

This is a revised version of the article published in the printed edition. The printed edition contains interpretations of results that might confuse readers. The author apologizes to the readers for any confusion this might have created. •

UNRECORDED CAPITAL FLOWS AND ACCUMULATION OF FOREIGN ASSETS: THE CASE OF CROATIA

Goran VUKŠIĆ, PhD*
Institute of Public Finance, Zagreb

Article**
JEL: F30, F31, F32, F34
UDC: 330.142.28(497.5)

Abstract

This paper evaluates the magnitude of capital flight, unrecorded capital flows and the resulting accumulation of foreign assets for Croatia, over the period between 2000 and 2007. The problem of capital flight has gained significance in the present global financial and economic crises, because of increasing capital scarcity in many emerging markets and transition economies including Croatia. The findings reveal relatively large amounts of foreign asset accumulation over the observed period. A large portion of this accumulation relates to cumulative amounts of net errors and omissions term, which is interpreted as unrecorded capital flow. There are reasons to believe that this net errors and omissions item in Croatia possibly partly represents the unrecorded accumulation of foreign cash from foreign tourist spending, and/or partly results from overstated tourism income in the official statistics. However, even after excluding this item from the calculation of capital flight, the remaining accumulation of foreign assets over the period is still substantial. If unrecorded portion of capital outflows is taken into account, Croatia's net international investment position is improved.

Key words: capital flows, capital flight, euroization, Croatia

1 Introduction

This paper estimates the amounts of capital flight and accumulation of foreign assets for Croatia, over the period from 2000 to 2007. The phenomenon of capital flight has been extensively explored over the last 20-30 years or so. The motivation of researchers

• *Revised version:* July 12, 2012

* The author would like to thank three anonymous referees for their useful comments and suggestions.

** *Received:* June 29, 2009

Accepted: November 21, 2009

was mainly to explain the fact that, while developing countries were borrowing capital abroad to finance their development, simultaneously one could estimate large, sometimes unrecorded, capital outflows from these countries. Although there may be different motives for such transactions (such as money laundering, a wish to keep capital ownership secret, fear of inflation, higher taxes or other risks), the money transferred abroad through various channels was considered lost in the sense that it could not be used for achieving development goals. Thus, the majority of researchers agree that capital flight has an adverse impact on a country's development. These negative consequences tend to be more pronounced where the capital scarcity in the economy is larger. Given the current global financial and economic crises and increasing capital scarcity in many emerging markets and transition economies, including Croatia, the problem of capital flight has regained significance. The magnitude of capital flight in such an environment is important in assessing a country's financing needs and possibilities. In addition, the estimates of unrecorded portion of capital outflows can be used for adjusting the net international investment position of a country, which is a key determinant of its external sustainability (Lane and Milesi-Ferreti, 2001).¹

In a certain sense, this study continues an analysis of capital flight from Croatia based on Vukšić (2001), which covered the period between 1993 and 1999. There are some methodological differences (improvements) as the quality and availability of needed data has increased. Given the different motives for capital flight and various types of related capital export transactions, there exist different definitions of this concept, and consequently, different methods of estimations. However, unlike in Vukšić (2001) in which three different methods for empirical evaluation of the scope of capital flight were applied, here, only the most popular residual method is used. As will be discussed in a later section, the results are not fully comparable. Still, the present research uses different versions of the residual method and alternative data sources, in order to arrive at additional conclusions about the character of capital flight, as well as to check the reliability of the results and conclusions.

The rest of the paper is organized as follows: the second section briefly presents the method used in estimating the amounts of capital outflows, some methodological shortcomings, as well as the relevant data. Afterwards, the capital flight estimates for the period between 2000 and 2007 are presented. In the fourth section the results are interpreted, while some concluding remarks are given in the last section.

¹ See e.g. Morgan Stanley (2009), for an example of assessment of macroeconomic outlook for Turkey: the unaccounted capital inflows in October and November 2008, presumably hiding behind net errors and omission term, helped in financing external deficits.

2 Methodology and data

2.1 Methodology

The broadest and the most commonly used method for capital flight estimation is the residual method, also known as the World Bank method.² The basic approach involves comparing the *sources* of capital inflows in the form of increases in external debt and net foreign direct investment, with the *uses* of these inflows for financing current account deficit and increases in international reserves (see e.g. Cumby and Levich, 1987; Chang et al., 1997; or Hermes et al., 2002). This approach defines the difference between *sources* and *uses* of capital as being capital flight. It should be noted that this measurement also includes capital outflows which may be due to the normal business activities of domestic economic agents (such as international portfolio diversification). Thus, if a transaction is counted as capital flight according to the residual method, this does not necessarily imply that the money transferred is acquired in an illegal way. However, some authors use the term “illegal” or “illicit” financial flows (see e.g. Kar and Cartwright-Smith, 2008) to describe capital flight under the residual method, assuming that the largest parts of these flows are (at least) transferred abroad in an illegal way (i.e. that some potentially existing capital flows restrictions are broken in the course of the transaction). This paper applies two different versions of the residual approach in order to provide better insights into this phenomenon. The first one is described in equation (1):

$$CF1 = \Delta ED + CAB + NFDI + NES + \Delta RES \quad (1)$$

CF1 stands for the first measurement of capital flight which equals the sum of the change in external debt (ΔED), current account balance (CAB), net foreign direct investment (NFDI), net portfolio investment in equity securities (NES) and the change in the international reserve assets (ΔRES). Positive values of ΔED , CAB, NFDI, NES and ΔRES (increase of external debt, current account surplus, higher inward FDI and portfolio investment in equity securities than outward FDI and portfolio investment and decrease of international reserves) represent capital inflows, i.e. sources of capital. Negative signs represent the uses of capital. For example, an increase in the official international reserves will appear in the above equation with negative sign of ΔRES because it represents the use of capital to accumulate reserves and therefore reduces the residual, i.e. capital flight.³

The change in the external debt is usually calculated by comparing the external debt stock at the beginning and the end of some period. An alternative would be to use capital and financial account data from the balance of payments, which should, theoretically, result in the same change in the external debt stock. However, it is often stated that the capital

² Extensive overviews of different definitions and methods for estimating capital flight, as well as the related problems and drawbacks of single approaches can be found in e.g. Chang et al. (1997), Hermes et al. (2002), or Beja (2005).

³ It should be noted that the above equation represents an adjustment of the basic residual approach. In addition to other sources of capital, it also considers net portfolio investment in equity securities. As noted by Claessens and Naudé (1993), portfolio investment in equity securities should be additionally included in the basic formulation of the residual approach (separately or in the net FDI term), although this was in contrast to much of the literature at that time. Such flows are similar to FDI, except that the major ownership control is not established.

flows in the balance of payments data (except for data on foreign direct investment) are usually underestimated in both directions (Chang et al., 1997; Hermes et al., 2002), so data on external debt stock are used instead.

There are two important shortcomings of this approach. The first is that the results are affected by the changing exchange rates of the currencies in which external debt stock is denominated (cross-currency valuation). To alleviate this problem, the cross-currency valuation effect is estimated using the data on the currency structure of external debt, and subtracted from the total changes in external debt stock in order to obtain a better estimate of this net capital inflows segment. In addition, in order to check for potential differences in results, in one of the calculations that follow, debt flows are used instead of the change in external debt stock (as in e.g. Eggerstedt et al., 1995). The second problem is that the results do not tell, in the case of the estimated capital flight, whether the capital has actually left the country, or it is being accumulated within the country in unrecorded transactions. In other words, if one estimates capital flight it may be that one is observing the rise of the unofficial economy, i.e. increased unrecorded holdings of foreign exchange cash, used as a store of value, and/or for unofficial transactions. Whether this kind of capital flight is lost in terms of financing the country's development goals and whether, and to what extent, it lowers domestic welfare is not that straightforward, but unofficial economic activities certainly represent a loss of government revenues. Despite these problems, different versions of the residual method are widely used and it has been accepted as a useful indicator of the approximate capital flight amounts.

Apart from the first measure of capital flight described in equation (1), this paper uses another measure, denoted as CF2 defined in the equation below:

$$CF2 = CF1 + NEO \quad (2)$$

NEO stands for the net errors and omissions item from the balance of payments data. Thus, in the second measurement of capital flight it is implicitly assumed that the errors and omissions item really represents errors and omissions related to data collection and that there is no capital flight "hidden" behind this item. This assumption is not widely used (on the contrary), but it may be important for the interpretation of the results for Croatia, as will be explained below. It should be noted here that a negative NEO item represents a use of capital in this context. For example, if in some period there is a surplus on the capital and financial account of the balance of payments, and a deficit on the current account which, in absolute value, is smaller than a corresponding surplus on the capital and financial account, the NEO item will be negative, suggesting that the "extra" capital has been used for some unidentified purpose (i.e. in the context of residual approach, it represents unrecorded capital outflow unless this possibility is explicitly excluded by assumption as in the definition of CF2).

2.2 External debt data

The primal source of external debt data is the Croatian National Bank (CNB). The relevant data (in million euro) is presented in table 1. The total debt stock has been steadily increasing and more than tripled over the period between the end of 1999 and 2007,

reaching almost 33 billion euro at the end of the period. The largest total changes in debt stock were recorded in 2003 (4,740.66 million euro), 2007 (3,655.34 million) and in 2006 (3,526.19 million). However, an increase of external debt stock by some amount does not necessarily mean that there were capital inflows in the exact same amount, if the debt is denominated in different currencies and the exchange rates change over the period (as is the case for Croatia). Since the largest part of the Croatian foreign debt is denominated in euro, calculation of the cross-currency valuation effect and capital flight using data in euro is probably less exposed to potential errors.⁴

Table 1: Croatian external debt data from the Croatian National Bank, in million euro

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total debt stock	10,174.53	12,263.59	13,609.26	15,143.10	19,883.77	22,933.00	25,747.71	29,273.89	32,929.23
Total change in debt stock	-	2,089.06	1,345.67	1,533.84	4,740.66	3,049.24	2,814.71	3,526.19	3,655.34
Cross-currency valuation	-	289.46	217.98	-479.30	-509.09	-221.83	359.14	-336.12	-306.77
Net change in debt stock	-	1,799.60	1,127.69	2,013.14	5,249.75	3,271.06	2,455.56	3,862.31	3,962.10

Source: own calculations based on CNB data.

In order to estimate the cross-currency valuation effect, the quarterly data on the currency composition (obtained from the CNB) of the total external debt stock is used. By using the higher data frequency, the short term debt can also be taken into account.⁵ This effect must be subtracted from the total change in debt stock in order to obtain the net change in debt stocks, i.e. the relevant proxy for capital inflows. The highest net changes in debt stock were recorded in 2003 (5,249.75 million euro), 2007 (3,962.10 million) and 2006 (3,862.31 million).

In addition to CNB data, the paper also uses external debt data from the World Bank's Global Development Finance (GDF) database (this data is always in US dollars) in alternative calculations of capital flight. The results of the capital flight estimates using

⁴ It should be noted here that the CNB publishes external debt and balance of payments data both in euro and in US dollars. As a robustness check in a later section, the resulting capital flight estimates obtained by using all the data from the CNB in euro, will be expressed as a percentage of the GDP and then compared to the capital flight estimates obtained by using all the data from the CNB in US dollars, and then expressed as a percentage of the GDP.

⁵ The method for estimating this effect is the following (for more details see Boyce and Ndikumana, 2001): if the total debt stock at all periods is expressed in euro, but part of the debt is denominated in another currency (e.g. US dollars), the amount of US dollar denominated debt at the end of period t is converted to euro using the exchange rate at the end of the period t and using the exchange rate at the end of period $t+1$. Afterwards, the amount in euro of the US dollar denominated debt stock obtained using the exchange rate at the end of period t is subtracted from the amount in euro obtained using the exchange rate at the end of period $t+1$. The difference represents the cross-currency valuation effect. This effect was calculated for external debt stock denominated in US dollars, Swiss francs and Croatian kuna. The average share of debt denominated in these currencies, together with the part of external debt denominated in euro, amounted to 95.16% of the total external debt stock over the whole period, with minimal and maximal shares amounting to 91.22% and 99.34%.

the World Bank data on external debt will be expressed as a percentage of the GDP and compared to the corresponding results using the CNB data in a later section.

The reasons for additional estimates using the World Bank data are the following. First, unlike the data available from CNB, the GDF database contains information on other factors which may lead to changes in external debt stock without actual capital flows taking place (such as interest capitalized, debt forgiveness or reduction, allocation of the old debt etc.). Second, the World Bank supplements the data it receives from the reporting country by market sources and its own estimates, which makes the comparison of the results especially interesting. And third, the GDF database contains information on net flows on total debt, which is used in additional calculations of capital flight instead of the net change in debt stock, as a further robustness check.

Table 2: Croatian external debt data from the World Bank, in million US dollars

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total debt stock	11,410.74	12,438.49	12,663.20	16,688.46	25,782.81	32,968.39	30,640.84	38,355.30	48,583.56
Total change in debt stock	–	1,027.75	224.71	4,025.27	9,094.34	7,185.58	-2,327.55	7,714.46	10,228.27
Cross-currency valuation	–	-206.10	-213.62	662.25	979.35	526.66	-1,187.56	769.78	954.34
Interest rescheduled (capitalized)	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net change in interest arrears	–	-3.91	16.92	5.40	31.58	-18.54	-2.75	25.07	21.16
Debt forgiveness or reduction	–	0.00	0.00	-1.23	-2.28	0.00	0.00	0.00	0.00
Net flows on debt, total	–	1,164.07	453.72	1,937.80	7,139.23	5,222.17	2,202.60	5,271.82	4,879.49
Residual, debt stock-flow reconciliation	–	73.68	-32.31	1,421.05	946.47	1,455.30	-3,339.84	1,647.80	4,373.29
Net change in debt stock	–	1,237.75	421.41	3,358.85	8,085.70	6,677.47	-1,137.24	6,919.61	9,252.78

Source: World Bank, GDF database.

According to the World Bank data on external debt presented in table 2, the total debt stock increased from 11,410.74 in 1999, to 48,583.56 million US dollars in 2007. Annual changes range from -2,327.55 million US dollars (decrease) to an increase of 10,228.27 million in 2007.

The cross-currency valuation item presented in the GDF database only refers to long-term external debt, with maturity of more than one year. Thus, the amounts of net change in debt stock are estimated with potentially larger errors than for the CNB data.⁶ Besides the cross-currency valuation effect, some other items shown in table 2 (interest rescheduled,

⁶ Indeed, the estimated values of cross-currency valuation effects for the CNB external debt data in US dollars (not shown) are different and higher in absolute values than cross-currency valuation effects from the GDF database.

net change in interest arrears and debt forgiveness or reduction) must be subtracted from the total change in debt stock.⁷ The resulting net change in debt stock is shown in the last row of table 2. The largest values were observed in 2003 (8,085.70 million US dollars) and 2007 (9,252.78 million US dollars).

The GDF database gives an additional, interesting item: residual debt stock-flow reconciliation. This item represents the change in the total debt stock that is not justified by the following: net flows on debt, net change in interest arrears, interest capitalized, debt forgiveness or reduction and cross-currency valuation. The amount of the residual item is very high in 2007, and negative and high in absolute value in 2005, indicating a possible anomaly, i.e. the major imprecision of the data in these years.

2.3 Balance of payments data

The next information needed for the estimation of capital flight is data from the balance of payments on the current account balance, net foreign direct investment, net portfolio investment in equity securities, reserve assets and (for calculation of the second measure of capital flight – CF2) net errors and omissions. The relevant data stems from the CNB and is presented in table 3 (in million euro).

The data shows that over the whole period all the relevant variables had the same sign except for net portfolio investment flows in equity securities, which were of quantitatively smaller importance in most of the years during the observed period. Along with the net change in debt stock, the net foreign direct investment flows were the most important source of capital. It should be stressed that this item encompasses only equity capital and reinvested earnings – intercompany debt has already been included in the external debt item. The foreign direct investment inflows were largest in 2007 (2,442.61 million euro), 2006 (2,249.04 million) and 2003 (1,247.90 million). The inflows were used to finance the current account deficit and the increase in reserve assets. The current account deficit was especially large during the last two years (in 2007 it was the largest and amounted to -3,236.67 million euro). The largest increases of reserve assets were recorded in 2001 (-1,548.98 million euro) and 2006 (-1,412.23 million).

Table 3: *Croatian balance of payments data, in million euro*

	2000	2001	2002	2003	2004	2005	2006	2007
Current account balance	-568.14	-820.78	-2,098.65	-1,888.83	-1,433.69	-1,975.62	-2,715.18	-3,236.67
Foreign direct investment	791.32	955.07	278.30	1,247.90	351.82	1,242.55	2,249.04	2,442.61
Equity securities	-0.26	15.44	-36.00	-44.83	102.41	-103.84	5.22	-527.74
Reserve assets	-677.27	-1,548.98	-741.87	-1,235.47	-43.03	-821.81	-1,412.23	-721.62
Net errors and omissions	-838.34	-184.36	-439.31	-828.11	-1,126.67	-1,037.88	-955.20	-902.83

Source: CNB.

The net errors and omissions item was always negative, and (in absolute value) highest in 2004 and 2005, in which it exceeded one billion euro. This item requires some additional

⁷ As is clear from table 2, these other factors were rather small so that their omission in calculations with CNB data does not lead to large errors.

discussion. In theory, the current account balance and capital and financial account balance should add up to zero.

However, there are operational problems and imperfections in collecting the balance of payments data, leading to significant deviations from this theoretical rule.⁸ The net errors and omissions item is a residual that equalizes the sum of the current and capital and financial account to zero. The relevant case for Croatia over the period under study was the current account deficit and capital and financial account surplus that exceeded the current account deficit (in absolute value), so that the net errors and omissions item was always negative (year on year). But such a situation implies more (recorded) net capital inflows in the balance of payments than are needed to finance the current account deficit. In such cases, the literature on capital flight counts the errors and omissions item as unrecorded capital outflow (overstated capital and financial account balance, or more specifically – understated outflows of capital). The other explanation is that the current account deficit was larger than recorded (overstated current account balance), due to either unrecorded imports of goods and services and/or overstated exports and/or overstated transfers and income account balances. Of course, both explanations can be valid at the same time.⁹

3 Estimated amounts of capital flight

This section presents the results of capital flight estimates using different approaches. First, the estimates of CF1 and CF2 calculated using data from CNB in euro are shown and discussed (denoted as *CF1 [CNB, EUR]* and *CF2 [CNB, EUR]*). Afterwards, these results are expressed as a share of the GDP and compared to other capital flight estimates: to those obtained by using CNB data in US dollars (denoted as *CF1 [CNB, USD]* and *CF2 [CNB, USD]*), and to those calculated using the World Bank external debt data also in US dollars (denoted as *CF1 [WB, USD]* and *CF2 [WB, USD]*). For the purpose of additional comparison, both capital flight measures with the World Bank's external debt data are calculated also using the World Bank's data on debt flows, instead of data on net change in external debt. These estimates are denoted with *CF1_f [WB, USD]* and *CF2_f [WB, USD]*.

Table 4 shows the amounts of estimated capital outflows for the period between 2000 and 2007, in million euro. The first measure of capital flight indicates the largest amounts of capital outflows in 2003 (3,328.52 million euro) and 2004 (2,248.57 million euro). The amounts of capital flight in the last two years of the observed period were also rather high and they amounted to almost 2 billion euro. In 2001 and 2002, on the other hand, capital inflows in amounts of -271.57 and -585.08 million euro were estimated.

⁸ Possibly the most striking evidence of the imperfections in the balance of payments data is the fact that the world as a whole is running a current account deficit, although it is a closed economy and, thus, should have a zero balance on current account. For this reason, a study by the International Monetary Fund has been undertaken to identify the factors leading to these obvious discrepancies (IMF, 1987). It found that one of the most important reasons was the increased amounts of cross-border assets with underreported investment income.

⁹ Since Croatia has a negative net international investment position, the overstated current account balance may be due to underreported investment income transactions by foreign owners. Such a (probably partial) explanation would be in line with the findings of the IMF (1987) study (see previous footnote).

Table 4: *Estimates of capital flight from Croatia, in million euro*

	2000	2001	2002	2003	2004	2005	2006	2007
CF1 [CNB, EUR]	1,345.24	-271.57	-585.08	3,328.52	2,248.57	796.83	1,989.16	1,918.69
CF2 [CNB, EUR]	506.90	-455.93	-1,024.39	2,500.41	1,121.90	-241.05	1,033.96	1,015.86
NEO	-838.34	-184.36	-439.31	-828.11	-1,126.67	-1,037.88	-955.20	-902.83

Source: own calculations based on CNB data.

As previously mentioned, the difference between two measures of capital flight is that the second one does not include the net errors and omission item (NEO) from the balance of payments. Since this item was always negative in Croatia over the period under study, which would imply unrecorded capital outflows behind this item, CF2 is always smaller than CF1. The highest amount of capital outflows according to the CF2 measurement was estimated in 2003 at slightly more than 2.5 billion euro. Similarly as for CF1, the amounts for 2004, 2006 and 2007 were also comparatively high. The estimates of CF2 in 2001, 2002 and 2005 were negative. Still, the cumulative amounts of capital flight over the observed period were positive for both measures: according to CF1, the accumulation of foreign assets by Croatian residents between 2000 and 2007 amounted to 10.77 billion euro, and according to CF2, 4.46 billion euro. These are really large amounts, confirming the importance of this topic for Croatia.

Before the interpretation of the results in the next section, the above estimates of capital outflows are expressed as shares of GDP and compared to corresponding estimates obtained using different data sources. According to the comparison in table 5, the estimates calculated using the CNB external debt data in euro and CNB external debt data in US dollars are not that different: for CF1 somewhat larger differences can be observed only for 2002 and for 2005. For CF2, differences between the estimates using CNB data in euro and US dollars are mostly comparable to those of CF1, except for the results for 2001 where the difference is larger. Nevertheless, it may be concluded that the cross-currency valuation effects do not shape the results significantly, and that the method of estimating these effects is relatively efficient. Otherwise, the results for the estimates calculated using euro and US dollar external debt data from CNB should be much more different.

As for the estimates calculated using the external debt data from the World Bank, they differ from the estimates using CNB data more significantly – especially the measures of CF1 and CF2 with the World Bank's data in which a change in external debt stock is used as a proxy of a segment of capital inflows. The reason is probably that the World Bank's estimate of the cross-currency effect only relates to a part of the total external debt (see section 2.2).¹⁰ Still, the estimates calculated using the World Bank's data on debt flows (denoted with $CF1_f[WB, USD]$ and $CF2_f[WB, USD]$), instead of the data on change in

¹⁰ The amount calculated for 2005 using the World Bank's external debt data deserves some special attention: it is mostly a result of the negative net change in debt stock according to the World Bank data (see table 2) – other variables entering the calculation of capital flight for this year do not show such unusual values when compared to other years. This negative net change in debt stocks cannot be attributed to net flows on debt, or to other items which potentially influence net change in debt stock and, thus, remains unexplained. This is why the value of the residual (debt-stock reconciliation) item in table 2 is so low in 2005 (it equals -3,339.84 million US dollars).

external debt stock, deviate less strongly from the results calculated using the CNB data for most of the years studied.

Table 5: Comparison of different capital flight estimates, in % of GDP

	2000	2001	2002	2003	2004	2005	2006	2007
CF1 [CNB, EUR]	5.81	-1.06	-2.08	11.09	6.86	2.23	5.09	4.48
CF1 [CNB, USD]	5.74	-1.27	-0.62	11.23	6.58	1.55	5.48	4.56
CF1 [WB, USD]	3.88	-3.53	3.42	15.97	12.11	-7.70	9.17	10.27
CF1 _r [WB, USD]	3.54	-3.39	-1.46	13.42	8.77	0.17	5.96	3.33
CF2 [CNB, EUR]	2.19	-1.79	-3.64	8.33	3.42	-0.67	2.64	2.37
CF2 [CNB, USD]	2.03	-3.33	-2.60	8.75	3.77	-1.27	3.08	2.69
CF2 [WB, USD]	0.17	-5.60	1.44	13.49	9.30	-10.52	6.77	8.41
CF2 _r [WB, USD]	-0.17	-5.46	-3.44	10.94	5.96	-2.64	3.56	1.47

Source: own calculations based on WB and CNB data.

As can be seen from the table, the estimates of CF1 for all data sources show the largest amounts of capital outflows in 2003 (ranging from 11.09% and 15.97% of the GDP, depending on data used). Also, except for 2001 and (mostly) for 2002, for all other years, all the results imply net accumulation of foreign assets with one exception for 2005. The results for CF2 are always lower than for CF1, but they are still mostly positive. Again, the largest values are estimated for 2003 (ranging from 8.33% to 13.49% of GDP). Similarly as for CF1, the estimates for 2001 and 2002 are almost always negative. Unlike for the first measure of capital flight, the results for CF2 imply net capital inflows in 2005 for results from all data sources. The following section tries to interpret the above results.

4 Discussion of results

It is very difficult to identify the motivation for capital flight. The literature usually points to the following types of motives: international portfolio diversification (which is a normal business activity of economic agents) in the presence of some capital controls; fear of some political and/or macroeconomic risks (such as risk of higher taxes, strong depreciation of domestic currency, actual or expected high inflation, expected introduction of more stringent capital controls etc.); and the motive of keeping capital ownership a secret (because of e.g. risk of expropriation, and/or loss of social status if the ownership was a consequence of actions which are illegal or which are viewed as immoral).¹¹ Whatever the motives for capital flight, the results in the previous section imply that (some) Croatian residents may have large foreign asset holdings, not recorded in the official Croatian net international investment position (IIP). However, this part of the capital flight presumably hiding behind the NEO item may arise due to imperfections in the current account data compilation, as noted in section 2.3. The following subsection deals with an interpretation of the NEO item in more detail.

¹¹ For a detailed discussion of the motives for capital flight see e.g. Beja (2005), Cumby and Levich (1987), Doolley (1988), Eggerstedt et al. (1995), Vukšić (2001), or Walter (1987).

4.1 Net errors and omissions

There was a significant and permanently negative NEO item in Croatia over the period under study. Normally, the size of the NEO is not necessarily an indicator of the relative accuracy of balance of payments data, since it represents a net amount, so that the errors and omissions may be offset. However, there is a reason for concern if the NEO is persistently large and preceded with the same sign as is the case in Croatia (IMF, 1993:6-7). Although it is very difficult to give a convincing interpretation of this single net item which may be influenced by many factors, there are reasons to believe that such a NEO item in Croatia possibly (partly) represents the unrecorded accumulation of foreign cash, and/or (partly) results from overstated tourism income in the current account.

It is usual to present changes in the foreign cash holdings of a country's residents in the financial account item "currency and deposits of other sectors". Due to data collection problems, this item was omitted from the Croatian balance of payments for a period of time after 1999. There were strong indications that this significantly affected the amount of NEO (CNB, 2003): the end of 2001 was the beginning of conversion of the national currencies of the European Monetary Union (EMU) member countries into euro – a process that continued throughout the first half of 2002 and already led to large increases in citizens' foreign currency deposits in 2001. This event was an opportunity for the Croatian National Bank to estimate the amounts of foreign cash holdings in Croatia (CNB, 2003:39-40): during 2001, the conversion to euro resulted in net foreign cash inflows into commercial banks of 2.1 billion euro, that is 2.3 billion euro of cash in the currencies of EMU member countries. The largest portion of these inflows ended up as foreign currency deposits of citizens. Although the citizens' foreign currency deposits did not grow at the beginning of 2002, large gross cash flows were recorded – further cash inflows in the currencies of EMU member countries (mostly German marks) and euro cash outflows. As a result of all these movements, the total amount of German mark cash holdings before the conversion was estimated at slightly more than 3 billion euro. Some of these foreign cash holdings were replaced by euro cash at the beginning of 2002. According to the CNB (2003) estimate for the first half of 2002, if the item "currency and deposits of other sectors" had been included in the financial account of the balance of payments, it would have accounted for 80% of the NEO item in that period (following the methodology used at the time). Although the first half of 2002 is not representative due to the special circumstances of the euro conversion, and because that period is not sufficiently long, this estimate still indicates that the NEO would not be so high in absolute value if the change of foreign cash holdings were included as a separate item with sufficient precision.

However, in the revision of the balance of payments data used in this paper (from May 2009), the "currency and deposits of other sectors" item was included in the balance of payments for the whole period under study, but only with relatively small amounts for most of the observed period.¹² Consequently, the NEO item is still large in absolute value despite the earlier indications that a large part of the NEO amount is caused by the unrecorded accumulation of foreign cash. Thus, one possible explanation is that the

¹² The CNB data was revised backwards. It does not suffer from any significant statistical breaks, i.e. it is methodologically mostly consistent for the period under study.

problem recognized by the CNB (2003) – the imprecise data on foreign cash holdings – has not been solved. In order to gain more insight into this problem, the quarterly data on the NEO item in Croatia is presented in table 6.

Table 6: Net errors and omissions 2000-2007, in million euro

	Quarter I	Quarter II	Quarter III	Quarter IV	Total
2000	-132.51	567.14	-1,021.36	-251.60	-838.34
2001	437.32	75.78	-907.01	209.54	-184.36
2002	132.34	12.52	-931.00	346.84	-439.31
2003	145.22	-110.77	-1,698.72	836.16	-828.11
2004	421.22	-249.68	-1,803.55	505.35	-1,126.67
2005	336.96	-64.36	-1,718.73	408.25	-1,037.88
2006	426.02	-141.18	-2,009.23	769.19	-955.20
2007	663.86	-50.45	-2,203.75	687.50	-902.83
Total	2,430.43	39.00	-12,293.36	3,511.23	-6,312.70
Average	303.80	4.88	-1,536.67	438.90	-789.09

Source: CNB.

As is clear from table 6, data for various quarters are quite different, with significant seasonal regularities over the observed period. This is not that surprising since it is known that the overall macroeconomic movements in Croatia and, consequently, the balance of payments data, have a strong seasonal component. Especially interesting in this respect is the influence of the tourist season, which is mostly reflected in the data for the third quarter of the year. In these quarters, the NEO item has always been negative and large in absolute value. The largest absolute values for the third quarters were documented in 2006 and 2007, in which the amount of the NEO exceeded 2 billion euro. Unlike in the third quarters, large positive average amounts of NEO were recorded in the first and fourth quarters. The average value of NEO in the second quarter was fairly close to zero.

In order to show that such seasonality of the NEO item is not usual, the quarterly data for NEO of some countries in the region which do not have such sizable tourism income is shown in table 7. Despite differences in the average NEO items for different countries (e.g. positive values for Bosnia and Herzegovina and negative values for Hungary in all quarters), it is clear that there is no strong seasonality in the quarterly data as in the case of Croatia.

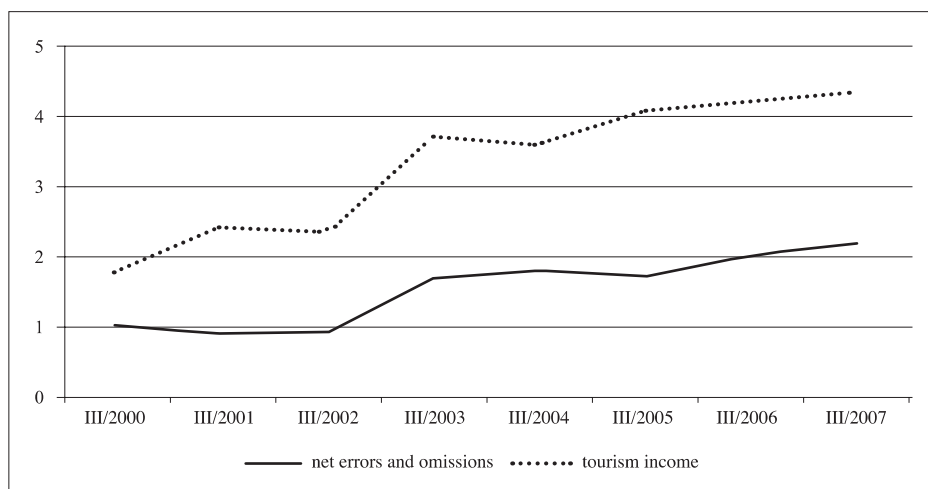
Table 7: Average quarterly net errors and omission for the period 1999-2006, in million US dollars

	Quarter I	Quarter II	Quarter III	Quarter IV
Bosnia and Herzegovina	25.25	112.33	66.65	73.71
Hungary	-267.53	-190.16	-386.03	-317.93
Macedonia, FYR	8.71	-1.40	6.51	7.69
Slovenia	59.74	0.30	-67.69	0.02

Source: IMF (2008). For Bosnia and Herzegovina, the average values are calculated for the period between 2001 and 2006, since data for 1999 and 2000 were not available.

Since tourism income in the third quarters is a potential cause for the seasonality of the Croatian NEO item, this data is shown in figure 1, together with the data for the NEO in the third quarters.¹³ The NEO amounts are shown in absolute values. Tourism income (in the third quarters) increased rapidly over the observed period, reaching values of over 4 billion euro in the last three years under study (on average, almost two thirds of the total annual tourism income were earned in the third quarters). The amount of NEO in the third quarters averaged 46.2% of the quarterly tourism income.

Figure 1: Net errors and omissions and tourism income in the third quarters, in billion euro



Source: CNB. The term “tourism income” is used for the item from the official Croatian balance of payments (current account item: travel: credit).

The figure shows a relatively high correlation between the two variables (the correlation coefficient equals 0.95), with an exception in 2001 and somewhat weaker co-movements observed in 2004 and 2005. Exactly this exception for 2001, which saw a fall in the NEO value and a significant rise in tourism income, provides additional arguments for the conclusions in the interpretation of the NEO item in Croatia which follows.

¹³ The term “tourism income” is used for the item from the official Croatian balance of payments (current account item: travel: credit). The methodology used in compiling this information is described in the CNB’s Bulletin: “Revenues from services rendered to foreign travellers and tourists, as well as expenditures incurred by domestic travellers and tourists abroad are shown under the position Travel. In the 1993-1998 period, this position was assessed by using various data sources which did not provide for a full coverage in accordance with the recommended methodology. Accordingly, in the second half of 1998, the Croatian National Bank started to carry out the Survey on Consumption of Foreign Travellers in Croatia and Domestic Travellers Abroad and use its results for compiling the Travel position. Since early 1999, the results of this Survey, based on carrying out a survey of travellers (stratified sample) at border crossings, have been combined with the Ministry of the Interior data on total number of foreign and domestic travellers, along with the data on distribution of foreign travellers by countries contained in the CBS Report on tourism, in order to assess the corresponding balance of payment items.” (CNB, 2009b:45).

The negative NEO item, specifically in the third quarters, may be the result of overstated current account income, i.e. tourism income, and/or understated capital outflows in the capital and financial account (i.e. unrecorded *use* of foreign currency tourism income). If the reason is only overstated tourism income, the question arises: Why is the NEO item positive in other quarters (especially in the first and the last)? What would be the reason to overstate one type of income in one quarter and understate it in the others? It seems that the possible overstatement of tourism income in the third quarter cannot (completely) explain the *seasonal* movements of the NEO item (although this may be an explanation for the annual NEO item – see below). On the other hand, if the problem arises because of understated (i.e. partly unrecorded) capital outflows in the capital and financial account in the third quarter, it is likely that part of these outflows represents unrecorded accumulation of foreign cash which flows into Croatia as income from foreign tourists. An argument for such an interpretation is the high correlation between tourism income and the absolute value of the NEO in the third quarters, shown in figure 1. Moreover, this correlation is partly disturbed by the mentioned exception for 2001, in which the value of NEO may have been affected by large foreign cash flows due to the euro conversion process. Although the bulk of the conversion was carried out at the end of 2001 and the beginning of 2002, it is likely that the effect was felt in the third quarters as well.

Foreign cash accumulated in other sectors (and presumably not precisely recorded in the corresponding balance of payments item) during the third quarters can then partly and gradually flow into the banking sector during other periods. This would explain the (on average) positive sign of the NEO item in the other quarters, especially the last and the first quarters. During these two quarters, tourism income is the lowest and possible “new” unrecorded foreign cash accumulation in these periods does not significantly affect the amount of NEO.¹⁴ On the other hand, the tourism income recorded in the second quarters is usually somewhat larger than that in the first and fourth quarters, so that the “new” unrecorded foreign cash accumulation may largely offset the inflow of the “old” accumulation into the banking sector. Thus, the average amount of NEO in the second quarters is only slightly above zero.

However, the negative amounts of NEO observed at the annual level do not necessarily imply that unrecorded foreign cash accumulation from foreign tourist spending does not completely flow into the banking sector during the other periods of the year. This annual NEO is especially difficult to interpret in a convincing way. It is possible that, for instance the tourism income (over the whole year) is indeed overstated by the amount of the annual NEO. This would imply that the Croatian GDP is overstated accordingly. In this case, since this error is systematic, the CNB should consider adjusting its methodology for estimating the tourism income. If the possibility of systematically overstated tourism income is excluded, and assuming that all tourism income ends up in the banks over the year, then the NEO may represent a form of unrecorded capital outflow, either abroad or outside the official sector of the economy (NEO can actually be due to the reasons mentioned in the last part of section 2.3, specifically those in footnotes 8 and 9, but it may

¹⁴ At this point, it should be reminded that the NEO is a net item, i.e. according to this interpretation, the balance of unrecorded capital inflows and outflows which are (partly) offsetting each other.

also represent an unaccounted increase in foreign cash balances from other unofficial, including criminal activities). Still, given the seasonal developments of the NEO item, its high correlation with tourism income described above and the conclusions from CNB (2003) that the NEO is strongly affected by foreign cash accumulation, the suspicion that the annual NEO item may partly be related to an increase in unrecorded foreign cash holdings remains strong.

Given that (foreign) cash holdings do not bring any returns, the question arises of the motivation of residents to hold foreign cash. The extensive use of foreign exchange assets (not only cash) in Croatia but also in other Central, Eastern and South-eastern European countries may be motivated by a variety of factors, one of the most pronounced ones being the lack of confidence in the national currency (Dvorsky et al., 2008). In addition, a study by Stix (2008) on households in Croatia, Slovakia and Slovenia, found that the choice between foreign currency cash and foreign currency bank deposits is largely affected by confidence in the banking system. A further important aspect may be the general anonymity and secrecy of cash holdings (Fischer et al., 2004), which, combined with lack of confidence in the national currency, may lead to demand for foreign cash for transactions in the underground economy and/or for illegal purposes (in such cases it is possible to derive earnings from these assets in unreported activities). The motive of ownership secrecy makes it very difficult to estimate the amounts of foreign cash holdings in general, but especially when these assets are derived from illegal activities. Therefore, the results of surveys trying to calculate the amount of foreign cash are of limited use because they tend to understate the amounts of foreign cash present (see e.g. Dvorsky et al., 2008; or Stix, 2008). In addition, although some information on the amount of foreign cash in some countries is available from data on currency shipments, there is no data on the migration of foreign cash in connection with tourism, workers' remittances or unofficial economic activities (ECB, 2007).

Specifically the seasonal developments of the NEO item (interpreted as changes in foreign cash balances), may indicate the motive of hiding (part of) tourism income from the tax authorities. This would be in line with the positive quarterly NEO amounts in the fourth and the first quarters, which can be interpreted as partial unrecorded capital inflows, i.e. the gradual movement of this accumulated foreign cash into the official economy. But then, this may also lead to a negative annual NEO, if e.g. part of the unreported tourism income cannot be "transferred" into the official economy without substantial risk of being detected by the tax authorities. It is also possible that part of the foreign cash accumulation from tourism income is used in other sectors of the unofficial economy. According to the Croatian Central Bureau of Statistics (CBS), the overall size of the unofficial economy in Croatia increased in nominal terms, from slightly less than 2 billion euro in 2000, to a little over 2.6 billion euro in 2005 (CBS, 2009).¹⁵ While a discussion of the reliability of these estimates of the underground economy is beyond the scope of this paper, they do imply

¹⁵ The size of unofficial economic activities is estimated in the course of the adjustment of GDP calculation methodology to ESA 95 methodology. CBS has revised its GDP estimates back to 1995. Although the data on GDP according to the new methodology (which is used in this paper) is available for 2006 and 2007 as well, the available publications containing the GDP data for years after 2005 do not contain separate information on the size of the underground economy.

that the transaction demand for foreign currency cash in the underground economy was likely to be increasing over the period mentioned and therefore may have partly caused the increase in foreign cash balances. Finally, workers' remittances may be an additional channel of unrecorded foreign cash accumulation, but again, a thorough analysis and discussion of this aspect go beyond the scope of this paper.

4.2 *The magnitude of the problem and some comparisons*

Table 8 shows cumulative amounts for both capital flight measurements and all data sources, expressed in million euro or US dollars and as a percentage of the total external debt stock at the end of 2007. For the first measurement of capital flight, cumulative amounts range from 28% of the total external debt (for $CF1_f$ [WB, USD]) to 41.47% (for $CF1$ [WB, USD]). The amounts of cumulative CF1 using CNB data on external debt are slightly higher than the lowest estimate: 29.24% and 32.71% of the total external debt stock. This measure of capital flight implicitly assumes that unrecorded capital outflows are hidden behind the NEO item. This is quite significant – the cumulative amount of NEO equals around 15.7% of the total external debt stock (for calculations in US dollars) or 19.2% (for calculation in euro). The discussion in the preceding section showed that the negative NEO item may partly be related to unrecorded accumulation of foreign cash from foreign tourist spending, and/or may possibly result from overstated foreign tourist spending in Croatia.

Table 8: *Cumulative amounts of different capital flight estimates 2000-2007*

	In million	In % of external debt at the end of 2007		In million	In % of external debt at the end of 2007
CF1 [CNB, EUR]	10,770.36	32.71	CF2 [CNB, EUR]	4,457.67	13.54
CF1 [CNB, USD]	14,146.90	29.24	CF2 [CNB, USD]	6,548.11	13.53
CF1 [WB, USD]	20,149.24	41.47	CF2 [WB, USD]	12,550.46	25.83
$CF1_f$ [WB, USD]	13,603.82	28.00	$CF2_f$ [WB, USD]	6,005.04	12.36

Source: own calculations based on WB and CNB data.

Regarding the cumulative amounts of CF2, they range from 12.36% of the total external debt stock at the end of 2007 (for $CF2_f$ [WB, USD]), to 25.83% (for $CF2$ [WB, USD]). The amounts of cumulative CF2 using CNB data on external debt are almost identical for calculations with data in euro and in US dollars: 13.53% and 13.54% of the total external debt stock. Thus, even after excluding the segment of capital flight presumably hiding behind the NEO item, there are substantial cumulative amounts of capital flight. Assuming that the above capital flight estimates do not arise from imperfections in current account data collection (this assumption should hold at least for CF2), then, regardless of the motives for capital flight, the following conclusion emerges: (some) Croatian residents have large foreign asset holdings, partly unrecorded in the official Croatian international investment position (IIP).

In contrast to the period studied in this paper, the cumulative amount of capital flight from Croatia in the period between 1993 and 1999 was negative and fairly close to zero, i.e. it amounted to only -79.7 million US dollars (Vukšić, 2001).¹⁶ However, annual amounts showed quite large differences and there are relatively convincing interpretations of annual developments. Capital outflows from Croatia during 1993 and 1994 amounted to 310.6 and 571 million US dollars, respectively. After the end of the war in 1995, the direction of capital flows changed and net capital inflows were estimated in the three following years: -1,009.6 million US dollars in 1996, -558.4 million in 1996, and -304.3 million in 1997. In 1998 Croatia went through a banking crisis, which was a likely cause of a new wave of capital flight amounting to 1,295.8 million US dollars in that year. Finally, in 1999 there were capital inflows amounting to -384.8 million US dollars.

In order to gain additional insight into the severity of the problem of capital flight from Croatia in the period after 2000, the results are compared to estimates for other countries using comparable methodology and data sources. Table 9 provides the methodologically consistent estimates of capital flight for Croatia and some other countries in the region, calculated by Kar and Cartwright-Smith (2008), for the period between 2002 and 2006. Their study also applies two versions of the residual approach, once with a change of external debt stock and once with net debt flows as relevant variables, both of which are shown in table 9. Their estimates for Croatia are compared to the results of the closest method applied in this paper.¹⁷

Differences in results for Croatia, as compared to estimates in this paper, are relatively large for some years for the estimates using the change of external debt stock as a relevant variable. When net debt flows are used instead, the results from the two sources coincide well. As for the other countries, strong differences are apparent: capital outflows seem to have been substantial for most years only in Hungary in estimations with a change of external debt stock (the reliability of the extremely large capital flight estimate for Hungary in 2006 will not be discussed here). Both Croatia and Hungary saw a reversal of capital flight in 2005. When net debt flows are used instead of changes of debt stock, the results for Hungary change significantly for most of the years. These estimates are available for Serbia as well and show that Serbia also experienced relatively large and persistent capital flight.

¹⁶ This paragraph presents the results from Vukšić (2001) obtained using the residual method similar to the CFI measurement applied in this paper. However, there are some differences. In Vukšić (2001) there were no corrections for the cross-currency valuation effect. Also, portfolio investment in equity securities were not considered and the net FDI data did not only encompass equity investment and reinvested earnings, but it also included intercompany debt (at least for some years), and thus possibly counted this part of the external debt twice. These methodological deficiencies were probably much less important at the time than they would have been for the period under study in this paper. The reason is that portfolio investment in equity securities and the intercompany debt were of considerably lower magnitude over that period. As for the other methods of estimations used in Vukšić (2001), the Dooley method and trade mispricing, their weaknesses were already highlighted in that paper, as well as in other literature. Consequently, they were not used in this study (see also footnote 2).

¹⁷ The sources of data used in Kar and Cartwright-Smith (2008) are the World Bank Global Development Finance database, World Economic Outlook databases and IMF Balance of Payment and International Finance Statistics databases. Some differences in results may be expected for Croatia as compared to estimates derived in this paper. The reasons may be the different sources of balance of payments data. Also, it is not clear whether Kar and Cartwright-Smith (2008) consider portfolio investment in equity securities, and whether they use only equity capital and reinvested earnings FDI in their calculations.

Table 9: Capital flight from Croatia and other countries in the region 2002-2006,
in million US dollars

Estimates using the residual method with change of debt stock					
	2002	2003	2004	2005	2006
Bosnia and Herzegovina	-332	-126	-579	-1,736	-745
Hungary	4,483	6,009	8,882	-4,405	34,466
Macedonia, FYR	50	99	-89	-212	370
Serbia	–	–	–	–	–
Slovenia	-65	-700	-315	-975	312
Croatia	1,960	7,439	5,969	-4,514	5,228
Croatia / CF1 [WB, USD]	995	5,925	5,275	-3,266	4,709
Estimates using the residual method with net debt flows					
	2002	2003	2004	2005	2006
Bosnia and Herzegovina	-396	-1,334	-607	-968	-1,032
Hungary	372	-246	7,639	-1,501	32,443
Macedonia, FYR	-87	-80	-154	-251	81
Serbia	804	1,080	1,668	2,837	2,817
Slovenia	-65	-700	-315	-975	312
Croatia	-126	5,446	4,009	5	3,187
Croatia / CF1 _f [WB, USD]	-425	4,978	3,820	73	3,061

Source: Kar and Cartwright-Smith (2008) and own estimates.

The estimates for other countries were always negative except in 2006 for Slovenia and Macedonia. Based on the above comparison, it can be stated that the problem of capital flight is not common for all the countries in the region.

4.3 Development of the Croatian net international investment position, adjustments and prospects

The results of unrecorded capital flow estimates may be used to adjust the Croatian net international investment position (IIP). Figure 2 presents the official Croatian net IIP in billion euro (curve denoted with IIP), as well as the net IIP corrected for the NEO term (the absolute values are shown since Croatia's net IIP is negative with and without corrections for unrecorded capital outflows).¹⁸

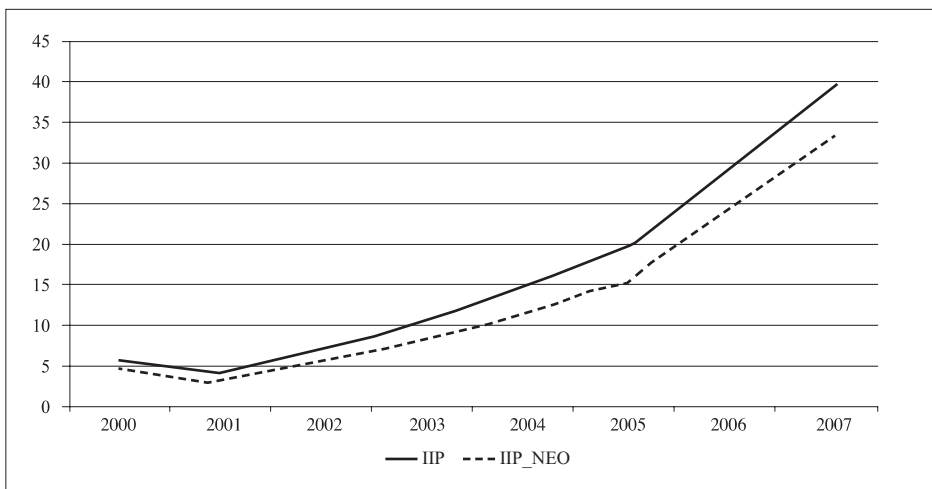
It is immediately clear from the figure that the official Croatian net IIP deteriorated significantly after a small improvement in 2001.¹⁹ These negative tendencies accelerated

¹⁸ Lane and Milesi-Ferreti (2001) count the NEO term to capital flows in their estimations of foreign assets and liabilities of countries for which there are no official data on the international investment position (IIP). This would imply adjusting the official net IIP for this amount. However, in the more recent version of their work (Lane and Milesi-Ferreti, 2007), they present this item separately and use it in the interpretation of the results.

¹⁹ Changes of net IIP are also subject to cross-currency valuation effects. Unfortunately, data on its currency structure were not available. Still, assuming that the assets and liabilities follow a similar currency structure as the Croatian external debt, it may be concluded that the cross-currency valuation effect in specific years has the same sign as the external debt in table 1. Thus, net increases of (the absolute value of) net IIP in euro in the period from 2002 onwards (with exception of 2005) are probably larger than shown in figure 2 after accounting for these effects.

after 2005. The correction of the official net IIP relates only to adding the unrecorded capital flows to the official net IIP amounts. As expected, the official net IIP curve lies above the curve representing net IIP adjusted for the NEO term. If expressed as a percentage of the GDP in 2007, (the absolute value of) the official Croatian net IIP amounted to 93.21%. The share of net IIP corrected for NEO was significantly smaller and amounted to 78.47%. Thus, correcting for unrecorded capital outflows has an obvious (positive) impact on the Croatian net external position although it is still negative as for other emerging European countries (see e.g. Lane and Milesi-Ferreti, 2007). It should be noted that unrecorded accumulation of foreign assets possibly generates unrecorded investment income. In such cases, if this unrecorded income is reinvested, then the actual cumulative amounts of unrecorded capital outflows are higher than estimated so that the actual adjusted curve would probably lie lower than depicted in figure 2. In other words, there would be additional improvements in net IIP.

Figure 2: *Official and adjusted Croatian net international investment position 2000-2007, in billion euro (absolute values)*



Source: CNB and own calculations.

The strong deterioration of the Croatian net IIP is a reflection of the fact that economic growth in Croatia over the period observed has largely been based on strong capital inflows from abroad. The sustainability and limits of economic growth under these circumstances largely depend on whether, and to what extent, these inflows were spent on productive, growth-enhancing purposes. According to some economists, this was mostly not the case. As noted by the CNB governor in October 2009, in times of expansion, there were enough funds for everyone and the problem of their misallocation (in terms of the effects of their spending) was not so obvious to many (Rohatinski, 2009). In his opinion, Croatia will

be able to meet its (short-term) financing needs in the present environment of increasing international liquidity and the improved political perception of Croatia as a debtor in the course of the continuing EU accession process. This, however, hides the danger of "... believing that we can go on functioning by following the established routine..." (Rohatinski, 2009). Therefore, he emphasizes the necessity for a substantial change of allocation which is not possible without the state playing a major role in the process.

5 Conclusion

This paper presents estimates of capital flight and the resulting accumulation of foreign assets, for Croatia, over the period between 2000 and 2007. The majority of researchers into the capital flight phenomenon agree that it has an adverse impact on a country's development. These negative consequences tend to be more pronounced where capital scarcity in the economy is greater. Given the current global financial and economic crisis and increasing capital scarcity in many emerging markets and transition economies, including Croatia, the problem of capital flight has regained significance. The magnitude of capital flows in such an environment is important in assessing a country's financing needs and possibilities. In addition, the results on unrecorded capital flows can be used for adjusting the net international investment position of a country, which is a key determinant of its external sustainability (Lane and Milesi-Ferreti, 2001).

To the extent that the results do not reflect data problems in the current account balance of the balance of payments, they reveal relatively large amounts of foreign asset accumulation over the observed period, ranging between 28% and 41.47% of the external debt stock at the end of 2007, depending on the source of the data used. A large portion of this accumulation relates to cumulative amounts of the net errors and omissions item, which is interpreted as unrecorded capital flow. There are reasons to believe that such net errors and omissions in Croatia partly represent the unrecorded accumulation of foreign cash from foreign tourist spending, and/or partly result from overstated tourism income. However, even after excluding this item from the calculation of capital flight, the findings reveal that the accumulation of foreign assets over the period ranged between 12.36% and 25.83% of the external debt stock at the end of 2007, depending on the source of the data used. If unrecorded portion of these outflows is taken into account, Croatia's net international investment position is considerably improved, but is still negative with negative tendencies.

It is very difficult to give a convincing interpretation of the causes and motives of capital flight. For this reason, policy recommendations remain mostly unclear. Still, if one motive for the unrecorded segment of capital flows presumably hiding behind the NEO item is to hide from the tax authorities some of the income earned from tourism, then a clear policy recommendation is to introduce more effective inspection and control. Clearly, if concerns about systematically overstated tourism income are justified, the data compilation methodology should be corrected accordingly (this would require a revision of the GDP data as well). As for the second measure of capital flight excluding the NEO item, it does not seem likely that it is motivated by any macroeconomic risks given the good macroeconomic development in Croatia over the period under observation. If (some)

of these capital outflows are caused by the motive of keeping capital ownership a secret (e.g. because it was acquired in an illegal way), then a similar policy implication emerges as for the unreported tourism income. To the extent to which some unrecorded foreign assets accumulation is held in EU countries in the form of bank deposits or other interest-bearing financial instruments, some revelation may be expected in the course of Croatia's accession to the European Union: the EU directive on taxation of savings income in the form of interest payments (Official Journal of the European Union, 2003, Council Directive 2003/48/EC), prescribes that member states automatically exchange information on interest payments to residents of other EU countries. This may enable more precise coverage of the investment income part of the current account, and the information may possibly be used for better estimation of the Croatian net IIP.

Since many Croatian economic agents are faced with significant and increasing financing constraints due to the (unexpected) recent turn in the global economy, the results may even be regarded as encouraging in the sense that some economic agents have some unrecorded reserves in the form of foreign assets, which may possibly be used to overcome the current financing difficulties. However, it is still too early to test this hypothesis empirically: data on the NEO item in the last quarter of 2008 show a negative value (implying unrecorded capital outflows) unlike the 2000-2007 average in table 6. This is possibly the result of the withdrawal of bank deposits in that period, given the shaken confidence in their safety at the time (CNB, 2009a).

LITERATURE

Beja, E. L. 2005. "Capital Flight: Meanings and Measures" in: A. E. Epstein, ed. *Capital Flight and Capital Controls in Developing Countries*. Cheltenham; Northampton: Edward Elgar, 58-82.

Boyce, J. and Ndikumana, L., 2001. "Is Africa a net creditor? New estimates of capital flight from severely indebted sub-Saharan African countries 1970-1996". *The Journal of Development Studies*, 38 (2), 27-56.

Chang, K. P. H., Claessens, S. and Cumby, R. E., 1997. "Conceptual and Methodological Issues in the Measurement of Capital Flight". *International Journal of Finance and Economics*, 2, 3101-119.

Claessens, S. and Naudé, D., 1993. "Recent Estimates of Capital Flight". *Policy Research Working Papers*, No. 1186. Washington DC: World Bank.

CNB, 2003. *Bulletin, Quarterly Report*, No. 80. Zagreb: Croatian National Bank.

CNB, 2009a. *Bulletin, Quarterly Report*, No. 146. Zagreb: Croatian National Bank.

CNB, 2009b. *Bulletin*, No. 151. Zagreb: Croatian National Bank.

Cumby, R. and Levich, R., 1987. "Definitions and Magnitudes: On the Definition and Magnitude of Recent Capital Flight" in: D. R. Lessard and J. Williamson, eds. *Capital Flight and Third World Debt*. Washington, DC: Institute for International Economics, 27-67.

Dvorsky, S., Scheiber, T. and Stix, H., 2008. “Euroization in Central, Eastern and Southeastern Europe – First Results from the New OeNB Euro Survey” in: P. Mooslechner and D. Ritzberger-Grünwald, eds. *Focus on European Economic Integration*, No. 1/08. Vienna: Oesterreichische Nationalbank, 48-60.

DZS, 2009. “Godišnji bruto domaći proizvod od 1995. do 2005”. *Priopćenje*, No. 12.1.3. Zagreb: Državni zavod za statistiku.

ECB, 2007. *Review of the International Role of the Euro*. Frankfurt am Main: European Central Bank.

eggerstedt, H., Hall, R. B. and Wijnbergen, S. Van, 1995. “Measuring Capital Flight: A Case Study of Mexico”. *World Development*, 23 (2), 211-232.

Epstein, A. E. (ed.) 2005. *Capital Flight and Capital Controls in Developing Countries*. Cheltenham; Northampton: Edward Elgar.

Fischer, B., Köhler, P. and Seitz, F., 2004. “The Demand for Euro Area Currencies: Past, Present and Future”. *ECB Working Paper Series*, No. 330. Frankfurt am Main: European Central Bank.

Hermes, N., Lensink, R. and Murinde, V., 2002. “Flight Capital and its Reversal for Development Financing”. *WIDER Discussion Paper*, No. 2002/99. World Institute for Development Economics Research, United Nations University.

IMF, 1987. *Final Report of the Working Party on the Statistical Discrepancy in World Current Account Balances*. Washington: International Monetary Fund.

IMF, 1993. *Balance of Payments Manual*. Washington: International Monetary Fund.

IMF, 2008. *International Financial Statistics*. CD-ROM March 2008. Washington, DC: International Monetary Fund.

Kar, D. and Cartwright-Smith, D., 2008. *Illicit Financial Flows from Developing Countries: 2002-2006*. Washington DC: Global Financial Integrity: A Program of the Center for International Policy.

Lane, P. R. and Milesi-Feretti, G. M., 2001. “The external wealth of nations: measures of foreign assets and liabilities for industrial and developing countries”. *Journal of International Economics*, 55, 263-294.

Lane, P. R. and Milesi-Feretti, G. M., 2007. “The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004”. *Journal of International Economics*, 73, 223-250.

Lessard, D. R. and Williamson, J. (eds.), 1987. *Capital Flight and Third World Debt*. Washington DC: Institute for International Economics.

Morgan Stanley, 2009. *Turkey: In the Absence of Growth* [online]. Available from: [<http://www.morganstanley.co.uk/views/gef/archive/2009/20090116-Fri.html>].

Official Journal of the European Union, 2003. Council Directive 2003/48/EC of 3 June 2003 on taxation of savings income in the form of interest payments, 26 June 2003, L 157/38 – L 157/48.

Rohatinski, Ž., 2009. Address of Dr. Željko Rohatinski at the business conference “Big Plans Day”, organized by the Lider business weekly (Zagreb, 26 October 2009).

Stix, H., 2008. “Euroization: What Factors drive its Persistence? Households Data Evidence for Croatia, Slovenia and Slovakia”. *OeNB Working Paper*, No. 140. Vienna: Oesterreichische Nationalbank.

Vukšić, G., 2001. “Bijeg kapitala iz Hrvatske: uzroci i opseg”. *Financijska teorija i praksa*, 25 (4), 459-485.

Walter, I., 1987. “The Mechanisms of Capital Flight” in: D. R. Lessard and J. Williamson, eds. *Capital Flight and Third World Debt*. Washington DC: Institute for International Economics, 103-128.

