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## The changing character of the European banking market

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Manfred Borchert

*Abstract: The Changing Character of the European Banking Market*

At present West European banks are increasingly branching out into asset management as well as the consulting business, which cannot be directly influenced by monetary controls. We have therefore carried out a regression analysis and a factor analysis of banks' balance-sheet items, and we have also plotted figures from banks' income statements. Our analyses fulfil a triple purpose. First, they shed much light on the positioning strategies deployed by European banks. Second, they reveal different tendencies in respect of the refinancing strategies that are adopted when credits are granted to non-banks. Third, they make it possible to assess the effectiveness of monetary policy. There is clear evidence that the European Central Bank's money supply policy will prove less and less efficient as banks increasingly resort to refinancing by assets and continue to expand their banking services by building up their consulting businesses.

**Key words:** Banking structure

Banking market

Banks' business strategies

**JEL-classification:** E 51, E 58, G 21

October 14<sup>th</sup>, 2003

## **The Changing Character of the European Banking Market\***

*Manfred Borchert*

### **Introduction**

The way monetary targeting is managed depends on how money is defined, and money may be defined in many different ways. All the current definitions, however, have one thing in common, viz. they invariably comprise liability items in banks' balance sheets. Consequently, these balance sheets remain unchanged (a) when banks provide assistance to customers who wish to raise funds in the capital markets; and (b) if banks – at least partially – refinance loans via assets (securities), they exert no influence whatever on the quantity of money.

However, even if banks refinance their loans by liability items, reference to the quantity of money M3 can be problematic because the means of payment (M1) and the amount of liquidity within the banking sector (M3-M1) develop in opposite directions, a process which will be neutralized – at least partially – within the aggregate M3. This is why broad money is endogeneously determined; “the starting point of this endogeneity thesis is the assertion that it is loans that cause deposits (and not the other way around).”<sup>1</sup>

Until the early 1980s, the continental European system was largely bank-based, while the U.S. and U. K. systems had become market-based. In 1994, only 16% of the capital borrowed by firms in the U.S. came from banks, while 49% was raised by issuing securities. By contrast, 80% of corporate borrowing in Germany was from banks and only 10% from securities markets.<sup>2</sup> Over the last twenty years, the European financial system has become more market-based – a change due to two factors: (a) improvements in the processing and transmission of information and (b) the process of European integration.<sup>3</sup> This trend will be

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\* This contribution was written in August and September 2003, during a research visit to the *International Monetary Fund* in Washington, D.C. (USA).

<sup>1</sup> Cf. Caporale/Howells 2001: 548.

<sup>2</sup> Cf. Rajan/Zingales 2003: 5.

<sup>3</sup> Cf. Rajan/Zingales 2003: 57.

reinforced as a result of the transition to a single European currency, which was launched as early as 1999, although the new coins and banknotes were not issued until 2002.

*Section 1* describes in outline the prospects of the West European banks. Owing to the introduction of the euro, every bank within the EMU zone can now expand its market area beyond its national borders. European banks are now increasingly expanding into asset management as well as the consulting business – activities which enable them to raise funds for customers in ways which cannot be influenced by monetary controls.

*Section 2* examines the positioning of Europe's big banks with the aid of a regression analysis, a factor analysis of balance-sheet items and a graphical representation of income statements. Our analyses reveal different tendencies in respect of the refinancing strategies that are adopted when credits are granted to non-banks (refinancing by assets and refinancing by liabilities). The adjustments of equity capital play a considerable role, too.

*Section 3* attempts to assess the effectiveness of monetary policy by drawing inferences from the development of the European banking market. The *European Central Bank's* money supply policy will prove increasingly inefficient if banks continue refinancing by assets and expanding their banking services by branching out into the consulting business.

### 1. The Incentives offered by the New Currency

As we have already pointed out, the way monetary targeting is managed depends on how money is defined, and all the current definitions comprise liability items in banks' balance sheets. It follows therefore that monetary policy essentially aims at influencing the composition of liability items in banks' balance sheets.

assets		liabilities	
cash	} B	bank deposits	$d_b$
central bank deposits		<i>non-bank deposits (<math>d_{nb}</math>):</i>	
loans to banks	$l_b$	demand deposits	$d_d$
loans to customers	$l_c$	other deposits	$d_o$
securities	$s_a$	debt securities in issue	$s_l$
other assets	$o_a$	capital	$c$
		other liabilities	$o_l$

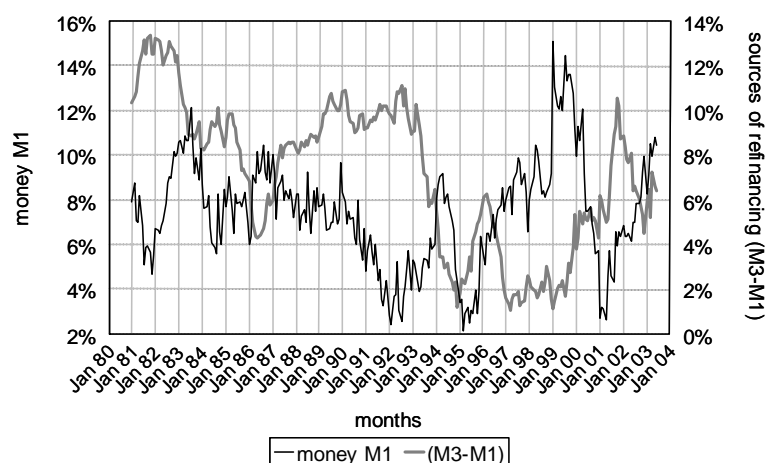
Assuming for simplicity of exposition that  $o_a = o_l$ , the bank's balance sheet may be represented by the following equation:

$$(1) \quad B + l_b + l_c + s_a = d_b + (d_d + d_o) + s_l + c.$$

Since monetary targeting usually seeks to influence  $(d_d + d_o + s_l)$ , banks have little effect on the money supply when they refinance loans via assets or provide assistance to customers who wish to raise funds in the capital markets.

In the past, the success of the monetary policy pursued by the *Deutsche Bundesbank* was primarily due to the fact that German investors financed their investments mainly by bank loans which in turn were refinanced by deposits ( $d_o$ ) and debt securities in issue ( $s_l$ ). As can be seen from Figure 1, the same is probably true for most of the countries which have signed up for EMU.

Figure 1: Annual change in the quantity of money within the EMU  
between January 1981 and July 2003 of 1998  
calculated by the *European Central Bank* until the end of 1998



**Source** The author's own calculations based on data from the monthly reports of the *European Central Bank*

When there was a rise in the rate of change of  $M1$ <sup>4</sup>, there was almost invariably a decrease in the rate of change of refinancing sources<sup>5</sup>, and these sources were equal to the difference

<sup>4</sup>  $M1$  comprises the monetary base held by non-banks and demand deposits  $d_d$ .

<sup>5</sup> The refinancing sources comprise deposits  $d_o$  and debt securities in issue  $s_l$  with an original duration of two years.

between M3 and M1<sup>6</sup>. This phenomenon can be explained by the fact that new bank loans can only be financed by demand deposits if customers can be persuaded to convert some of their idle demand deposits into deposits represented by (M3-M1).

There are still considerable differences in the ways in which European banks refinance loans, but the arrival of the euro has brought about dramatic changes in this domain by enabling all the banks within the *European Monetary Union* (EMU) to create uniform means of payment.<sup>7</sup> It is now possible for money created in one member state to be used as a means of payment in another member country. The radius of banking activity has been enlarged, but at the same time domestic banks have lost the protection afforded by Europe's national currencies<sup>8</sup>. In order to withstand the full blast of Europe-wide competition, they will have no choice but to adapt to the new situation.

Since competition is going to squeeze margins in the traditional banking sector, banks may look for new sources of profit beyond the ambit of conventional commercial banking<sup>9</sup>. In other words, they may be tempted to expand their activities in areas such as investment banking and consulting banking. "Credit institutions within Europe are mainly expanding into asset management and the business of investment services in general".<sup>10</sup>

Under the terms of the *Basle Accord I* (1988), big credits have to be notified if they exceed 10% of the bank's equity capital. The way this regulation is applied depends on the risk category into which a credit falls<sup>11</sup>. A credit granted to a single bank client may not exceed 25% of the bank's equity capital<sup>12</sup>. The *Basle Accord II*, which is to become effective by 2005, tightens the minimum capital requirements by including credit risk as well as explicit capital requirements for operational risk<sup>13</sup>.

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<sup>6</sup> The only exception was 1990, the year when German reunification brought about an extension of Germany's currency area.

<sup>7</sup> Cf. Borchert 1999: 59.

<sup>8</sup> Cf. Bagliano/Dalmazzo/Marini 1999: 979.

<sup>9</sup> Cf. Milbourn/Boot/Thakor 1999: 196.

<sup>10</sup> Cf. European Central Bank 2000: 14.

<sup>11</sup> Cf. Walsh 1994: 50.

<sup>12</sup> Cf. Norton 1994: 214.

<sup>13</sup> Cf. Basle Committee on Banking Supervision 2001: 1.

*Summary:* Traditionally, European banks have refinanced credits by liability items in their balance sheets. Owing to the introduction of the euro, every bank within the EMU zone can now expand its market area beyond its national borders. This results in increased competition which is inducing banks to resort to M&A with a view to achieving cost reductions, synergy effects and increases in equity capital. But, what is more, European banks are now increasingly expanding into asset management as well as the consulting business – activities which enable them to raise funds for customers in ways which cannot be influenced by monetary controls.

## **2. The Positioning of the Big Banks in Western Europe**

What is causing a stir in the general public is above all the way the Western European banking sector is being restructured by mergers and acquisitions (M&A), with big banks shifting their business segment from book credit allocation to credit brokerage via the market. At the same time, the banks' share of pure interest income is declining in favour of the share of revenue from consulting banking, investment banking and wholesale banking (credit brokerage).

### **2.1. Regression Analysis of Balance Sheet Items**

This empirical analysis focuses on the big European banks. All the results reported here are based on data provided by the balance sheets of big banks. We have chosen to ignore the activities of small banks, which are assumed to consist mainly in cost cutting and shifting their customers' deposits.

In what now follows, the 50 largest banks in Europe are referred to by the numbers appended to their names in Appendix II<sup>14</sup>. A cross-section analysis was carried out, and data from the banks in question were normalised by the banks' total assets for the year 2002. No distinction was made between countries which have already signed up for the single currency, those which will probably join EMU in the not too distant future (Great Britain, Denmark and Sweden), and those which have decided to remain outside (Switzerland).

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<sup>14</sup> WGZ-Bank (# 52) – listed in Appendix II – is not one of the largest European banks.

We shall begin by using regression analysis to test the main factors required for refinancing loans to customers  $l_c$ . If we take the balance sheet on page 2 as our point of departure and if, for simplicity's sake, we assume that  $o_a = o_l$  and that  $l_b = d_b$ <sup>15</sup>, equation (2) follows logically from equation (1):

$$(2) \quad l_c = f(B, s_a, d_{nb}, s_l, c).$$

The 2002 balance sheets of the 50 biggest banks were compared with the corresponding documents for the year 2001. Owing to their M&A activities, however, the names of the banking companies change. As a result, some of the big banks are excluded from the calculations for 2001.

The results of the regression analysis for the *year 2002* are shown in equation (3) and Table 1:

$$(3) \quad l_c = 2,2 + 0,18 \cdot B - 0,14 \cdot s_a + 0,42 \cdot d_{nb} + 0,39 \cdot s_l - 0,19 \cdot c.$$

(2,12) (0,12) (-0,84) (2,33) (2,80) (-0,99)

The t-statistics (in brackets) indicate that not all of the variables are statistically significant. The minus sign prefixed to the variable "securities  $s_a$ " means that selling securities from the portfolio leads to an increase in the number of loans granted by banks (asset substitution).

Table 1: A résumé of the model<sup>b)</sup>

R	R-square	adjusted R-square	standard deviation
0,451 <sup>a)</sup>	0,204	0,113	2,253
<sup>a)</sup> independent variables: (constant), B/a = monetary base at banks/assets, $s_l/a$ = securities in issue/assets, $s_a/a$ = securities/assets, $d_{nb}/a$ = customers' deposits/assets, $c/a$ = equity capital/assets. <sup>b)</sup> dependent variable: $l_c/a$ = loans to customers/assets Number of observations: 48			

Although some of the variables were not statistically significant, we continued to use all of the variables in order to be able to draw comparisons between the data for 2001 and 2002.

The results of the regression analysis for the *year 2001* are shown in equation (4) and Table 2:

$$(4) \quad l_c = 1,2 - 0,09 \cdot B - 0,69 \cdot s_a + 0,27 \cdot d_{nb} + 0,52 \cdot s_l + 0,06 \cdot c.$$

(2,67) (-0,67) (-4,93) (1,69) (3,57) (0,38)

<sup>15</sup> Loans to banks ( $l_b$ ) and bank deposits ( $d_b$ ) are used mainly for settlements between banks.



Table 2: A résumé of the model<sup>b)</sup>

R	R-square	adjusted R-square	standard deviation
0,756 <sup>a)</sup>	0,571	0,485	6,66
<sup>a)</sup> independent variables: (constant), B/a = monetary base at banks/assets, s <sub>i</sub> /a = securities in issue/assets, s <sub>a</sub> /a = securities/assets, d <sub>nb</sub> /a = customers' deposits/assets, c/a = equity capital/assets. <sup>b)</sup> dependent variable: l/a = loans to customers/assets Number of observations: 38			

If we compare equations (3) and (4), we can see that in 2001 and 2002 the variables B and c had an entirely different significance for the banks under discussion. In 2002 the build-up of equity capital c was detrimental to lending. In 2001, however, loans were still made according to the amount of equity capital at the banks' disposal.

The year 2002 saw an increase in lending that was linked to a rise in the amount of central bank money B held by the banks. In 2001, however, the situation was quite different. Owing to the shortage of overall demand, financing loans was regarded as a low priority, and liquid assets were used instead to build up the central bank's money stock B.

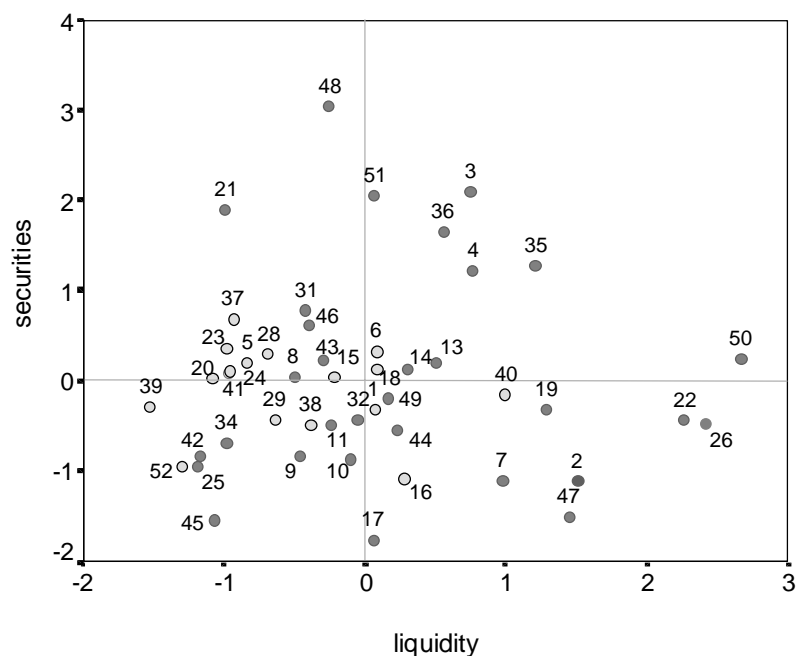
*Summary:* In 2001 and 2002 the lending policies pursued by the big European banks were determined to a considerable extent by their customer deposits (d<sub>nb</sub>) and by securities ("securities" s<sub>a</sub> and "securities in issue" s<sub>i</sub>). Since 2001 banks have been adjusting their equity capital c in the run-up to *Basle Accord II*.

## 2.2. Factor Analysis of balance sheets

A factor analysis was carried out in which normalised key data from large European banks were reduced to two factors. When we have a large number of interdependent variables (e.g. balance sheet items) of different objects (e.g. banks), a factor analysis can be used to extract certain underlying independent factors, thereby reducing the number of explanatory variables. The correlation between these factors and the original variables gives us the "factor loadings" presented in the Varimax-rotated factor matrix in Table 3a (2002) and Table 3b (2001) in Appendix I. The coordinate axes represent mean values of the factors obtained for the sample that was selected. For details see Appendix I. Our analysis of balance-sheet items yields two different factors for the years 2001 (Figure 2) and 2002 (Figure 3).

For the *year 2001* *factor 1* was interpreted as *liquidity* ( $B, d_{nb}, c$ ) and *factor 2* as *securities* ( $s_a, s_l$ ). As can be seen from Figure 2, securities play a prominent role in cases where bank loans to non-banks have to be refinanced. It should, however, be borne in mind that the German banks (light shading) include a great many *Landesbanken*, which act as central banks for Germany's *Sparkassen* (savings banks), and which traditionally rely in large part on securities of issue as a source of refinancing.

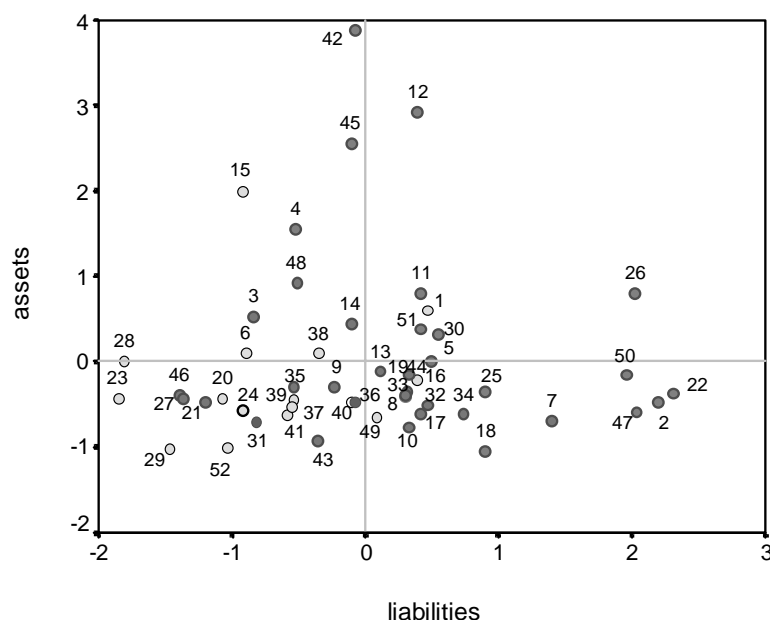
Figure 2: The refinancing methods used by Western European banks, 2001



Source: The author's own calculations based on data provided by the 50 largest European banks

For the *year 2002* *factor 1* was interpreted as *liabilities* ( $d_{nb}, s_l, c$ ), and *factor 2* was interpreted as *assets* ( $B, s_a$ ).

Figure 3: The refinancing methods used by Western European banks, 2002



Source: The author's own calculations based on data provided by the 50 largest European banks

As can be seen from Figure 3, a considerable number of banks already refinance with the aid of assets. As far as refinancing is concerned, most of Germany's *Landesbanken*, however, rely less heavily than the average bank on assets, their main sources of refinancing being securities in issue and savings bank deposits.

When we compare the figures for 2001 and 2002, we see that the two factors which are beginning to crystallise differ with respect to their composition – a finding already suggested by the regression analysis. In both of the years under discussion, it was not only balance-sheet item B that had a different significance for the banks; the same was true of item  $s_1$ . In both years, however, factors 1 and 2 were the sources of refinancing that banks tapped whenever they granted loans to non-banks. There are considerable differences between the methods that Western European banks adopt when they have to refinance loans. Their balance sheet structure, however, will no doubt be modified by disintermediation and developments in the capital markets<sup>16</sup>.

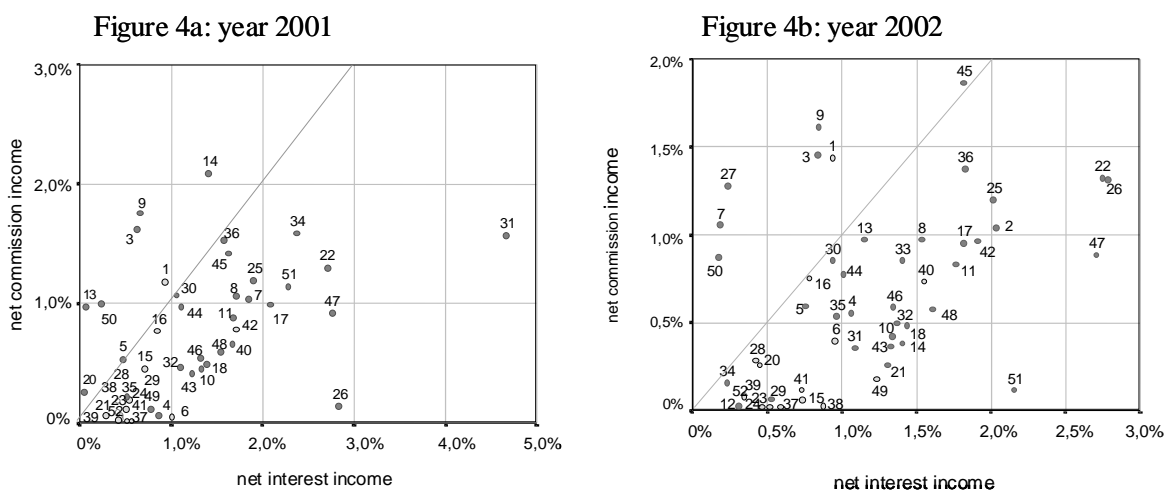
<sup>16</sup> Cf. Belaisch/Kodres/Levy/Ubide 2001: 38.

*Summary:* All the banks are now increasingly refinancing their credit supply by items not subject to monetary control. Whichever type of security banks opt for, the quantity of money remains almost unchanged. In the case of debt securities in issue, however, the quantity of money only remains unchanged if the original duration of the securities is longer than two years.

### 2.3. A Graphical Representation of Income Statements

In order to ascertain business trends, we analysed income statements submitted by the 50 largest European banks. The focus of our analysis was on their net interest income (interest income minus interest expenses) and their net commission income (commission income minus commission expenses). The relevant numbers were plotted as shown in Figures 4a (2001) and 4b (2002). All the data were normalised by the volume of assets indicated in the balance sheets.

*Figure 4: Business trends according to income statements submitted for 2002*



*Source:* The author's own calculations based on data provided by the 50 largest European banks

Our analysis shows that at present, as far as banking profits are concerned, greater importance still attaches to net interest income. The diagonals in Figures 4a and 4b represent a uniform distribution of the two types of bank earnings. The relative decline in net interest income in 2002 is due to a fall in the number of loans extended to non-banks during this period.

Nonetheless, there is clear evidence that banks are moving closer and closer to a state where interest and commission income will be uniformly distributed.

These two types of income are the components of banks' credit terms, i.e. (1) net interest income obtained during the refinancing process, and (2) revenues from consulting business as well as those gained by providing assistance to customers desirous of raising funds in the capital markets (i.e. profits derived from the securitisation process). Competition will force the banks to offer a wider range of off-balance sheet services in order to boost commission earnings.

*Summary:* When West European banks want to refinance their credit supply, they increasingly resort to disintermediation. Consequently, even if the assets in the banks' balance sheets were in line with minimum reserve requirements, the central bank's ability to exercise monetary control would be severely limited.<sup>17</sup> As time progresses, attempts to control the quantity of money will become increasingly ineffectual.

### **3. Consequences for monetary policy**

There is little doubt that small banks with a local market will survive, and central banks will continue to focus their efforts on small banks as an object of monetary targeting. Nonetheless, small banks will have no choice but to adapt to the activities in which big banks engage.

In Europe these big banks are working towards three objectives: (1) cost-cutting<sup>18</sup>, (2) diversifying the services on offer, and (3) increasing equity capital. On the one hand, the activities in question pose a threat to banks by inducing them to accept a higher level of risk<sup>19</sup>; on the other hand they offer certain advantages since increased diversification makes bankruptcy less likely<sup>20</sup>.

When banks diversify, they seek to achieve two goals: (a) increased refinancing (of their credits) by assets and (b) shifting the burden of financing onto the capital market. A very

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<sup>17</sup> Cf. Borchert 2002: 57-59.

<sup>18</sup> This is especially true of small credit institutions.

<sup>19</sup> They imagine they are too big to fail.

<sup>20</sup> Cf. Mishkin 1999: 680 and 686.

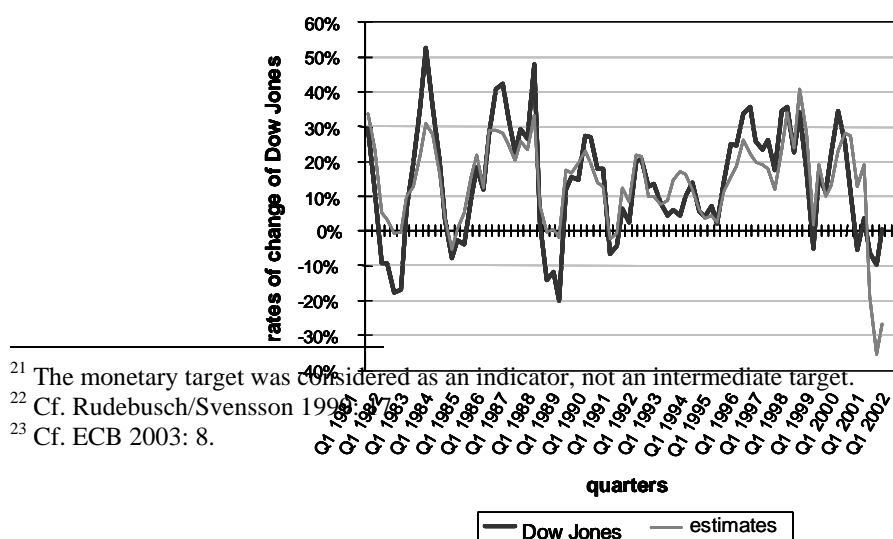
broadly defined money supply (M3) – consisting of the credit institutions’ liabilities – then becomes less efficient as an instrument of monetary policy.

The mainstays of ECB monetary policy used to be the monetary target<sup>21</sup> and the Eurosystem’s internal inflation forecast<sup>22</sup>. In May 2003, however, the ECB adopted a new two-phase policy plan. The first phase is an economic analysis designed to identify short- to medium-term risks to price stability, while the second phase is a monetary analysis which takes account of variations in a wide range of monetary indicators, including M3, its components and counterparts, notably credit, and various measures of excess liquidity<sup>23</sup>.

It should, however, be emphasised that “monetary policy works not just through its direct effects on interest rates, but also through its effects on other asset prices.”<sup>24</sup> In a country like the U.S.A., movements in the Dow Jones index (DJ) can therefore be assessed with some degree of accuracy by the amount of liquidity inside (M3-M1) and outside the banking sector (FA-(M3-M1)), with FA = financial assets:

$$(5) \text{ DJ} = f((\text{M3-M1}), (\text{FA}-(\text{M3-M1}))) \quad \text{with} \quad r^2 = 0,66.$$

Figure 5: Variability of the Dow Jones -Index



Source : The author’s own calculations based on data from Datastream

Up to now there is no clear evidence to suggest that a similar connection exists between EuroSTOXX and liquid assets inside and outside the banking sector in Western Europe.

If commercial banks continue to refinance loans via assets and to provide assistance to customers desirous of raising funds in the capital markets, the proper way for the ECB to influence investment financing securitisation via monetary policy will be to resort to some kind of interest rate policy, and pursuing such a policy will involve some sort of inflation targeting<sup>25</sup>. Be that as it may, “the uncertainty associated with the introduction of the new currency should provide an argument for relying less, rather than more, on monetary aggregates as indicators.”<sup>26</sup>

### ***Appendix I: The Principles of Factor Analysis***

Factor analysis is a statistical technique designed to reduce a set of observable variables to a small(er) number of latent factors. The underlying assumption is that there are a number of unobserved variables (so-called *factors*) that account for correlations among observed

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<sup>24</sup> Cf. Mishkin 2001: 9. According to an empirical investigation conducted by the Deutsche Bundesbank (2002: 49), the same seems to be true for Germany.

<sup>25</sup> Cabos et al. have carried out a regression analysis for Germany which shows that inflation targeting yielded better results than monetary targeting for the period 1970-1997. Cf. Cabos/Funke/Siegfried (2001): 231.

<sup>26</sup> Svensson/Woodford 2003: 2.

variables. If this assumption is correct, each observed variable ( $y$ ) can be expressed as a weighted composite of a set of latent factors ( $f$ ).

This idea is formalised in the following system of equations:

$$y_1 = a_{11} f_{11} + a_{12} f_{12} + \dots + a_{1n} f_{1n} + e_1$$

$$y_2 = a_{21} f_{21} + a_{22} f_{22} + \dots + a_{2n} f_{2n} + e_2$$

...

$$y_m = a_{m1} f_{m1} + a_{m2} f_{m2} + \dots + a_{mn} f_{mn} + e_m.$$

Assuming that the residuals ( $e$ ) are uncorrelated with any of the observed variables, the correlations among the observed variables are accounted for by the factors ( $f$ ). Since the main purpose of factor analysis is data reduction, a precondition is  $n < m$ .

In order to obtain significant results it is advisable to carry out the factor analysis as follows:

(1) Selecting a factor model: In the present case the most useful technique is *principal component analysis*. The purpose of this procedure is not to ascertain causes, but to reduce variables to a common denominator. The communality estimate<sup>27</sup> for a variable is therefore assumed to be 1.

(2) Determining the number of factors: The decision is ultimately subjective. From the economic point of view, there is one important requirement. One must be able to interpret the factors. If one wishes to verify a theory which suggests a certain number of factors, a factor analysis should be carried out with the prespecified number of factors. These factors should have an eigenvalue greater than 1 (*Kaiser-Guttman rule*).

(3) The rotation of factors: The idea of data reduction provides the most common basis for rotation. The aim is to rotate the factors simultaneously in order to have the greatest possible number of zero loadings on each factor. The rotation method used in the present study is the simplest one, namely an orthogonal rotation in which the angle between the reference axes of

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<sup>27</sup> By *communality estimate* we mean the approximate calculation of the proportion of the variable's variance which is free of error and which is shared with other variables in the matrix.

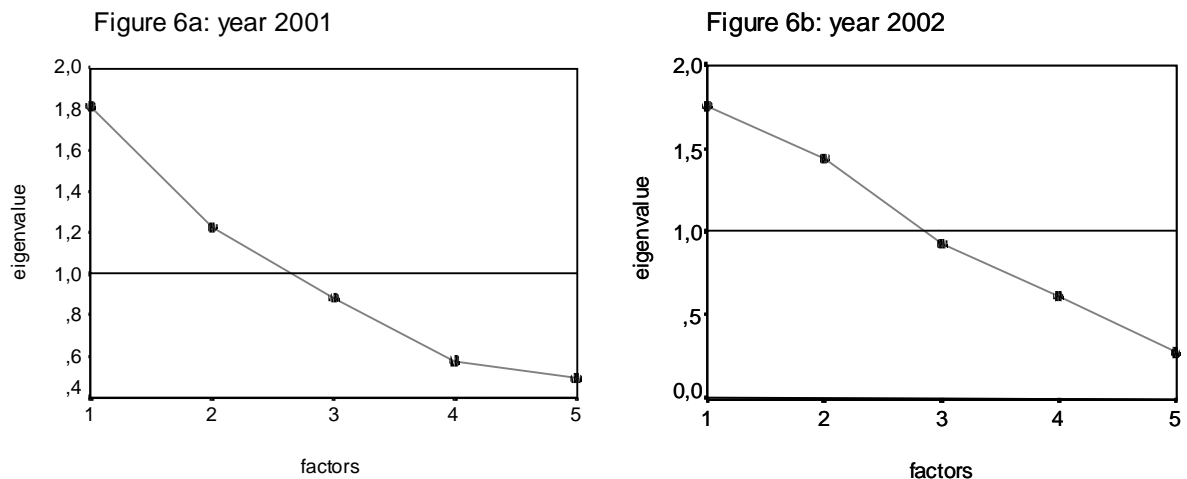


factors is maintained at 90 degrees (*Varimax rotation*). The *factor loadings* of the rotated area appeared at the end of this process.

(4) At the final stage of the operation the factor matrix shows how the variables are related to the factors.

A factor analysis was carried out as a *principal component analysis* in which the key figures of the big west European banks were reduced to certain factors. The scree plots in Figure 6 suggest that two factors should be extracted.

Figure 6: Scree plots



According to the *Kaiser-Guttman-rule* the factors should have an eigenvalue above 1. That applies to two factors in Figure 6a as well as in Figure 6b. The correlation between these factors and the original variables gives us the *factor loadings* represented in the Varimax rotated factor matrix in Tables 3a and 3b.

<b>Table 3a: year 2001</b> Rotated factor matrix <sup>a)</sup> <i>balance sheet items</i>	<i>factors</i>	
	<b>1</b>	<b>2</b>
equity capital <i>c</i>	0,539	-0,496
non-bank deposits <i>d<sub>nb</sub></i>	0,754	-0,201
cash and central bank deposits <b>B</b>	0,841	0,114
debt securities in issue <i>s<sub>l</sub></i>	-0,210	0,725
securities <i>s<sub>a</sub></i>	0,094	0,812

Extractions method: analysis of main components

Rotations method: Varimax with Kaiser-normalisation

<sup>a)</sup> the rotation converges after 3 iterations

<b>Table 3b: year 2002</b> Rotated factor matrix <sup>a)</sup> <i>balance sheet items</i>	<i>factors</i>	
	<b>1</b>	<b>2</b>
equity capital <i>c</i>	0,787	-0,359
non-bank deposits <i>d<sub>nb</sub></i>	0,857	0,175
debt securities in issue <i>s<sub>l</sub></i>	-0,364	-0,079
cash and central bank deposits <b>B</b>	0,490	0,650
securities <i>s<sub>a</sub></i>	-0,097	0,859

Extractions method: analysis of main components

Rotations method: Varimax with Kaiser-normalisation

<sup>a)</sup> the rotation converges after 3 iterations

The absolute values of the factor loadings assign the various variables to factors 1 and 2. These factors, of course, still have to be interpreted in economic terms. The correlation between these factors and the objects (banks) give us the *factor values* in Figures 2 and 3. The zero lines in these figures represent the mean values of the two factors in question.

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<b>Appendix II: Banks 2002</b>		<b>cash &amp; deposits with central bank</b>	<b>loans and advances to banks</b>	<b>loans and advances to customers</b>	<b>bonds &amp; loan securities</b>	<b>other assets</b>	<b>total assets in bill. of specified currency</b>	<b>currency unit (bn) 1 bn = 10<sup>9</sup></b>	<b>deposits by banks</b>	<b>customer accounts</b>	<i>including demand deposits</i>	<b>other deposits/debt securities in issue</b>	<b>share capital</b>	<b>other liabilities</b>	<b>total liabilities in bn of specified currency</b>	<b>total assets in bn of EURO</b>
1.	Deutsche Bank	8.98	25.69	204.87	318.68	200.14	758.36	EUR	241.10	286.50	119.00	125.98	29.99	74.76	758.36	758.36
2.	HSBC Holdings plc	7.66	95.50	352.34	193.87	109.87	759.24	US-\$	52.93	495.44	256.72	107.05	52.41	51.42	759.25	745.61
3.	UBS (Union Bank of Switzerland)	4.27	32.47	211.65	665.52	267.21	1181.12	CHF	83.18	306.88	229.99	615.00	38.99	94.55	1138.60	731.19
4.	ING Bank	11.42	45.68	284.45	297.58	77.24	716.37	EUR	96.27	319.82	n.a.	261.22	22.36	16.70	716.37	716.37
5.	BNP Paribas	9.88	146.51	225.34	121.72	206.87	710.32	EUR	177.91	195.57	70.95	145.84	26.45	164.55	710.32	710.32
6.	HVB (Bayerische Hypo/Vereinsbank)	5.37	73.87	409.94	187.24	14.74	691.16	EUR	143.36	154.92	49.55	271.66	14.23	106.99	691.16	691.16
7.	Royal Bank of Scotland	3.48	44.30	223.34	68.93	71.95	412.00	£	54.72	219.16	81.02	84.89	23.54	29.69	412.00	657.22
8.	Barclays	2.03	58.17	202.40	94.23	46.24	403.07	£	87.43	171.49	83.73	102.44	15.21	26.50	403.07	642.98
9.	Crédit Suisse	2.55	195.78	182.14	336.70	238.49	955.66	CHF	287.88	297.98	86.65	106.60	31.39	231.81	955.66	613.72
10.	HBOS (Halifax/Bank of Scotland)	1.37	11.84	240.88	50.28	50.71	355.08	£	45.64	150.22	123.26	89.68	13.77	55.77	355.08	566.42
11.	ABN AMRO Holding N.V.	9.46	41.92	254.59	157.23	92.82	556.02	EUR	95.88	239.28	n.a.	117.19	14.59	89.08	556.02	556.02
12.	Crédit Agricole	9.71	67.14	62.54	48.01	318.32	505.72	EUR	70.48	205.09	55.72	39.23	15.43	175.49	505.72	505.72
13.	Société Générale	5.09	54.35	184.64	93.30	163.89	501.27	EUR	69.24	196.09	57.52	165.63	15.73	54.58	501.27	501.27
14.	Fortis	4.49	83.86	172.14	154.61	70.67	485.77	EUR	96.55	177.64	54.61	77.12	10.87	123.59	485.77	485.77
15.	Commerzbank	8.47	54.34	148.51	201.74	9.07	422.13	EUR	114.98	95.70	33.11	92.73	8.81	109.91	422.13	422.13
16.	Dresdner Bank	4.88	88.37	157.02	121.54	41.64	413.45	EUR	127.54	143.84	58.62	54.59	11.97	75.51	413.45	413.45
17.	Lloyds TSB	1.14	17.53	134.50	29.52	70.07	252.76	£	25.44	116.33	87.92	31.09	7.97	71.93	252.76	403.20
18.	Rabobank	3.81	47.23	225.25	82.38	16.05	374.72	EUR	85.89	171.63	n.a.	69.43	21.21	26.56	374.72	374.72
19.	Caisse d'Épargne	n.a.	155.92	116.57	54.89	29.75	357.13	EUR	76.76	170.09	26.49	67.57	9.30	33.41	357.13	357.13
20.	DZ Bank	0.88	93.64	106.94	78.09	58.71	338.26	EUR	122.92	72.65	8.41	83.04	5.99	53.66	338.26	338.26
21.	Abbev National plc	0.40	6.60	90.91	60.77	47.04	205.72	£	24.17	76.77	51.16	57.69	6.39	40.70	205.72	328.16
22.	Banco Santander Central Hispano	6.24	40.26	162.97	45.85	68.89	324.21	EUR	50.82	167.82	68.05	49.14	23.94	32.49	324.21	324.21
23.	LB Baden-Württemberg	0.78	127.13	110.03	67.82	14.69	320.45	EUR	93.82	70.36	13.24	136.09	4.79	15.39	320.45	320.45
24.	Bayerische LB	0.70	112.22	102.46	66.16	18.17	299.71	EUR	112.37	52.04	6.58	104.30	8.47	22.53	299.71	299.71
25.	Gruppo Intesa	4.15	30.43	168.53	32.80	44.82	280.73	EUR	44.59	113.64	82.70	85.79	13.65	23.06	280.73	280.73
26.	Banco Bilbao Vizcaya Argentaria	8.05	21.48	141.32	52.14	56.55	279.54	EUR	56.12	146.56	57.44	46.74	14.97	15.15	279.54	279.54
27.	NatWest	1.25	23.66	112.12	17.91	16.94	171.89	£	17.72	111.48	58.67	21.71	8.72	12.26	171.89	274.20
28.	West LB (AG Konzern)	2.09	77.04	88.76	72.38	25.33	265.60	EUR	118.83	63.76	15.73	58.15	5.00	19.86	265.60	265.60
29.	KfW (Kreditanstalt fuer Wiederaufbau)	0.03	129.28	85.78	32.15	13.69	260.93	EUR	31.76	39.76	0.14	162.60	6.49	20.32	260.93	260.93
30.	Credit Lyonnais	4.29	34.18	96.16	45.60	64.66	244.89	EUR	61.85	78.79	29.58	32.54	8.66	63.05	244.89	244.89
31.	Den Danske Bank Group	17.57	199.62	948.35	432.25	153.77	1751.55	DKK	319.57	427.94	214.75	910.35	60.32	33.37	1751.55	235.85
32.	KBC Group	0.05	29.30	98.78	61.90	31.70	221.73	EUR	39.68	113.72	20.83	38.17	8.43	21.73	221.73	221.73
33.	Banques Populaires	n.a.	49.44	98.88	32.21	40.21	220.74	EUR	48.94	84.21	n.a.	31.40	7.21	48.98	220.74	220.74
34.	unicredito	1.61	28.10	113.82	38.64	31.18	213.35	EUR	31.99	93.57	n.a.	62.51	10.46	14.82	213.35	213.35
35.	DEXIA	1.55	43.51	71.91	69.85	22.33	209.15	EUR	47.13	77.50	21.72	52.49	9.64	22.39	209.15	209.15
36.	San Paolo di Torino	1.41	22.00	126.70	19.69	33.97	203.77	EUR	24.46	85.28	60.46	70.37	5.14	18.52	203.77	203.77
37.	Nord LB	0.44	58.74	77.12	45.33	15.52	197.15	EUR	69.06	43.30	7.51	63.87	5.03	15.89	197.15	197.15
38.	Bankgesellschaft Berlin	1.39	30.80	89.58	42.96	10.07	174.80	EUR	59.35	57.09	13.01	44.17	3.89	10.30	174.80	174.80
39.	LB Hessen-Thüringen Girozentrale	0.31	46.52	60.03	30.76	15.34	152.95	EUR	53.53	33.61	5.66	45.15	3.53	17.13	152.95	152.95
40.	Bank Austria (member of HVB-Group)	1.82	29.56	76.35	36.93	3.31	147.97	EUR	41.03	56.56	16.81	30.50	4.61	15.27	147.97	147.97
41.	Landesbank SWH	0.23	33.73	66.85	40.96	3.74	145.51	EUR	47.51	30.75	5.19	53.46	5.60	8.19	145.51	145.51
42.	Banca di Roma	4.12	20.42	80.09	13.64	22.67	140.94	EUR	31.58	52.11	44.76	41.48	2.21	13.56	140.94	140.94
43.	Svenska Handelsbanken	8.17	79.52	839.34	129.73	220.76	1277.51	SEK	235.11	292.84	191.85	624.98	52.19	72.39	1277.51	139.26
44.	SEB (Skandinaviska E. Banken)	13.47	150.38	680.21	206.61	190.44	1241.11	SEK	234.29	499.54	330.93	364.24	45.70	97.34	1241.11	135.29
45.	Banca Monte dei Paschi	0.83	16.03	68.47	12.45	31.10	128.88	EUR	20.52	77.25	n.a.	18.93	1.68	10.50	128.88	128.88
46.	BBL (member of ING-Bank)	0.66	18.41	57.59	31.21	6.98	114.86	EUR	41.53	56.49	19.53	6.95	3.73	6.16	114.86	114.86
47.	Standard Chartered	1.10	16.00	57.01	22.30	16.60	113.01	US-\$	10.85	71.63	24.73	16.49	7.33	6.71	113.01	110.98
48.	Swedbank Group	6.72	98.66	703.40	64.88	83.84	957.50	SEK	102.81	263.42	219.00	472.84	38.59	79.84	957.50	104.38
49.	La Caixa Group	1.55	10.09	61.44	14.39	15.56	103.02	EUR	12.82	65.52	14.93	9.38	5.40	9.90	103.02	103.02
50.	Hamburgische LB	0.26	22.12	42.81	23.96	3.51	92.66	EUR	24.33	31.09	4.72	27.35	4.10	5.79	92.66	92.66
51.	Banca Nazionale del Lavoro	0.52	6.82	60.25	4.32	11.80	83.71	EUR	14.97	53.35	n.a.	6.38	3.85	5.16	83.71	83.71
52.	WGZ BANK	0.17	24.05	21.03	11.85	2.81	59.91	EUR	29.04	9.36	0.91	18.51	1.24	1.76	59.91	59.91

Source: The author's own calculations based on data provided by the 50 largest European banks.