Box 1

The derivation and use of flow data in monetary statistics

The monetary statistics of the euro area comprise stock and flow data on the assets and liabilities of the Monetary Financial Institutions (MFI) sector in the euro area. The stock data show the levels outstanding of the balance sheet items at the end of the reference period. The ECB calculates flow statistics by adjusting the differences between end-of-month stocks for the effect of "non-transaction-related" factors. Thus, the ECB's flow data reflect only those changes in stocks which arise from transactions, i.e. from the acquisition of financial assets or the incurring of financial liabilities. The ECB uses flow data to produce an index of notional stocks for the monetary variables. This index measures changes in the money stock arising from financial transactions. The index of notional stocks is then further used to derive the monetary growth rates. This box discusses the statistical procedure adopted by the ECB to derive the flow statistics and the associated growth rates.[1] In addition, it discusses the conceptual background to these adjustments.

The statistical procedure

The following non-transaction-related factors are taken into account in order to derive adjusted flows from differences in amounts outstanding of M3:

1 *Reclassifications and other statistical factors:* These comprise changes in the assets and liabilities on the balance sheet of the MFI sector arising from:
- changes in the MFI reporting population caused by alterations to sector classifications (e.g. an institution is newly classified as an MFI and reallocated from the money-holding sector to the MFI sector);
- corporate restructuring (e.g. a credit institution transfers parts of its business to a subsidiary outside the MFI sector);
- the reclassification of assets and liabilities (e.g. a certain type of savings deposit is reclassified from a deposit redeemable at notice to an overnight deposit), and
- the correction of those reporting errors which, for technical reasons, cannot be removed from the stock data for the complete relevant period.

2 *Revaluations*

Revaluations are changes in the level outstanding of the assets and liabilities of the MFI sector which are due to valuation changes. A distinction is made between two types of revaluation:

a) Exchange rate revaluations

The Eurosystem's monetary aggregates follow the "all-currency" definition. This means that these aggregates include instruments denominated in foreign currencies (held with domestic MFIs), the value in euro of which is affected by exchange rate variations. These revaluations therefore stem from changes in the euro value of assets or liabilities denominated in foreign currency that arise from exchange rate fluctuations.

b) Other revaluations

These are changes in the balance sheet of the MFI sector arising from changes in the book value of securities held or issued by MFIs, other than those stemming from exchange rate fluctuations (e.g. changes in the value of securities held in a portfolio caused by movements in their market price).

The table shows the derivation of the flows for the broad aggregate M3 in detail. The monthly flow (column 6) is calculated as the difference in end-of-month levels (column 2) minus the adjustments for reclassifications

1 *The detailed provisions underlying this procedure are set out in the ECB Guideline of 13 November 2000 concerning certain statistical reporting requirements of the European Central Bank and the procedures for the reporting of statistical information in the field of money and banking statistics by the national central banks (ECB/2000/13). A technical note at the end of the "Euro area statistics" section of the Monthly Bulletin describes in detail how the annual percentage changes are derived from amounts outstanding and flows. These procedures are in line with international statistical standards.*

M3: levels outstanding at the end of the period, derivation of flows and index of adjusted levels

(EUR billions; not seasonally adjusted; index: December 1998 = 100)

		Levels	Difference in levels	Adjustments				
				Reclassifi-cations	Foreign exchange revaluations	Other revaluations	Flows [1]	Index of adjusted levels [2]
		1	2	3	4	5	6=2-3-4-5	7
1999	Jan.	4,511.5	47.4	1.7	2.5	…	43.1	101.0
	Feb.	4,496.7	-14.8	0.0	3.6	…	-18.4	100.6
	Mar.	4,513.1	16.4	-2.3	2.9	…	15.9	100.9
	Apr.	4,551.9	38.8	3.1	1.4	…	34.3	101.7
	May	4,587.5	35.6	0.0	1.5	…	34.1	102.4
	June	4,611.2	23.7	0.9	1.5	…	21.3	102.9
	July	4,620.8	9.6	0.0	-3.5	…	13.1	103.2
	Aug.	4,601.7	-19.0	0.1	2.3	…	-21.4	102.7
	Sep.	4,627.5	25.7	11.7	-0.4	…	14.4	103.1
	Oct.	4,649.3	21.9	1.8	2.7	…	17.4	103.4
	Nov.	4,699.1	49.8	0.0	5.1	…	44.6	104.4
	Dec.	4,791.0	91.9	11.3	0.6	…	79.9	106.2
2000	Jan.	4,800.9	10.0	3.8	2.6	…	3.6	106.3
	Feb.	4,822.4	21.5	-1.7	0.5	…	22.8	106.8
	Mar.	4,862.5	40.0	-0.1	4.1	…	36.1	107.6
	Apr.	4,954.4	92.0	43.7	6.4	…	41.9	108.5
	May	4,951.8	-2.6	-3.7	-3.5	…	4.6	108.6
	June	4,944.1	-7.8	2.3	-3.2	…	-6.9	108.5
	July	4,953.7	9.6	-0.2	4.1	…	5.6	108.6
	Aug.	4,957.6	4.0	-0.6	6.6	…	-2.0	108.5
	Sep.	4,957.8	0.1	1.1	2.3	…	-3.4	108.5
	Oct.	4,977.9	20.1	-0.2	6.8	…	13.5	108.8
	Nov.	5,013.0	35.1	0.9	-6.1	…	40.3	109.6
	Dec.	5,080.0	67.0	0.2	-13.5	…	80.4	111.4

Source: ECB.

1) The individual adjustments may not add up to the total due to rounding.

2) Taking the level outstanding in December 1998 (not seasonally adjusted) as 100, the index shows the cumulative product of changes from that date calculated from flows (column 6).

and other statistical factors (column 3), foreign exchange revaluations (column 4) and other revaluations (column 5). As can be seen from the table, the most substantial effects so far have resulted from reclassifications. There have also been significant foreign exchange revaluation effects. By contrast, the impact of other revaluations has been negligible. The table above will shortly start to be published on a regular basis on the ECB's website at www.ecb.int.

Conceptual background to the adjustments

Reclassifications and other statistical factors must be corrected for in flow statistics since failure to do so may easily jeopardise the comparability of successive observations. One example involving a change in the MFI reporting population may help to clarify this: following an amendment to the law identifying money market funds in one euro area country, from April 2000 some financial institutions previously defined as "other financial intermediaries" (and therefore excluded from the MFI sector) were reclassified as money market funds. In such a case, a simple comparison between the amounts outstanding of money market fund shares/units before and after April 2000 would be misleading. Consistency has been preserved by making a reclassification adjustment in April 2000.

The rationale behind the adjustments for *revaluations* is somewhat different. It arises not only from concerns about statistical consistency, but also from general considerations as to how the information content of monetary

aggregates can be preserved when they include components subject to valuation changes. The need to adjust for *revaluations other than for exchange rate changes* arises from the inclusion in the monetary aggregates of negotiable securities the market prices of which may vary. The valuation changes are normally relatively small owing to the short lifetime of these instruments. As a result, and also taking into account the transaction costs involved in frequently buying or selling these securities, it is deemed likely that temporary fluctuations in prices for short-term securities would not be perceived by holders of money as implying a change in their portfolio with significant implications for their spending capacity.

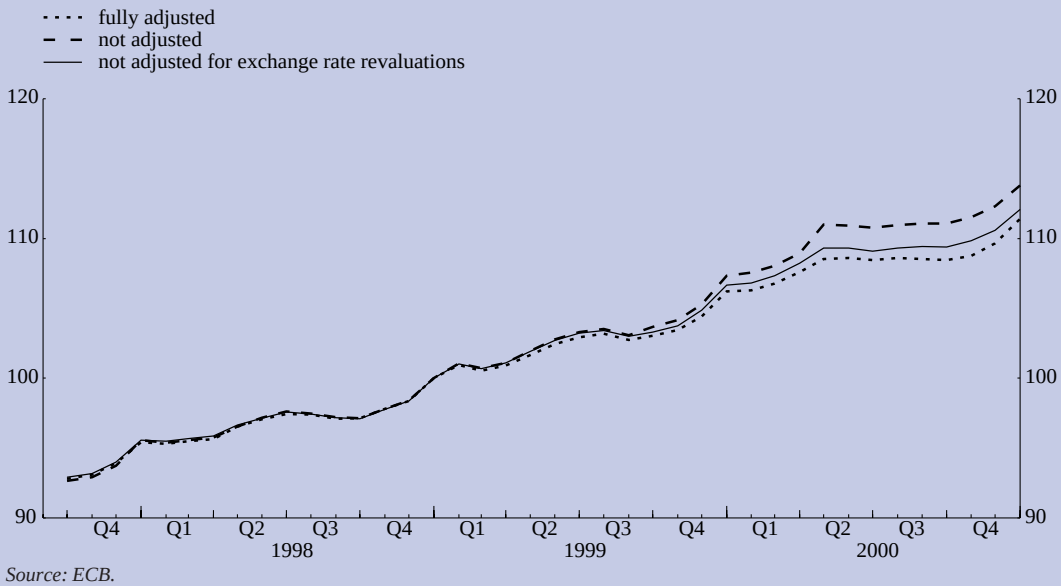
The issue of adjusting the amounts outstanding for *exchange rate fluctuations* arises, as noted above, from the fact that the Eurosystem's monetary aggregates follow the "all-currency" definition. This is in line with the practice previously adopted by the national central banks of the majority of the euro area Member States. It is based on the assumption that, from the point of view of holders of money, liquid assets in foreign currencies are, at least potentially, relatively close substitutes for holdings of corresponding euro-denominated assets included in M3.

The arguments for and against adjusting monetary growth rates for exchange rate fluctuations differ according to the time horizon of the analysis. There are several arguments in favour of adjusting for exchange rate fluctuations in short-term analyses of monetary developments. One important such argument is that exchange rates may be rather volatile. If the effects of exchange rate changes were included in the monthly calculation of monetary growth rates, this would risk allowing valuation effects to overshadow the true transaction-related effects. Moreover, it is not reasonable to expect agents to perceive a significant change in their spending capacity because of short-term exchange rate fluctuations.

For longer-term analyses, by contrast, it may be of interest to monitor stocks not adjusted for exchange rate revaluations. Since exchange rates might follow a trend over a longer period of time, it may be argued that an increase or decrease in the value in euro of foreign currency-denominated components of M3 arising from exchange rate developments could, if sustained over protracted periods, give rise to wealth effects and lead to changes in the spending decisions of euro area residents. If so, the valuation of foreign currency components at market values would appropriately reflect the spending capacity of the economic agents in the long run. For this reason it might be useful, in particular during sustained periods of pronounced exchange rate movements, to look at measures of M3 not corrected for exchange rate adjustments.

Indices of notional stocks of variants of M3

(index: December 1998 = 100)



Source: ECB.

The chart shows three index series: the unadjusted M3 series, the fully adjusted M3 series and a series not corrected for exchange rate variations. As can be seen from the chart, a certain gap arose between the latter two series as from around mid-1999 due to the depreciation of the euro from January 1999 until the end of October 2000.

This gap may be surprising given the relatively small share (4%) of foreign currency components in M3 at the end of 2000; it reflects the large movements in the euro exchange rate. However, the potential wealth effects may be modest for reasons suggested above, and the exchange rate gains on holdings in foreign currencies were partly reversed following the appreciation of the euro in November and December. In addition, it should be taken into account that the actual degree of substitutability between foreign currency and euro components of M3 in the euro area is not perfect. The characteristics of euro-denominated and foreign currency components differ on account of the exchange rate risks related to the latter. Moreover, there are certain differences in the purposes for which they are held. For example, some of the deposits denominated in foreign currency are held to pay for imports in foreign currency and consequently have a relatively low degree of substitutability with their euro counterparts. Overall, therefore, the effect of exchange rate variations on domestic spending capacity is expected to be much smaller than the gap in the chart would tend to suggest.

To sum up, this box has explained why the ECB calculates growth rates on the basis of flow data. This notwithstanding, potential effects on spending capacity accumulated in the long run due to exchange rate revaluations of the foreign currency components of M3 are closely monitored and – if appropriate – taken into account in the overall monetary policy assessment. However, since foreign currency components form only a small proportion of M3, and in view of the conceptual arguments given above, such effects are expected to be of limited relevance.