

# Twin Deficits: Implications of Current Account and Fiscal Imbalances for the Accession Countries<sup>1)</sup>

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## I Introduction

Growing fiscal and current account imbalances in a relatively large number of countries have motivated increasing research on so-called twin deficits. Taylor (2002) discusses the development of current account deficits over a period of about 120 years. He shows that external imbalances have been an important feature of the world economy, although their role has changed several times. Similarly, McCoskey and Kao (1999) look for panel cointegration in the OECD countries.

Several authors address twin deficits from the point of view of macroeconomic stability (see Edwards, 2001). In this vein, Halpern (1998) and Megarbane (2002) underline the negative implications of a combination of adverse factors (e.g. twin deficits, high interest rates and exchange rate depreciation), which may increase the vulnerability of transition countries. Megarbane (2002) also points out a possible interrelationship between the mentioned variables: an adverse fiscal development has to be counteracted by a more prudent monetary policy, implying higher interest rates. He concludes that fiscal instruments are crucial for sound macroeconomic policy in transition countries. Therefore, twin deficits should be avoided. Finally, Milesi-Ferretti and Razin (1998a, 1998b) discuss the relation between current account deficits and currency crises in emerging markets. They also stress the importance of further research regarding the role of macroeconomic policies during periods of high current account deficits and their reversals.

In line with McCoskey and Kao (1999), we define twin deficits as a long-run (positive) relationship (cointegrating relationship) between the current account and the fiscal balance, including some other factors. Thus, this paper contributes to the discussion of current account and fiscal policy in the following ways. First, we analyze the determinants of the long-run current account position in a broad set of countries including OECD countries as well as emerging economies between 1970 and 2001. Second, we use quarterly data, while comparative studies (see Edwards, 2001, and Ventura, 2002) are based on annual data.<sup>3)</sup> Thus, we can address the issue of structural breaks and nonstationarity in our analysis, an issue most authors of comparative studies (except for McCoskey and Kao, 1999), have omitted. By contrast, several country studies<sup>4)</sup> have focused strongly on the properties of analyzed time series. Third, we consider both investment and the fiscal balance determinants of the current account in the long run, while the majority of the previous studies concentrated on only one of these factors. Finally, we focus on the development of the current account and the fiscal balance in transition economies in the past decade, while also presenting evidence for selected countries for comparison. With few exceptions, this group of countries has been omitted from the analysis so far.

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3 Several country studies (e.g. Hatemi and Shukur, 2002) use similar quarterly data.

4 See for instance Vamvoukas, 2002, and Leachman and Francis, 2002, for analyses of twin deficits in Greece and in the U.S.A., respectively.

Edwards (2001) includes several Eastern European countries (partly before transition) in his data set. Megarbane (2002) discusses the sustainability of the current account deficit in Slovakia.

The paper is structured as follows. The next section presents some theoretical foundations for the analyses of interlinkages between the balance of payments and the fiscal balance in national accounts. Section 3 describes the external balance and fiscal policy in selected countries. Section 4 tests the “twin deficit” hypothesis defined as a long-run (cointegrating) relationship between the current account and the fiscal balance. The role of other factors, like investment or the exchange rate, is also analyzed. Finally, the last section summarizes and provides some indications for future research.

## 2 The Current Account and Fiscal Balance in National Accounts

National accounts provide for a clear relationship between budget deficits and the external balance. The basic economic identity defines income,  $Y$ , as the sum of private and public consumption,  $C$  and  $G$ , investment,  $I$ , and net exports,  $X - M$  (which, for the sake of simplicity, are identified with the current account below),

$$Y_t = C_t + I_t + G_t + X_t - M_t \quad (1)$$

By simply rearranging the variables, we can see that

$$X_t - M_t = Y_t - C_t - G_t - I_t = S_t - I_t. \quad (2)$$

This means that the external account has to equal the difference of national savings (defined as income less private and public consumption) and investment. This relation implies that the current account is directly related to saving and investment in the economy. Therefore, the policies supporting investment have a negative impact on the current account, while policy measures reducing private or public consumption have a positive impact on the current account, because they increase national savings.

Further insights for policy implications are given by separating public from private savings (see Mann, 2002). Public savings,  $S^g$ , which correspond to the fiscal budget position, are defined as the difference between tax income,  $T$ , and expenditures,  $G$ . Similarly, private savings,  $S^p$ , are defined as disposable income, that is, income less taxes,  $Y - T$ , and private consumption. It follows that

$$X_t - M_t = (Y_t - T_t - C_t) + (T_t - G_t) - I_t = S_t^p + S_t^g - I_t. \quad (3)$$

If private savings is roughly equal to investment, it is clear from this equation that the external account and public budget are directly interrelated, or twinned. The external account and the fiscal balance, labeled the “twin deficits,” have to move in the same direction by the same amount.

Finally, it is important to keep in mind that the external account has to equal the capital and financial account,

$$X_t - M_t = B_{t+1} - B_t, \quad (4)$$

where the capital and financial account is given as the change of an economy’s net foreign assets,  $B$ . Thus, countries may accumulate foreign assets or sell

domestic assets to foreigners. Therefore, countries which experience large inflows of foreign capital (including foreign direct investment) necessarily face a negative current account of the same size if we ignore the changes in foreign exchange reserves. This opens the question of the sustainability of current account deficits. In general, a current account deficit is sustainable if it can be easily financed by associated foreign capital inflows (see for example Mann, 2002; Obstfeld and Rogoff, 2000b; Megarbane, 2002). However, the sustainable level of the current account deficit may be ambiguous, if we consider the possibility of reversal (or sudden stops) of capital flows (see Milesi-Ferretti and Razin, 1998a, 1998b).

It follows that accumulated current account deficits are equal to external debt associated with a particular period  $T$ ,  $\sum_{i=1}^T (X_t - M_t) = \sum_{i=1}^T (B_{t+1} - B_t)$ . Of course, this debt generates a continuous flow of interest payments (or transferred dividends related to equity investment) to creditor countries and possibly a repayment or debt rescheduling (or portfolio restructuring, or investment withdrawal) at some later point. As a result, the country has to be able to meet all these obligations by means of export surpluses if required. The current account has to be sustainable not only at a particular point in time; rather, the whole trajectory of the current account has to be considered. This issue is also known as external debt sustainability. Therefore, it is obviously necessary to differentiate between investment-induced and consumption-induced current account deficits (see for example Megarbane, 2002), because only the former increase productivity and export capacity in the long run.

Along the line of these arguments, we can see the current account as a long-run phenomenon (see Kraay and Ventura, 2002). Reflecting the possible long-run role of the capital account, Obstfeld and Rogoff (1995, 1996) discuss the intertemporal approach to the balance of payments. Under the assumption of consumption smoothing, they note the possibility that countries can finance large investment and budgetary needs<sup>1)</sup> or equalize negative income shocks by external deficits and, by definition, surpluses on the capital account. Also under the assumption of the intertemporal approach to the balance of payments, the determination of the current account is nearly the same as in equation (3); its derivation is not presented here because it would exceed the scope of this paper.<sup>2)</sup>

The possibility of intertemporal trade may be especially important for transition economies. On the one hand, these countries experienced large declines of income during the first years of economic reform (see Campos and Coricelli, 2002). On the other hand, these countries have the prospect of EU membership, which will support their growth and convergence. Furthermore, the countries are already well integrated into the international financial markets. Several economies in the region are experiencing large investment inflows (see Dittlbacher, Fidrmuc and Walter, 2002). This framework creates good preconditions for income smoothing in these countries.

1 Székely (2002) discusses possible budgetary needs in transition economies during the accession to the European Union in more detail.

2 See Obstfeld and Rogoff (1996, pp. 1–127) for details.

The specific conditions of transition economies result in high investment and budgetary needs on the road to the EU. Therefore, these economies are likely to experience large twin deficits as a common feature of economic transition, convergence, and accession to the EU.

### 3 Development of the Current Account and the Fiscal Balance in Selected Countries

We collected data on the current account and the fiscal balance (as a percentage of GDP) for 11 OECD countries, 3 emerging markets and 4 transition economies in Central and Eastern Europe (see tables 1 and 2) in the last three decades (shorter time period for the last two groups of countries). The IMF's International Financial Statistics are the major source of the data. These data are complemented by national statistics for the transition countries which are of special interest here. The current account and the fiscal balance are expressed as a share of nominal GDP, the data for which is from the IMF or from national statistics.

The original data are characterized by a strong seasonal pattern. Therefore, we adjusted the raw data first, using standard seasonal filters (Census X-12). Tables 1 and 2 demonstrate that the data still show a large variance after seasonal adjustment. In general, large countries show a smoother behavior of the current account.

Furthermore, some countries possibly underwent structural changes during the analyzed period, notably Germany due to reunification in October 1990. In fact, the German current account exhibits a clearly visible structural break at the end of 1990, while the German fiscal balance seems to be unaffected by this regime change. As a result, tables 1 and 2 report all statistics for the whole period and for the period after reunification. Structural breaks are likely to have occurred in some other countries as well. For example, Hatemi and Shukur (2002) identify structural breaks for twin deficits (however, they define deficits of the current account and the fiscal balance in a slightly different way) in the U.S.A. in 1989.

Table 1

| Descriptive Current Account Statistics |  |         |         |        |                    |            |                       |
|--|--|---------|---------|--------|--------------------|------------|-----------------------|
| Country                                | Period   | Minimum | Maximum | Mean   | Standard deviation | ADF/Levels | ADF/First differences |
| Australia                              | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 1.647 | 0.446   | -0.897 | 0.449              | -2.666*    | -5.171***             |
| Austria                                | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 6.607 | 2.836   | -1.413 | 1.806              | -2.312     | -5.607***             |
| Brazil                                 | 1 <sup>st</sup> qu. 1990 to 4 <sup>th</sup> qu. 2000 | - 5.282 | 2.707   | -2.018 | 2.284              | -1.658a    | -5.287a***            |
| Bulgaria                               | 1 <sup>st</sup> qu. 1994 to 3 <sup>rd</sup> qu. 2001 | -11.964 | 16.403  | -1.603 | 5.258              | -1.975a    | -5.830a***            |
| Canada                                 | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 1.305 | 1.151   | -0.497 | 0.511              | -1.968     | -6.948***             |
| Czech Republic                         | 1 <sup>st</sup> qu. 1993 to 3 <sup>rd</sup> qu. 2001 | - 8.901 | 4.546   | -3.394 | 3.081              | -3.219a**  |                       |
| Estonia                                | 1 <sup>st</sup> qu. 1993 to 4 <sup>th</sup> qu. 2001 | -14.006 | 7.869   | -6.534 | 4.565              | -3.186a**  |                       |
| Finland                                | 1 <sup>st</sup> qu. 1975 to 4 <sup>th</sup> qu. 2001 | - 8.798 | 9.595   | -0.249 | 4.179              | -0.948     | -4.507***             |
| France                                 | 1 <sup>st</sup> qu. 1975 to 4 <sup>th</sup> qu. 2001 | - 3.313 | 3.079   | 0.345  | 1.276              | -2.106     | -5.220***             |
| Germany - 1                            | 1 <sup>st</sup> qu. 1971 to 4 <sup>th</sup> qu. 2001 | - 2.265 | 5.620   | 0.792  | 1.922              | -2.438     | -4.193***             |
| Germany - 2                            | 1 <sup>st</sup> qu. 1991 to 4 <sup>th</sup> qu. 2001 | - 1.862 | 1.468   | -0.616 | 0.629              | -5.550a*** |                       |
| Hungary                                | 1 <sup>st</sup> qu. 1996 to 4 <sup>th</sup> qu. 2001 | - 6.721 | - 0.671 | -3.324 | 1.694              | -1.629a    | -3.559a**             |
| Korea                                  | 1 <sup>st</sup> qu. 1976 to 4 <sup>th</sup> qu. 2001 | -10.917 | 16.726  | -0.084 | 5.038              | -2.299     | -4.535***             |
| Mexico                                 | 1 <sup>st</sup> qu. 1981 to 4 <sup>th</sup> qu. 2001 | - 1.943 | 1.153   | -0.574 | 0.830              | -2.498     | -3.512**              |
| Poland                                 | 1 <sup>st</sup> qu. 1995 to 3 <sup>rd</sup> qu. 2000 | - 8.557 | 1.232   | -3.731 | 2.926              | -0.901a    | -3.602a**             |
| Slovakia                               | 1 <sup>st</sup> qu. 1993 to 1 <sup>st</sup> qu. 2002 | -16.007 | 6.910   | -5.064 | 5.711              | -1.811a    | -4.348a***            |
| Spain                                  | 1 <sup>st</sup> qu. 1975 to 4 <sup>th</sup> qu. 2001 | - 5.017 | 2.998   | -1.473 | 1.945              | -3.057**   |                       |
| UK                                     | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 6.006 | 4.443   | -0.821 | 1.988              | -2.381     | -5.265***             |
| U.S.A.                                 | 1 <sup>st</sup> qu. 1973 to 4 <sup>th</sup> qu. 2001 | - 4.695 | 1.234   | -1.425 | 0.369              | 1.476      | -4.330***             |

Note: ADF - augmented Dickey-Fuller test (in levels and first differences) using four lags; a - using one or two lags; \*/\*\*/\*\*\* denote significance at the 10%, 5% and 1% level.

Table 2

| Descriptive Fiscal Balance Statistics |  |         |         |        |                    |            |                       |
|---------------------------------------|--|---------|---------|--------|--------------------|------------|-----------------------|
| Country                               | Period   | Minimum | Maximum | Mean   | Standard deviation | ADF/Levels | ADF/First differences |
| Australia                             | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 1.658 | 0.806   | -0.359 | 0.509              | -2.557     | -6.095***             |
| Austria                               | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 1998 | - 8.586 | - 0.019 | -3.768 | 1.570              | -2.439     | -6.527***             |
| Brazil                                | 1 <sup>st</sup> qu. 1990 to 4 <sup>th</sup> qu. 2000 | - 6.643 | 4.359   | -0.642 | 1.816              | -4.689a*** |                       |
| Bulgaria                              | 1 <sup>st</sup> qu. 1994 to 3 <sup>rd</sup> qu. 2001 | -29.190 | 9.958   | -2.429 | 8.013              | -2.324a    | -5.863a***            |
| Canada                                | 2 <sup>nd</sup> qu. 1976 to 3 <sup>rd</sup> qu. 1995 | - 1.902 | - 0.175 | -0.974 | 0.382              | -2.159     | -5.676***             |
| Czech Republic                        | 1 <sup>st</sup> qu. 1993 to 3 <sup>rd</sup> qu. 2001 | - 4.977 | 4.314   | -0.701 | 2.051              | -3.177a**  |                       |
| Estonia                               | 4 <sup>th</sup> qu. 1993 to 2 <sup>nd</sup> qu. 2002 | - 7.512 | 6.170   | -0.369 | 2.668              | -2.972a**  |                       |
| Finland                               | 1 <sup>st</sup> qu. 1970 to 3 <sup>rd</sup> qu. 2000 | -21.200 | 3.969   | -2.430 | 4.784              | -1.855     | -5.533***             |
| France                                | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 1998 | - 7.784 | 2.195   | -2.002 | 2.097              | -2.466     | -6.710***             |
| Germany - 1                           | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 1998 | - 4.304 | 0.376   | -1.533 | 0.925              | -3.544***  |                       |
| Germany - 2                           | 1 <sup>st</sup> qu. 1991 to 4 <sup>th</sup> qu. 1998 | - 3.321 | 0.019   | -1.569 | 0.775              | -4.150a*** |                       |
| Hungary                               | 1 <sup>st</sup> qu. 1997 to 4 <sup>th</sup> qu. 2001 | -10.568 | 1.748   | -4.229 | 2.774              | -2.131a    | -3.294a**             |
| Korea                                 | 1 <sup>st</sup> qu. 1970 to 3 <sup>rd</sup> qu. 2000 | - 7.621 | 5.652   | -0.124 | 1.983              | -3.384**   |                       |
| Mexico                                | 1 <sup>st</sup> qu. 1981 to 4 <sup>th</sup> qu. 2001 | - 4.237 | 1.711   | -0.964 | 1.340              | -1.138     | -3.702***             |
| Poland                                | 1 <sup>st</sup> qu. 1993 to 2 <sup>nd</sup> qu. 2002 | - 6.060 | - 0.040 | -2.781 | 1.402              | -2.427a    | -6.810a***            |
| Slovakia                              | 1 <sup>st</sup> qu. 1993 to 2 <sup>nd</sup> qu. 2002 | -12.430 | 2.074   | -4.940 | 2.786              | -2.395a    | -4.173a***            |
| Spain                                 | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 1999 | -16.235 | 11.843  | -3.676 | 3.234              | -2.378     | -7.684***             |
| UK                                    | 1 <sup>st</sup> qu. 1970 to 1 <sup>st</sup> qu. 1998 | - 8.929 | 5.200   | -3.121 | 2.858              | -2.485     | -5.516***             |
| U.S.A.                                | 1 <sup>st</sup> qu. 1970 to 4 <sup>th</sup> qu. 2001 | - 6.562 | 3.268   | -2.344 | 2.202              | -1.684     | -5.120***             |

Note: The fiscal balance definition is according to the IMF and does not correspond to domestic statistics or ESA 95. ADF = augmented Dickey-Fuller test (in levels and first differences) using four lags; a – using one or two lags; \*\*\*/\*\*/\* denote significance at the 10%, 5% and 1% level.

We should also note that there is a general tendency to record current account deficits. In particular, only two countries (Germany and France) in our data sample have current account surpluses in the average of the whole period. Japan and the Netherlands, which are not included in our data sample, are also characterized by high trade surpluses. By contrast, other countries not covered are also likely to have negative current account balances, which reflects the accumulation of debt by developing countries. To some extent this trend may be explained by the overestimation of exports and the underestimation of imports for tariff reasons. Nevertheless, changes in levels should be less affected by these factors.

Already the first analysis of the available data reveals interesting features regarding the persistence and possible nonstationarity of the time series. Like the authors of previous studies, e.g. Taylor (2002), we find that the current account deficit is highly persistent in several developed countries. A well-known example is Australia, which has displayed a persistent deficit of the current account (up to 1% or 2% of GDP) since the beginning of the 1970s. Similarly, the U.S.A. has reattained a positive current account balance only in one quarter since the beginning of the 1980s (the deficit was close to 2% of GDP for most of this period). By contrast, Canada, which is another country mentioned in the previous literature, has shown an improvement of the current account from a permanent deficit of 1% of GDP to a surplus in 2000.

These observations are largely true also for medium-term analyses. Only one country (Korea) had a nearly balanced current account during the whole period available (1976–2001). Furthermore, only one more country (Finland) displays average current account deficits below 0.5% of GDP, while France has a current account surplus of a similar size. By contrast, several countries (Austria and Spain)<sup>1</sup>) have typically posted average current account deficits close to 1.5% of GDP for a period of about 30 years.

1 Note that the balance of trade in services (tourism) is already part of the current account.

Finally, the unit root test confirms the hysteresis of the current account. The last two columns of table 1 show the results of the augmented Dickey-Fuller test (ADF)<sup>1)</sup> for the levels and first differences. The ADF test fails to reject the null hypothesis of a unit root for all countries with the exception of Spain, Estonia, the Czech Republic (although for a relatively short time period), and Germany after reunification. Differenced time series are stationary for all countries at any obvious significance level, implying that the current account is integrated of order 1 for nearly all countries.

We can see similar results for fiscal balances.<sup>2)</sup> Several countries have faced persistent government deficits above 2% or even 3% of GDP over a period of 20 or 30 years. However, there seem to be more countries with a nonaccommodative fiscal policy than countries with nonpersistent external accounts. According to the ADF test, Germany and Korea show no persistence of fiscal shocks during the whole period of about 30 years. For a shorter time period, similar results are reported also for the Czech Republic, Brazil and Estonia.

We should note that both indicators are stationary for the Czech Republic, Estonia and Germany (after reunification). Similarly, Korea's average current account has been close to 0 (although the time series is nonstationary), while its fiscal balance has no unit root. Thus, countries with a relatively flexible fiscal policy are generally likely to have a flexible or balanced external account. This can be seen as a first result relating fiscal policy and the current account.

Last but not least, data presented in table 1 show that the imbalances of the current account may be comparably large in shorter periods. Nearly all reported countries (whose data are available for the whole period) experienced maximum deficits well above the usually quoted 5% mark, notably Austria: -6.6%, Finland: -8.8%, Korea: -10.9%. Nevertheless, a comparison of these examples reveals the historical uniqueness of the development in the transition economies in the 1990s. Slovakia, for example, reports the maximum current account deficit in our data sample (-16.0% of GDP), followed by Estonia (-14.0% of GDP) and Bulgaria (-12.0% of GDP). Furthermore, these extraordinarily high levels of current account deficits are characterized by much stronger persistence than on previous occasions. As a result, transition economies have average current account deficits above 6% of GDP in Estonia, 5% in Slovakia and above 3% in Hungary, Poland and the Czech Republic over the available period (see table 1). These levels are much higher than those reported for developed economies or emerging markets earlier, although those levels were computed for a different period. This finding is further supported by Edwards (2001), who establishes that only a rather small number of countries experienced large current account deficits for longer periods (e.g. five years).

It is interesting to note that the fiscal development is less outstanding in transition countries (see table 2).<sup>3)</sup> Nevertheless, Slovakia and Hungary report

1 Hatemi and Shukur (2002) apply the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root test (Kwiatkowski et al., 1992). This test also finds nonstationarity of the U.S. data.

2 Note that the fiscal balance is defined according to the IMF and is not comparable to national definitions or ESA 95.

3 However, it is more difficult to assess the reliability of the fiscal data for transition economies.

the highest level of government deficit (above 4% of GDP in the 1990s), but some other countries are also close to the 4% mark (e.g. Spain and the UK) over a longer period of time (since the 1970s).

#### 4 Twin Deficits: A Myth or Reality?

Although we can determine negative external and fiscal balances for the majority of analyzed countries, earlier studies report mixed evidence on the relation between fiscal and external deficits (see McCoskey and Kao, 1999). A first look at the data already confirms this finding. On the one hand, we find only few examples where fiscal and external accounts develop along a joint path. Normandin (1999) and Mann (2002) note the emergence of twin deficits in the U.S. economy in the 1980s as a major motivation for the twin deficit hypothesis. As a more recent example, Finland faced moderate current account and fiscal deficits until 1990. Then, both balances became strongly negative until 1995, when both time series showed a significant improvement. However, there is a higher number of counterexamples, including Mexico and the U.S.A. (only in the 1990s). The correlation between both time series is high and negative ( $-0.58$  for Mexico in the whole sample and  $-0.84$  in the case of the U.S.A. in the 1990 to 2001 period). Actually, the majority of countries in our data sample shows negative correlations of both variables.

Unfortunately, this adverse behavior is difficult to explain. The application of the so-called *Lawson's doctrine*<sup>1)</sup> in the economic policy of some countries may provide a partial explanation. In particular, Lawson's doctrine states that a large current account deficit is not a cause for concern if the fiscal accounts are balanced. As a result, policymakers may postpone corrective measures if both indicators develop in different directions as a result of idiosyncratic fiscal and external shocks.<sup>2)</sup> Therefore, if fiscal and external shocks are not fully correlated, but the policy tends to react more strongly to combinations of negative fiscal and external innovations, we can see relatively longer periods characterized by a nonpositive correlation between the variables.

Actually, the relation between the current account and the fiscal balance is unclear also for the transition economies. We can see low positive correlations (about 0.3) for the Czech Republic and Hungary. However, the remaining transition economies facing larger fiscal and external imbalances in the region are reporting either 0 correlation (Poland and Slovakia) or even a negative correlation ( $-0.2$  in the case of Bulgaria and Estonia).

On the other hand, the comparison of tables 1 and 2 provides strong evidence for a positive relation between both variables in a cross-country analysis.<sup>3)</sup> All countries facing current account problems also experience budgetary problems. As a result, we find a positive correlation between the average current account deficit/surplus and the average fiscal balance (0.21 for the

1 This argument was associated with former UK Chancellor of the Exchequer Nigel Lawson. See Edwards (2001) for a critique of Lawson's doctrine.

2 As a recent example, the U.S.A. experienced a positive fiscal shock related to the New Economy, and a negative external shock related to the slower growth of its trading partners.

3 However, McCoskey and Kao (1999) find mixed evidence for panel cointegration of fiscal and current account deficits in OECD countries.

whole data sample). Further improvement of our data base is necessary to draw more reliable conclusions on the cross-country evidence. Nevertheless, this finding indicates a positive long-run relationship between external and fiscal balances, which may stand in opposition to an unclear short-run (or even medium-run) correlation of the variables.

Alternatively, we have tried to find long-run relationships between the external and the fiscal balances in selected countries. This causality is suggested by the intertemporal approach to the balance of payments (see Obstfeld and Rogoff, 1995 and 1996), which also stresses the role of private investment. Therefore, we include gross capital formation as a share of GDP<sup>1)</sup> (denoted as above by  $I$ ) in the long-run (cointegrating) relationship between the current account ( $CA$ ) and the fiscal balance ( $T - G$ ),

$$CA = \beta_1 + \beta_2(T - G) - \beta_3 I. \quad (5)$$

As indicated by (5), we expect a positive sign for the fiscal balance and a negative sign for investment. Thus, a budget deficit and high investment worsen the current account. The coefficient of both variables should equal 1 if countries are perfectly integrated into the world economy and budgetary investment expenditures are financed on the world financial market. However, Feldstein and Horioka (1980) showed that a high portion of domestic investment is still financed from domestic sources (domestic savings).<sup>2)</sup> This is demonstrated in coefficient  $\beta_3$ , which is significantly lower than 1. A similar effect may be expected also for the fiscal balance.

The earlier literature on this subject has emphasized the importance of structural breaks in the determination of the current account. Leachman and Francis (2002) split their data sample (1948–1992) in 1973, when the Bretton Woods system was dissolved. Edwards (2001) discusses several events, including the oil price shocks in the 1970s and the debt crisis in 1982. The latter event is also stressed by Ventura (2002), who excludes the developing countries from his sample due to possible bias as a result of the debt crisis in 1982. Finally, Hatemi and Shukur (2002) find a structural break at the beginning of the 1990s, which they attribute to the New Economy, globalization and the integration of the former socialist economies into the world economy. The differences between the 1980s and 1990s due to the New Economy are also stressed by Mann (2002). We also find support for structural breaks corresponding to the listed events. Therefore, we test for cointegration in two separate periods, 1980–89 and 1990–2001 (see table 3).<sup>3)</sup>

We find a long-run relationship between the variables for several countries in the 1980s, but only in few cases in the 1990s.<sup>4)</sup> The explanatory variables

*1* Private investment was also revealed to be  $I(1)$  for all analyzed countries. The inclusion of additional variables (e.g. the real exchange rate) does not change our results significantly.

*2* This result, which is generally referred to as the Feldstein-Horioka puzzle, has been widely confirmed by subsequent intensive research. Obstfeld and Rogoff (2000a, 2000b) discuss this issue.

*3* We label the respective periods the 1980s and the 1990s throughout the paper, although the latter subperiod is slightly longer for some countries.

*4* The overall performance of the models is also worse for the 1990s. This indicates that the current account has become increasingly determined by short-term factors recently. This observation also corresponds to the high frequency of financial crises around the world in this decade.

Table 3

**Cointegration Test (Trace Test) for Selected Countries**

**A. Period from 1980 to 1989 (wherever available)**

|                      | Number of lags | Trace test    |               |               | Long-run (cointegrating) equation                     |
|----------------------|----------------|---------------|---------------|---------------|---|
|                      |                | $H_0 : r = 0$ | $H_0 : r = 1$ | $H_0 : r = 2$ |   |
|                      |                |               |               |               |   |
| Australia            | 5              | 31.79*        | 5.88          | 0.01          | $CA = -7.90 - 0.34 (T-G) + 0.25 I$<br>(-2.07) (2.66)  |
| Austria              | 1              | 24.69         | 8.40          | 2.08          |   |
| Canada               | 1              | 46.79*        | 17.29*        | 2.67          | $CA = -3.43 - 1.01 (T-G) + 0.08 I$<br>(-7.21) (2.50)  |
| Germany              | 1              | 33.17*        | 9.32          | 4.46          | $CA = 18.79 + 4.31 (T-G) - 0.47 I$<br>(5.92) (-1.18)  |
| Finland              | 1              | 38.50**       | 8.67          | 2.26          | $CA = 16.03 - 0.20 (T-G) - 0.70 I$<br>(-1.55) (-4.76) |
| France               | 1              | 38.50**       | 15.02         | 5.83          | $CA = 40.81 + 2.14 (T-G) - 1.76 I$<br>(5.71) (-4.78)  |
| Mexico <sup>1)</sup> | 3              | 16.87*        | 3.45          |               | $CA = 0.07 + 0.01 (T-G)$<br>(0.04)                    |
| Spain                | 1              | 27.46         | 9.05          | 1.90          |   |
| UK                   | 2              | 37.50**       | 8.50          | 0.14          | $CA = 44.77 + 0.79 (T-G) - 2.34 I$<br>(3.77) (-7.59)  |
| U.S.A.               | 3              | 53.37**       | 11.02         | 4.76          | $CA = 4.77 + 1.40 (T-G) - 0.09 I$<br>(8.38) (-0.37)   |

**B. Period from 1990 to 2001 (wherever available)**

|                       | Number of lags | Trace test    |               |               | Long-run (cointegrating) equation                      |
|-----------------------|----------------|---------------|---------------|---------------|--|
|                       |                | $H_0 : r = 0$ | $H_0 : r = 1$ | $H_0 : r = 2$ |  |
|                       |                |               |               |               |  |
| Australia             | 4              | 29.80         | 13.77         | 2.43          | $CA = 11.41 + 0.39 (T-G) - 0.55 I$<br>(1.16) (-4.30)   |
| Austria               | 1              | 23.13         | 8.14          | 1.25          |  |
| Bulgaria              | 1              | 11.48         | 4.69          |               |  |
| Canada                | 2              | 25.26         | 12.40         | 1.17          |  |
| Finland <sup>1)</sup> | 1              | 10.44         | 2.02          |               |  |
| France                | 3              | 32.23*        | 6.76          | 0.76          | $CA = 310 + 16.71 (T-G) - 13.39 I$<br>(4.86) (-4.91)   |
| Mexico <sup>1)</sup>  | 1              | 12.85         | 5.07          |               |  |
| Slovakia              | 1              | 33.99*        | 14.01         | 5.50          | $CA = -34.75 - 0.07 (T-G) - 1.31 I$<br>(-0.29) (-8.59) |
| UK                    | 3              | 33.57*        | 13.13         | 0.06          | $CA = 18.28 + 0.24 (T-G) - 1.12 I$<br>(2.60) (-8.43)   |
| U.S.A.                | 2              | 16.53         | 2.33          | 0.06          |  |

Note: All reported time series are  $I(1)$  in the subperiods. Time series for the nonreported countries are  $I(0)$ . \*/\*\* denote rejection of  $H_0$  at the 5% and 1% significance level.

<sup>1)</sup> Investment share is not available or stationary in levels. See tables 1 and 2 for data availability and description. t-statistics based on asymptotic standard errors are in parentheses.

generally show the expected sign and size in nearly all equations, although the performance of investment seems to be slightly better. We find unexpectedly high coefficients only for France<sup>1)</sup> in the 1980s. By contrast, we can see very low coefficients on investment in the U.S.A., which confirms the Feldstein-Horioka puzzle for this country. This result basically confirms earlier findings. For example, Obstfeld and Rogoff (1996, 2000b) interpret similar results for the U.S.A. as indicating that the country is still relatively closed despite its integration into the world economy and the recent wave of globalization.

However, the reported coefficients are relatively high, close to or even higher than 1 for many, mainly European countries. This implies that the whole amount of investment<sup>2)</sup> is financed from international sources (including other

<sup>1)</sup> Note that the French data show much larger short-run fluctuations than other time series.

<sup>2)</sup> Actually, the coefficient may be larger than 1 if investment is lower than new production expenditures (including for example operative costs in addition to fixed investment).

EU countries, however). By contrast, non-EU countries (for example Canada) still rely strongly on domestic sources (savings) to finance their investment, which is demonstrated by estimated coefficients for investment close to 0.

In Central and Eastern Europe, we find only weak evidence for the relationship between the external and internal accounts. The long-run equation estimated for the Slovak Republic implies that the current account deficit is determined mainly by investment.<sup>1)</sup> This conclusion confirms the descriptive analysis by Megarbane (2002). Note that the coefficient estimated for investment in Slovakia is close to 1. This indicates that in fact all investment in Slovakia is financed from foreign sources. Thus, the Feldstein-Horioka puzzle does not seem to hold in transition economies, either.

No significant results are available for Bulgaria, while no final conclusions are possible for Hungary and Poland due to the brevity of comparative time series published by the IMF. As mentioned before, the Czech Republic and Estonia display a high degree of flexibility of the current account and fiscal balance, as documented by the stationarity of the corresponding time series.

## 5 Conclusions

The association of high external and internal deficits, which are generally referred to as twin deficits, has attracted increasing attention in the last two decades. Since the second half of the 1990s, this phenomenon has gained importance also in the transition economies of Central and Eastern Europe, on which we have focused here. Because there are many questions related to data reliability in this region, we start our analysis with a comparison of a set of OECD countries and emerging economies.

For this data sample, we find that both current accounts and fiscal balances have been displaying a significant degree of hysteresis as shown by the unit root tests. Correspondingly, we define “twin deficits” as a cointegrating relationship between the current account, the fiscal balance and investment. This paper shows that twin deficits emerged in the 1980s. As expected, investment contributed significantly to the current account deficit.

Furthermore, we find that the countries which pursue sustainable fiscal policies (e.g. Korea, Germany, Estonia, and the Czech Republic) also display a high flexibility of the current account. However, we find less evidence for twin deficits in the 1990s. Following the arguments of earlier studies (e.g. Mann, 2002), we attribute this feature to the New Economy and the changes in the world economy (globalization, the breakdown of the central planning system in Central and Eastern Europe) in the 1990s.

Despite the increasing role of international financial markets, we find that several countries are still financing their investment mainly from domestic sources (savings). This feature confirms earlier results on the so-called the Feldstein-Horioka puzzle. However, we find less evidence for the Feldstein-Horioka puzzle for the EU countries and also for transition economies (Slovakia). This result indicates that EU integration has significantly increased the degree of openness in the participating economies.

*1* However, note that a large part of investment in Slovakia was related to the public sector.

We see remarkable similarities, but also important differences between the transition economies in Central and Eastern Europe and comparable countries. In particular, the transition economies are found to have high current account deficits which are unique in a historic comparison, both in relation to developed countries and to emerging markets. Over the last nine years, the average GDP ratio of the Slovak current account deficit has reached nearly 5%, which is about twice as high as comparable figures reported by other regions. But other transition countries also have current account deficits well above the levels in other countries. By contrast, the transition economies' fiscal indicators are more similar to those reported by other regions.

Possibly, the large current account deficits and fiscal expenditures may be viewed as an intertemporal phenomenon related to the output collapse at the beginning of transition. As a result, transition countries can make use of the possibility of financing current investment and consumption from future income, which is expected to converge rapidly in the course of accession to the EU. Nevertheless, the policies in transition countries have to focus on the sustainability aspects of high current account deficits. Unsustainable macroeconomic policies may increase the vulnerability of these countries from the perspective of international investors. This aspect underlines the importance of sound fiscal policies in the region.

Last but not least, these results indicate possible directions for future research. First, the application of panel data methods is likely to lead to better results. This is reflected in the observation that we found some evidence for twin deficits in cross-country comparisons. Second, the results may be sensitive to structural breaks. Therefore, more detailed analysis of structural changes may be necessary. Finally, the data base has to be improved for further transition economies in order to extend these analyses to more CEECs (e.g. Hungary and Poland).

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