Ulrike Dennig*

Problems of Measuring Money Supply in the Euro Area

With just a few weeks left to go before responsibility for monetary policy is transferred from the EMU member countries to the European Central Bank, there is still no standardised concept for measuring a euro area money supply which could serve as a statistical basis for a money-supply oriented monetary policy strategy. Which problems remain to be solved?

When the European Monetary Union (EMU) comes into force on 1st January 1999, responsibility for monetary policy will be transferred from the national monetary authorities to the European Central Bank (ECB), which will make its monetary policy decisions in accordance with economic developments in the euro area as a whole. In order to do so, the ECB will require reliable data for the region, particularly monetary indicators which have been calculated according to standardised definitions and procedures. With only a few weeks left to go before the start of the EMU, considerable shortcomings remain.

In particular there is still no standardised concept for measuring a euro area money supply which could serve as a basis for a money-supply oriented monetary policy strategy. Estimating money supply developments has so far meant falling back on surrogates such as the "EMU money supply" which is compiled by aggregating national, at times incongruent, money supplies. The delay in publishing a measure of money supply for the euro area clearly indicates that considerable harmonisation, aggregation and consolidation problems still exist as far as measuring a common money supply is concerned.

The Maastricht treaty has given the European Central Bank considerable powers in the field of statistics. It is even free to issue binding directives with immediate effect in the EMU area as well as to threaten and impose sanctions. Since 1996, considerable progress has been made in preparing the ground for the standardisation of statistics. In mid-1996, the European Monetary Institute (EMI), the predecessor of the ECB, published a catalogue of concrete statistical requirements for the standardisation of the more important monetary indicators, particularly for the money supply aggregates.[1] At that time, it was estimated that a good two years would be sufficient for the implementation of these requirements, such that consolidated euro area money supply figures should actually have already been compiled as from July of this year.[2] However, such figures have yet to be published.

The greatest problems to harmonisation are posed by national differences in the selection of the financial institutions required to report to the central bank, in the definition of alternative money supply measures, and in the scope of data published. From the point of view of monetary theory, the economy can be divided into three sectors which create money, hold money and maintain monetary neutrality respectively.[3] The first sector includes banks and financing institutions, the second comprises of companies and private citizens (and state-run enterprises) and the third usually consists of the state and foreign trade. In order to measure the money supply it is sufficient to require the money-creating sector to report. Traditionally, only banks have been obliged to report in Europe in the past, whereby the term "bank" has not been applied consistently. In some countries the terms "credit institution" and "bank" have been treated as equi-

* Hamburg Institute for Economic Research (HWWA), Hamburg, Germany.

[1] Cf. EMI: The Statistical Requirements for Monetary Union, Frankfurt, July 1996; Deutsche Bundesbank: Harmonisierte monetäre Statistiken – Grundlage für eine erfolgreiche Geldpolitik in der Währungsunion, Informationsbrief zur WWU No. 2, October 1996.

[2] Cf. EMI: Annual Report 1997, p. 55.

[3] Cf. EMI: Money and Banking Statistics Sector Manual, Frankfurt, April 1998.

valent, but not in others. Thus in some member states like Germany, savings banks and mutual loan societies are among the institutions required to report, but not in others.

In recent years, most countries have extended the obligation to report – albeit to differing degrees – to include other financing institutions. Consequently, leasing and factoring firms and unit trusts, as well as building societies and industrial finance companies, deposit-taking institutions or stockbrokers and insurance agents are now often included too. In order to guarantee a clear definition of the money-creating sector in future, the ECB has now compiled and published an extensive list of "monetary financial institutions" in the EMU which are required to report.[4]

There should also be a clear and standardised distinction between the state sector, which is regarded as neutral, and the money-holding sector. Some member states have so far regarded only the central government as neutral in a monetary sense (Germany, France and Finland), while some include the entire public sector complete with any regional administrative bodies (Austria) and others also include social insurance (Belgium) or state enterprises and special credit institutions (Italy).

Ambiguous Money Supply Definition

The reporting institutions should in future all define, assemble and classify monetary data in the same manner. It has become standard practice to differentiate between the money supply aggregates M1 (cash and current deposit accounts), M2 (M1 plus time deposits) and M3 (M2 plus savings deposits). Although this terminology is widely used in the EMU member countries, there is as yet no standard classification as far as content, terms and currency are concerned. In some countries, for example, savings deposits have been included in M2 (Italy, Netherlands, Portugal). Innovative financial instruments such as money market funds or certificates of deposit have also been classified differently, and foreign currency deposits have in some cases been included additionally (Italy, Spain, France). While all other countries measure their money supply on the basis of residents' bank deposits, Portugal also includes deposits held by Portuguese emigrants. Finally, there are also problems regarding the term structure. In Germany, for instance, time deposits of up to four years are included in M2, while other countries include only deposits of up to one or two years. In future, the ECB intends the M3 limit to be set at two years.[5]

As long as uncertainty remains as to which money supply definition is most appropriate for the aims of European monetary policy, it would be desirable to measure all three money supply aggregates across the entire EMU. In any case, the ECB would thus gain additional information. With the exception of Luxembourg, M1 is measured in all the EMU member countries. In contrast, M2 is not published in two countries (Belgium, Ireland) and M3 in two other countries (Italy and Portugal). Luxembourg, which for a long time has formed a monetary union with Belgium, discloses no monthly figures with regard to the money supply in circulation.

Problems also persist regarding the amount of time which elapses before figures are made available; in some countries publication is delayed by up to five months. In order to ensure that money supply data are always as recent as possible, the ECB in future expects the reporting financial institutions to provide the necessary monthly figures no later than 15 days after the end of the month and quarterly figures no later than 30 days after the end of the quarter. If this can be achieved, EMU money supply figures could in future be available with a maximum delay of four weeks.

Analysis of euro area money supply growth in 1999 will also require standardised data for the months before monetary union comes into force. Retroactive calculations involve not only the problems of harmonisation mentioned above, but additional aggregation and evaluation problems. National aggregates – following the best possible harmonisation and adaptation to the conceptions stipulated by the ECB – thus require further weighting and adjustment to a single currency base. Since the Maastricht treaty provides for conversion from ecu to euro on a 1:1 basis at the start of the monetary union, the ecu presents itself as an appropriate common basis.

In order to minimise the problems of transition, moreover, conversion should take place – as is the case with the figures presented here – in line with current central rates. In view of the inevitable problems of aggregating absolute amounts, the level of the money supply figures derived in this way is of limited significance only. However, since it is the develop-

[4] Cf. EMI: List of Monetary Financial Institutions: as at December 1997, Frankfurt, April 1998.

[5] Cf. EMI: The Single Monetary Policy in Stage Three – General Documentation on ESCB Monetary Policy Instruments and Procedures, Frankfurt, September 1997, pp. 77 f. and, particularly, the table on p. 108.

ment of monetary aggregates in the course of time which is of primary importance, the growth rates measured on the basis of these aggregates do indeed provide a meaningful indicator.[6]

Finally, before a measure of euro area money supply which meets the requirements of modern monetary theory can be calculated, a number of consolidation issues remain to be resolved. Thus in the EMU, reporting institutions' assets and liabilities vis-à-vis partners in other member countries must now be included in the money supply aggregates. This applies particularly to the short-term financial transactions, formerly classified as euromarket operations, settled outside the currency's country of origin – i.e. trade in so-called euromarks in Luxembourg, euroguilders in Paris, eurofrancs in Brussels, etc. Such time deposits, as well as other deposits held at banks in other EMU countries, will have to be included in the euro area money supply. The consolidated money supply in the EMU can thus be expected to be larger than the EMU money supply derived by aggregating individual national money supplies. In order to enable the ECB to consolidate data from the reporting financing institutions in this way, the balance sheet structure of these institutions must in future be modified, with a further sub-division of financial relations with other countries allowing differentiation between EMU countries and the rest of the world.[7]

Money Supply Development in the EMU Region

Since the European Central Bank has not yet released any figures for a "harmonised" euro area money supply calculated according to standardised definitions and procedures, an analysis of money supply developments in the euro area still has to rely on surrogate measures such as the summarised, unconsolidated money supply of the eleven member countries. Figure 1 provides an overview of the development of the corresponding EMU money supply aggregates M1 and M3; these aggregates are shown

[6] The German Bundesbank applies a different method to arrive at a harmonised money supply. It first converts the money supply aggregates of the individual countries to D-marks on the basis of 1993 consumer monetary parities and then weights them using nominal GDP weights from the same period. Cf. Deutsche Bundesbank: Monatsbericht August 1998, pp. 25 f.

[7] Cf. EMI: The Statistical Requirements..., op. cit.; Deutsche Bundesbank: Harmonisierte monetäre Statistiken..., op. cit.

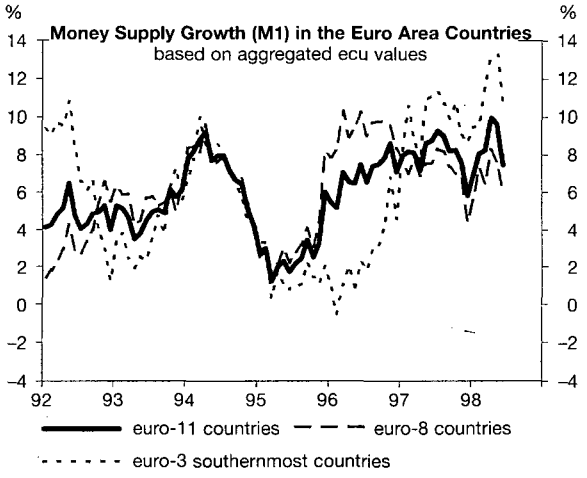
Table 1
Development of National Money Supplies (M3) in the EMU Area
(year-on-year changes in %)

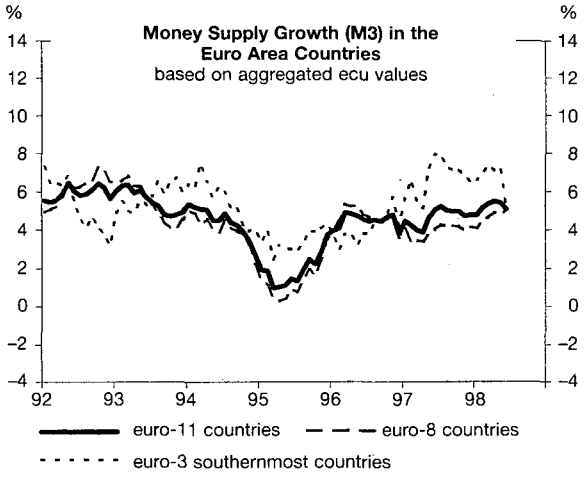
Year	Quarter	D	F	I	E	NL	B/Lux	Au	P	Fi	Ire	EMU Area
92	1	6.7	3.3	3.7	8.7	5.7	4.8	5.8	25.9	6.6	2.7	5.51
	2	7.8	4.5	4.6	6.4	6.0	6.3	4.8	22.8	6.2	3.9	6.11
	3	8.9	4.5	2.0	5.6	7.1	5.7	4.6	20.4	4.5	3.1	5.93
	4	9.5	5.4	1.7	4.5	6.9	5.0	4.4	18.1	2.1	8.1	6.09
93	1	7.7	5.5	3.4	6.0	6.8	8.5	5.0	15.6	0.3	16.7	6.23
	2	8.4	3.2	3.0	7.0	7.0	9.6	5.3	12.7	–1.9	20.5	5.90
	3	8.0	–0.1	4.5	7.5	6.5	11.0	4.9	9.3	0.0	22.2	5.16
	4	7.7	–2.2	4.2	9.0	6.4	14.8	5.1	8.1	1.8	18.1	4.82
94	1	11.4	–4.7	5.6	8.2	6.6	13.1	4.5	5.1	5.9	12.2	5.22
	2	10.5	–4.6	5.1	7.5	5.0	10.1	4.6	5.7	9.7	9.2	4.69
	3	8.5	–1.7	3.1	7.7	4.0	6.6	5.4	8.5	8.3	8.7	4.50
	4	5.6	0.8	0.8	7.2	2.1	–1.9	5.3	9.3	4.4	9.9	3.34
95	1	0.2	3.1	–1.9	8.2	0.3	–7.3	5.4	12.7	–0.3	10.9	1.59
	2	–1.0	4.0	–2.8	8.7	–0.7	–8.9	5.1	12.4	–0.8	10.2	1.20
	3	–0.6	4.9	–2.5	9.2	0.5	–5.7	4.2	9.2	0.8	11.1	1.90
	4	1.3	3.9	–2.2	10.6	3.0	–0.9	5.1	8.3	–0.3	13.4	2.92
96	1	5.4	3.5	–3.1	10.2	4.5	4.8	5.1	5.9	0.7	15.0	4.31
	2	7.3	1.5	–2.1	9.0	6.8	8.9	5.0	6.8	–2.2	17.3	4.71
	3	8.0	–0.6	0.5	7.4	7.4	7.4	4.1	8.5	–3.4	18.0	4.48
	4	8.2	–1.6	3.6	5.7	6.3	7.4	2.9	8.6	–0.8	20.9	4.42
97	1	7.8	–3.2	7.9	3.7	7.2	5.8	2.8	8.8	1.3	23.3	4.23
	2	6.4	–1.6	9.9	3.6	7.1	5.0	2.4	8.4	6.0	26.5	4.52
	3	6.0	–0.2	11.2	4.0	7.3	6.2	3.2	6.7	7.1	29.5	5.08
	4	4.8	1.0	9.6	4.0	6.7	6.9	2.3	7.4	7.0	26.7	4.83
98	1	3.7	4.1	9.5	4.2	5.2	6.5	1.8	6.6	7.6	25.1	5.10
	2	4.3	4.9	11.0	3.5	7.2	4.3	1.8	4.9	5.4	24.4	5.34

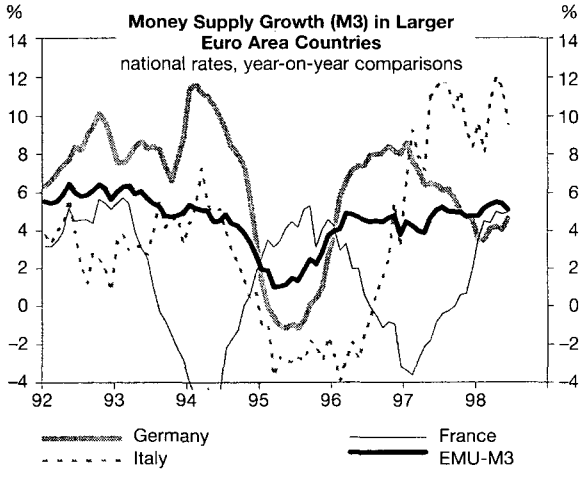
Quarterly averages; EMU = weighted average. D = Germany. F = France. I = Italy. E = Spain. NL = Netherlands. B = Belgium. Lux = Luxemburg. AU = Austria. P = Portugal. Fi = Finland. Ire = Ireland.

Sources: OECD, national statistics, own calculations.

Figure 1







M1 = cash and current deposit accounts; M3 = M1 plus fixed and savings deposits. M2 for Italy and Portugal; base data valued using central ecu exchange rates for 1998, not seasonally adjusted, year-on-year comparisons.

Sources: OECD, national statistics, own calculations.

both for the whole of the group of eleven countries, and separately for two sub-groups – a core group of eight countries[8] and a second group of the three southernmost countries.[9]

A comparison of the different money supply aggregates shows that, in the period since 1992, the EMU money supply of the euro-11 countries in the M3 definition has fluctuated to a far lesser extent than in the M1 definition. The fundamental trend of M1 money supply growth in the EMU countries has also seen a marked acceleration since 1992, while average M3 growth in the EMU countries remained roughly constant during the same period.

The contrasting developments of M1 and M3 in the EMU countries can be explained by shifts in portfolio structures, which can also be observed in national financial markets in times of falling capital market or money market interest rates. When interest rates and interest rate differences fall, the opportunity costs of holding money are lower, such that relatively more liquid funds are held. If monetary policy decisions were based on M1 data alone, both the timing and the quantity of this sort of asset restructuring would have to be anticipated correctly. It would also be necessary to convey varying central bank reactions to the public in spite of there being no significant change in published figures. Since these problems do not arise to the same extent in the case of M3, the euro or EMU area money supply in this definition would be preferable to other aggregates.

In the 1990s, partly as a result of the efforts made to meet the Maastricht criteria, there has been a marked alignment in inflation rates, long-term interest rates and – albeit to a lesser extent – short-term money market interest rates among the future members of the EMU. Similar observations should also be true of their money supplies. Figure 1 does not confirm this assumption; it shows that M1 growth rates in the "EMU core countries" (EMU 8) and the southernmost countries (EMU 3) came increasingly into alignment in the first half of the 1990s, but drifted apart again later. While the differences between the two groups were less marked in the case of M3, it is clear that, here too, there were stronger divergencies again in the last two years. This is probably due in part to individual economies' being at different stages of the economic cycle and in part to statistical problems.

[8] Germany, France, Belgium, Netherlands, Luxembourg, Ireland, Austria and Finland.

[9] Italy, Spain and Portugal.

A long-term comparison nevertheless shows that since the 1980s progress has clearly been made with regard to convergency. While M3 growth rates in the southernmost countries in the early 1980s were still well over 10%, they were considerably lower for most of the 1990s, whereby the deviation from the weighted average has fallen from up to eight percentage points at the start of the decade to around two percentage points today.

The 1990s also saw significant differences in money supply developments within the group of "EMU core countries". Although cooperation on monetary policy between France and Germany in particular has been exceptionally close for a long time, and the repo rate for open-market operations carried out by their respective central banks has been practically identical for some months now, differences between the rate of money supply growth in the two countries were at times quite considerable. Money supply growth developed differently again in Italy, recently showing a marked acceleration. The differences in developments between these three countries, which after all account for around 70% of the common EMU money supply aggregate M3, are possibly due to international capital movements, but could also be a side-effect of policies geared primarily to exchange rates rather than to money supply volumes. However, sizeable differences exist not only between these three countries (see Table 1).

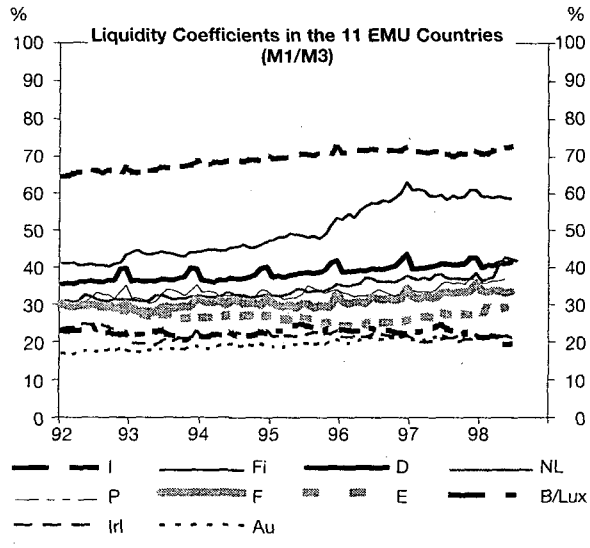
Suitability as an Intermediate Target

The money supply is of particular importance as an intermediate target for monetary policy. In the initial phase of monetary union, however, it is unlikely that the money supply will be capable of fulfilling this function properly, even if it is calculated "correctly", for its suitability as an intermediate target and as a basis for money supply strategy requires a sufficiently stable correlation between demand behaviour in the financial markets – which is expressed in the money supply – and price developments.[10] As this has largely been the case in Germany in the past, the Bundesbank has favoured the money supply concept. In other European countries, however, there has not been such a close correlation between money supply and prices. It is thus impossible as yet to assess the stability of the demand for money in the EMU area as a whole with any degree of certainty.

Econometrical studies carried out by the German Bundesbank seem to suggest that the demand for money in the entire euro area has been relatively stable in recent months, and that the money supply preceded price developments. These studies used the EMU money measure M3H as an indicator – a Bundesbank definition which is calculated by aggregating national money supplies and which already involves a certain degree of harmonisation. The Bundesbank regards M3H as a perfectly suitable aid to monetary policy orientation during the transition period until an official euro area money measure is published.[11] However, all the studies on the stability of the euro area money supply carried out so far have been based on surrogate measures, which will all differ to a greater or lesser extent from the actual euro area money supply. A degree of uncertainty thus remains.

A further uncertainty factor which should not be underestimated results from the fact that changes in financial structures and in the behaviour of market participants following the transition to monetary union in 1999 are as yet largely unpredictable. If we observe the usual volume of liquid funds held by economic units – commonly measured as the relationship between the national money supplies M1 and M3 (Figure 2) – it is apparent that there are still considerable differences between the EMU countries in

Figure 2



With M2 for Italy and Portugal; original figures not seasonally adjusted.

Sources: OECD and national statistics.

[10] Cf.: H.-J. Jarchow: Theorie und Politik des Geldes, Vol. II, Göttingen, 2nd ed. 1976, pp. 179 f.; M. J. M. Neumann: Zwischenziele und Indikatoren der Geldpolitik, in: K. Brunner et al. (ed.): Geldtheorie, Cologne 1974, p. 360.

[11] Deutsche Bundesbank: Monatsbericht August 1998, p. 27.

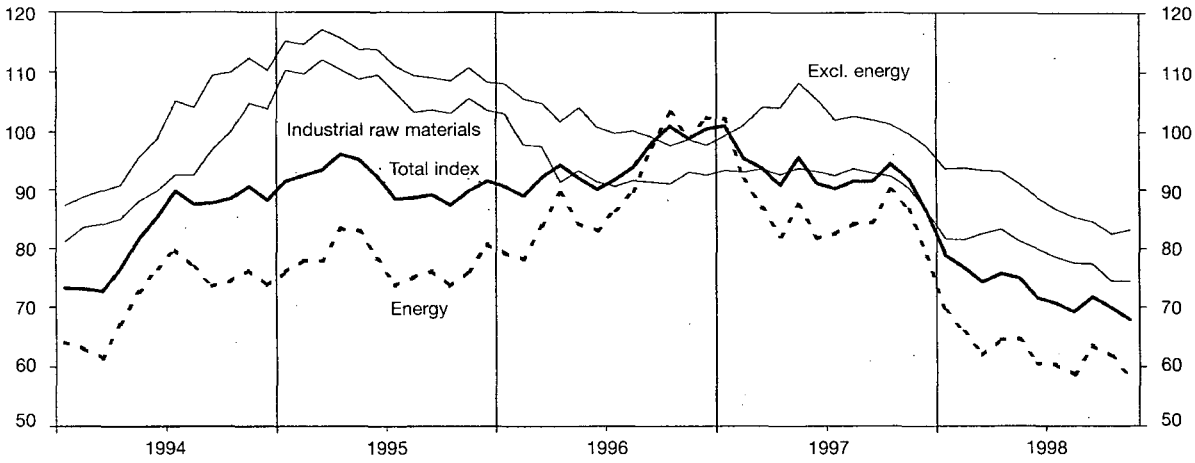
this respect. In most of the 11 member countries, 20% to 40% of the monetary assets documented are held in the form of liquid funds. In Italy and Finland, however, the liquidity coefficients are markedly higher. In the case of Italy this divergence is probably in part due to the fact that, instead of M3, only the relatively smaller money supply aggregate M2 is available. Nonetheless, inefficient supplies of loan capital to the private sector or inefficient payment settlements can also be partly responsible. Similar assumptions may also be made for Finland.

However, liquidity differences of between 20% (e.g. for Austria and Ireland) and 40% (Germany, France, Netherlands, Portugal) which still exist among the remaining EMU countries also point to structural differences of significance for monetary policy. Low levels of liquidity could indicate advanced economisation of money-holding resulting from an increased use of cash and credit cards.

In view of the differences in financial market structures, the incalculable effects of harmonising monetary policy instruments and institutions, and the adjustment processes to be expected after the start of monetary union, the demand for money is likely to be characterised for some time by a not inconsiderable degree of instability. Consequently, monetary policy will initially have to follow a pragmatic course. Yet even to do this, reliable statistical data regarding the money supply in its various definitions will be required as quickly as possible, for in the catalogue of monetary indicators upon which monetary policy decisions will depend, the money supply will, according to the ECB, certainly be among the most prominent.

HWWA Index of World Market Prices of Raw Materials[1]

(1990 = 100)



Raw Materials and Groups of Materials[1]	1997	May 98	June 98	July 98	Aug. 98	Sep. 98	Oct. 98	Nov. 98[2]
Total Index	92.7	75.0	71.6	70.7	69.2	71.8	69.9	67.9
	(-1.7)	(-21.5)	(-21.4)	(-21.6)	(-24.3)	(-21.5)	(-26.0)	(-26.0)
Total, excl. energy	102.3	91.0	88.6	86.7	85.3	84.6	82.5	83.2
	(0.8)	(-15.8)	(-15.9)	(-15.1)	(-16.8)	(-17.2)	(-18.5)	(-16.6)
Food, tropical beverages	132.0	120.2	114.4	110.6	108.5	105.6	106.3	109.3
	(12.5)	(-20.4)	(-19.2)	(-15.2)	(-16.0)	(-18.3)	(-16.8)	(-14.5)
Industrial raw materials	92.3	81.2	79.9	78.6	77.6	77.5	74.5	74.5
	(-1.5)	(-13.3)	(-14.2)	(-15.0)	(-17.2)	(-16.6)	(-19.4)	(-17.5)
Agricultural raw materials	92.6	81.7	81.3	79.0	78.1	77.9	74.4	74.5
	(-3.5)	(-11.8)	(-11.8)	(-13.6)	(-15.9)	(-17.3)	(-21.3)	(-19.4)
Non-ferrous metals	89.8	73.1	69.8	69.7	69.0	69.8	67.5	67.6
	(2.0)	(-22.5)	(-25.3)	(-24.8)	(-26.4)	(-21.5)	(-21.8)	(-19.0)
Energy	86.5	64.6	60.6	60.3	58.7	63.4	61.7	58.0
	(-3.5)	(-26.0)	(-25.9)	(-26.9)	(-30.3)	(-24.9)	(-31.4)	(-33.0)

[1] On a US dollar basis, averages for the period; figures in brackets: percentage year-on-year change.
[2] Up to and incl. 20th November.