

Eesti Pank
Bank of Estonia



QUALITY INDICATORS FOR THE BALANCE OF PAYMENTS STATISTICS

Q2 2007–2009

February 2010

TABLE OF CONTENTS

- Quality indicators of the balance of payments statistics2
- 1. Balance of payments flash estimates..... 3
- 2. Adjustment of the time series of quarterly balance of payments for Q2 2007–200916
- 3. Adjustment of the time series of the international investment position28
- 4. The essence of the quality indicators of balance of payments statistics29

QUALITY INDICATORS OF THE BALANCE OF PAYMENTS STATISTICS

The following is the sixth analysis of the scope of adjustment of the balance of payments time series, which is now made available also for the public on the web site of Eesti Pank. The analysis covers quality indicators recommended by Eurostat and the European Central Bank (ECB): the mean absolute percent error (MAPE) for the current account items and the root mean square relative error (RMSRE) for the financial account items. For information on the content of the quality indicators, please see Clause 4 at the end of the analysis. Both indicators assess the scope of later adjustment of the balance of payments time series (as a percentage) compared to the preliminary time series. In addition, the analysis covers the absolute scope of adjustments, the direction of later adjustments, and the adjustment of the item "errors and omissions". As a rule, the majority of preliminary economic indicators are later adjusted upon collection of additional data and in accordance with changes in methodology. Eesti Pank applies the following adjustment policy with regard to the balance of payments (BOP) and the international investment position (IIP):

- **Regular adjustments:**

- When the preliminary data for Q2, Q3 or Q4 are released, the data for the previous quarter is regularly adjusted.
- When the preliminary data for Q1 are released, the data for Q4 (as well as any other previous quarter for which additional data has been collected) are adjusted. The data are considered final after their integration into the input/output tables of the national accounts system (in up to five years).

- **Extraordinary adjustments:**

- In exceptional cases, when significant errors or omissions have occurred, also the data for earlier quarters may be adjusted.
- If changes in methodology or data collection system render the results incomparable, data may be adjusted retrospectively as far as possible.
- Extraordinary adjustments are reported in quarterly press releases of BOP and IIP statistics.

The current analysis also includes reference thresholds that should help users of statistics better assess the quality indicators. It should be noted that there is only one international recommendation with regard to the scope of adjustment of the balance of payments items. Namely, the International Monetary Fund (IMF) has recommended to maintain the item "errors and omissions" within $\pm 5\%$ of half of the credit and debit turnovers of the current account. The Balance of Payments and Economic Statistics Department of Eesti Pank used ECB's report on the quality of balance of payments statistics (2009), where the scope of adjustments of euro area's monthly balance of payments for 2005–2007 had been analysed. The scope of adjustment of these indicators, which cover a large and stably developing region, is considerably smaller compared to a small and rapidly developing country like Estonia, where bigger market agents play a greater role. Nevertheless, the data of the ECB serve as a suitable benchmark. Eurostat's annual report of the quality of balance of payments statistics did not provide a reference base, as the report covers only non-EU statistics. In the case of Estonia, non-EU turnover accounts for only 15% of the current account turnover.

1. BALANCE OF PAYMENTS FLASH ESTIMATES

Adjustment of time series

The database of balance of payments flash estimates (monthly balance of payments) is not as representative as the database of quarterly balance of payments, which is why the scope of adjustment of the former is generally larger. The current analysis covers the period from January 2007 to September 2009 (the latest adjusted flash estimate available at the time of drawing the analysis). Table 1 and Figure 1 present the results of the current account analysis; the results of the financial account analysis are available in Table 4 and Figure 2. Table 2 presents the absolute scope of adjustments of both accounts, and Table 3 indicates the direction of adjustments.

Table 1. Adjustment of the current account of balance of payments flash estimates (MAPE; % of preliminary value)

	% of current account turnover*	01–12/2007	01–12/2008	01–09/2009	Euro area**
Goods exports (f.o.b.)	29.3	3.7	1.6	0.9	0.69
Goods imports (f.o.b.)	36.1	5.7	2.4	1.8	0.78
Services: credit	12.4	4.5	5.6	8.9	5.87
Services: debit	8.1	3.9	3.3	12.7	3.42
Income: credit	3.7	18.7	15.2	28.3	24.29
Income: debit	7.1	30.0	15.5	12.5	14.63
Transfers: credit	2.0	15.1	37.0	15.1	-
Transfers: debit	1.3	20.2	14.1	14.3	-

* 2007–2009.

** ECB's calculations for 2005–2007.

As seen in Table 1, the later adjustments of the **current account** items of balance of payments flash estimates have generally remained within 20%, except for the items of income and transfers. In some cases, the downward trend of the scope of adjustments can be detected.

The scope of adjustment of the largest item, the imports and exports of goods (65% of the current account turnover), has been the smallest in relative terms, having decreased year by year. In 2007 the exports and imports of goods were adjusted by nearly 4% and 6%, respectively, whereas in 2009 the respective indicators were below 1% and 2%. The scope of adjustment of the goods turnover has decreased as a result of improvement of the intra-Community trade reporting system Intrastat as well as earlier and timelier receipt of data from Statistics Estonia. The scope of adjustment of foreign trade statistics has also decreased considerably in absolute terms, having declined by five times over the period analysed, both in terms of imports and exports. In 2009, the average monthly adjustment of exports was 77 million Estonian kroons and 160 million kroons in terms of imports. However, comparing the scope of adjustment of goods imports and exports with that of ECB's respective items regarding the euro area, in 2009 the scope of adjustment of exports was relatively similar (0.9% for Estonia vs. 0.7% for ECB), whereas that of imports differed slightly (1.8% vs. 0.8%).

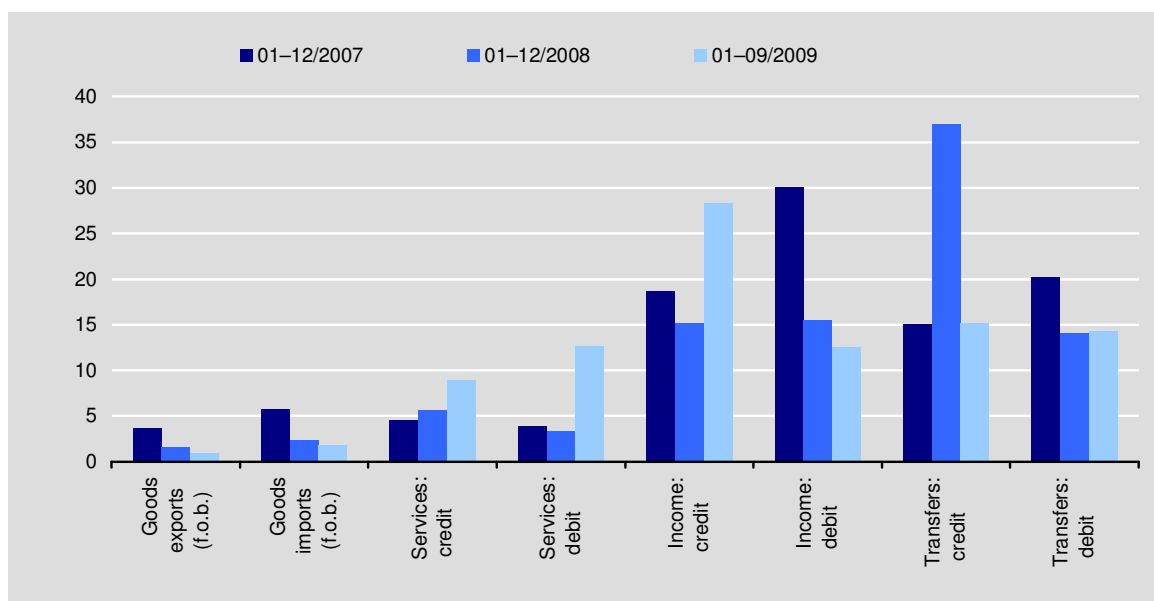


Figure 1. Adjustment of the current account of balance of payments flash estimates (MAPE; % of preliminary value)

Table 2. Average scope of adjustment of balance of payments flash estimates (EEK m)*

	01-12/2007	01-12/2008	01-09/2009
Current account	1,014.5	589.7	413.3
Goods exports (f.o.b.)	389.8	175.4	76.8
Goods imports (f.o.b.)	779.0	305.5	160.1
Services: credit	174.7	243.3	363.4
Services: debit	107.5	106.5	347.5
Income: credit	221.3	244.9	226.7
Income: debit	721.6	460.1	205.2
Transfers: credit	90.7	214.6	107.0
Transfers: debit	98.6	65.7	55.5
Financial account	1,063.8	878.1	836.5
Direct investment	1,204.5	510.7	425.3
Portfolio investment	588.0	465.2	142.7
Other investment	1,046.0	946.6	1,233.5
Errors and omissions	586.8	431.9	733.1
Reserve assets	202.5	250.6	0.7

* In absolute terms.

The direction of the later adjustment of data serves as one of the quality indicators: if data are of high quality, their adjustment should, as a rule, take place in both directions (sometimes upward and sometimes downward). In case adjustments are predominantly in one direction only, this points to a systemic error. As regards goods exports in the period analysed, the adjustments were mainly upward: the exports of goods were adjusted upward in 23 cases out of the 33 months analysed (see Table 3). With the imports of goods the case was just the opposite: upward adjustments occurred in 23 cases out of 33.

Table 3. Direction of adjustment of balance of payments flash estimates (latest/preliminary)

	No of upward adjustments*	No of downward adjustments**
Current account	18	15
Goods exports (f.o.b.)	23	10
Goods imports (f.o.b.)	10	23
Services: credit	25	8
Services: debit	25	8
Income: credit	19	14
Income: debit	14	19
Transfers: credit	13	20
Transfers: debit	18	15
Financial account	14	19
Direct investment	23	10
Portfolio investment	11	22
Other investment	13	20
Errors and omissions	20	13

* Change (+).

** Change (-).

Compared to goods, the scope of adjustment of services, the second largest sub-account, has been slightly greater, including in the case of the euro area. In 2007-2008 the relative scope of adjustment of imports and exports ranged from 3–6%, which is comparable to the scope of adjustments for the euro area. In 2009, the scope increased, especially as concerns the imports of services (nearly 13%). The scope of absolute adjustments increased accordingly, standing around 350 million kroons per month both in terms of imports and exports. As regards the analysis of the direction of adjustments, it should be noted that both the imports and exports were mostly adjusted upward (in 25 cases out of 33), which means that exports were larger and imports lower, according to revised data.

The relatively higher scope of adjustment of income inflows and outflows is caused by reinvested earnings, which comprise a significant share of Estonia's balance of payments. For reinvested earnings, there are no actual data sources available at the time of compiling flash estimates, which is why in flash estimates the item of income is modelled. Consequently, the adjustment of income items is usually quite large, reaching even 30% in some periods. The same problem applies to euro area's balance of payments, where the inflow and outflow of income are adjusted 24% and 15%, respectively. On average, the absolute scope of income adjustments stood in the period analysed stood at +/- 250 million kroons. There were no systemic errors in the assessment of income inflows and outflows, as the numbers of upward and downward adjustments were more or less equal.

The reason for the larger scope of adjustment of current account transfers is similar to that of reinvested earnings. Namely, the transfers of the current year are recorded on an accrual basis based on preliminary data. At year-end, the data on transfers are adjusted upon receipt of revised data. However, the value of the items regarding transfers is relatively low, which is why the larger scope of adjustment of these items does not really affect the balance of payments. Furthermore, the direction of adjustments does not point to systemic errors either.

The absolute scope (EEK m) and direction of adjustments are also reflected in Figures 4–18 at the end of the quality analysis of the flash estimate.

The scope of adjustment of the **financial account** items has generally been larger than in the case of goods and services, the main components of the current account (see Tables 2 and 4). The items of the financial account are net items; in case of a smaller balance, later adjustment may be relatively large. As direct and other investment have the least data available at the time of compiling flash estimates, the scope of adjustment of these financial account items is usually extensive. The relatively marginal adjustment of the direct investment of 2009 is explained by the fact that revised

data on reinvested earnings is still unavailable. The larger adjustment of reserve assets derives from complications regarding the introduction of a new accounting software in Eesti Pank. While the scope of adjustment of the current account items of Estonia's balance of payments flash estimate is comparable to that of euro area's flash estimate, then in the case of the financial account items the scope of adjustment of euro area's indicators is significantly smaller (below 1%).

Table 4. Adjustment of the financial account of balance of payments flash estimates (RMSRE; % of time series' volatility)

	01-12/2007	01-12/2008	01-09/2009	Euro area
Financial account	17.3	22.7	9.7	-
Direct investment	23.8	11.1	7.0	0.66
Portfolio investment	11.0	10.2	2.5	0.37
Other investment	13.6	11.8	11.9	0.33
Reserve assets	9.5	10.0	0.0	-

* ECB's calculations in 2005–2007.

Compared to the current account items, also the absolute scope of adjustment of the financial account items is larger. Thus, as a result of later adjustments the financial account changed by 0.8–1 million kroons on average. Attention should be also drawn to the items of direct and portfolio investment: the former have been mostly adjusted upward and the latter downward (see Table 3).

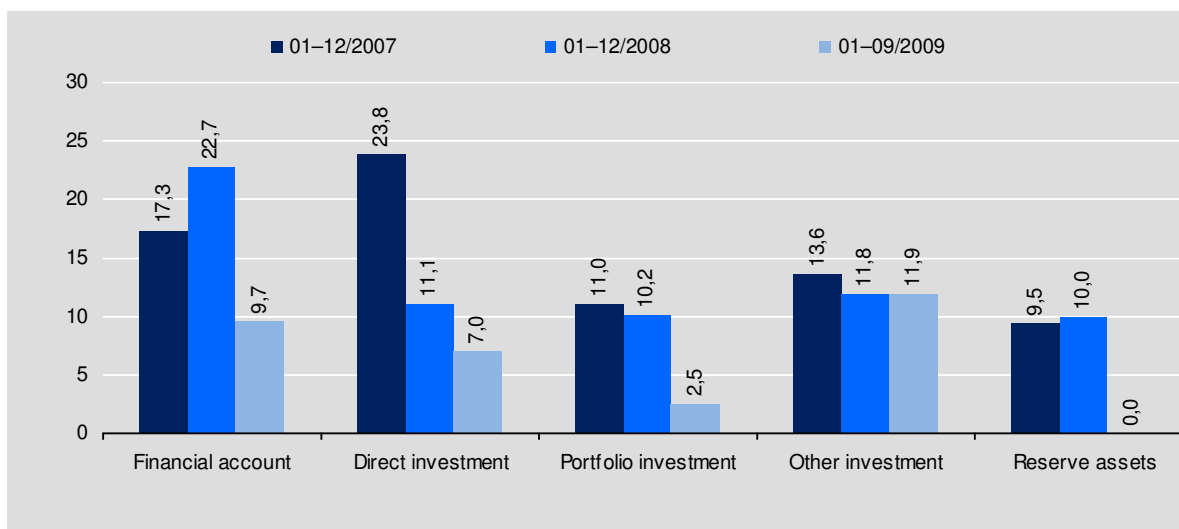


Figure 2. Adjustment of the financial account of balance of payments flash estimates (RMSRE; % of time series' volatility)

1.1 Errors and omissions

Figure 3 gives an overview of the quality of the flash estimate's item "errors and omissions". As regards the assessment of quality of errors and omissions, the IMF has recommended to maintain that item within $\pm 5\%$ of half of the current account turnover. From January 2007 to September 2009 the errors and omissions exceeded that limit only in 4 cases out of 33, even though the database of the flash estimate is limited compared to the data sources used for the compilation of quarterly balance of payments. The absolute scope of adjustment of errors and omissions has ranged

from 400 million kroons in 2008 to 700 million in 2009, whereas upward adjustments have been predominant (20 cases out of 33).

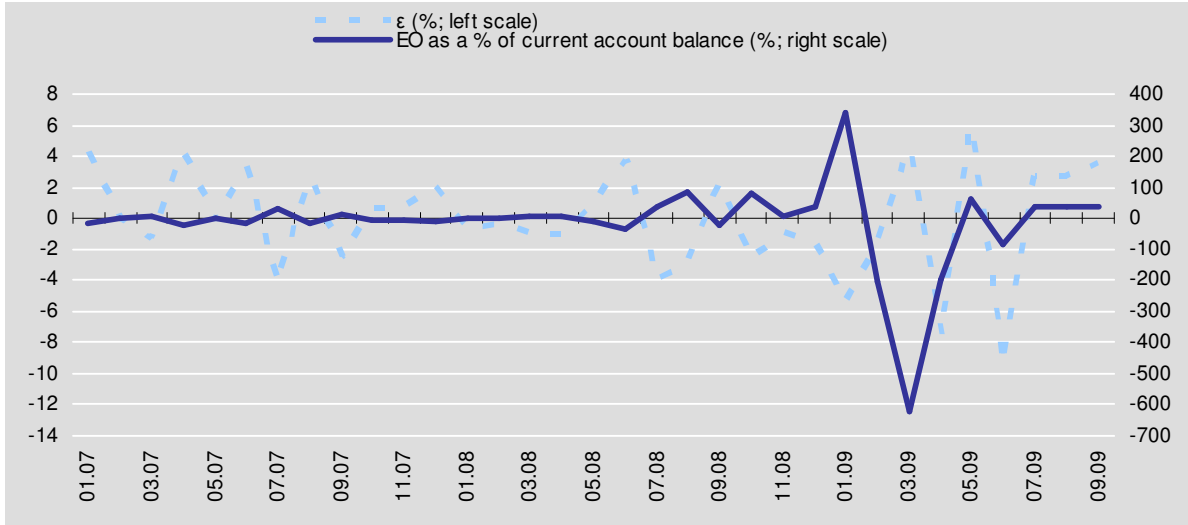


Figure 3. Dynamics of the quality indicators of "errors and omissions"

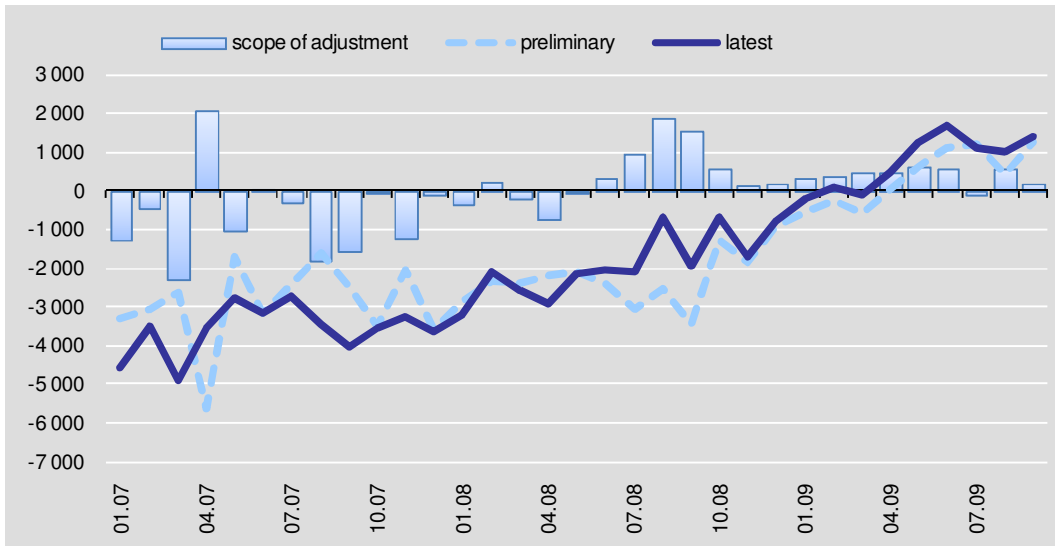


Figure 4. Preliminary and latest data on the current account balance (EEK m)

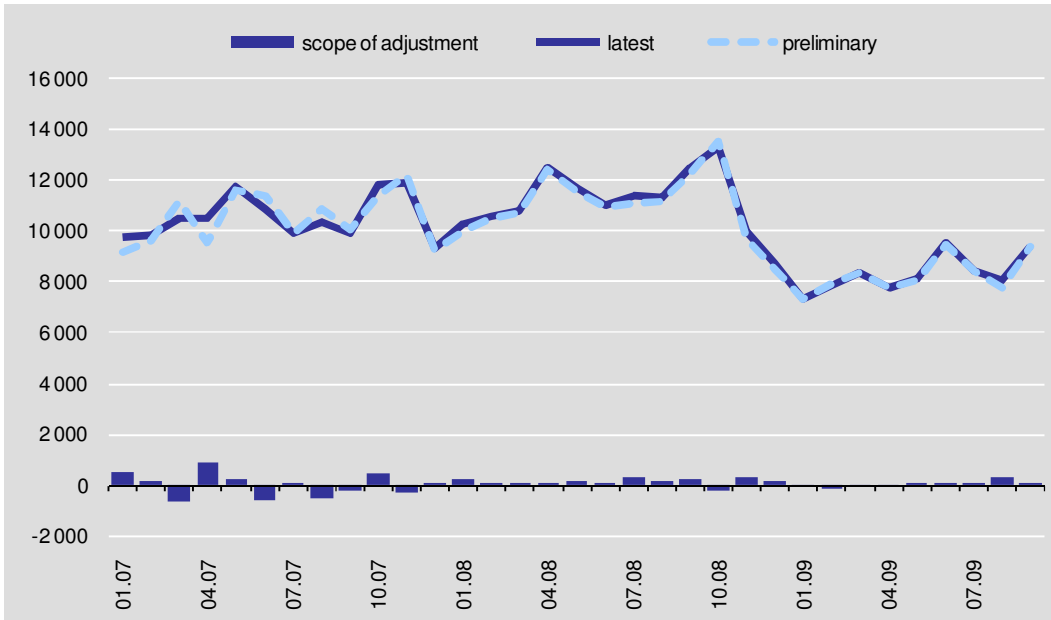


Figure 5. Preliminary and latest data on goods exports (EEK m)

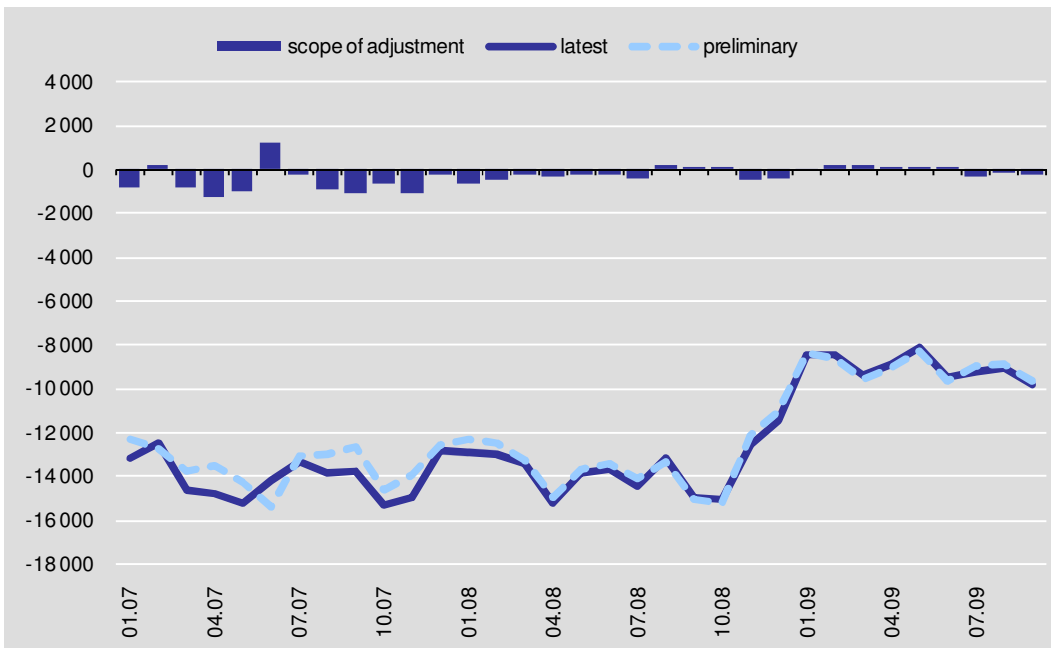


Figure 6. Preliminary and latest data on goods imports (EEK m)

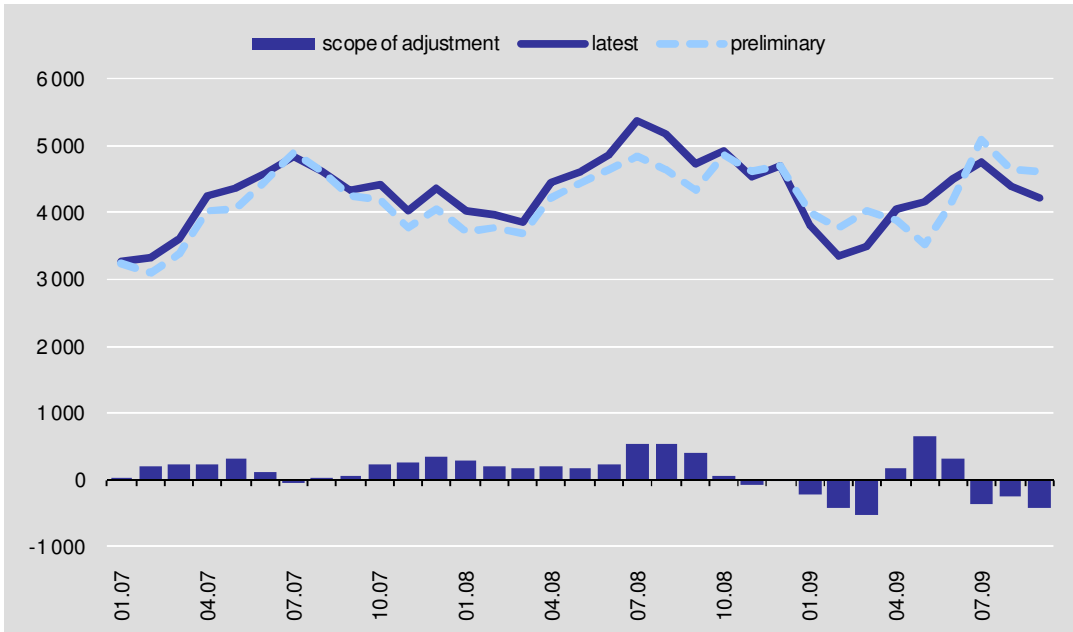


Figure 7. Preliminary and latest data on services exports (EEK m)

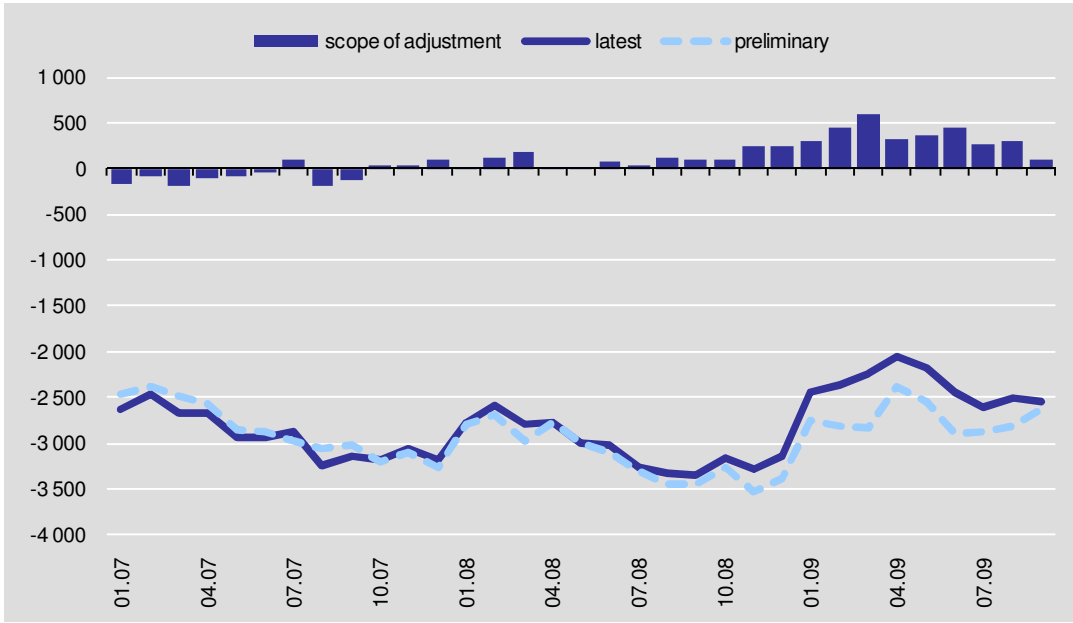


Figure 8. Preliminary and latest data on services imports (EEK m)

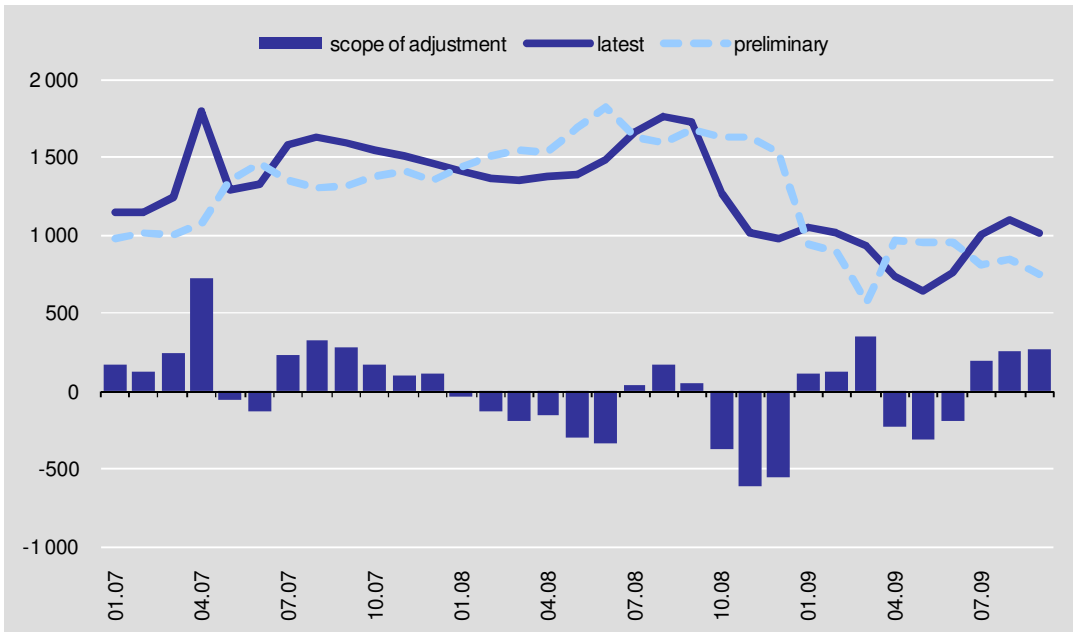


Figure 9. Preliminary and latest data on income inflow (EEK m)

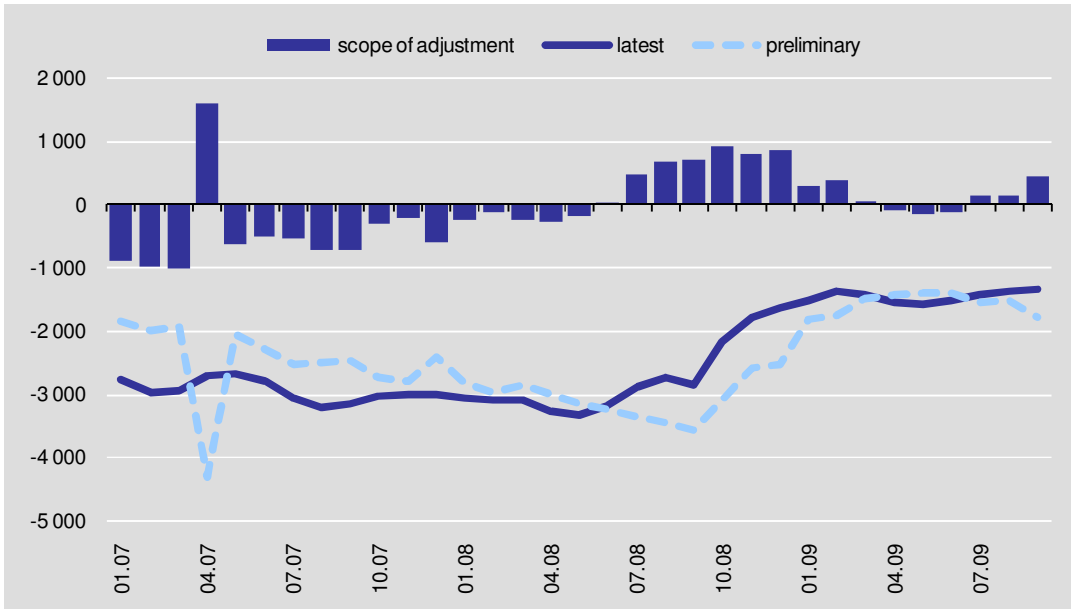


Figure 10. Preliminary and latest data on income outflow (EEK m)

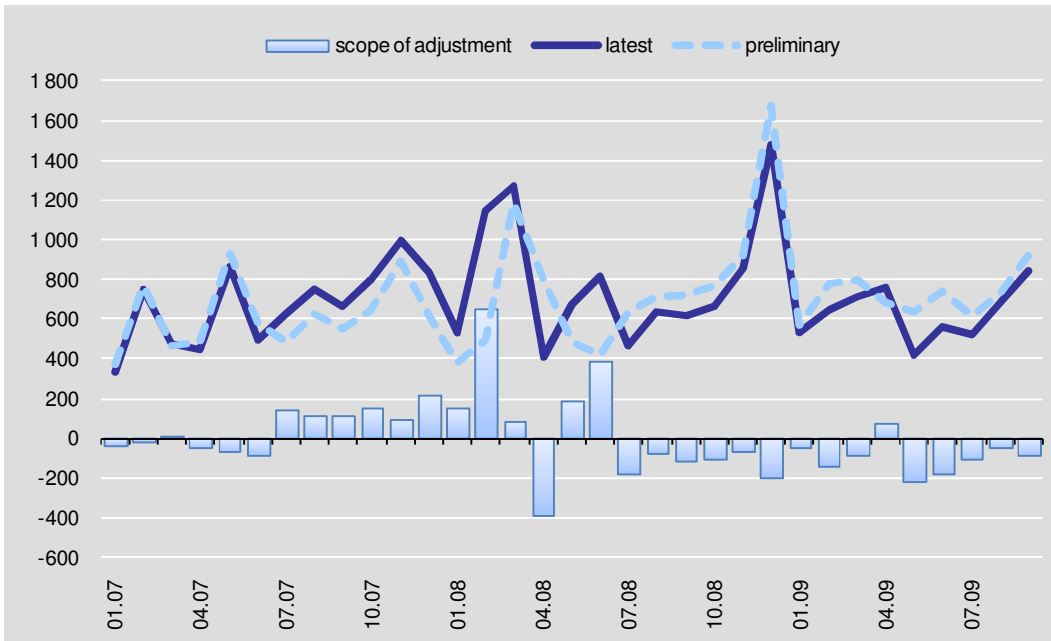


Figure 11. Preliminary and latest data on incoming transfers (EEK m)

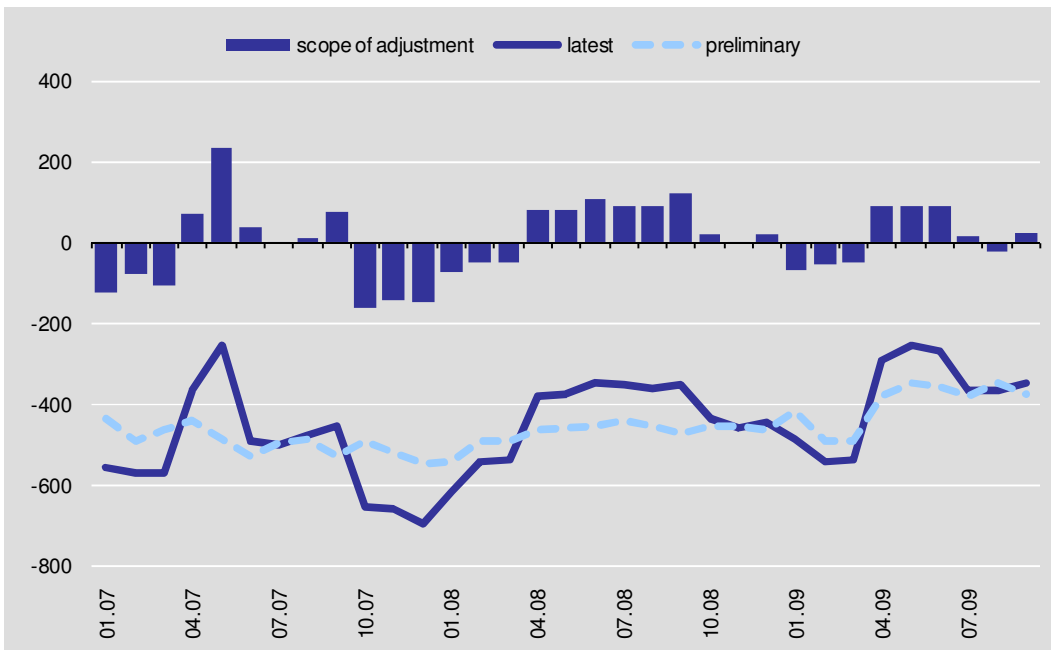


Figure 12. Preliminary and latest data on outgoing transfers (EEK m)

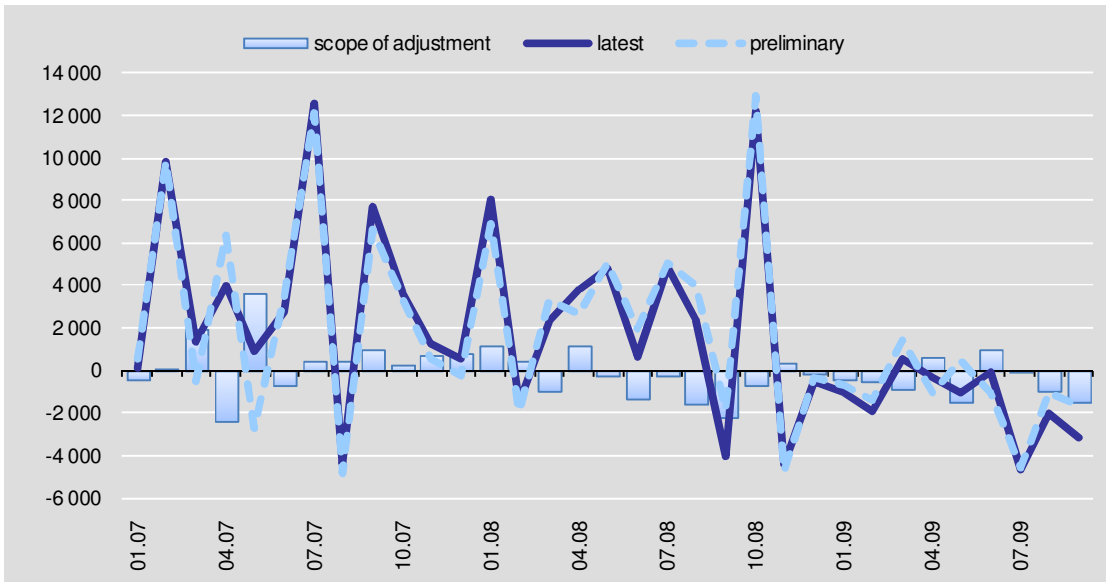


Figure 13. Preliminary and latest data on the financial account balance (EEK m)

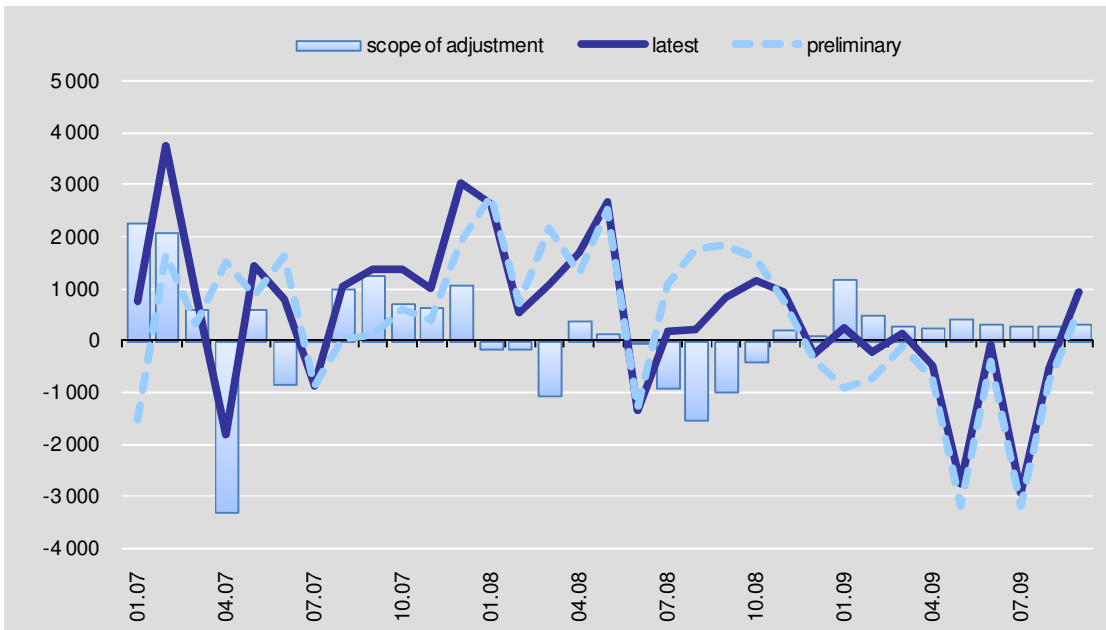


Figure 14. Preliminary and latest data on direct investment balance (EEK m)

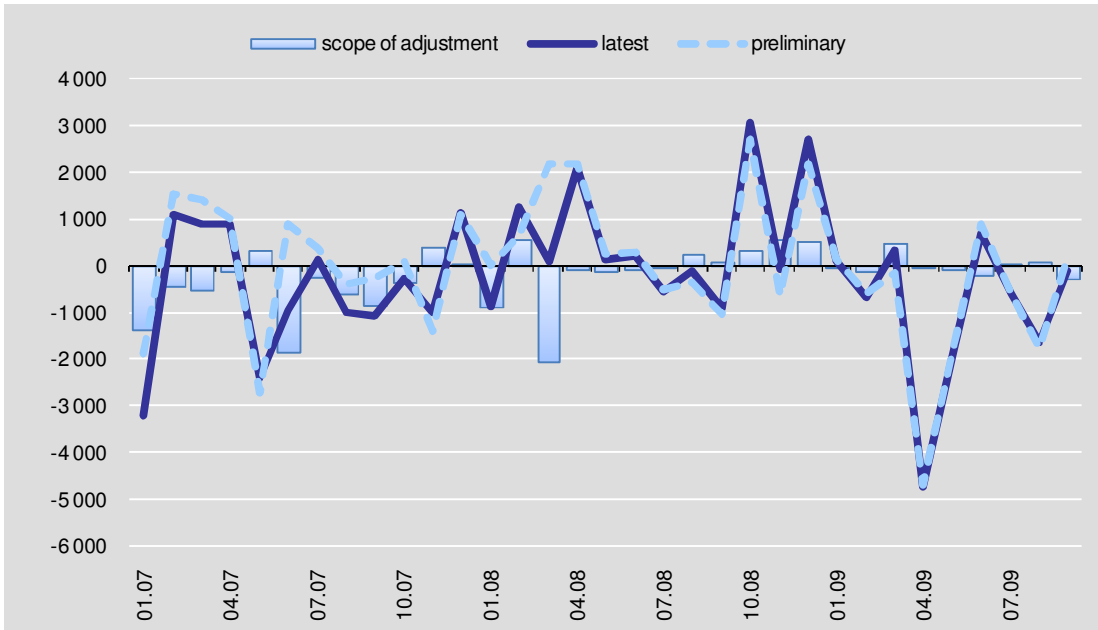


Figure 15. Preliminary and latest data on portfolio investment balance (EEK m)

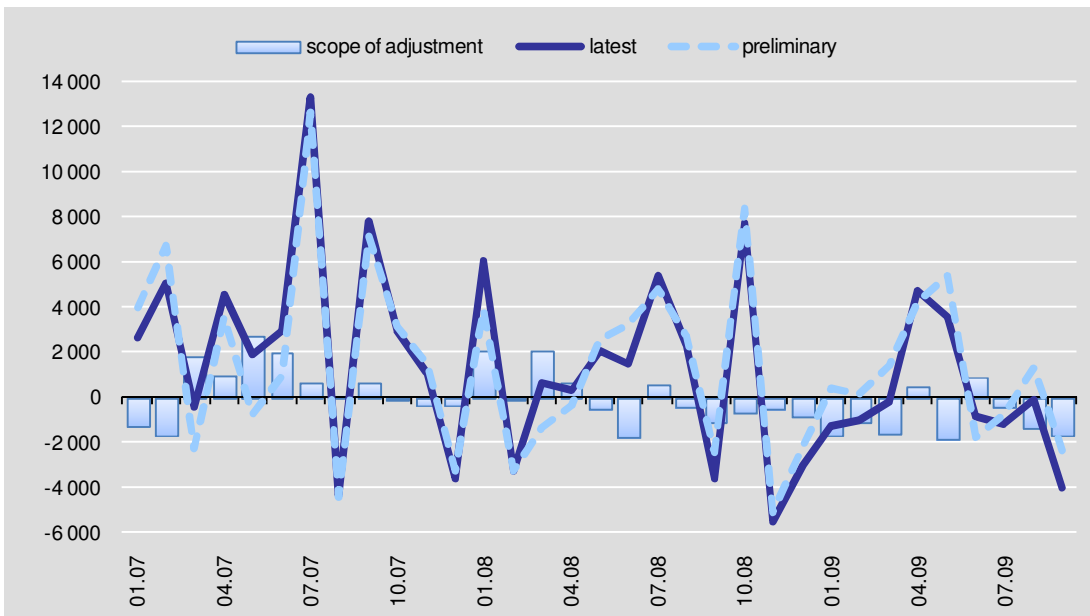


Figure 16. Preliminary and latest data on other investment balance (EEK m)

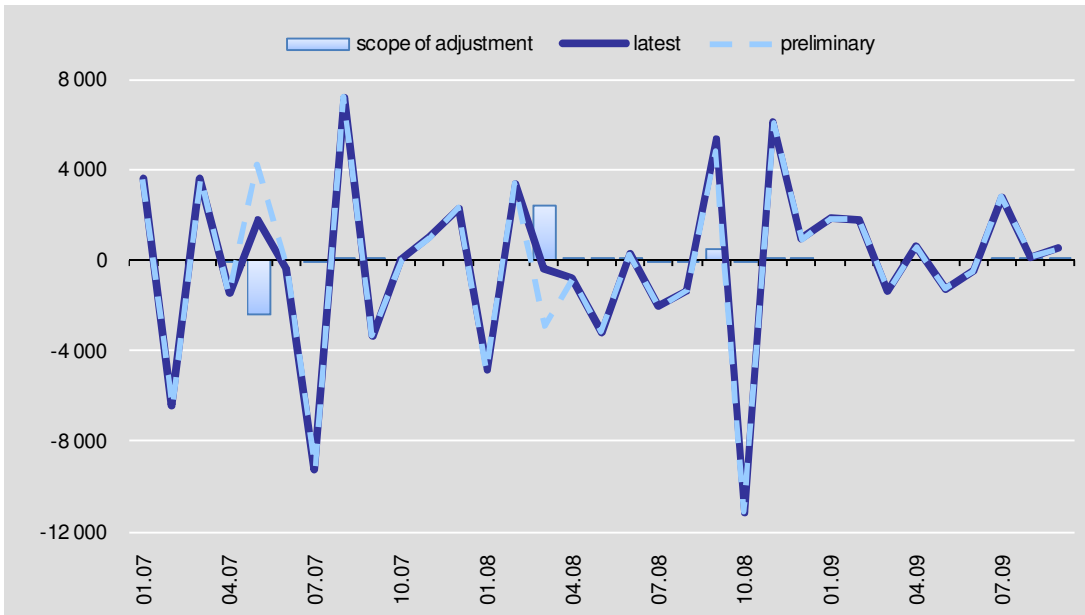


Figure 17. Preliminary and latest data on reserve assets (EEK m)

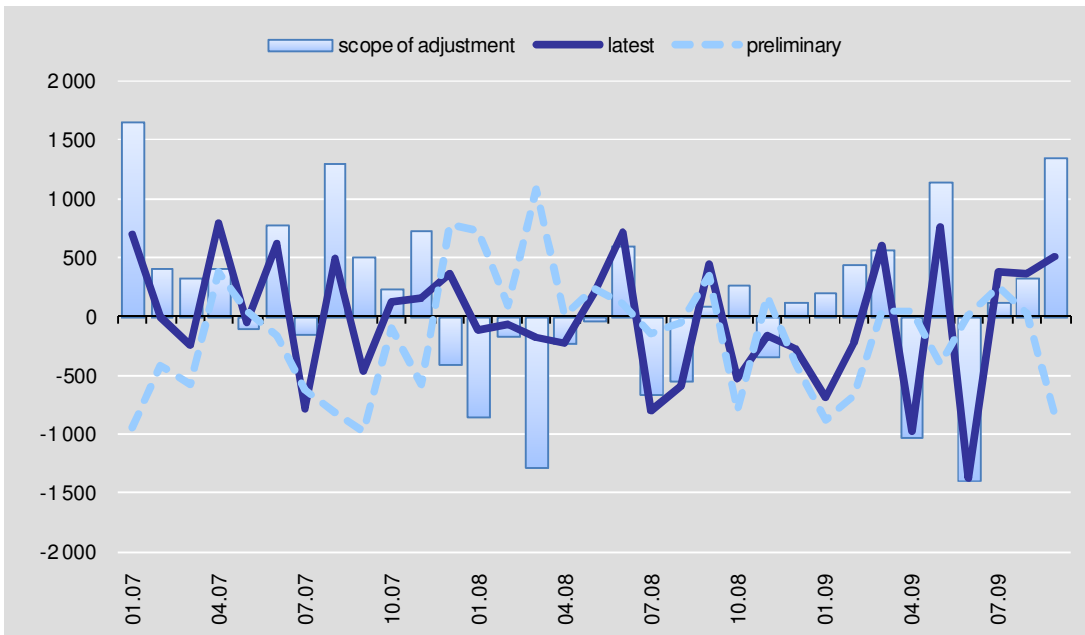


Figure 18. Preliminary and latest data on errors and omissions (EEK m)

SUMMARY: Estonia's balance of payments flash estimates are compiled in accordance with the IMF Balance of Payments Manual, 5th Edition, and the statistical requirements of EU institutions (ECB, Eurostat). The relatively large adjustment of flash estimates is inevitable, given the relatively limited availability of data sources for flash estimates compared to quarterly balance of payments. The scope of adjustments is also affected by the smallness of Estonia's

economy and bigger market participants, who may vary from period to period and be left uncovered in the analyses at the right time. However, as indicated by the quality analysis, the scope of adjustments (both relative and absolute) usually remain within an acceptable range. The direction of adjustments has also been two-directional, which shows the absence of systemic errors. The item of "errors and omissions" exceeded the internationally recommended threshold ($\pm 5\%$ of half of the current account turnover) only in 4 cases out of 33. Thus, the balance of payments flash estimates are of high quality and provide suitable preliminary indicators for the assessment of a country's external trade balance.

2. ADJUSTMENT OF THE TIME SERIES OF QUARTERLY BALANCE OF PAYMENTS FOR Q2 2007–2009

2.1. Adjustment of time series

The analysis of the adjustments of quarterly balance of payments uses the same methods as the balance of payments flash estimates: MAPE for the current account and RMSRE for the financial account items, the absolute scope and the direction of adjustments. Both MAPE and RMSRE assess the scope of later adjustment of the balance of payments data (as a percentage) compared to the preliminary data. The same reference base applies here as well, namely MAPE and RMSRE of the euro area's monthly balance of payments published by the ECB.

Table 5 and Figure 19 show the relative scope of adjustments of the **current account** of quarterly balance of payments (period analysed: 2007–Q2 2009).

Table 5. Adjustment of the current account of quarterly balance of payments (MAPE; % of preliminary value)

	% of current account turnover*	2007	2008	Q1 2009	Q2 2009	Euro area**
Goods exports (f.o.b.)	29.1	0.6	0.8	1.0	0.6	0.69
Goods imports (f.o.b.)	36.3	4.2	1.3	0.4	0.2	0.78
Services: credit	12.1	1.9	2.5	0.0	0.8	5.87
Services: debit	8.0	2.8	1.2	0.3	5.8	3.42
Income: credit	3.9	14.9	6.3	5.0	0.7	24.29
Income: debit	7.3	15.3	4.4	2.0	3.8	14.63
Transfers: credit	1.8	17.1	16.6	0.4	3.1	
Transfers: debit	1.3	3.3	0.0	1.4	0.3	

* 2007–Q2 2009.

**ECB's calculations of monthly balance of payments for 2005–2007.

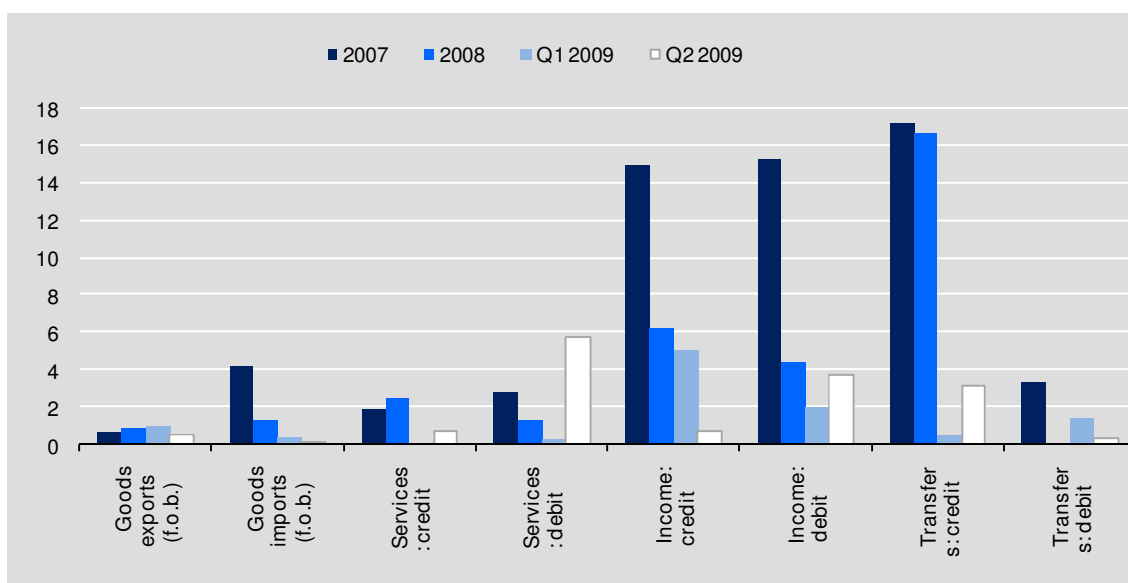


Figure 19. Adjustment of the current account of quarterly balance of payments (MAPE; % of preliminary value)

The adjustment of the current account items is, in general, similar to the adjustment of flash estimates: the items of goods and services, major components of the current account, are adjusted to a lesser extent, whereas the items of

income and transfers are adjusted to a greater extent. The difference lies in the scope of adjustments, which is considerably smaller owing to the more representative database available for quarterly balance of payments. The adjustment of data on goods exports remained below 1% during the entire period analysed (200–300 million kroons per quarter in absolute terms; see Table 6). The adjustment of data on goods imports was of similar scope, being larger only in 2007. The latter was due to the non-coverage of a major importer of alcoholic beverages in the Intrastat. The reason for the adjustment of data on goods imports and exports lies in regular retrospective revision of data by Statistics Estonia. When analysing the direction of adjustments (see Table 7), it appears that there are no problems with exports, whereas imports tends to increase as a result of later adjustments (in 7 cases out of 10). In general, the relative scope of adjustment of data on goods imports and exports in Estonia's quarterly balance of payments and the euro area's monthly balance of payments is well comparable. Goods turnover comprised 65% of the current account turnover of the period analysed.

Table 6. Average scope of adjustment of quarterly balance of payments (EEK m)*

	2007	2008	1st half of 2009
Current account	1,787.3	614.4	503.9
Goods exports (f.o.b.)	199.0	281.9	191.5
Goods imports (f.o.b.)	1,689.2	533.9	79.1
Services: credit	236.5	334.9	50.7
Services: debit	245.0	108.7	214.6
Income: credit	609.1	260.7	86.0
Income: debit	1,071.5	385.5	134.6
Transfers: credit	291.7	436.4	30.2
Transfers: debit	62.9	0.4	12.2
Capital and financial account	782.4	685.6	191.3
Direct investment	742.6	457.5	375.3
Portfolio investment	233.4	433.6	343.9
Other investment	511.1	378.8	143.0
Errors and omissions	1,008.5	413.2	394.7
Reserve assets	6.6	10.4	0.0

* In absolute terms.

Compared to goods, the scope of adjustment of services imports and exports (20% of the current account turnover) was slightly larger in the period analysed, ranging close to 2% (except for Q2 2009). These indicators are even better than the respective indicators of the euro area calculated by the ECB (3–6%). The absolute scope of adjustment of services imports and exports remained between 200–300 million kroons. When analysing the direction of adjustments, in terms of imports the numbers of upward and downward adjustments are equal, whereas in terms of exports upward adjustments prevail (8 cases out of 10). In other words, the exports of services increase in the course of adjustments.

The reasons for larger adjustments of income and transfers are the same as in the case of flash estimates: the use of estimated data on reinvested earnings in compiling preliminary data on income, and the use of preliminary data in the case of transfers. Income and transfers comprised 11% and 3% of the current account turnover, respectively, in the period analysed. Regardless of the relatively large adjustment of income data in some periods (up to 15%), it was still lower than in the case of the euro area, where the scope of adjustment of data on income inflow was nearly 25%. It should also be noted that in terms of income inflow upward adjustments are predominant (8 cases out of 10), which means that income inflow almost always increases as a result of adjustments.

Table 7. Direction of adjustment of quarterly balance of payments (latest/preliminary)

	No of upward adjustments*	No of downward adjustments**
Current account	4	6
Goods exports (f.o.b.)	5	5
Goods imports (f.o.b.)	3	7
Services: credit	8	2
Services: debit	5	5
Income: credit	8	2
Income: debit	4	6
Transfers: credit	6	4
Transfers: debit	6	4
Capital and financial account	7	3
Direct investment	5	5
Portfolio investment	7	3
Other investment	9	1
Errors and omissions	7	3

* Change (+).

** Change (-).

The smaller scope of adjustment of balance of payments for the first quarters of 2009 results from the adjustment policy of the balance of payments: the data are adjusted two times on a regular basis (see above). In other words, if the data for 2007–2008 have already been revised twice, then the data for 2009 have had only the first regular adjustment.

Figures 23–31 give an overview of the absolute scope of adjustment of the current account items. As seen in Figure 23, the current account deficit has later been adjusted mostly in one direction. That is to say that the latest data show a bigger deficit than indicated by preliminary data. This primarily stems from the (mainly upward) adjustment of data on goods imports.

Table 8 and Figure 20 show the relative adjustment of the **capital and financial accounts**; Figures 32–37 indicate the absolute scope of adjustments.

Table 8. Adjustment of the financial account data of quarterly balance of payments (mean RMSRE; % of time series' volatility)

	2007	2008	Q1 2009	Q2 2009	Euro area*
Capital and financial account	6.9	6.2	1.0	0.4	-
Direct investment	7.8	6.0	3.1	0.7	0.66
Portfolio investment	1.9	3.8	2.1	0.1	0.37
Other investment	5.0	3.1	0.7	0.2	0.33
Reserve assets	0.2	0.2	0.0	0.0	-

* ECB's calculations of monthly balance of payments for 2005–2007.

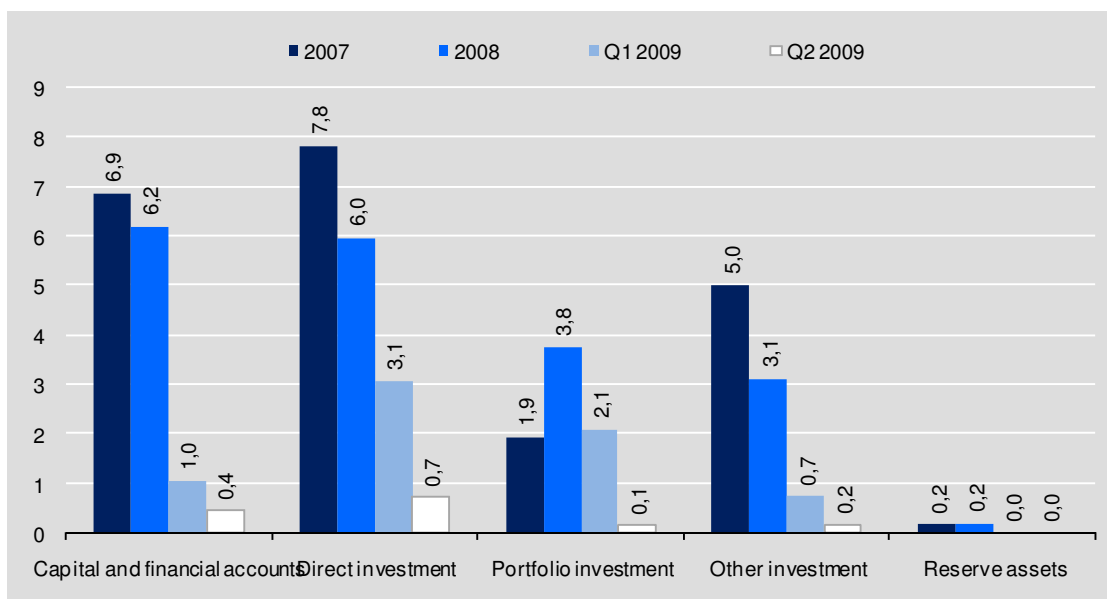


Figure 20. Adjustment of the financial account of quarterly balance of payments (RMSRE; % of time series' volatility)

The scope of adjustment of the capital and financial account items of quarterly balance of payments is slightly larger compared to the main items (goods and services) of the current account, but considerably smaller than the adjustment of the respective items of balance of payments flash estimates. The reason lies in the availability of a more representative database. The adjustment scope has been somewhat larger in the case of direct and other investment. This is due to the later adjustments of reinvested earnings in the former case and problems with the coverage of the household sector in the latter case. The greater adjustment of direct investment in 2007 was related to the later revision of some large-scale transactions. The small adjustment of the financial account items regarding the first quarters of 2009 can be explained by the fact that their second regular adjustment is yet to take place. Comparing the scope of adjustment of the financial account items with the respective euro area indicators, the scope of adjustment of the latter is significantly smaller (below 1%).

The absolute scope of adjustment of the financial account items remained between 200–800 million kroons. When analysing the direction of adjustments of the financial account items, it appears that upward adjustments prevailed in the case of portfolio and other investment (in 7 and 9 quarters out of 10, respectively). However, the absolute scope of upward adjustments was relatively small.

2.2. Errors and omissions

The residual item "errors and omissions" of Estonia's quarterly balance of payments did not exceed the internationally recommended reference value ($\pm 5\%$ of half of the current account turnover) even once in the period analysed (see Figure 21). The mean deviation in that period was $\pm 1.8\%$. As regards the current account balance, errors and omissions comprised 33% in the period analysed. The indicator was high owing to the almost non-existent current account balance in the first quarter of 2009. The direction of adjustments of the residual item has been predominantly upward (in 7 cases out of 10). Yet another quality indicator is also the sum of errors over a certain period of time. Ideally,

in a longer term that sum should be equal to zero (errors with a negative and positive sign should ultimately be equal). From Q1 2007 to Q2 2009 the errors of quarterly balance of payments totalled -4 billion kroons.

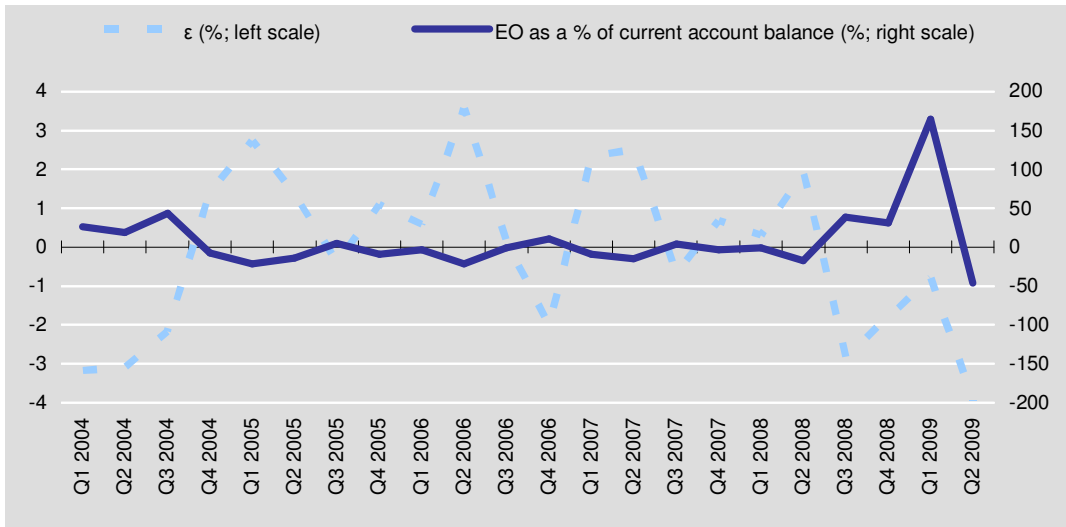


Figure 21. Dynamics of the quality indicators of "errors and omissions"

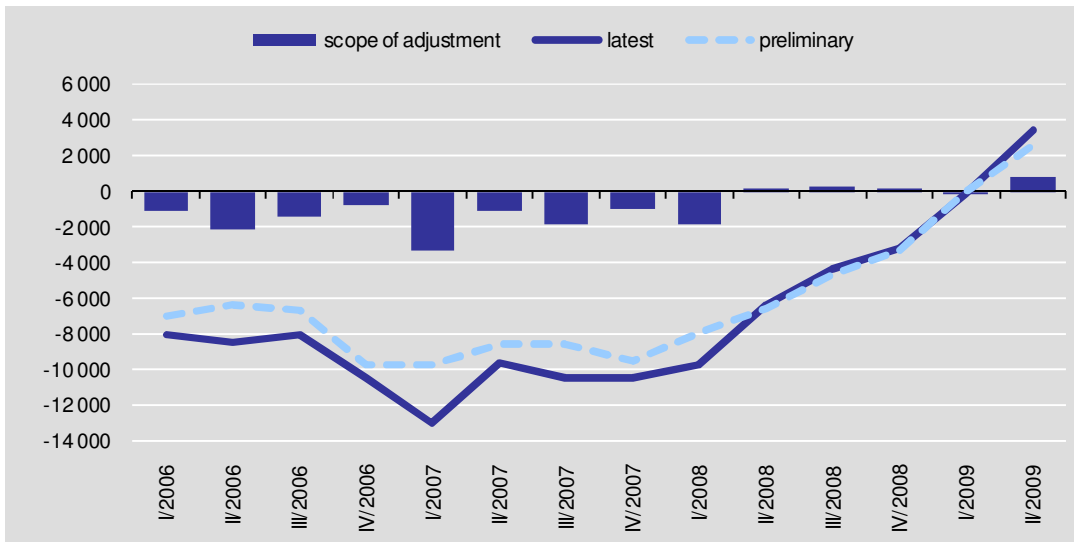


Figure 22. Preliminary and latest data on the current account balance (EEK m)

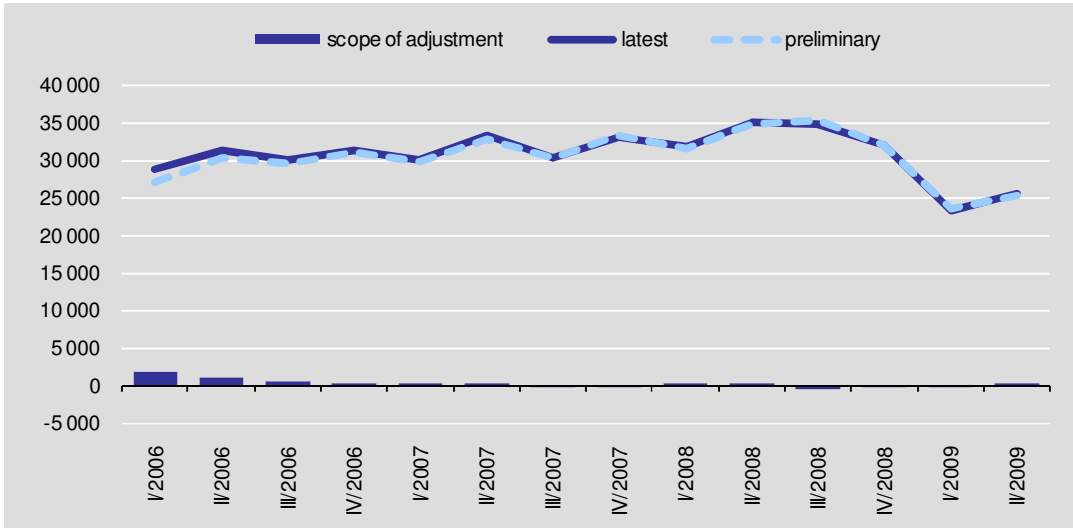


Figure 23. Preliminary and latest data on goods exports (EEK m)

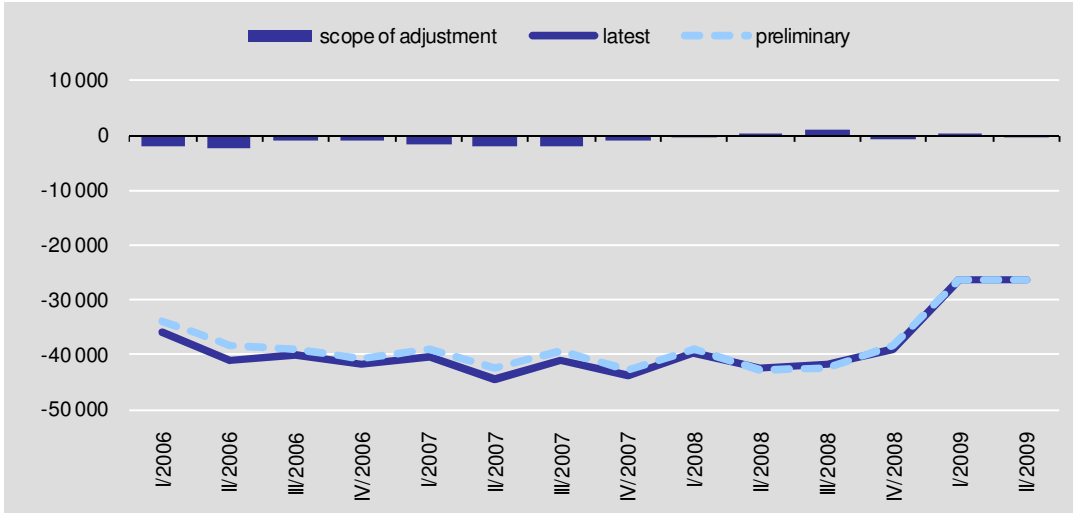


Figure 24. Preliminary and latest data on goods imports (EEK m)

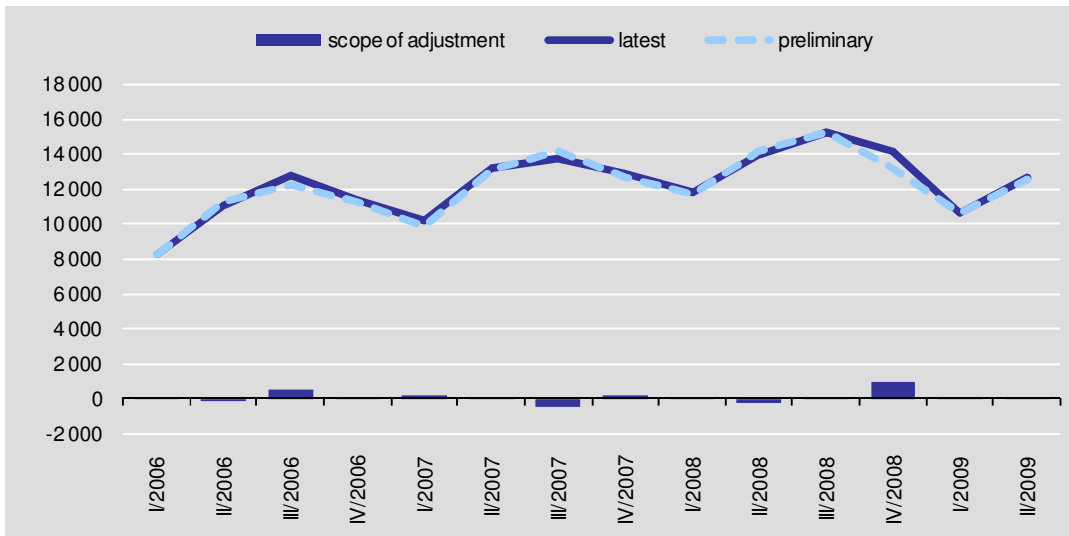


Figure 25. Preliminary and latest data on services' credit turnover (EEK m)

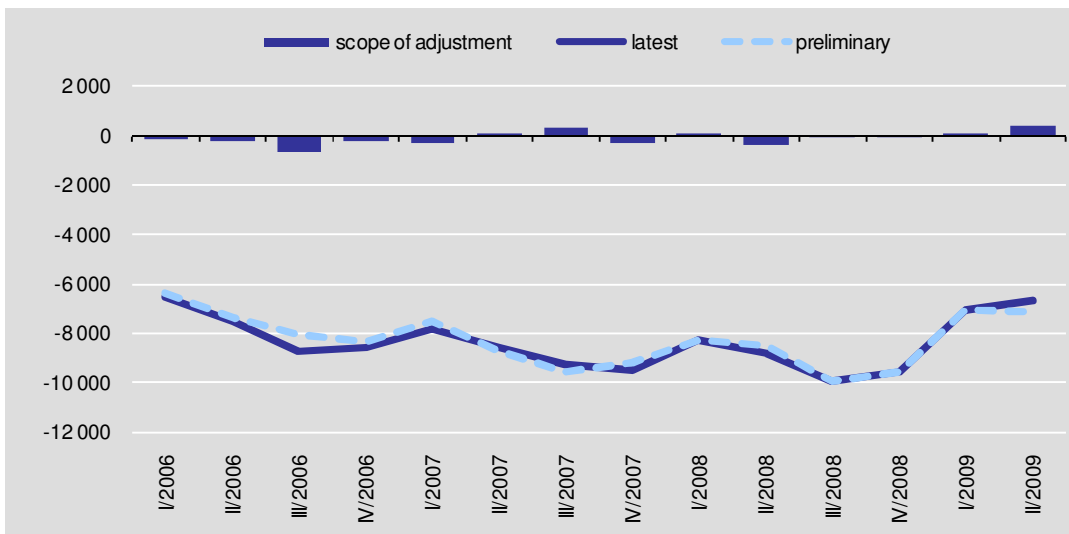


Figure 26. Preliminary and latest data on transfers' debit turnover (EEK m)

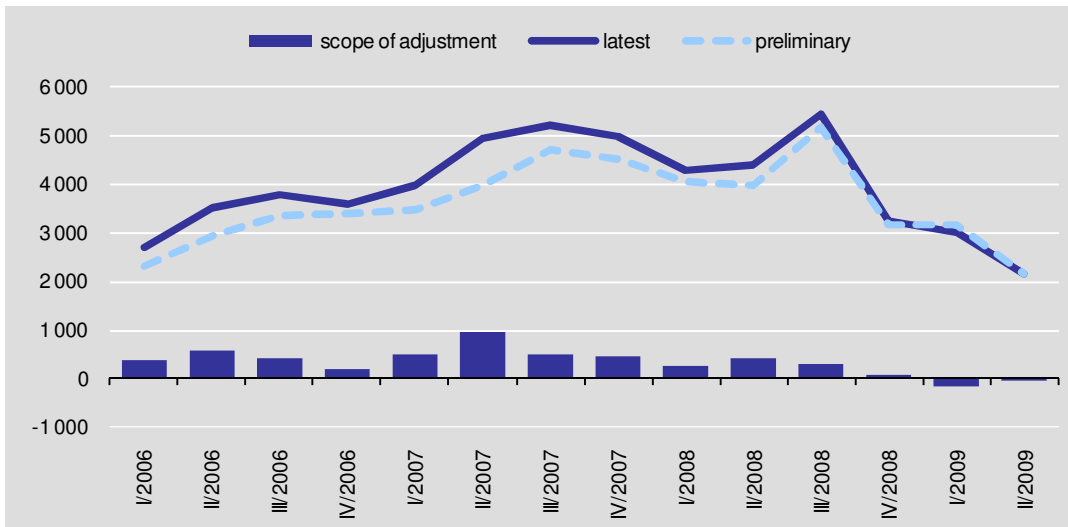


Figure 27. Preliminary and latest data on income inflow (EEK m)

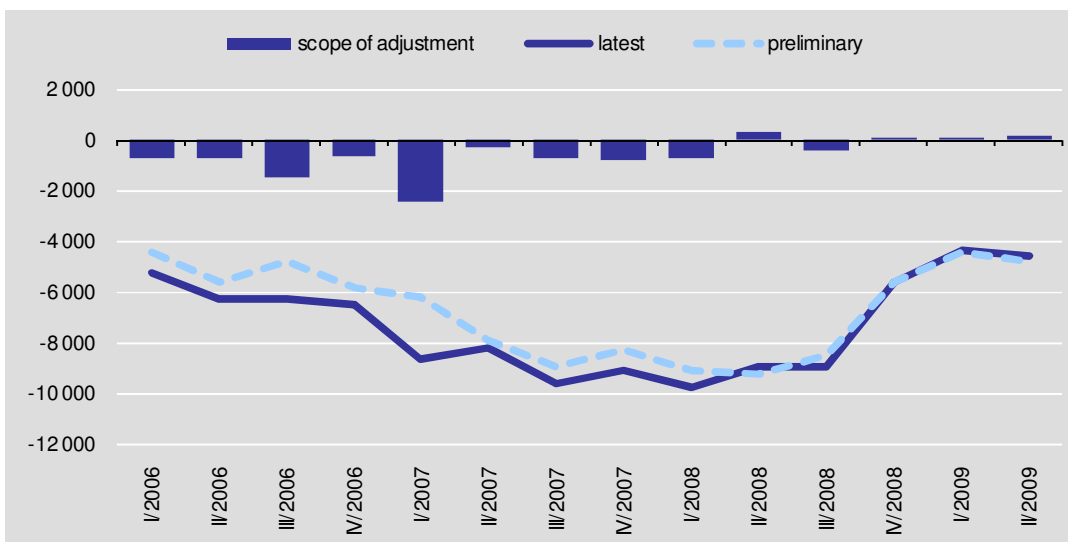


Figure 28. Preliminary and latest data on income outflow (EEK m)

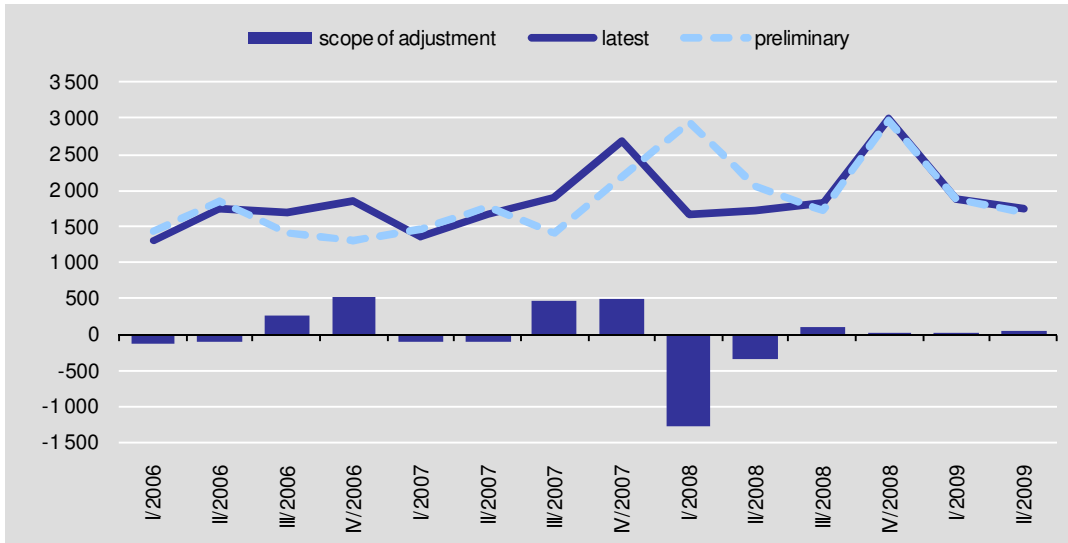


Figure 29. Preliminary and latest data on transfers' credit turnover (EEK m)

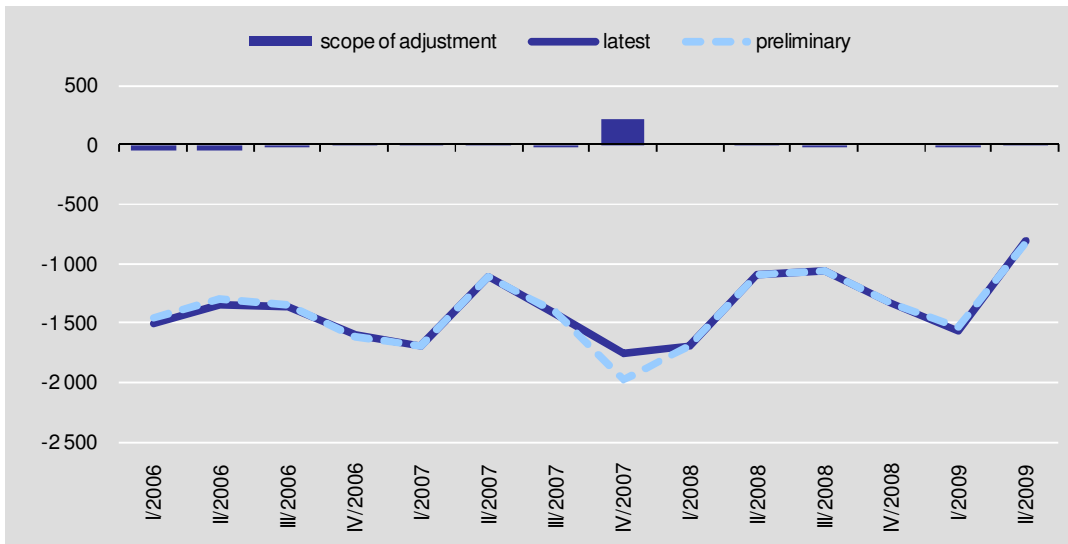


Figure 30. Preliminary and latest data on transfers' debit turnover (EEK m)

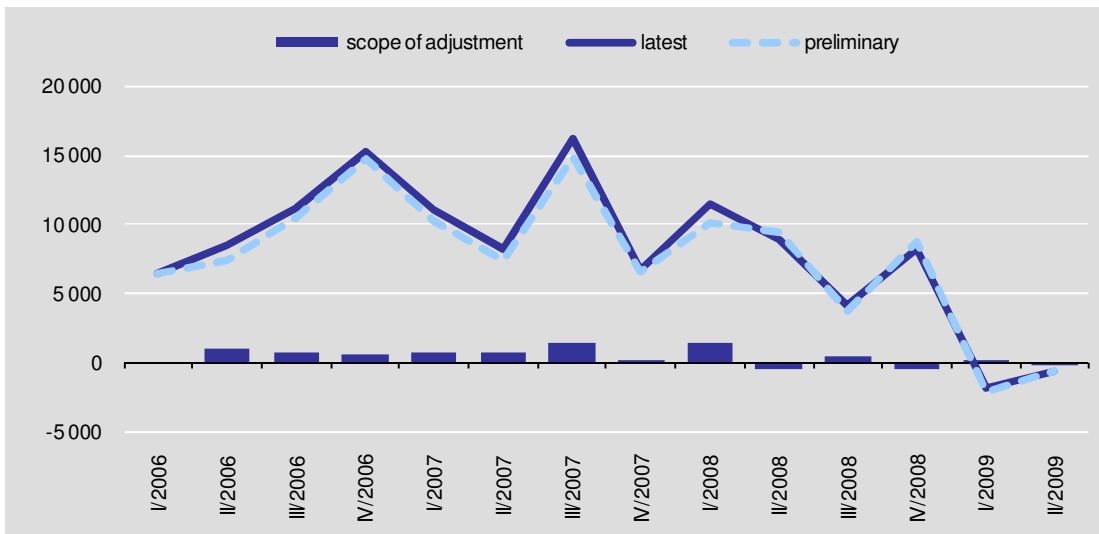


Figure 31. Preliminary and latest data on capital and financial accounts balance (EEK m)

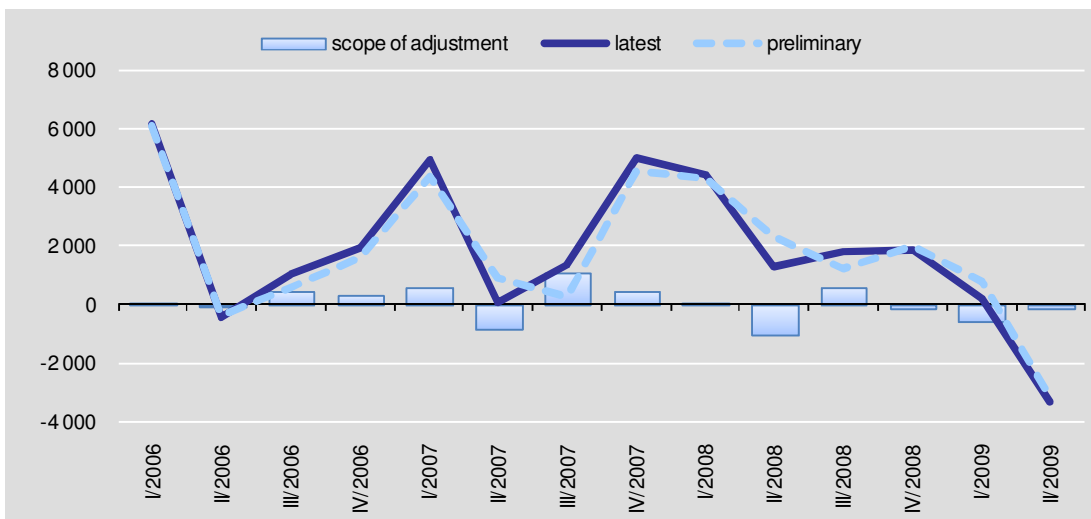


Figure 32. Preliminary and latest data on direct investment balance (EEK m)

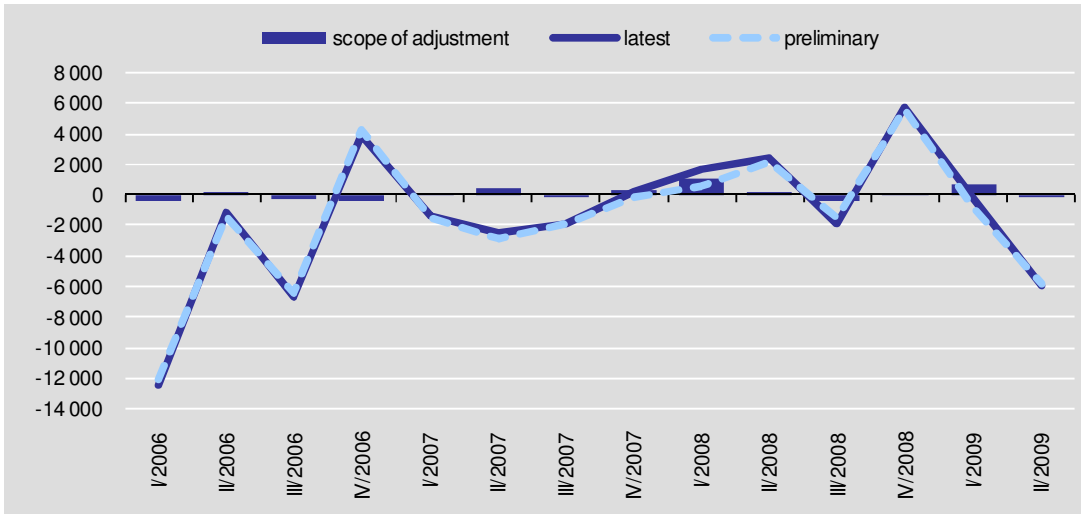


Figure 33. Preliminary and latest data on portfolio investment balance (EEK m)

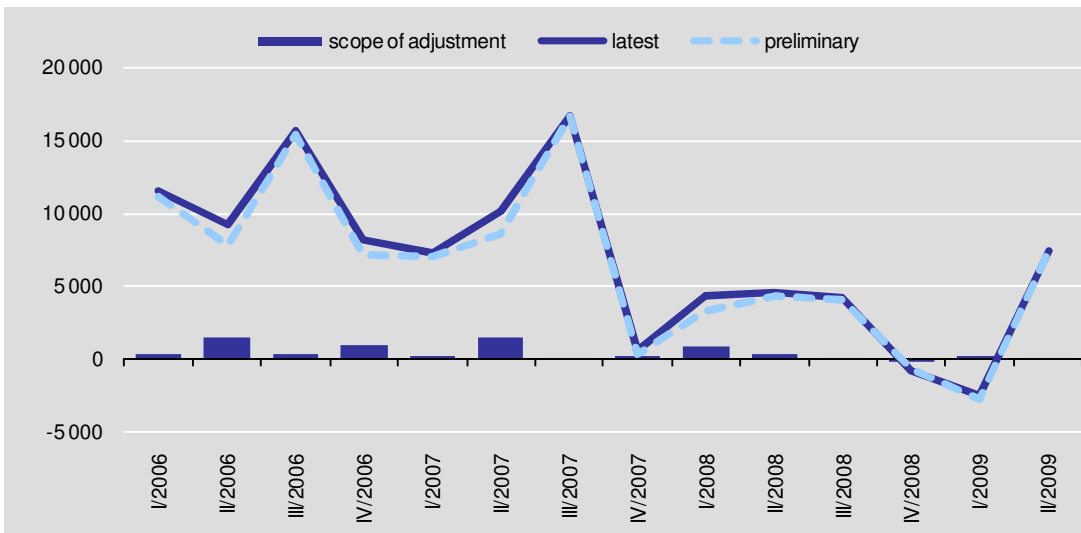


Figure 34. Preliminary and latest data on other investment balance (EEK m)

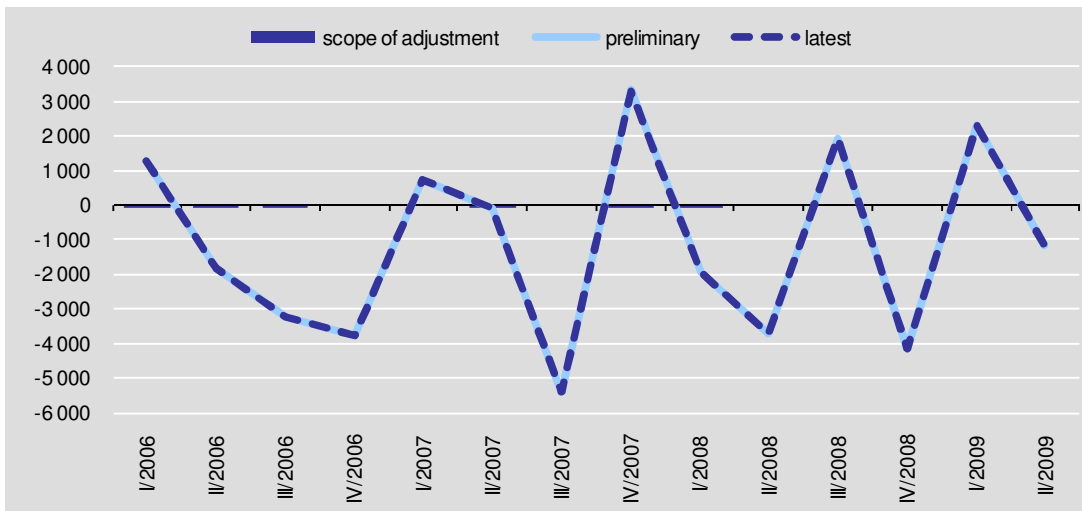


Figure 35. Preliminary and latest data on reserve assets (EEK m)

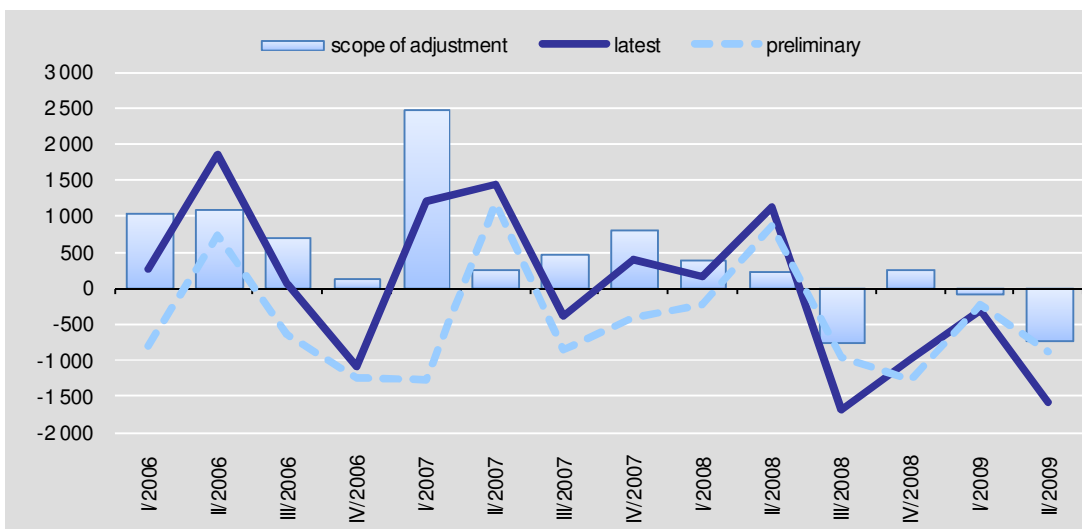


Figure 36. Preliminary and latest data on the balance of errors and omissions (EEK m)

SUMMARY: In conclusion, it can be said that Estonia's quarterly balance of payments are of high quality. It is based on the IMF Balance of Payments Manual, 5th Edition, and is in accordance with the statistical requirements of EU institutions (ECB and Eurostat) and the OECD. Compared to the balance of payments flash estimate, the quality of quarterly balance of payments is considerably higher, given the availability of a more representative database. The scope of adjustments has been smaller in the case of major sub-accounts (goods and services), remaining between 1–3%. The higher quality of quarterly balance of payments has benefited from the increased representativity of foreign trade statistics (in particular statistics collected through the Intrastat), which lies within the responsibility of Statistics Estonia. The scope of adjustment of data on goods is fully comparable with the adjustments of ECB's respective items, whereas the adjustments of data on services and income are even smaller compared to those of the total euro area.

Upward and downward adjustments have been more or less equal in number, which means that there were no systemic errors in the compilation of balance of payments. The item “errors and omissions” has not exceeded +/-5% of half of the current account turnover even once. Both the Eurostat and the International Monetary Fund have assessed the quality of Estonia’s quarterly balance of payments to be high.

3. ADJUSTMENT OF THE TIME SERIES OF THE INTERNATIONAL INVESTMENT POSITION

The later adjustments of the **international investment position** are shown in Table 9 and Figure 37. As a rule, the scope of adjustment of the international investment position items is smaller, given that these are cumulative indicators.

Table 9. Adjustment of international investment position data (MAPE; % of preliminary value)

	2007	2008	31/03/2009	30/06/2009
Direct investment abroad	3.5	2.3	0.8	0.0
Portfolio investment abroad	0.7	1.1	0.2	0.3
Other investment abroad	1.1	0.9	0.3	0.3
Reserve assets	0.0	0.0	0.0	0.0
FOREIGN ASSETS	1.1	0.7	0.1	0.1
Direct investment in Estonia	3.1	1.4	0.1	0.3
Portfolio investment in Estonia	0.6	1.0	2.0	0.3
Other investment in Estonia	1.2	1.2	0.2	0.0
FOREIGN LIABILITIES	1.7	1.2	0.3	0.1
Net investment position	2.6	1.8	0.5	0.1

The adjustment of both asset and liability items usually remained below 2%, except in the case of direct investment. The larger adjustment of direct investment is explained by the later collection of data on reinvested earnings. The reason for the larger adjustment of direct investment in 2007 lies in the convergence of the market prices of delisted companies (including Hansapank) towards the book values. The small adjustment of the position in 2009 stems from the adjustment policy of the balance of payments statistics. Namely, these data have not undergone the second adjustment yet.

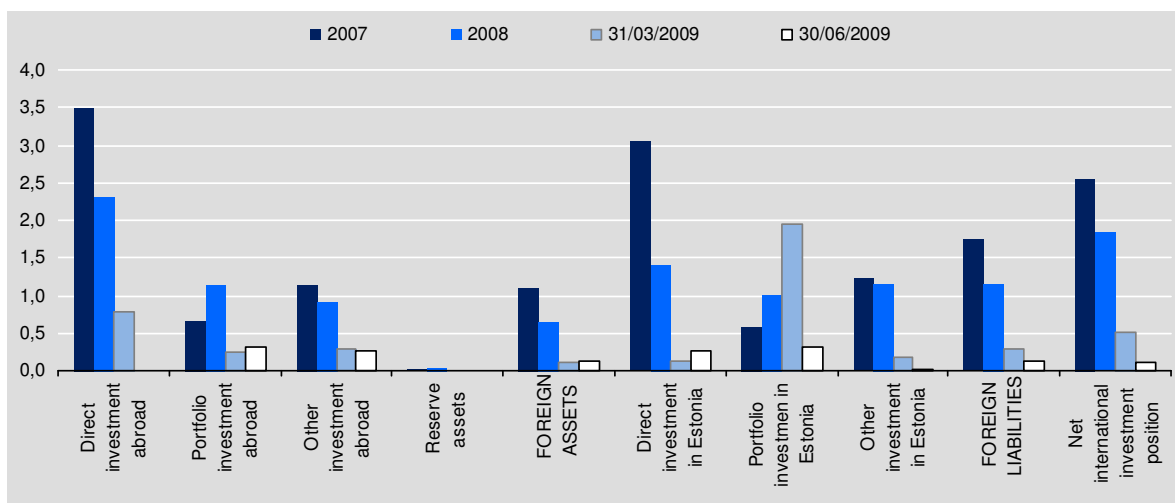


Figure 37. Adjustment of the international investment position (MAPE; % of preliminary value)

ASSESSMENT: Owing to the cumulative nature of the international investment position data, the scope of their adjustment has been marginal, remaining below 1% for the majority of the items (except for direct investment). The slightly larger adjustment of direct investment data can be explained by the absence of actual data on reinvested earnings at the time of compiling the preliminary balance of payments.

4. THE ESSENCE OF THE QUALITY INDICATORS OF BALANCE OF PAYMENTS STATISTICS

The **scope of adjustment** of the **current account and the investment position** items is assessed as a ratio of the mean absolute percent error (MAPE) and the preliminary indicator:

$$MAPE = \frac{1}{N} \sum_{t=1}^N \left| \frac{X_t(l_j) - X_t(l_i)}{X_t(l_i)} \right| * 100, \text{ where}$$

- N – the number of periods in the time series;
 $X_t(l_j)$ – the latest value of the item;
 $X_t(l_i)$ – the preliminary value of the item.

The **scope of adjustment** of the net values of the **financial account** is assessed as the root mean square relative error (RMSRE), which indicates the adjustment in ratio to the volatility of the indicator:

$$RMSRE = \sqrt{\frac{\sum_{t=1}^N [X_t(l_j) - X_t(l_i)]^2}{\sum_{t=1}^N [\Theta - X_t(l_j)]^2}} * 100, \text{ where}$$

- Θ – later value from the item's mean value in the monitored period (the arithmetic mean);
 N – the number of periods in the time series;
 $X_t(l_j)$ – the latest value of the item;
 $X_t(l_i)$ – the preliminary value of the item.

The scope of net transactions not covered in the balance of payments is assessed by comparing "errors and omissions" with a half of the total current account turnover:

$$\varepsilon = \frac{EO}{\frac{1}{2}(DB_{CA} + CR_{CA})} * 100, \text{ where}$$

- ε – proportion of the error;
 EO – errors and omissions;
 DB_{CA} – debit turnover of the current account;
 CR_{CA} – credit turnover of the current account.