

The present paper draws upon the second line of research and attempts to empirically test some of the implications for the current account as suggested by the inter-temporal model. Since the literature on current account modelling is vast and numerous specifications are available, we proceeded by selecting standard variables that are typically included in current account regressions, including credit to the private sector, but also take a step further by analysing the impact of certain fiscal variables that constitute the fiscal deficit on the current account deficit.

[5]On the other hand, an anticipated permanent change in national cash flow, say due to an increase in output, will cause a one-for-one change in consumption leaving the currentaccount unaltered (Makrydakis,1999).

This contribution is quite useful in the case of the Greek economy that currently follows an economic adjustment program (EU-IMF bailout programs) and thus sets an ideal case study of the inter-linkages of fiscal policy with external sector.

We start from the accounting identity of the current account (*CA*) being equal to the difference between domestic saving (*S*) and investment (*I*), which is further decomposed into net private saving $(S_p - I_p)$ and general government fiscal balance $(S_g - I_g)$:

Dividing the previous accounting identity by GDP (*Y*) yields the following identity:

$$\frac{CA}{Y} = \frac{(S_p - I_p)}{Y} + \frac{(S_g - I_g)}{Y} \quad (1)$$

Following Brissimis et al. (2010), we employ an analytical representation of the current account position consisting formally of private saving to GDP ratio $\left(\frac{S_p}{Y}\right)$ which is again considered a function of the economic convergence indicator expressed as the ration of real GDP per capita of a reference country $\left(\frac{Y^*}{N^*}\right)$ relative to the domestic real GDP per capita $\left(\frac{Y}{N}\right)$, the real effective exchange rate *(REER)*, the ratio of the general government fiscal balance to GDP $\left(\frac{S_g - I_g}{Y}\right)$and the ratio of private investment to GDP (I_P / Y). This representation is further augmented by other financial and demographic factors that are considered explanatory variables of$\left(\frac{S_p}{Y}\right)$.

More specifically, the relative GDP per capitarepresents an important factor in explaining current account developments (e.g. see Freund, 2000), especially in the context of a monetary union. A small open economy at its early stages of economic development and convergence is mainly characterised by a comparatively lower level of savings. This implies increased external borrowing against future income, which, coupled with substantial initial investment needs, would translate into larger current account deficits at early stages of development (or economic convergence). *Thus, one should expect relative GDP per capita to be positively related to private saving and lead to a deterioration of current account.*

Moreover, an appreciation of thereer, increases the purchasing power in terms of imported goods of current and future income, as well as the value of the accumulated monetary and property assets of domestic agents. This effect tends to raise consumption and reduce propensity to save**.***Thus, an increase in reeris expected to decrease private saving and lead to current account deterioration.*

A potentially important determinant of saving that appears in the empirical literature is financial liberalisation, hereby proxied by credit to the private sector as percent of GDP (denoted as $crp=credit/Y$). The process of deregulation in financial markets is usually associated with lower levels of private saving, as the borrowing constraint faced by households is relaxed (see Jappelli et al., (1989); Bayoumi, (1993); Lehmussaari, (1990) and Ostry et al., (1995)).[6] Private credit variable as a percent of GDP is also capturing other effects, like credit conditions and private sector borrowing behaviour[7]. *In this respect, private credit is expected to influence negatively private saving and current account position.*

Last but not least, private investments may have a positive or negative effect on current account deficit depending on their interrelation with domestic or external economy of a country. For example in a small closed economy private investment may have a positive effect for export oriented sectors of the economy leading to substantial benefits for the current account position. The opposite may also hold in the context of an open economy in which most likely private investments pertain to external demand of investment goods and services.

To add up to the previous determinants of private savings, we employ a demographic variable in the context of Brissimis et al. (2010). We use the total dependency ratio to capture the demographic aspects of savings. Basic intuition implies that an increase in the dependency ratio would decrease the saving ratio because, according to the life-cycle hypothesis, the very young and the old are net consumers with comparatively lower levels of savings, while the remainder of the population is considered net savers intending to rest on their savings after retirement.

[6] For further evidence showing that financial liberalization increases consumption, and significantly decreases saving, while it does not substantially increase investment, see Melitz (1990), Englund (1990) and Osugi (1990).

[7] These borrowing conditions have have drastically changed after the EMU entrance of Greece.

However, other factors, like uncertainties about the lifespan after retirement and the financial support that will be required as well as the observed small differences between public wages and pensions (high replacement rate) that are more typical in the case of Greece, may urge the state (public agent) and the consumers to behave differently in their choice to save or spend. Consequently, the effect of the demographic variable on private saving should be considered ambiguous.

In total, the following analytical representation of $\left(\frac{S_p}{Y}\right)$is followed:

$$\frac{S_p}{Y} = g\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}, reer, crp, dr, \frac{(S_g - I_g)}{Y}, \frac{(I_p)}{Y}\right) (2)$$

The relationship between fiscal policy on one hand and private saving and current account on the other hand, depends on the extent to which consumers react in a Keynesian or Ricardianway.[8] The Keynesian model assumes that a higher fiscal deficit (or to a lower fiscal surplus), as a result of lower taxes or higher government spending, increases disposable income and thereby consumption and decreases private saving, leading to a higher current account deficit (or lower current account surplus). The economic reaction of private agents under the Keynesian model supports the twin-deficit hypothesis, according to which wider fiscal deficits should usually be accompanied by wider current account deficits.

However, the twin-deficit hypothesis does not necessarily hold when consumers are Ricardian.

[8] For a literature review, see Debelle and Faruquee (1996), Bussière*et al.* (2005) and Briotti (2005). The empirical work by Nickel and Vansteenkiste (2008) shows that the government debt to GDP ratio can partly explain the Ricardian or Keynesian behaviour of private agents. In countries with debt to GDP ratios up to 90 percent, the relationship between the government balance and the current account balance is positive, i.e. an increase in the fiscal deficit leads to a higher current account deficit. In very high debt countries, however, this relationship turns negative but insignificant, implying that a rise in the fiscal deficit does not result in a rise in the current account deficit. Implicitly, this result suggests that households in very high debt countries tend to become Ricardian and thus sterilise fiscal policy from current account dynamics. Thecomposition of government spending may also be important (see Bayoumi and Masson, 1998). For example, public investment, to the extent that it is viewed as productive, does not necessarily build on tax increases and should not generate a private saving response. By contrast, investment that does not generate revenues for the government (and is considered equivalent to government consumption) would involve future taxes and might induce a larger private saving offset.

If the fiscal stanceis perceived by agents as increasingly unsustainable, then tax increases or reduction in government spending (i.e. fiscal consolidation) are expected in the future, which will affect agents future net wealth. In this case, a higher fiscal deficit (or lower fiscal surplus) decreases consumption and increases precautionary saving, so that agents maintain their long-run rate of consumption, in an environment of reduced future disposable income. This would lead to a lower current account deficit (or higher current account surplus). Thus, to the extent that private agents do not adjust their saving more than the change in the fiscal balance, we expect the current account to respond positively to the fiscal balance.

Substituting equation (2) into equation (1) yields our baseline (model A) representation:

$$\frac{CA}{Y} = g\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}, reer, crp, dr, \frac{(S_g - I_g)}{Y}, \frac{(I_p)}{Y}\right) - \frac{(I_p)}{Y} + \frac{(S_g - I_g)}{Y} \quad (3)$$

Where private investment and fiscal deficit as a percent of GDP $\left(\frac{(I_p)}{Y}\right)$ and $\left(\frac{(S_g - I_g)}{Y}\right)$enter the current account representation both directly and indirectly

From the previousrepresentation, we seek for a disaggregate view of fiscal deficit in order to make inferences regarding the effect of specific fiscal variables over the current account deficit. This investigation is particularly important for the assessment of the effect of current fiscal consolidation over current account deficit. In model B, we decompose the fiscal deficit into expenditures(exp) and current revenues (rev) and acquire the following specification:

$$\frac{CA}{Y} = g\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}, reer, crp, dr, \frac{(exp)}{Y}, \frac{(rev)}{Y}, \frac{(I_p)}{Y}\right) - \frac{(I_p)}{Y} + \frac{(exp)}{Y} + \frac{(rev)}{Y} \quad (4)$$

From a Keynesian standpoint, fiscal expansion (due to revenue reduction and/or public expenditure increases) is consistent with consumption increases and saving reduction deteriorating this way the current account balance.

On the other hand, the Ricardian rationale, by contemplating the existence of a perfect world where no distortions exist, comes to the opposite conclusions since the rational economic agents anticipate afuture tightness of fiscal policyfollowing afiscal expansion and hence increase their savings. As a result the two deficits follow different path.

In model C, we further disaggregate fiscal deficit into public employee's compensation (w) and gross fixed capital formation (gfcf) in expenditure side and direct (dirt) and indirect taxation (indirt) in the case of revenues. This disaggregation will allow the quantification of the impact of the currently undergoing fiscal consolidation on current account deficit readjustment. Based on formula (4) we get the following:

$$\frac{CA}{Y} = g\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}, reer, crp, dr, \frac{(w)}{Y}, \frac{(gfcf)}{Y}, \frac{(dirt)}{Y}, \frac{(indirt)}{Y}, \frac{(I_p)}{Y}\right) + \frac{(I_p)}{Y} + \frac{(w)}{Y} + \frac{(gfcf)}{Y} + \frac{(dirt)}{Y} + \frac{(indirt)}{Y} + \frac{(emp)}{Y} \quad (5)$$

Again, compensation of public employees, direct and also indirect taxation should be considered fiscal variables whose impact on current account deficit may have either a Keynesian or a Ricardian aspect. Depending on the effect of private $\left(\frac{(\mathrm{I_p})}{\mathrm{Y}}\right)$ and public investments (gfcf) on domestic and external demand their effect may be also positive or negative.

A linear representation of the previous equations (3), (4), (5), including an interceptand a trend, can be the following[10]:

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(S_g - I_g)}{Y} + a_6 + a_7 * t \quad (6)$$

[9] Since, in model c, compensation of public employees reflects employment cost (wages*employment in public sector) we also discount for supply side by making use of total employment of the economy which we take into account as a proxy for total public employment in Greece. However, an increase in total level of employment and subsequently to the public sector may have also a negative or a positive effect depending on the Keynesian or the Ricardian aspect of the economy.

[10] See also Herrmann et al. (2005).

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(exp)}{Y} + a_6 * \frac{(rev)}{Y} + a_7 + a_8 * t (7)$$

As disaggregation in a VECM context is at the cost of degrees of freedom, we estimate the previous VEC model of equation (8) trying though to preserve as much as possibledegrees of freedom in our models. More specifically, we estimate the same model but instead of disaggregating both the expenditures and revenues in equation (7), we turn to disaggregate only expenditures and keep at aggregate level current revenues and vice versa (equations 8a and 8b)[11].

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(w)}{Y} + a_6 * \frac{(gfcf)}{Y} + a_7 * \frac{(rev)}{Y} + a_8 + a_9 * t \ (8a)$$

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(exp)}{Y} + a_6 * \frac{(dirt)}{Y} + a_7 * \frac{(indirt)}{Y} + a_8 + a_9 * t \ (8b)$$

Following the theoretical relationship between current account and its determinants, the expected signs of the employed variables are presented in the following summary table (table 1):

[11] This approach of preserving degrees of freedom in a VAR context is acknowledged to be proposed to ThanasisTangalakis.

Table 1. Current account theoretical relationship (model a, b, c)

Variable	Expected sign
Differential gdp per capita $\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}\right)$	**+/-**
Real effective exchange rate $(reer)$	**-**
Credit to the private sector (crp)	**-**
Demography (dr)	**-**
Fiscal deficit $\left(\frac{(S_g - I_g)}{Y}\right)$	+ (Keynesian view)/- (Ricardian view)
Total public spending $\left(\frac{(exp)}{Y}\right)$	+/-
Total revenues $\left(\frac{(rev)}{Y}\right)$	+/-
Private investment $\left(\frac{(I_p)}{Y}\right)$	**+/-**
Compensation of employees *(w)*	**+/-**
Public investment *(gfcf)*	**+/-**
Direct taxation *(dirt)*	**+/-**
Indirect taxation *(indirt)*	**+/-**
Total employment *(tot_emp)*	**+/-**

4. Data and Empirical Methodology

Our data sample refers to 2000q1 to 2011q4 and captures the period in which Greece joined the EMU as well as the initial period of IMF/ECB/EC bail-in program. Quarterly data on current account balance, gdp, per capita real gdp, real exchange rate, fiscal deficit, total public spending, total revenues, public investment (gross fixed capital formation), compensation of employees, direct taxation, indirect taxation, dependency ratio and lastly total employment have been taken from Eurostat (National Accounts and Government Finance Statistics (GFS) and Labour force survey (LFS)). Bank of Greece quarterly data on credit have been used and lastly private investment data express the difference between total (economy wide) gross fixed capital formation and public gross fixed capital formation (again extracted from Eurostat). The current account deficit and all fiscal variables along with credit are relative to gdp.

The finding that many macro time series may contain a unit root has spurred the development of the theory of non-stationary time series analysis. Engle and Granger(1987)pointed out that a linear combination of two or more non-stationary series may be stationary. If such a stationary linear combination exists, the non-stationary time series are considered to be *co-integrated*.

The stationary linear combination is called the *co-integrating equation* and may be interpreted as a long-run equilibrium relationship among the variables. We primarily focus on co-integration tests employing the Johansen (1991, 1988) system framework. The Johansen tests performed in this paper uses an estimated vector error correction (VEC) model which is a restricted VAR model that is designed for use with non-stationary series.

5. Empirical Results

a. Baseline Estimation

Our attempt focuses on investigating the channels through which fiscal policy could affect the current account position in Greece. In line with this, we use different models in which the fiscal policy is reflected by the fiscal balance and its components.

Starting from baseline model a (table 3, appendix), the coefficients in the estimated long run equilibrium relationship are significant and their sign is consistent with theory. Additionally, the short run representation points to the consistency of our results since the error correction term is negative and significant (coef. λ_1 equals to -0.72) indicating a quick long run equilibrium convergence[12].

Turning to long run equilibrium representation, the convergence indicator, has the expected sign (coef.α_0: -0.21) indicating that the larger gap of per capita GDP between a country of interest and one or more reference countries, is consistent with high capital and FDI inflows and thus largercurrent account imbalances. The competitiveness indicator (reer) is negatively related to current account balance (coef.α_1: -1.46) indicating that the appreciation of the real exchange rate ceteris paribus, increases the purchasing power of domestic income thus increasing the imports of goods, while on the other hand affects positively the relative value of assets (real estate, and other financial assets) held by domestic residents. As a result the propensity to consume increases and savings are reduced leading to current account deterioration.

[12] Based on Johansen trace test and maximum eigenvalue test in model a representation, the number of co-integrating relations is at most one. For more details please see appendix table 2. Moreover, stability of the VECM (model a) representation is also evident since the error correction is negative less than unity and significant (see appendix table 3).

At the same time we should also consider a negative effect on export competitiveness leading to the deterioration of trade balance and thus current account position.

Creditvariable (denoted crp in our model) has a negative sign which is consistent with theory (coef. α_2:-2.10) since credit expansion leads to the loosening of the households inter-temporal budget constraint that is also reflected into proportionally lower saving rates and higher propensity to consume. More specifically, credit expansion is related with income effects supporting domestic asset price pressures (real estate, housing, etc) which together with the financial liberalization and higher levels of liquidity of the economy (as the case of Greek economy after entering EMU) contribute to higher import demand and lower savings.

The contribution of private investment is negative (coef. α_4: -0.22) andwith smaller impact compared to previous variables, indicating this waythe effects that this variable has on imports. Moreover, the negative sign of the dependency ratio variable (denoted dr in our theoretical model) provide evidence of the life cycle theory of consumption based on which a comparatively higher share of dependent and elderly people related to the working age population, contributes more to the deterioration of the current account balance. In other words, the higher the share of elderly peoples in an economy, the lower the tendency to save[13] is, leading to current account deterioration.

According to the same estimation output of table 3 the positive relation between fiscal policy and current account is also confirmed (coef.α_5:0,25) proving that for the case of Greece, twin deficit hypothesis also holds. This finding indicates that in the case of Greek economy, fiscal deficit improvements arerelatedwith improvements of external imbalances as reflected by current account position. Still this fiscal and current account deficit pass through is not perfect since our estimates prove that only 25% of fiscal deficit changes (levels) are transferred into current account.

Following these results, we focus our analysis on examiningthe ways in which available fiscal policy options (spending, revenue etc.) are contributing to the external imbalancesof the Greek economy.

13 According toLifecycletheoryofconsumption, elderlypeopletendtoconsumemoreandsaveproportionallylessaftertheirretirement.

b. Disaggregate View of Twin Deficit Hypothesis

Model b estimation output (table 4 of the appendix), confirms the model stability (representation 7) since the respective error correction term coefficient is significant and equals -0,31[14].At the same time, the coefficients of non-fiscal variables are significant and have the expected signs[15]. In the case of fiscal variables employed in model b, given that they are both statistically significant, it is clear that the effect ofrevenues (coef.a_6:-0.86) in the current account position is greater than the effect of the fiscal spending (coef.a_5: -0.004).

To our view thesefindingshavea reasonable explanation in the case of the Greek economy.Starting from the spending side, an increase (reduction) in government spending is consistent with disposable income increases (reductions)that lead to thedeterioration (improvement) of the current account position through demand increasesofimported goods and services as well assubsequent savingsreductions. The negative coefficient $a_5$confirms this rationale.

On the other hand, negativerevenue coefficienta_6, imply that even though revenue increases are consistent with fiscal deficit improvements, and current account improvements (iftwin deficithypothesis is valid), they may also have adverse effectsasthey do not allow for price competitiveness gainsto be transformed into export competitiveness improvementsas they mitigate the effect of unit labour cost improvements (currently observedinthe Greek economy). Additionally, the reduction in disposable income due to increasing tax burden, results not only to consumption reduction but also to savings reduction contributing to additional deterioration of the current account position.

14BasedonJohansentracetest (1988) andmaximumeigenvaluetestinthemodel b representation, thenumberofco-integratingrelationsisatmostone. Formoredetailspleaseseetable 2 oftheappendix.

15Dependencyratioisinsignificantinthelongrunequilibriumandthuswedropitfromouranalysis.

Following estimation results of the extended representation 8a (model c, table 5 of the appendix), model stability is confirmed since the respective error correction term coefficient is significant and equals -0.24[16]. Real exchange rate (reer) and credit variable (crp) have the expected negative contributions on current account balance based on long run equilibrium. On the other hand, economic distance indicator andprivate investment exhibit a negative contribution (coefα_0: -0.19,α_4: -1.39) and thus contribute negatively to current account imbalances build up[17]. More specifically, the following long-run equilibrium is estimated (t-statistic reported in parentheses below coefficients):

$$\frac{CA}{Y} = -\underset{(-6.56)}{1.48} * reer - \underset{(-7.17)}{1.40} * crp + \underset{(1.50)}{0.03} * dr - \underset{(-2.28)}{0.19} * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} - \underset{(-3.98)}{1.39} * \frac{(I_p)}{Y} - \underset{(-1.66)}{0.01} * \frac{(w)}{Y} + \underset{(2.91)}{0.03} * \frac{(gfcf)}{Y} - \underset{(-6.33)}{1.47} * \frac{(tot\_rev)}{Y} + \underset{(0.30)}{0.0002} * \frac{(tot\_emp)}{Y} + \underset{(5.10)}{0.02} * t + 3 \ (8a)$$

Turning to the employed fiscal variables, it is evident that all of them exhibit a statistically significant contribution and thus the employed variables should be seen as potential policy instrument to constrain current account imbalances.Public wage appears to marginally have a significant and negative contribution to current account balance, thus implying a feedback mechanism between wage increases (reductions) and current account deterioration (improvements), a result consistent with Keynesian view. Our results confirm that increases in this specific expenditure item feedback a current account deterioration. In the case of public gross fixed capital formation (gfcf), our results indicate a more Ricardian view since gfcf appears to result to the confinement of current account deficit (which is the case for Greece during the entire examined period). This is explainedbythe significant contribution that the publicgfcffor controlling the Greek external balance (Public investment program (PIB)) through the financing of large investment and infrastructure projects thatsupportproductivity and competitiveness gains for the Greek economy.

16 Based on Johansen trace test (1988) and maximum eigenvalue test in the model c representation, the number of co-integrating relations is at most three (table 2 of the appendix). In the current context starting from three cointegrating relations, we apply a general to specific approach by eliminating co- relations that have an insignificant contribution in the short run representation. By doing so, a short run representation with only one error correction term (table 5 appendix) is evident. These representations have not been included for brevity reasons and may be given by authors upon request.

17 In the same estimation output, dependency ratio and total employment are insignificant.

In the case of model 8a, the previous long run representation and the effects of fiscal policy on external imbalances are confirmed also by short-run VECM representationand Impulse response (cholesky decomposition) analysis provided in the appendix. It is evident that current account responses are significant to wages, gfcf and revenue responses. Moreover, credit changes provide also significant current account responses.

Following previous finding of total taxation revenues impact on external imbalances we turnto the case of taxation disaggregation(i.e.extendedrelation 8b (model c, table 6, appendix)) to examine the contribution of direct and indirect taxes to this effect. Model stability is confirmed since the respective error correction term coefficient is significant and equals -0.14[18]Moreover, the following long-run equilibrium output estimation is derived (t-statistic reported in parentheses below coefficients):

$$\frac{CA}{Y} = -\underset{(-11.51)}{1.43} * reer - \underset{(-14.8)}{1.13} * crp - \underset{(-0.42)}{0.072} * \frac{(I_p)}{Y} + \underset{(1.78)}{0.02} * dr + \underset{(4.32)}{0.16} * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} - \underset{(-6.58)}{0.28} * \frac{(tot\_exp)}{Y} + \underset{(7.34)}{0.02} * \frac{(dir\_tax)}{Y} - \underset{(16.21)}{0.07} * \frac{(indir\_tax)}{Y} + \underset{(6.01)}{0.0003} * \frac{(tot\_emp)}{Y} + \underset{(8.50)}{0.011} * t - 0.66 \ (8b)$$

According to our estimation results the contribution of direct andindirect taxation on current account dynamics is significant though diversified. More specifically, direct taxation has a significant positive effect (coef. α_6: 0.02) on current account balance. This result is indicative of the effect of direct taxation increases on disposable income which isfollowed by a reduction of the demand for imported goods and services. Indirect taxation exhibits a negative effect on current account balance (coef. α_7: 0.07).

[18] Based on Johansen trace test (1988) and maximum eigenvalue test in the model c representation, the number of co-integrating relations is at most four (table 2 of the appendix). In the current context starting from three Cointegrating relations, we apply a general to specific approach by eliminating co-relations that have an insignificant contribution in the short run representation. By doing, a short run representation with only one error correction term (table 6 appendix) is accepted. These representations have not been included for brevity reasons and may be given by authors upon request.

This different (compared to direct taxation) impact of indirect taxation reflects the impact of indirect taxation on relative prices between imported and exported goods through the inflationary effect of indirect taxation on domestic goods and services prices. Lastly, following the same estimation output, with the exception of economic distance, all other variables (real exchange rate ($reer$), private investment (I_p), credit (crp), dependency ratio(dr) and private investment$\frac{(I_p)}{Y}$have the usual sign and magnitude.

Lastly, the effects of fiscal policy on external imbalances as depicted in long run representationare broadly confirmed also by short-run VECM representationand Impulse response (cholesky decomposition) analysis provided also in the appendix. According to our simulation estimate current account responses are significant with respect to total spending, direct and indirect taxation responses. Same as model 8a, credit changes provide also large and significant current account responses.

6. Conclusions

We used a small scale VECM in order to study the relationship between the current account position and the fiscal policy in the case of Greek economy during the recent decade. Our results indicate that the twin deficit hypothesis holds for Greece during the period of our sample though with a limited pass through from fiscal to current account deficit since only 25% of fiscal deficit readjustment is being transferred to current account rebalancing.

According to our empirical evidence in the case of Greece, fiscal policy mix requires more attention in the revenue side since, when pursuing fiscal targets based on revenue increases, adverse effects on external imbalances are evident as tax increases put a burden onlabour and production cost. These taxation increases are translated into export prices increases and thus current account deficit worsening. Contrary, pursuing fiscal targets by reducingspending has the usual income effects that lead to current account deficit reductions.

In the same context, empirical results using a disaggregatedspecification of our modelwith respect to fiscal variables, prove that, indirect taxation reduction anddirect taxation increasesreduce current account imbalances (even though with a different contribution). In the public spending case, public investment increases and wage reductions, serve the same purpose of limiting current account imbalances.

In light of these findings, an optimal way of performing fiscal policy to confrontwith current account imbalances in the case of Greek economy would be the increase of direct taxation accompanied by indirect taxation reductions while in the spending side case, theincrease of public investment spending and the reduction ofwage costs.These combined types of fiscal interventions offset each otherout andprovide neutral budgetary spending and revenue outcomes while achieving at the same timethe supremumlimitation of current account imbalances.

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Appendix

Variable Notation in empirical Models (model a, b, c)of the Appendix

Variable	Empirical models variable notation
1. Differential gdp per capita $\left(\frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)}\right)$	$Diff\_real\_gdp$
2. Real effective exchange rate ($reer$)	$reer$
3. Credit to the private sector (crp)	$credit$
4. Demography (dr)	dep_ratio
5. Fiscal deficit $\left(\frac{(S_g - I_g)}{Y}\right)$	$fisc\_def$
6. Total public spending $\left(\frac{(exp)}{Y}\right)$	tot_exp
7. Total revenues $\left(\frac{(rev)}{Y}\right)$	tot_rev
8. Private investment $\left(\frac{(I_p)}{Y}\right)$	$priv\_invest$
9. Compensation of employees *(w)*	$wages$
10. Public investment *(gfcf)*	pub_inv
11. Direct taxation *(dirt)*	dir_tax
12. Indirect taxation *(indirt)*	$indir\_tax$
13. Total employment *(tot_emp)*	tot_emp

Table 2. Johansen test results

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.
Model A: *Johansen test results {Sample (adjusted): 2000Q3 2011Q4, Included observations: 46 after adjustments, Trend assumption: Quadratic deterministic trend, Lags interval (in first differences): 1 to 3}.*			
Unrestricted Cointegration Rank Test (Trace)			
None *	174.49	139.28	0
At most 1 *	116.36	107.35	0.01
At most 2	631.2	793.41	0.44
At most 3	261.41	552.46	0.98
At most 4	114.41	350.11	0.99
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
None *	581.3	495.86	0.01
At most 1 *	532.37	434.2	0
At most 2	369.79	371.64	0.05
At most 3	147	308.15	0.91
At most 4	732.5	242.52	0.99
Model B: *Johansen test results {Sample (adjusted): 2000Q3 2011Q4, Included observations: 46 after adjustments, Trend assumption: Quadratic deterministic trend, Lags interval (in first differences): 1 to 3}*			
Unrestricted Cointegration Rank Test (Trace)			
None *	183,21	139,87	0
At most 1 *	120,77	107,79	0,01
At most 2	643,9	793,67	0,39
At most 3	339,54	552,91	0,81
At most 4	131,23	350,21	0,98
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
None *	631,14	496,71	0
At most 1 *	555,12	434,14	0
At most 2	304,82	372,92	0,24
At most 3	208,99	308,78	0,48
At most 4	108,45	243,55	0,86
Model C/8a: *Johansen test results {Sample (adjusted): 2000Q3 2011Q4, Included observations: 46 after adjustments, Trend assumption: Quadratic deterministic trend, Lags interval (in first differences): 1 to 3}*			
Unrestricted Cointegration Rank Test (Trace)			
None *	361,68	259,02	0,00
At most 1 *	269,86	215,12	0,00
At most 2 *	203,27	175,17	0,00
At most 3 *	143,70	139,27	0,03
At most 4	103,62	107,34	0,08
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
None *	631,14	496,71	0
At most 1 *	555,12	434,14	0
At most 2 *	304,82	372,92	0,24
At most 3	208,99	308,78	0,48
At most 4	108,45	243,55	0,86
Model C/8b: *Johansen test results {Sample (adjusted): 2000Q3 2011Q4, Included observations: 46 after adjustments, Trend assumption: Quadratic deterministic trend, Lags interval (in first differences): 1 to 3}*			
Unrestricted Cointegration Rank Test (Trace)			
None *	455,09	259,02	0,00
At most 1 *	338,97	215,12	0,00
At most 2 *	252,49	175,17	0,00
At most 3 *	176,88	139,27	0,00
At most 4 *	120,04	107,34	0,06
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
None *	116,11	67,91	0,00
At most 1 *	86,48	61,80	0,00
At most 2 *	75,61	55,72	0,00
At most 3 *	56,83	49,58	0,00
At most 4 *	44,12	43,41	0,04

Table 3. Vector Error Correction Estimates (model a, representation 6)

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * \text{reer} + a_2 * \text{crp} + a_3 * \text{dr} + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(S_g - I_g)}{Y} + a_6 + a_7 * t$$

Cointegrating Eq:	Long-run relation
CU_ACC_DEF(-1)	1.000000
DIFF_REAL_GDP_PC (-1)	0.209240
	[12.4635]
REER (-1)	1.460576
	[7.93460]
PRIV_INVEST(-1)	0.222334
	[3.40844]
DEP_RATIO(-1)	0.054850
	[7.28307]
CREDIT(-1)	2.103899
	[14.2808]
FISCAL_DEF (-1)	-0.247148
	[-3.80688]
@TREND(00Q1)	-0.038040
	[-4.38507]
C	-3.418627

Short run representation	D(CU_ACC_DEF)	D(PRIV_INVEST)	D(CREDIT)	D(REER)	D(FISCAL_DEF)	D(DIFF_REAL_GDP_PC)	D(DEP_RATIO)
ECT	-0.719628	0.405912	0.394327	0.034186	-0.441449	-2.689734	-2.550572
	[-2.81557]	[2.59465]	[1.31332]	[0.15266]	[-0.90726]	[-2.37961]	[-1.23151]
D(CU_ACC_DEF(-1))	-0.531917	-0.167339	-0.384855	0.006363	0.411149	3.090238	0.660400
	[-2.00406]	[-1.03003]	[-1.23430]	[0.02736]	[0.81368]	[2.63267]	[0.30705]
D(CU_ACC_DEF(-2))	-0.827889	0.230440	-0.070328	-0.048114	0.469583	1.731874	-1.431198
	[-2.53332]	[1.15203]	[-0.18319]	[-0.16804]	[0.75478]	[1.19832]	[-0.54046]
D(CU_ACC_DEF(-3))	-0.409835	0.168825	0.035632	-0.038431	0.104605	0.735244	0.422214
	[-1.93154]	[1.29992]	[0.14295]	[-0.20672]	[0.25896]	[0.78354]	[0.24557]
D(PRIV_INVEST(-1))	-0.080044	-0.459575	-0.857098	0.125696	-0.049448	0.062850	-1.376710
	[-0.23583]	[-2.21210]	[-2.14955]	[0.42267]	[-0.07652]	[0.04187]	[-0.50055]
D(PRIV_INVEST(-2))	-0.807179	0.254875	0.030632	-0.222457	0.244252	0.362012	-1.182086
	[-1.81799]	[0.93786]	[0.05873]	[-0.57186]	[0.28897]	[0.18437]	[-0.32856]
D(PRIV_INVEST(-3))	0.231334	-0.265456	0.418386	0.273044	0.014245	-2.496333	-0.855247
	[0.61846]	[-1.15944]	[0.95214]	[0.83314]	[0.02000]	[-1.50907]	[-0.28216]
D(CREDIT(-1))	1.228053	-0.645017	-0.621979	0.201760	1.192397	3.008684	3.666657
	[2.81112]	[-2.41224]	[-1.21198]	[-0.52713]	[1.43375]	[1.55732]	[1.03580]
D(CREDIT(-2))	1.311640	-0.847867	-0.906112	0.167932	0.026694	0.217252	2.531000
	[2.49116]	[-2.63089]	[-1.46496]	[0.36403]	[0.02663]	[0.09330]	[0.59323]
D(CREDIT(-3))	0.869234	-0.487421	-0.518802	-0.010573	-0.124845	1.226808	2.300843
	[3.23721]	[-2.96569]	[-1.64472]	[-0.04494]	[-0.24423]	[1.03311]	[1.05746]
D(REER(-1))	1.078441	-0.570661	-0.872652	0.012032	-0.245185	3.365948	1.685045
	[2.39180]	[-2.06773]	[-1.64750]	[0.03046]	[-0.28564]	[1.68801]	[0.46119]
D(REER(-2))	-0.026658	-0.086419	-0.291524	-0.201432	0.036716	0.440497	1.750817
	[-0.08308]	[-0.44003]	[-0.77343]	[-0.71653]	[0.06011]	[0.31044]	[0.67340]
D(REER(-3))	0.430130	-0.048269	-0.242964	0.081350	-0.269099	-1.909129	-0.312095
	[1.55889]	[-0.28581]	[-0.74957]	[0.33650]	[-0.51229]	[-1.56455]	[-0.13959]
D(FISCAL_DEF(-1))	-0.428390	0.249684	0.320516	-0.021206	-0.608695	0.183179	-1.011315
	[-2.45852]	[2.34106]	[1.56581]	[-0.13890]	[-1.83495]	[0.23771]	[-0.71625]
D(FISCAL_DEF(-2))	-0.427916	0.220916	0.162440	0.113956	-0.775984	0.075920	-1.283595
	[-2.86781]	[2.41884]	[0.92671]	[0.87166]	[-2.73172]	[0.11505]	[-1.06160]
D(FISCAL_DEF (-3))	-0.421763	0.249640	0.433661	-0.084259	-0.153595	-0.017795	0.198443
	[-1.88444]	[1.82229]	[1.64938]	[-0.42969]	[-0.36048]	[-0.01798]	[0.10942]
D(DIFF_REAL_GDP_PC (-1))	0.115582	-0.077416	-0.075142	-0.017102	-0.012385	0.188995	0.488018

	[1.88668]	[-2.06455]	[-1.04411]	[-0.31862]	[-0.10620]	[0.69758]	[0.98307]
D(DIFF_REAL_GDP_PC (-2))	0.045169	-0.057517	-0.040882	0.041017	0.044369	0.170253	-0.139125
	[0.96174]	[-2.00078]	[-0.74099]	[0.99678]	[0.49624]	[0.81969]	[-0.36557]
D(DIFF_REAL_GDP_PC_ (-3))	-0.082768	0.022345	-0.026463	-0.024573	0.070371	-0.035099	0.462071
	[-1.78218]	[0.78605]	[-0.48505]	[-0.60390]	[0.79593]	[-0.17089]	[1.22783]
D(DEP_RATIO(-1))	-0.039383	0.037230	0.020648	0.003465	-0.008519	-0.092183	-0.087818
	[-1.10977]	[1.71400]	[0.49528]	[0.11144]	[-0.12610]	[-0.58738]	[-0.30539]
D(DEP_RATIO(-2))	0.033186	0.010300	0.021522	0.004580	0.007630	-0.133947	-0.090168
	[1.10886]	[0.56228]	[0.61215]	[0.17468]	[0.13391]	[-1.01204]	[-0.37181]
D(DEP_RATIO(-3))	0.066766	0.026649	-0.002272	0.002181	-0.028846	-0.062652	0.038177
	[2.09202]	[1.36419]	[-0.06061]	[0.07799]	[-0.47477]	[-0.44390]	[0.14762]
C	-0.024227	-0.020363	0.029322	0.046128	-0.028940	-0.332412	-0.050767
	[-0.56203]	[-0.77179]	[0.57904]	[1.22136]	[-0.35266]	[-1.74373]	[-0.14534]
@TREND(00Q1)	-0.001729	0.000851	0.000473	-0.000381	-0.000327	0.004381	-0.006818
	[-2.63241]	[2.11763]	[0.61363]	[-0.66293]	[-0.26184]	[1.50811]	[-1.28108]
@SEAS(1)	-0.034914	0.020180	0.044625	-0.050664	0.015572	0.363462	0.677432
	[-0.66693]	[0.62978]	[0.72563]	[-1.10457]	[0.15625]	[1.56991]	[1.59693]
@SEAS(2)	0.012678	0.020949	-0.052722	-0.000365	-0.001109	0.165899	-0.170449
	[1.49008]	[0.20163]	[- 0.35025]	[-0.32641]	[-0.08516]	[0.69058]	[-0.31274]
@SEAS(3)	-0.037278	0.073625	0.032063	-0.087118	0.084001	0.355136	0.189693
	[-0.49648]	[1.60198]	[0.36350]	[-1.32424]	[0.58765]	[1.06948]	[0.31177]
DUMMY	0.082654	-0.036139	-0.030464	0.004719	0.005240	-0.057613	0.147333
	[4.37171]	[-3.12289]	[-1.37160]	[0.28488]	[0.14558]	[-0.68904]	[0.96168]
R-squared	0.973206	0.906288	0.872989	0.671554	0.836322	0.922603	0.858916
Adj. R-squared	0.924977	0.737605	0.644368	0.080350	0.541703	0.783288	0.604965
Sumsq. resids	0.004607	0.001726	0.006358	0.003537	0.016697	0.090105	0.302510

Note: Error correction representation when using one Cointegrating relation representation based on Johansen (1988) rank test. t-statistics in [ ], Sample (adjusted): 2000Q3 2011Q4. ECT: error correction term. Autocorrelation of short-run representation equals 3.

Table 4. Vector Error Correction Estimates (model b, representation 7)

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(exp)}{Y} + a_6 * \frac{(rev)}{Y} + a_7 + a_8 * t$$

Cointegrating Eq:	**Long-run relation**	Cointegrating Eq:	**Long-run relation**	Cointegrating Eq:	**Long-run relation**
CU_ACC_DEF(-1)	1.000000				
DIFF_REAL_GDP_PC	0.054738	TOT_EXP(-1)	0.003553	@TREND(00Q1)	-0.009526
	[3.05004]		[3.35229]		[-8.52806]
REER(-1)	0.657508	TOT_REV(-1)	0.864765	C	-1.394267
	[3.93677]		[3.54806]		
PRIV_INVEST(-1)	0.608124	CREDIT(-1)	0.696951		
	[3.36306]		[5.91286]		

Short run representation	**D(CU_ACC_DEF)**	**D(DIFF_REAL_GDP_PC)**	**D(REER)**	**D(PRIV_INVEST)**	**D(CREDIT)**	**D(TOT_EXP)**	**D(TOT_REV)**
ECT	-0.311608	-2.738950	-0.075211	0.035567	-0.260267	-124.8428	-0.888190
	[-1.87947]	[-3.99085]	[-0.69795]	[0.33765]	[-2.20531]	[-3.98727]	[-4.30547]
D(CU_ACC_DEF(-1))	-0.286000	2.323744	0.057373	-0.073755	0.009468	29.58809	0.190162
	[-1.64988]	[3.23839]	[0.50923]	[-0.66969]	[0.07673]	[0.90384]	[0.88166]
D(DIFF_REAL_GDP	-0.049643	0.267438	-0.027185	-0.001069	0.023082	7.965150	0.096941
	[-1.53655]	[1.99971]	[-1.29459]	[-0.05210]	[1.00365]	[1.30548]	[2.41148]
D(REER(-1))	-0.051787	2.331405	0.033712	0.140550	0.043906	36.46150	0.125265
	[-0.19246]	[2.09312]	[0.19276]	[0.82214]	[0.22923]	[0.71753]	[0.37414]
D(PRIV_INVEST(-1))	0.261013	-0.231738	0.199711	-0.208733	-0.270007	25.92235	-0.558160
	[0.80870]	[-0.17345]	[0.95200]	[-1.01791]	[-1.17523]	[0.42529]	[-1.38986]
D(CREDIT(-1))	0.392474	1.131522	-0.025375	0.048024	0.213449	32.21147	0.175367
	[1.88370]	[1.31196]	[-0.18738]	[0.36279]	[1.43920]	[0.81865]	[0.67645]
D(TOT_EXP(-1))	0.001697	-0.001188	-9.47E-05	-0.001215	-0.000758	0.208716	0.004387
	[1.77290]	[-0.29988]	[-0.15215]	[-1.99710]	[-1.11283]	[1.15445]	[3.68319]
D(TOT_REV(-1))	-0.077246	2.508313	-0.008560	0.267218	0.610733	-1.445436	-0.526558
	[-0.46045]	[3.61196]	[-0.07850]	[2.50707]	[5.11426]	[-0.04562]	[-2.52256]
C	-0.055957	-0.096762	0.013269	0.025386	0.031802	7.451157	0.041660
	[-3.97220]	[-1.65934]	[1.44915]	[2.83643]	[3.17140]	[2.80083]	[2.37678]
@TREND(00Q1)	-0.000436	0.002551	6.73E-05	-0.000121	-0.000136	-0.020690	-0.000102
	[-1.09563]	[1.54981]	[0.26046]	[-0.48082]	[-0.48145]	[-0.27552]	[-0.20547]
@SEAS(1)	0.003398	0.275433	-0.015706	-0.032183	0.006944	-9.259868	-0.062271
	[0.13138]	[2.57251]	[-0.93425]	[-1.95845]	[0.37713]	[-1.89573]	[-1.93492]
@SEAS(2)	0.078365	-0.190491	0.004984	-0.021244	-0.056451	-8.099541	-0.076972
	[4.71422]	[-2.76832]	[0.46125]	[-2.01152]	[-4.77069]	[-2.58008]	[-3.72142]
@SEAS(3)	0.132149	0.004863	-0.031390	-0.039674	-0.022391	-12.85517	-0.041927
	[9.21448]	[0.08191]	[-3.36756]	[-4.35419]	[-2.19336]	[-4.74649]	[-2.34960]
DUMMY	0.030243	0.025523	-0.002347	-0.004429	-0.005890	0.884862	0.006666
	[2.59450]	[0.52895]	[-0.30981]	[-0.59801]	[-0.70987]	[0.40197]	[0.45964]
R-squared	0.931549	0.827008	0.551629	0.746555	0.874911	0.783597	0.746150
Adj. R-squared	0.903741	0.756730	0.369478	0.643593	0.824094	0.695683	0.643023
Sumsq. resids	0.012714	0.217857	0.005371	0.005132	0.006442	453.4286	0.019684

Note: Error correction representation when using one Cointegrating relation representation based on Johansen (1988) rank test. t-statistics in [ ], Sample (adjusted): 2000Q3 2011Q4. ECT: error correction term. Autocorrelation of short run representation equals to one.

Table 5.Vector Error Correction Estimates (Model C, Representation 8a)

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(w)}{Y} + a_6 * \frac{(gfcf)}{Y} + a_7 * \frac{(rev)}{Y} + a_8 + a_9 * t$$

Cointegrating Eq:	**Long-run relation**	Cointegrating Eq:	**Long-run relation**	Cointegrating Eq:	**Long-runrelation**
CU_ACC_DEF(-1)	1.000000				
DIFF_REAL_GDP_PC(-1)	0.186325	WAGES(-1)	0.009821	TOT_EMP(-1)	-2.51E-05
	[2.27542]		*[1.66403]*		*[-0.29811]*
REER(-1)	1.483968	GFCF(-1)	-0.028449	@TREND (00Q1)	-0.018616
	[6.56041]		*[-2.91611]*		*[-5.09186]*
PRIV_INVEST(-1)	1.394579	CREDIT(-1)	1.401600	C	-3.009059
	[3.98262]		*[7.17153]*		
DEP_RATIO(-1)	-0.027778	TOT_REV(-1)	1.476216		
	[-1.50796]		*[6.33989]*		

Short run representation	***D(CU_ACC_DEF)***	***D(DIFF_REAL_GDP_PC)***	***D(REER)***	***D(PRIV_INVEST)***	***D(DEP_RATIO)***	***D(WAGES)***	***D(GFCF)***	***D(CREDIT)***	***D(TOT_REV)***	***D(TOT_EMP)***
ECT	-0.235793	-0.440337	-0.120302	0.015001	0.418674	-1.027198	-7.963370	-0.166789	-0.696326	208.7194
	[-1.9779]	*[-2.03507]*	*[-1.68759]*	*[0.18103]*	*[0.51449]*	*[-2.15134]*	*[-3.59408]*	*[-1.95745]*	*[-4.52381]*	*[1.69568]*
D(CU_ACC_DEF(-1))	-0.179314	0.501047	0.068016	-0.051159	0.288768	-0.379838	-0.377475	-0.058243	0.019676	181.4828
	[-0.90889]	*[1.47621]*	*[0.60824]*	*[-0.39358]*	*[0.22622]*	*[-0.50714]*	*[-1.08606]*	*[-0.43576]*	*[0.08149]*	*[0.93992]*
D(DIFF_REAL_GDP_PC(-1))	-0.164806	0.267742	-0.085814	-0.004387	0.449844	-1.154446	0.125508	0.060603	0.169845	-1.051.133
	[-1.77130]	*[1.67266]*	*[-1.62724]*	*[-0.07156]*	*[0.74724]*	*[-0.32683]*	*[0.07657]*	*[0.96143]*	*[1.49156]*	*[-1.15435]*
D(REER_CORRECT(-1))	0.040681	0.408244	0.042013	0.058441	0.029204	10.00917	1.809373	-0.075290	0.359044	-3.431.156
	[0.14513]	*[0.84654]*	*[0.26443]*	*[0.31644]*	*[0.01610]*	*[0.94056]*	*[0.36640]*	*[-0.39646]*	*[1.04658]*	*[-1.25071]*
D(PRIV_INVEST(-1))	0.628671	-0.417971	0.185291	-0.320214	-0.096997	-8.044173	-8.097835	-0.420508	-0.094232	-2.800.511
	[1.83440]	*[-0.70891]*	*[0.95388]*	*[-1.41815]*	*[-0.04374]*	*[-0.61828]*	*[-1.34124]*	*[-1.81111]*	*[-0.22467]*	*[-0.83496]*
D(DEP_RATIO(-1))	-0.004694	-0.068546	0.005984	0.016567	0.029558	-2.254081	-1.377292	0.005978	-0.105194	-2.121.409
	[-0.14070]	*[-1.19418]*	*[0.31642]*	*[0.75367]*	*[0.13692]*	*[-1.77959]*	*[-2.34322]*	*[0.26446]*	*[-2.57618]*	*[-0.64968]*
D(WAGES(-	-0.000959	-0.012822	0.00	-0.000486	0.001714	-	-	-	0.01118	0.00977

1))			0959			0.291260	0.057075	0.001387	7	7
	[-0.19514]	*[-1.51602]*	*[0.34408]*	*[-0.15010]*	*[0.05389]*	*[-1.56065]*	*[-0.65903]*	*[-0.41638]*	*[1.85943]*	*[0.00203]*
D(GFCF(-1))	-0.013908	-0.004207	0.003694	0.002262	0.020274	-0.284717	-0.203658	0.009238	-0.020685	7.274330
	[-1.15692]	*[-0.20340]*	*[0.54213]*	*[0.28560]*	*[0.26065]*	*[-0.62384]*	*[-0.96161]*	*[1.13419]*	*[-1.40590]*	*[0.61827]*
D(CREDIT(-1))	0.376790	0.027700	0.084121	0.086007	-1.193.290	11.62695	5.793045	0.256434	0.314009	-2.652.682
	[1.58047]	*[0.06754]*	*[0.62254]*	*[0.54756]*	*[-0.77359]*	*[1.28465]*	*[1.37931]*	*[1.58768]*	*[1.07621]*	*[-1.13692]*
D(TOT_REV(-1))	0.214740	0.603888	-0.076465	0.126710	-0.496351	-3.528767	-4.998728	0.345458	-0.165619	-3.649.963
	[1.08372]	*[1.77147]*	*[-0.68083]*	*[0.97057]*	*[-0.38714]*	*[-0.46910]*	*[-1.43197]*	*[2.57336]*	*[-0.68294]*	*[-1.88214]*
D(TOT_EMP(-1))	0.000137	-2.92E-05	0.000177	6.98E-05	-0.000503	0.004221	0.003798	0.000184	0.000179	0.579867
	[0.95933]	*[-0.11853]*	*[2.17718]*	*[0.73964]*	*[-0.54271]*	*[0.77643]*	*[1.50520]*	*[1.89985]*	*[1.02364]*	*[4.13722]*
C	-0.081645	-0.027707	0.006861	0.024036	0.008895	0.546328	0.140707	0.023085	0.015963	-6.077.524
	[-5.35748]	*[-1.05680]*	*[0.79426]*	*[2.39391]*	*[0.09021]*	*[0.94431]*	*[0.52410]*	*[2.23592]*	*[0.85587]*	*[-4.07489]*
@SEAS(1)	0.038210	0.138490	-0.005496	-0.030911	0.480414	-0.233493	-0.692138	0.019638	-0.039659	110.3125
	[1.11660]	*[2.35242]*	*[-0.28336]*	*[-1.37106]*	*[2.16979]*	*[-0.17973]*	*[-1.14811]*	*[0.84706]*	*[-0.94697]*	*[3.29388]*
@SEAS(2)	0.109989	-0.000256	0.009980	-0.033635	0.004401	-0.502265	0.460181	-0.048317	0.011579	151.3616
	[3.97115]	*[-0.00538]*	*[0.63575]*	*[-1.84321]*	*[0.02456]*	*[-0.47767]*	*[0.94311]*	*[-2.57496]*	*[0.34158]*	*[5.58393]*
@SEAS(3)	0.140496	0.010571	-0.035265	-0.046837	0.018487	-1.076.621	-0.204087	-0.029166	-0.016214	33.70582
	[9.18764]	*[0.40182]*	*[-4.06873]*	*[-4.64878]*	*[0.18684]*	*[-1.85454]*	*[-0.75757]*	*[-2.81527]*	*[-0.86636]*	*[2.25218]*
DUMMY	0.020351	0.004509	0.008461	-0.002129	-0.053648	0.163770	7.40E-05	-0.001668	0.003294	-2.967.942
	[2.12882]	*[0.27416]*	*[1.56143]*	*[-0.33803]*	*[-0.86732]*	*[0.45125]*	*[0.00044]*	*[-0.25759]*	*[0.28156]*	*[-3.17221]*
R-squared	0.929663	0.767893	0.649629	0.719941	0.749017	0.679087	0.803501	0.883569	0.747640	0.894371
Adj. R-squared	0.894495	0.651839	0.474444	0.579911	0.623526	0.518631	0.705251	0.825353	0.621460	0.841557
Sumsq. resids	0.013064	0.038667	0.004197	0.005671	0.546924	18.82862	4.054593	0.005996	0.019568	12513.17

Note: Error correction representation when using one Cointegrating relation representation based on Johansen (1988) rank test. t-statistics in [ ], Sample (adjusted): 2000Q3 2011Q4. ECT: error correction term. Autocorrelation of short run representation equals to one.

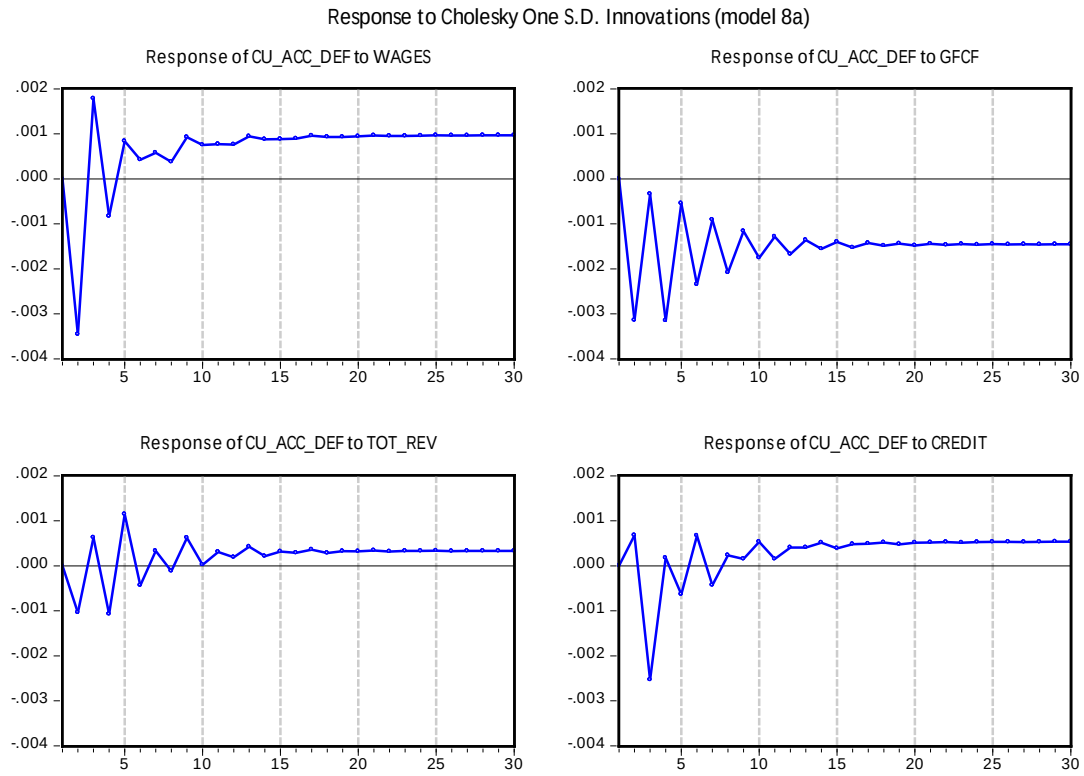
Response to Cholesky One S.D. Innovations (model 8a)
Response of CU_ACC_DEF to WAGES
Response of CU_ACC_DEF to GFCF
Response of CU_ACC_DEF to TOT_REV
Response of CU_ACC_DEF to CREDIT
.002
.001
.000
-.001
-.002
-.003
-.004
5
10
15
20
25
30

Table 6. Vector Error Correction Estimates (Model C, Representation 8b)

$$\frac{CA}{Y} = a_0 * \frac{\left(\frac{Y^*}{N^*}\right)}{\left(\frac{Y}{N}\right)} + a_1 * reer + a_2 * crp + a_3 * dr + a_4 * \frac{(I_p)}{Y} + a_5 * \frac{(exp)}{Y} + a_6 * \frac{(dirt)}{Y} + a_7 * \frac{(indirt)}{Y} + a_8 + a_9 * t$$

Cointegrating Eq:	Long-run relation	Cointegrating Eq:	Long-runrelation	Cointegrating Eq:	Long-runrelation
CU_ACC_DEF(-1)	1.000000				
DIFF_REAL_GDP_PC(-1)	-0.159135	TOT_EXP(-1)	0.289313	TOT_EMP(-1)	-0.000267
	[-4.32378]		[6.58641]		[-6.00980]
REER(-1)	1.434645	CREDIT(-1)	1.139986	@TREND(00Q1)	-0.011626
	[11.5117]		[14.8097]		[-8.49465]
PRIV_INVEST(-1)	0.072691	DIR_TAX(-1)	-0.018428	C	0.656334
	[0.41415]		[-7.34634]		
DEP_RATIO(-1)	-0.023342	INDIR_TAX(-1)	0.068407		
	[-1.77504]		[16.2115]		

Short-run representation	D(CU_ACC_DEF)	D(DIFF_REAL_GDP_PC)	D(RER)	D(PRIV_INVEST)	D(DEP_RATIO)	D(TOT_EXP)	D(CREDIT)	D(DIR_TAX)	D(INDIR_TAX)	D(TOT_EMP)
ECT	-0.135241	-0.981080	0.127032	-0.183436	0.233107	0.132547	-0.051962	3.292836	-8.323583	2474540
	[-1.62180]	[-2.59368]	[1.02891]	[-1.54320]	[0.17029]	[0.27321]	[-0.42332]	[3.62203]	[-1.37414]	[1.25046]
D(CU_ACC_DEF(-1))	-0.458724	0.624990	-0.050819	0.187710	0.004773	-0.464602	0.054664	-1.696974	-0.450986	2.042.079
	[-2.19472]	[1.71937]	[-0.42832]	[1.64326]	[0.00363]	[-0.99653]	[0.46342]	[-1.94241]	[-0.07748]	[1.07382]
D(DIFF_REAL_GDP_PC(-1))	-0.151874	0.268273	-0.068885	-0.020250	0.658250	0.318722	-0.044390	8.080551	5.670491	-7.520.919
	[-1.48344]	[1.50671]	[-1.18530]	[-0.36191]	[1.02155]	[1.39566]	[-0.76827]	[1.88827]	[1.98876]	[-0.80740]
D(REER(-1))	0.151294	1394640	-0.010713	0.214703	-0.620985	-0.008739	0.124874	-1.339350	-2.291900	-5.827.964
	[0.42181]	[2.23574]	[-0.05262]	[1.09527]	[-0.27508]	[-0.01092]	[0.61689]	[-0.89335]	[-0.22944]	[-1.78582]
D(PRIV_INVEST(-1))	0.078493	-1006649	0.131835	-0.059131	-1610974	0.027414	-0.116531	-2.775787	-2.689809	-1.249.933
	[0.19928]	[-1.46955]	[0.58964]	[-0.27469]	[-0.64984]	[0.03120]	[-0.52423]	[-1.68601]	[-2.45207]	[-0.03488]

D(DEP_RATIO(-1))	0.034758	-0.065274	0.028402	-0.007934	0.051138	-0.058875	0.013580	1.867778	-0.242851	-4131710
	[1.01902]	[-1.10038]	[1.46690]	[-0.42562]	[0.23821]	[-0.77383]	[0.70546]	[1.31008]	[-0.25565]	[-1.33136]
D(TOT_EXP(-1))	0.086833	-0.096190	-0.025723	-0.039651	0.447621	-0.279850	0.015962	-2.876641	0.255915	-9292231
	[1.04108]	[-0.66313]	[-0.54331]	[-0.86986]	[0.85270]	[-1.50421]	[0.33911]	[-0.82513]	[0.11017]	[-1.22448]
D(CREDIT(-1))	0.676098	-0.637538	0.209906	-0.213202	-0.841955	-0.494062	0.360224	-7.864752	-6.828910	-5.552.966
	[2.08777]	[-1.13200]	[1.14187]	[-1.20464]	[-0.41309]	[-0.68397]	[1.97102]	[-0.58103]	[-0.75718]	[-1.88464]
D(DIR_TAX(-1))	-0.007706	0.014001	-0.005414	0.010411	-0.028782	-0.005102	0.006160	-0.407993	-0.406020	-0.126663
	[-1.64712]	[1.72075]	[-2.03845]	[4.07137]	[-0.97743]	[-0.48888]	[2.33311]	[-2.08625]	[-3.11601]	[-0.02975]
D(INDIR_TAX(-1))	0.006980	0.023528	-0.000456	0.006114	-0.038116	-0.013666	0.019780	-0.856235	-0.661074	-1824779
	[0.77457]	[1.50134]	[-0.08922]	[1.24151]	[-0.67209]	[-0.67990]	[3.88949]	[-2.27332]	[-2.63425]	[-2.22572]
D(TOT_EMP(-1))	1.13E-05	-0.000352	0.000162	5.04E-05	-0.000237	0.000419	9.42E-05	0.014486	-0.002510	0.667364
	[0.06856]	[-1.22960]	[1.73488]	[0.56063]	[-0.22864]	[1.14111]	[1.01485]	[2.10598]	[-0.54772]	[4.45727]
C	-0.072915	-0.044473	0.011135	0.015716	0.010897	0.063471	0.017552	0.529376	0.462736	-5505175
	[-4.10889]	[-1.44103]	[1.11058]	[1.62042]	[0.09756]	[1.60348]	[1.75260]	[0.71369]	[0.93630]	[-3.40964]
@SEAS(1)	-0.005500	0.180367	-0.023345	0.001412	0.505879	-0.056360	0.009873	-2.185034	0.691568	1258726
	[-0.14391]	[2.71359]	[-1.07603]	[0.06762]	[2.10305]	[-0.66111]	[0.45771]	[-1.36778]	[0.64973]	[3.61977]
@SEAS(2)	0.055963	0.095448	-0.030527	0.029575	-0.120437	-0.025909	-0.035722	-1647828	-2351306	1568810
	[1.33043]	[1.30474]	[-1.27848]	[1.28647]	[-0.45492]	[-0.27613]	[-1.50476]	[-0.93721]	[-2.00712]	[4.09911]
@SEAS(3)	0.165821	-0.045459	-0.009663	-0.082673	0.077618	-0.133588	-0.018552	0.851666	0.067357	2.010.558
	[6.02646]	[-0.94997]	[-0.61868]	[-5.49768]	[0.44820]	[-2.17656]	[-1.19472]	[0.74051]	[0.08790]	[0.80310]
DUMMY	0.021419	0.009381	0.006120	-0.000941	-0.058034	-0.001413	-0.001214	-0.502088	-0.257298	-3347433
	[2.09468]	[0.52753]	[1.05433]	[-0.16839]	[-0.90175]	[-0.06194]	[-0.21034]	[-1.17473]	[-0.90351]	[-3.59803]
R-squared	0.926273	0.755565	0.646547	0.805953	0.763503	0.680055	0.915962	0.858352	0.843965	0.883636
Adj. R-squared	0.886776	0.624618	0.457197	0.702000	0.636808	0.508656	0.870942	0.782469	0.760375	0.821298
Sumsq. resids	0.012874	0.038938	0.004148	0.003845	0.509973	0.064055	0.004100	2.249.260	9.985.359	10657.47

Note: Error correction representation when using one Cointegrating relation representation based on Johansen (1988) rank test. t-statistics in [ ], Sample (adjusted): 2000Q3 2011Q4. ECT: error correction term. Autocorrelation of short run representation equals to one.