**GLUCKSMAN FELLOWSHIP PROGRAM STUDENT RESEARCH REPORTS:**

**Jennifer McCabe**, “An Examination of the Predictive Abilities of Economic Derivative Markets’

**Christian Baier**, "The Migration of Corporate Finance from Banks to Capital Markets in Germany"

**WILLIAM L. SILBER, EDITOR**

# PREFACE

The Glucksman Institute for Research in Securities Markets awards fellowships each year to outstanding second year Stern MBA students to work on independent research projects under a faculty member's supervision. Two research projects completed by the Glucksman Fellows of 2003-2004 are included in this special issue of the Finance Department Working Paper Series. These papers focus on important topics in empirical finance.

Jennifer McCabe, under the supervision of Richard Levich, examines the ability of economic derivative auction markets to predict three types of monthly macroeconomic data releases: the ISM Manufacturing Index, Non-farm Payrolls, and Retail Sales. Christian Baier, under the direction of Ingo Walter, studies the evolution of corporate fund-raising in Germany from a relationship-based approach to a capital-markets approach. These papers, reflecting the research effort of two outstanding Stern MBA students, are summarized in more detail in the Table of Contents on the next page.

William L. Silber, Director
Glucksman Institute

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# An Examination of the Predictive Abilities of Economic Derivative Markets

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## I. Introduction

In late 2002, Deutsche Bank and Goldman Sachs introduced regular auctions of economic derivatives. These options allow market participants to take positions on a variety of official macroeconomic measures, in anticipation of their scheduled announcement. The statistics covered to date include U.S. Nonfarm Payrolls, Initial Jobless Claims, the Institute for Supply Management's manufacturing index, the U.S. Retail Report, and the Eurozone Index of Consumer Prices.

The auctions are conducted using a Pari-mutuel Derivatives Call Auction (PDCA) technology developed by Longitude, Inc. The auctions last for between one to two hours and are typically held the day of or one day prior to the actual data release. While the auction is in progress, investors can enter limit orders to buy or sell digital or vanilla options. The digital options offer a $1 payout per contract if the actual release is at or above (for calls) or below (for puts) the strike, while vanilla options offer a payout of $1 per point the actual release is above or below the strike. The available strikes for each auction are determined in advance by the auction sponsors (Deutsche Band and Goldman Sachs). The available strikes center around economist consensus estimates and express a range of possible outcomes for the announced figure.

Using the limit orders received during the auction, the PDCA technology calculates a unique equilibrium price for the various options that will 1) maximize the premiums collected and 2) ensure that the premiums collected will equal the total amount to be paid out for any given actual release number.[1] The equilibrium price of each digital option gives an indication of the subjective probability the market assigns to that particular option expiring in the money and,

[1] The process by which this unique equilibrium price is calculated is outside the scope of this paper, but is explained in detail by Baron and Lange.

thus, gives insight into what the market expects the announced figure to be. This figure is called the implied forecast.

As the auction proceeds, auction participants have access to real time information displaying indicative prices and implied forecasts (final prices and implied forecasts are not displayed until the auction has concluded). These figures are updated as the auction proceeds to reflect incoming orders. For example, if an auction participant expects (with high probability) that the released number will be higher than the current implied forecast, s/he may place an order for a digital call option with a strike at or near the current implied forecast. If this order is placed at or above the current indicative price, it will result in an upward adjustment of the implied probabilities above the strike and a downward adjustment of the implied probabilities of outcomes below the strike. As a result, the implied forecast will increase, expressing the revised view of the market taking the latest order into account. Deutsche Bank makes available on its economic derivatives website (www.economicderivatives.com) post auction reports which summarize each auction and the final implied forecast. Appendix I contains some examples of these post auction reports.

Experience with other predictive markets, such as the Iowa Electronic Markets, suggests that the implied forecasts generated by these auctions may prove to be accurate predictors of the officially announced statistics.[2] In this paper, I examine the efficacy of the economic derivatives market in predicting the announced numbers, particularly in comparison to economists' consensus predictions. Specifically, I examine the following four research questions:

1) Do the auctions generate more accurate predictions than those of economists, measured on an absolute basis?

[2] See Berg, Forsyth, Nelson and Rietz (2001)

2) If the auction predictions are not more accurate on an absolute basis, are they useful indicators of the surprise in a forthcoming announcement?
3) Do the auctions generate forecasts which are more or less biased than those of economists? and
4) Have the auction predictions improved over time?

Unfortunately, given the short span of time the economic derivative markets have been in existence, there is limited data available and it is difficult to reach conclusions with a high degree of statistical significance. My analysis of the data suggests that the auction forecasts are no better at predicting the actual announcements than economist consensus forecasts. Nor are they useful as indicators of the direction of any potential surprise. Both processes produced forecasts which were, on average, about 0.57 standard deviations from the actual announced figure. However, there does appear to be an interesting result relating to the degree of upward bias in the two types of forecasts. While the auction and economist forecasts both tended to be overly optimistic, the auction forecasts appear to be less so.

**II. Data**

Data were collected from 56 auctions, held over the period October 2002 to March 2004 and pertain to 49 actual announcements of the following measures: ISM Manufacturing, Nonfarm Payrolls, and Retail Sales.[3] There were seven Nonfarm Payroll announcements for which auctions were held both on the day of and day prior to the announcement, resulting in the difference between the number of announcements and the number of auctions. An additional 22 auctions, covering a European inflation measure, were not included because of difficulty in obtaining economist consensus estimates for those announcements. Economist consensus

[3] Auctions covering Initial Jobless Claims were introduced in February 2004. However, because there have only been three auctions on this measure to date, these auctions were not included in this study.

estimates of the remaining three measures were collected from the Bloomberg terminal, as displayed on the day of the auction. Bloomberg surveys about 50 to 60 economists on a regular basis and reports the resulting median estimate as the consensus forecast. The actual announced statistic (not including any post-announcement revisions) was also collected from the Bloomberg terminal. **Table 1** summarizes the available data. A full listing of the source data used in this analysis is contained in Appendix II.

**Table 1: Summary Descriptive Statistics**

| | ***Observations*** | ***Mean*** | ***St. Dev.*** |
|---|---|---|---|
| ***Announcements*** | | | |
| ISM Manufacturing | 15 | 53.19 | 5.78 |
| Retail Sales | 16 | 0.37 | 0.63 |
| Nonfarm Payroll | 18 | -17.78 | 104.15 |
| ***Auction Forecasts*** | | | |
| ISM Manufacturing | 15 | 53.23 | 5.08 |
| Retail Sales | 16 | 0.30 | 0.29 |
| Nonfarm Payroll | 25 | 46.06 | 85.98 |
| ***Economist Forecasts*** | | | |
| ISM Manufacturing | 15 | 53.52 | 4.91 |
| Retail Sales | 16 | 0.34 | 0.20 |
| Nonfarm Payroll | 18 | 38.28 | 70.14 |

*Units: ISM Manufacturing - Index 0-100; Retail Sales - % Monthly Change; Nonfarm Payroll - Monthly Change in Thousands*

The 56 observations cover announcements of economic statistics that are measured in very different ways. The ISM number is an index, the Retail Sales figure is a percentage change, and the Nonfarm Payroll is an absolute change. Accordingly, the data must first be standardized to allow for meaningful comparison. The relevant statistics of interest, for each of the 56 observations, are the magnitudes of the Auction Forecast Errors and Consensus Forecast Errors relative to the variation of the underlying statistic. The Forecast Errors were obtained by subtracting the actual announced statistic from the auction's implied forecast or the economist consensus forecast, respectively. The Forecast Errors were then standardized by dividing the

Forecast Error by the standard deviation of the announced statistic between October 2002 and March 2003.[4]

## III. Accuracy of the Predictions

The accuracy of the forecasts generated by the auctions and the economist surveys can be assessed by comparing the absolute values of the Standardized Errors for each observation. The one-sided research hypothesis to be tested is that the mean absolute error generated by the auction process is less than the mean absolute error generated by economist surveys. The null hypothesis, therefore, is that the mean absolute error generated by the auction is equal to (or greater than) that generated by the survey. As can be seen from the paired t-test results summarized in **Table 2**, this null hypothesis cannot be rejected. Both processes produce mean absolute errors about 0.57 standard deviations from the announced statistic.

**Table 2: Paired T-Test Comparing Mean Absolute Auction Forecast Error with Mean Absolute Consensus Forecast Error**

| | ***Observations*** | ***Mean*** | ***Standard Deviation*** | ***Standard Error of Mean*** |
|---|---|---|---|---|
| **Auction** | 56 | 0.57 | 0.53 | 0.07 |
| **Consensus** | 56 | 0.57 | 0.54 | 0.07 |
| **Difference** | 56 | -0.00 | 0.19 | 0.03 |
| T-Test of mean difference = 0 (vs > 0): T-Value = -0.05 P-Value = 0.519 | | | | |

Similar results are obtained when this test is conducted separately for each economic statistic. The auction and consensus forecasts each generated mean absolute errors of about 0.21 for ISM releases, 0.76 for Nonfarm Payroll releases, and 0.62 for Retail Sales releases.

## IV. Predictions of the Surprise

Although the auction forecasts do not appear from these data to provide a more accurate prediction of the announced statistics than consensus forecasts, an interesting question is whether the auctions provide an indication of the direction of the surprise element contained in the

[4] This method of standardization follows that used by Balduzzi et al. (2001) and Andersen et al (2003) to measure the surprise element in macroeconomic news announcements.

announcement. The surprise element is typically measured as the difference between the announced figure and the consensus estimate. If the auction forecast tended to be above (below) the consensus estimate whenever the actual figure was also above (below) the consensus figure, the auction could prove to be an important indicator of the direction of the coming surprise, if not the magnitude. However, it turned out that the auction accurately predicted the sign of the surprise for only 31 of the 56 auctions, in line with what would be expected to occur by random chance. As is the case with the accuracy of predictions, this result is consistent across all types of data releases.

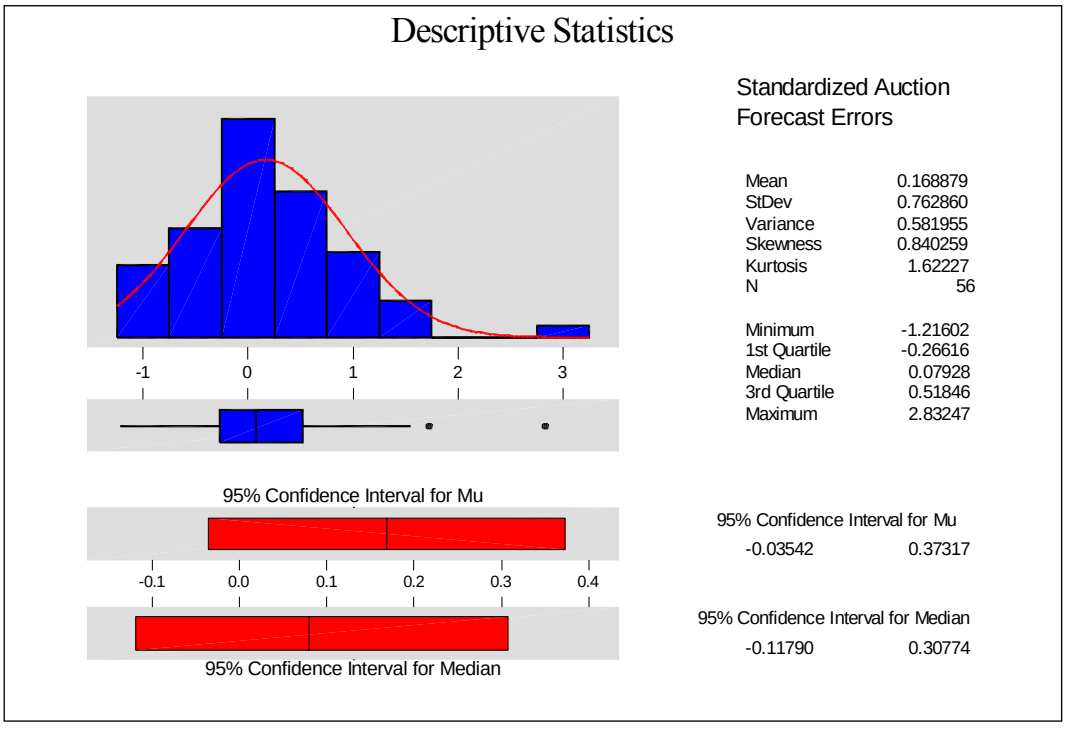
The practice of measuring the surprise element in a news announcement in this fashion (*i.e.*, as the difference between the announced figure and the consensus estimate) has been the norm in large part because there has been no other way to measure the market's expectation for the announced figure. For this reason, much of the research measuring the impact of news announcements on financial markets (*e.g.*, Balduzzi et al. (2001) on bond markets and Andersen et al. (2003) on foreign exchange markets) measures the correlation between the market reaction and the surprise as measured by economist forecasts. However, the introduction of the economic derivative auctions presents an alternative measure of market expectations. It may be interesting to revisit the work of Balduzzi et al. and Andersen et al., measuring the surprise component as the difference between the *auction* forecast and the announced figure and see whether this measure of surprise does a better or worse job of predicting the actual market impact of the news announcement. Such a question is beyond the scope of this paper, but is highlighted as a potential area for future research.

## V. Bias in the Predictions

In a study of the accuracy of economists' consensus estimates for major monthly news announcement, Moersch (2001) concluded that, although the forecasts tended to be fairly accurate, they frequently contained an element of upward bias. Moersch finds this to be consistent with earlier studies of long-term forecasts, which attribute bias to strategic behavior of forecasters such as a reluctance to adjust predictions in light of new information for fear that sharp adjustments might call into question a forecaster's original estimates and damage his/her standing with clients.[5]

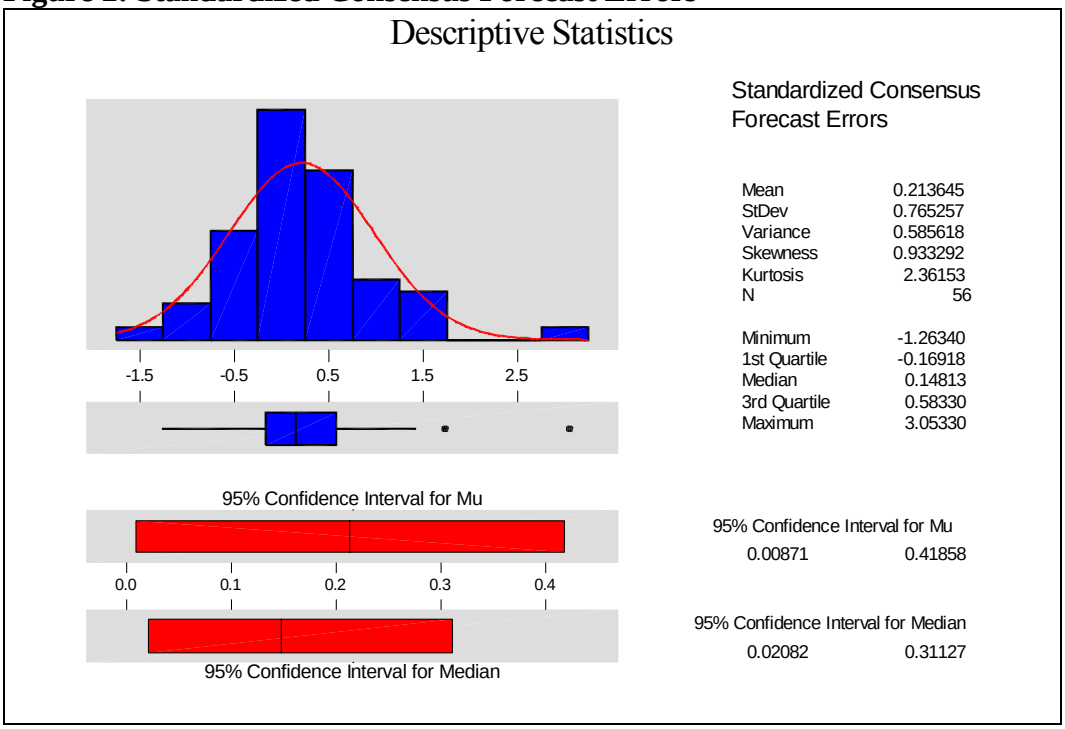
Bias is evident in a given forecasting process to the extent that the mean forecast errors deviate from zero. **Figures 1 and 2**, shown below, contain histograms and descriptive statistics of the standardized forecast errors generated by the auctions and by the economists' estimates, respectively.

**Figure 1: Standardized Auction Forecast Errors**




[5] See, *e.g.*, Laster et al. (1999) and Ehrback and Waldmann (1996)

**Figure 2: Standardized Consensus Forecast Errors**




At first glance both distributions appear centered near zero, as would be expected. However, the consensus forecast errors demonstrate a more pronounced skew to the right than the auction forecast errors (skewness measures of 0.93 and 0.84, respectively). In addition, the mean forecast error generated by the auction process is nearly 25% closer to zero than that generated by the consensus estimates. The 95% confidence intervals for the true mean forecast errors generated under each process allow one to conclude that the consensus predictions are upwardly biased (*i.e.*, significantly greater than zero), but the same cannot be said for the auction (because the confidence interval includes zero).

A more rigorous test of whether the auction forecast errors are systematically less optimistic than the consensus estimates can be conducted using a paired t-test. Such a test, summarized in **Table 3**, below, is borderline significant at the 5% level. Although the auctions

may result in less of an upward bias, further data would need to be examined in order make a conclusive determination.

**Table 3: Paired T-Test Comparing the Mean Auction Forecast Error with the Mean Consensus Forecast Error**

| | ***Observations*** | ***Mean*** | ***Standard Deviation*** | ***Standard Error of Mean*** |
|---|---|---|---|---|
| **Auction** | 56 | 0.17 | 0.76 | 0.10 |
| **Consensus** | 56 | 0.21 | 0.77 | 0.10 |
| **Difference** | 56 | -0.04 | 0.19 | 0.03 |
| T-Test of mean difference = 0 (vs < 0): T-Value = -1.77 P-Value = 0.041 | | | | |

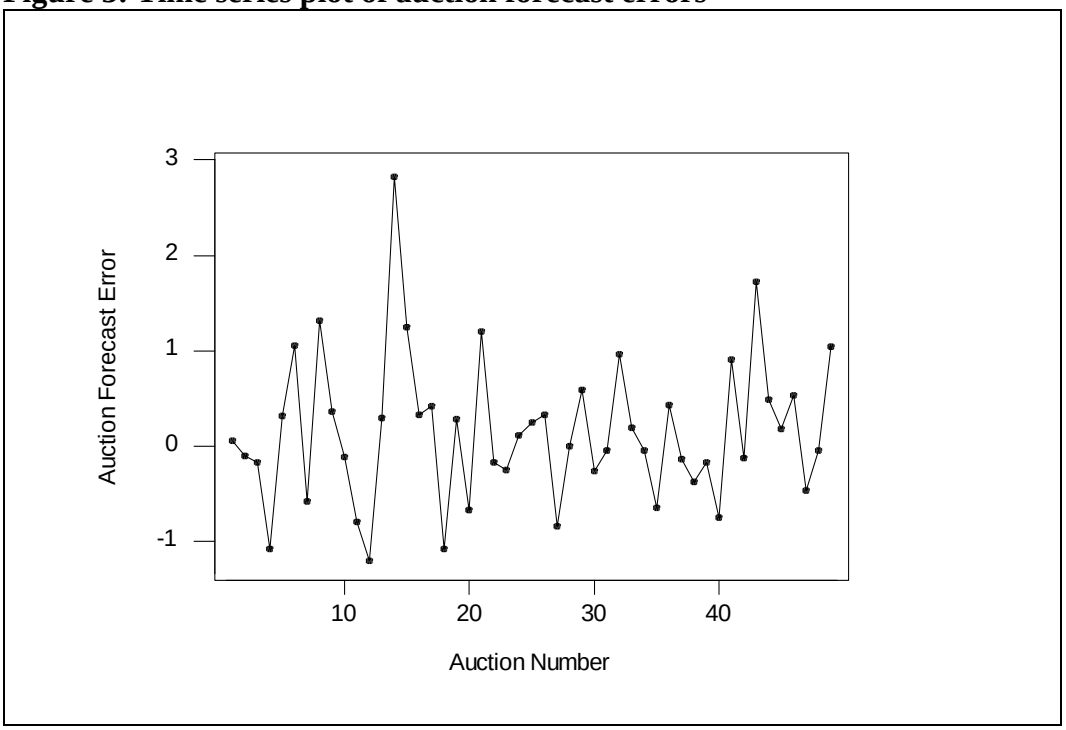
Interestingly, similar analyses conducted for each of the three types of data announcements reveal varied distribution patterns for each type of announcement. Neither the consensus estimates nor the auction predictions for ISM announcements generate mean forecast errors significantly different from zero, but a test of whether the auction forecasts are less pessimistic than consensus estimates is significant at the 5% level. Mean forecast errors for Retail Sales announcements were also not significantly different from zero (for either process) and, for these announcements, a test of whether the auctions were more pessimistic was not quite significant at the 5% level. Payroll forecast errors, on the other hand, *were* significantly greater than zero for both processes, but the auction and consensus estimates were both equally optimistic.

**VI. Improvement over Time**

The final question to be addressed is whether auction participants "learn" from prior auctions with the result that, over time, the auction forecasts do a better job of predicting the announcements. To address this question, I first examined a plot of the auction forecast errors

against a chronological ordering of the auctions (shown below in **Figure 3**) to determine if there was a pattern over time.[6]

**Figure 3: Time series plot of auction forecast errors**




If the forecasts are becoming more accurate over time, there should be a reduction in the variance in auction forecast errors for later auctions. To test whether this is the case, I divided the auctions into two groups – the earlier half and the later half – and conducted a variance ratio test to determine whether the two groups exhibit non-constant variance. The F-statistic for this test is 2.307 with a tail probability of 0.047, suggesting that the variance may be decreasing over time. To determine whether this result holds for auction forecasts of all three economic measures, I repeated the test for ISM auctions, Nonfarm Payroll auctions, and Retail Sales

[6] Note that, for the seven Nonfarm payroll announcements with two associated auctions, I used only the earlier of the two auctions in this analysis, as the earlier auction forecasts are more directly comparable with the announcements for which there was only one auction.

auctions separately. It appears that the overall reduction in variance is driven solely by a reduction in the variance of Retail Sales forecast errors.

To further analyze the improvement over time, I conducted a regression to see whether the absolute value of the standardized auction forecast error is related to the chronological auction number, using the equation $Error_{(t)} = \alpha + \beta \times t$, where $t$ = the chronological auction number. This analysis was conducted for the combined sample and for each of the individual types of announcements. The regressions were not significant for the combined sample or for the ISM and Nonfarm Payroll auctions, yielding F-statistics ranging from 0.03 to 0.61 (with associated tail probabilities of 0.87 to 0.44). Once again, however, Retail Sales auctions did demonstrate improvement. The regression for Retail Sales provided the results summarized in **Table 4**, below. For Retail Sales, it appears that each new auction is associated with a reduction in the absolute value of the forecast error of about 0.05 standard deviations.

**Table 4: Regression of Retail Sales Absolute Forecast Errors vs Auction Number**

| | ***Coefficient*** | ***Standard Error of Coefficient*** | ***T-Statistic*** | ***Tail Probability*** |
|---|---|---|---|---|
| **Constant** | 1.05 | 0.19 | 5.53 | 0.00 |
| **Auction Number** | -0.05 | 0.02 | -2.59 | 0.02 |
| Adjusted $R^2$ = 27.7%, F-statistic = 6.73 with tail probability of 0.021 | | | | |

It is unclear why Retail Sales would be the only economic measure with a demonstrated improvement in auction forecast errors over time. It is not the least volatile of the measures under consideration here – ISM manufacturing announcements exhibit a much smaller standard deviation relative to its mean. There also does not appear to have been a predictable trend in the Retail Sales announcements over the period in question that might explain the improvements.

Perhaps the improvement in Retail Sales forecasts over time is related to its position in the monthly cycle of data releases. In a study of the impact of macroeconomic announcements on foreign exchange markets, Andersen et al (2003) found that releases which occur earlier in the

month tend to have a greater impact on markets than those that occur later in the month, presumably because later releases contain little "new" information. In keeping with those findings, we might expect to see auctions for Retail Sales releases, which take place later in the month, generate more accurate predictions than those for Nonfarm Payrolls, which take place about a week earlier, and for the ISM index, which typically occurs the first or second day of the month. Notwithstanding the improvement in Retail Sales predictions over time, however, this does not appear to be the case. As noted in section III, above, ISM auctions generated the smallest mean absolute errors (0.21), followed by Retail Sales auctions (0.62) and, finally, by Nonfarm Payrolls (0.76). A likely explanation for this unexpected result might be the impact of the so-called "jobless recovery" coming out of the 2001 recession. Nonfarm Payroll auction participants may have made overly optimistic predictions after receiving good news about the expanding economy.

**VII. Conclusion**

The analysis in this paper showed that, on average, the implied market forecasts from the auctions were not significantly different than economists' consensus forecasts, and the auction predictions did not embody expertise in judging the surprise in the forthcoming announcement. However, the data do seem to support a finding that the auctions produce less overly optimistic forecasts than economist consensus estimates. It appears that market participants are more cautious when money is at risk than economists are when their reputation is at risk. Finally, with the possible exception of Retail Sales announcements, the accuracy of the auction forecasts does not appear to have improved with time.

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## Appendix I – Sample Post Auction Reports

(a) Post Auction Report. Change in US Non-farm Payrolls, November 2002 Report

The first graph shows implied probabilities that are fairly symmetric based on opening prices. The second graph shows the evolution of the implied market forecast over the auction period with a sharp change in the implied forecast around 3:00 PM. The third graph shows the revised implied probabilities based on the closing option prices.

(b) Post Auction Report. ISM Manufacturing PMI, November 2003

The first graph shows implied probabilities based on opening prices. Note the symmetry in the graph and upturn for extreme high and low values. The second graph shows the revised implied probabilities based on closing option prices. These revised probabilities differ considerably from the first graph.

# POST AUCTION REPORT

## Change in US Non-farm Payrolls November 2002 Report (IMF +70k)

### THE OFFERING

| | |
|---|---|
| **Event:** | Change in US Non-farm Payrolls for October as published by the Bureau of Labor Statistics |
| **Auction Date:** | Thursday, December 5 2002 |
| **Auction Time:** | 3pm – 4.30pm London time (10am – 11.30am EDT) |
| **Expiration/ Release Date:** | Friday, December 6, 2002 |
| **Strike Prices:** | -150, -100, -75, -50, -25, 0, 25, 50, 75, 100, 125, 150, and 200 |
| **Units:** | 1000 jobs |
| **Currency:** | USD |
| **Instruments:** | Vanilla Call and Put Spreads<br>Digital Calls and Puts, Range Binaries |

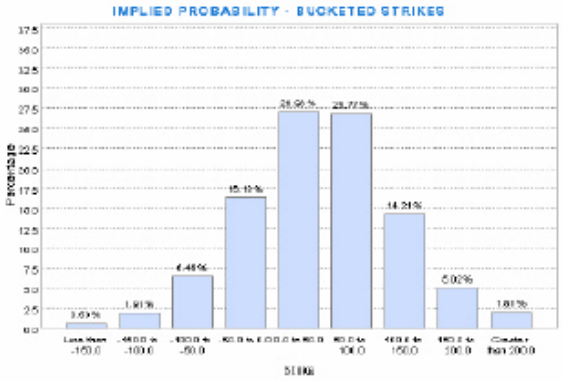
### OPENING PRICES

October's non-farm payroll report, released on November 1st, showed non-farm payrolls decreasing by 5K, slightly below the consensus expectation of no change. With the November release on December 6th, Wall Street economists expect a slight improvement in the employment situation.

A current Bloomberg survey of 59 economists shows an expected increase of 36K in non-farm payrolls, with forecasts ranging from a low of –100K to a high of +75K. Deutsche Bank's own estimate is up 40k.

With the continuing slew of relatively strong recent US data, the opening orders for the auction on 5th December were distributed around a mean of 45k - slightly higher than the economist's consensus - with a standard deviation of around 75k (the standard deviation of the "surprise" between economist expectations and the actual release over the last 3 years).

This gave the following implied probabilities and opening prices (note the "current implied market forecast" at 45):




**Auction: NFPNov02a**

| | | | |
|---|---|---|---|
| **Event:** | Nonfarm Payroll Nov'02 | **Auction Period:** | 05 Dec 2002 15:00:00 GMT<br>05 Dec 2002 16:30:00 GMT |
| **Expiration:** | 06 Dec 2002 13:30:00 GMT | **Current Time:** | 05 Dec 2002 10:56:37 GMT |
| **Strike Units:** | Thousands of Jobs | **Last Pricing Time:** | 04 Dec 2002 16:05:09 GMT |
| **Status:** | closed | | |

**Current Implied Market Forecast: 45.07**

Refresh Prices

**DIGITAL CALLS (inclusive of Strike Price)**

| Strike | Bid | Offer | Payout |
|---|---|---|---|
| -150 | 0.9800 | 1 | 1 |
| -100 | 0.9909 | 0.9909 | 1.00918 |
| -75 | 0.9374 | 0.9674 | 1.0337 |
| -50 | 0.8963 | 0.9263 | 1.07956 |
| -25 | 0.8304 | 0.8504 | 1.16225 |
| 0 | 0.7345 | 0.7645 | 1.30804 |
| 25 | 0.6090 | 0.6390 | 1.56348 |
| 50 | 0.4647 | 0.4947 | 2.02143 |
| 75 | 0.3139 | 0.3439 | 2.90782 |
| 100 | 0.1970 | 0.2270 | 4.40529 |
| 125 | 0.1113 | 0.1413 | 7.07714 |
| 150 | 0.0549 | 0.0849 | 11.77656 |
| 200 | 0.0048 | 0.0348 | 28.73563 |

**DIGITAL PUTS (exclusive of Strike Price)**

| Strike | Bid | Offer | Payout |
|---|---|---|---|
| -150 | 0.0000 | 0.0200 | 50 |
| -100 | 0.0091 | 0.0391 | 25.57545 |
| -75 | 0.0326 | 0.0626 | 15.97444 |
| -50 | 0.0737 | 0.1037 | 9.6432 |
| -25 | 0.1396 | 0.1696 | 5.89623 |
| 0 | 0.2355 | 0.2655 | 3.76648 |
| 25 | 0.3604 | 0.3904 | 2.56148 |
| 50 | 0.5053 | 0.5353 | 1.86811 |
| 75 | 0.6501 | 0.6801 | 1.47051 |
| 100 | 0.7730 | 0.8030 | 1.24533 |
| 125 | 0.8567 | 0.8867 | 1.12524 |
| 150 | 0.9151 | 0.9451 | 1.05809 |
| 200 | 0.9652 | 0.9952 | 1.00482 |

**VANILLA CALLS**

| Strike | Bid | Offer |
|---|---|---|
| -150 | 191.1 | 196.1 |
| -100 | 142.3 | 148.3 |
| -75 | 118.4 | 123.9 |
| -50 | 95.4 | 100.4 |
| -25 | 73.6 | 78.1 |
| 0 | 53.9 | 57.9 |
| 25 | 37.0 | 40.5 |
| 50 | 23.5 | 26.5 |
| 75 | 13.9 | 16.3 |
| 100 | 7.44 | 9.44 |
| 125 | 3.56 | 5.06 |
| 150 | 1.49 | 2.49 |

**VANILLA PUTS**

| Strike | Bid | Offer |
|---|---|---|
| -100 | 0.14 | 1.14 |
| -75 | 0.76 | 2.26 |
| -50 | 2.21 | 4.21 |
| -25 | 5.0 | 7.5 |
| 0 | 9.8 | 12.8 |
| 25 | 17.4 | 20.9 |
| 50 | 28.4 | 32.4 |
| 75 | 43.2 | 47.7 |
| 100 | 61.3 | 66.3 |
| 125 | 81.9 | 87.4 |
| 150 | 104.3 | 110.3 |
| 200 | 151.9 | 156.9 |

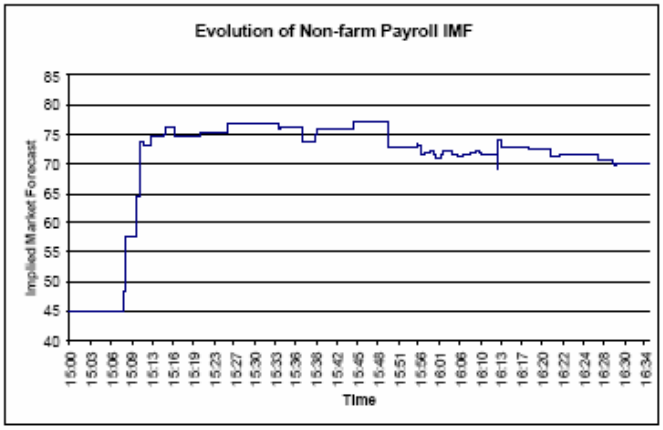
## DURING THE AUCTION

Right from the auction open, it was clear the market was expecting a figure far higher than suggested by the economists' consensus, and saw immediate value in buying the higher strikes – as can be seen from the graph below. A mixture of digital ranges with strikes ranging anywhere from +50k up to +125k were the preferred strategies, pretty much instantly moving the implied market forecast (IMF) from +45k at the open to a high of just over +77k – all within 15 minutes of the auction open.

This move created some good opportunities for those who thought the market may be getting ahead of itself in its assessment of the US economy, fearing a similar result to Monday's ISM release – where the market predicted 51.0, only to be disappointed when the figure was released at 49.2. With this in mind, participants began looking at buying strikes around the economists' consensus. For example, a digital range with strikes of 0k and +50k was now around 25%. For those with a more bearish view, a digital range with strikes of –25k and +25k was priced at 17%. A preferred in-house trade was buying a +25k digital put for around 33%.

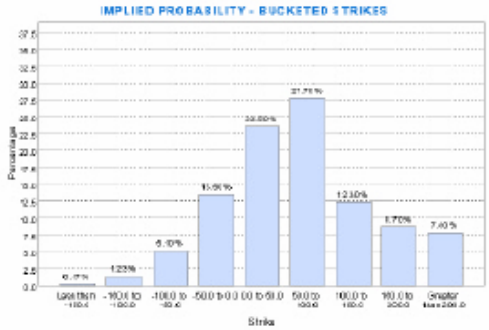
This interest to consider downside strikes was, however, not large enough to move the market significantly lower, and, as can be seen from the graph, the market drifted lower throughout the rest of the auction.

The resulting auction moves, though, were a textbook case for why orders should be submitted early on, and clearly demonstrated the cooperative nature of the auction process. The large initial orders that moved the market during the first fifteen minutes were eventually filled at considerably better prices than the original limit price submitted. Putting these orders in early allowed those participants with differing views to appreciate the value and submit their own limit orders – which not only improved the prices but also the size of the eventual fills.




## AUCTION CLOSE – DISTRIBUTION AND PRICES

The **implied market forecast** at auction close was for a Non-farm payrolls release of **+70k**, considerably higher than the economist consensus of +36k. This suggests that the market is probably short futures or long USD and that unless we see a release over +100k, the market will be prone to disappointment and a move lower on the USD or short covering on futures could be seen.




**Auction: NFPNov02a**

| | | | |
|---|---|---|---|
| **Event:** | Nonfarm Payroll Nov'02 | **Auction Period:** | 05 Dec 2002 15:00:00 GMT<br>05 Dec 2002 16:30:00 GMT |
| **Expiration:** | 06 Dec 2002 13:30:00 GMT | **Current Time:** | 05 Dec 2002 17:42:15 GMT |
| **Strike Units:** | Thousands of Jobs | **Last Pricing Time:** | 05 Dec 2002 16:41:42 GMT |
| **Status:** | finalized | | |

**Current Implied Market Forecast: 70.02**

Refresh Prices

**DIGITAL CALLS (inclusive of Strike Price)**

| Strike | Bid | Offer | Payout |
|---|---|---|---|
| -150 | 0.993259 | 1 | 1 |
| -100 | 0.971000 | 1 | 1 |
| -75 | 0.953000 | 0.983000 | 1.01729 |
| -50 | 0.920000 | 0.950000 | 1.05263 |
| -25 | 0.850271 | 0.880271 | 1.13601 |
| 0 | 0.785000 | 0.815000 | 1.22699 |
| 25 | 0.688000 | 0.718000 | 1.39276 |
| 50 | 0.650000 | 0.680000 | 1.72414 |
| 75 | 0.373000 | 0.403000 | 2.48139 |
| 100 | 0.273000 | 0.303000 | 3.30033 |
| 125 | 0.205000 | 0.235000 | 4.25532 |
| 150 | 0.150000 | 0.180000 | 5.55556 |
| 200 | 0.053001 | 0.093001 | 10.75267 |

**DIGITAL PUTS (exclusive of Strike Price)**

| Strike | Bid | Offer | Payout |
|---|---|---|---|
| -150 | 0.000000 | 0.016741 | 59.73359 |
| -100 | 0.000000 | 0.029000 | 34.48276 |
| -75 | 0.017000 | 0.047000 | 21.2766 |
| -50 | 0.050000 | 0.080000 | 12.5 |
| -25 | 0.119729 | 0.149729 | 6.67973 |
| 0 | 0.186000 | 0.216000 | 4.66116 |
| 25 | 0.282000 | 0.312000 | 3.20513 |
| 50 | 0.420000 | 0.450000 | 2.22222 |
| 75 | 0.597000 | 0.627000 | 1.5949 |
| 100 | 0.697000 | 0.727000 | 1.37562 |
| 125 | 0.756000 | 0.786000 | 1.26785 |
| 150 | 0.820000 | 0.850000 | 1.17647 |
| 200 | 0.906999 | 0.936999 | 1.06724 |

**VANILLA CALLS**

| Strike | Bid | Offer |
|---|---|---|
| -150 | 213.339 | 220.339 |
| -100 | 164.128 | 170.128 |
| -75 | 139.019 | 145.019 |
| -50 | 115.314 | 121.314 |
| -25 | 93.018 | 98.418 |
| 0 | 73.218 | 77.218 |
| 25 | 54.563 | 58.153 |
| 50 | 38.710 | 41.710 |
| 75 | 26.354 | 28.854 |
| 100 | 17.8577 | 19.8577 |
| 125 | 11.7545 | 13.2545 |
| 150 | 6.9970 | 7.9970 |

**VANILLA PUTS**

| Strike | Bid | Offer |
|---|---|---|
| -100 | 0.0000 | 0.7806 |
| -75 | 0.0800 | 1.6800 |
| -50 | 0.0766 | 2.0766 |
| -25 | 3.070 | 6.670 |
| 0 | 6.870 | 9.870 |
| 25 | 12.824 | 15.324 |
| 50 | 21.372 | 25.372 |
| 75 | 33.525 | 38.025 |
| 100 | 49.519 | 54.519 |
| 125 | 67.925 | 73.425 |
| 150 | 87.668 | 93.668 |
| 200 | 129.661 | 135.661 |



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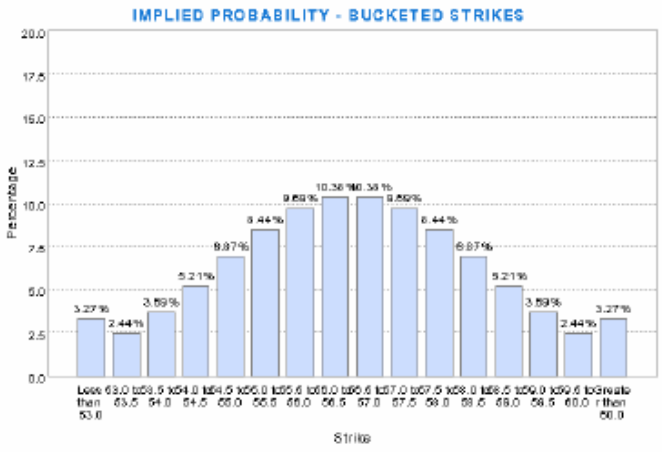
# POST AUCTION REPORT

## ISM Manufacturing PMI
## November 2003

### DETAILS

| | |
|---|---|
| **Event:** | ISM Manufacturing PMI as published by the Institute for Supply Management |
| **Auction Date:** | **Monday, December 1 2003** |
| **Auction Time:** | **1pm – 2pm London time (8am– 9am EDT)** |
| **Expiration/ Release Date:** | Monday, December 1 2003 |
| **Strikes:** | 53, 53.5, 54, 54.5, 55, 55.5, 56, 56.5, 57, 57.5, 58, 58.5, 59, 59.5 and 60 |
| **Units:** | Index points |
| **Currency:** | USD |
| **Instruments:** | Vanilla Calls, Puts, Spreads, Straddles, Strangles, Risk reversals Digital Calls, Puts, Range Binaries, Strangles and Risk reversals and the Forward |

### OPENING DISTRIBUTION AND PRICES

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GLOBAL MARKETS – Economic Derivatives

Auction: ISMNov03

| | | | |
|---|---|---|---|
| Event: | Nov '03 ISM Manufacturing PMI | Auction Period: | 01 Dec 2003 13:00:00 GMT<br>01 Dec 2003 14:00:00 GMT |
| Expiration: | 01 Dec 2003 15:00:00 GMT | Current Time: | 01 Dec 2003 14:59:58 GMT |
| Strike Units: | 0 | Last Pricing Time: | 28 Nov 2003 20:36:21 GMT |
| Status: | closed | | |

Current Implied Market Forecast: 56.45 Refresh Prices

*FORWARD*

| Clearing Price |
|---|
| 56.453 |

*DIGITAL CALLS (inclusive of Strike Price)*

| Strike | Clearing Price |
|---|---|
| 53 | 0.9673 |
| 53.5 | 0.9428 |
| 54 | 0.9059 |
| 54.5 | 0.8538 |
| 55 | 0.7861 |
| 55.5 | 0.7007 |
| 56 | 0.6038 |
| 56.5 | 0.5000 |
| 57 | 0.3962 |
| 57.5 | 0.2993 |
| 58 | 0.2149 |
| 58.5 | 0.1462 |
| 59 | 0.0941 |
| 59.5 | 0.0572 |
| 60 | 0.0327 |

*DIGITAL PUTS (exclusive of Strike Price)*

| Strike | Clearing Price |
|---|---|
| 53 | 0.0327 |
| 53.5 | 0.0572 |
| 54 | 0.0941 |
| 54.5 | 0.1462 |
| 55 | 0.2149 |
| 55.5 | 0.2993 |
| 56 | 0.3962 |
| 56.5 | 0.500 |
| 57 | 0.6038 |
| 57.5 | 0.7007 |
| 58 | 0.7861 |
| 58.5 | 0.8538 |
| 59 | 0.9059 |
| 59.5 | 0.9428 |
| 60 | 0.9673 |

*VANILLA CALLS*

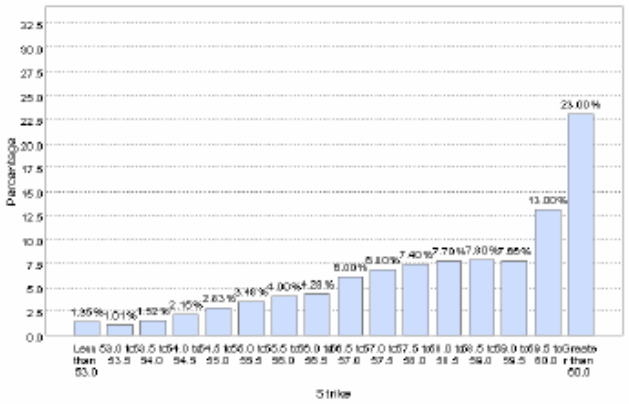
| Strike | Clearing Price |
|---|---|
| 53 | 3.453 |
| 53.5 | 2.977 |
| 54 | 2.517 |
| 54.5 | 2.079 |
| 55 | 1.673 |
| 55.5 | 1.306 |
| 56 | 0.986 |
| 56.5 | 0.714 |
| 57 | 0.496 |
| 57.5 | 0.326 |
| 58 | 0.202 |
| 58.5 | 0.116 |
| 59 | 0.0572 |
| 59.5 | 0.0212 |

*VANILLA PUTS*

| Strike | Clearing Price |
|---|---|
| 53.5 | 0.0237 |
| 54 | 0.0634 |
| 54.5 | 0.126 |
| 55 | 0.220 |
| 55.5 | 0.353 |
| 56 | 0.531 |
| 56.5 | 0.761 |
| 57 | 1.042 |
| 57.5 | 1.373 |
| 58 | 1.746 |
| 58.5 | 2.161 |
| 59 | 2.604 |
| 59.5 | 3.066 |
| 60 | 3.547 |

## AUCTION CLOSE – DISTRIBUTION AND PRICES

IMPLIED PROBABILITY - BUCKETED STRIKES




Deutsche Bank

GLOBAL MARKETS – Economic Derivatives

**Auction: ISMNov03**

| | | | |
|---|---|---|---|
| Event: | Nov '03 ISM Manufacturing PMI | Auction Period: | 01 Dec 2003 13:00:00 GMT<br>01 Dec 2003 14:00:00 GMT |
| Expiration: | 01 Dec 2003 15:00:00 GMT | Current Time: | 01 Dec 2003 15:40:00 GMT |
| Strike Units: | 0 | Last Pricing Time: | 01 Dec 2003 14:02:53 GMT |
| Status: | finalized | | |

Current Implied Market Forecast: 58.35

Refresh Prices

*FORWARD*

| Sell At | Closing Price | Purchase At |
|---|---|---|
| 57.99493 | 58.08493 | 58.13493 |

*DIGITAL CALLS (inclusive of Strike Price)*

| Strike | Sell At | Closing Price | Purchase At |
|---|---|---|---|
| 53 | 0.976495 | 0.988495 | 0.996495 |
| 53.5 | 0.966408 | 0.978408 | 0.986408 |
| 54 | 0.951161 | 0.963161 | 0.971161 |
| 54.5 | 0.929040 | 0.939040 | 0.949040 |
| 55 | 0.901301 | 0.911301 | 0.921301 |
| 55.5 | 0.866458 | 0.876458 | 0.886458 |
| 56 | 0.826471 | 0.836471 | 0.846471 |
| 56.5 | 0.783636 | 0.793636 | 0.803636 |
| 57 | 0.723636 | 0.733636 | 0.743636 |
| 57.5 | 0.655636 | 0.665636 | 0.675636 |
| 58 | 0.581636 | 0.591636 | 0.601636 |
| 58.5 | 0.504636 | 0.514636 | 0.524636 |
| 59 | 0.426637 | 0.436637 | 0.446637 |
| 59.5 | 0.350000 | 0.360000 | 0.370000 |
| 60 | 0.220000 | 0.230000 | 0.240000 |

*DIGITAL PUTS (exclusive of Strike Price)*

| Strike | Sell At | Closing Price | Purchase At |
|---|---|---|---|
| 53 | 0.012154 | 0.013605 | 0.014855 |
| 53.5 | 0.021233 | 0.023682 | 0.025952 |
| 54 | 0.034955 | 0.038839 | 0.042723 |
| 54.5 | 0.054324 | 0.06038 | 0.066396 |
| 55 | 0.079829 | 0.089089 | 0.097569 |
| 55.5 | 0.113542 | 0.126642 | 0.138542 |
| 56 | 0.153529 | 0.171529 | 0.173529 |
| 56.5 | 0.196364 | 0.216364 | 0.216364 |
| 57 | 0.256364 | 0.268364 | 0.276364 |
| 57.5 | 0.324364 | 0.336364 | 0.344364 |
| 58 | 0.398364 | 0.408364 | 0.418364 |
| 58.5 | 0.475364 | 0.485364 | 0.495364 |
| 59 | 0.553363 | 0.563363 | 0.573363 |
| 59.5 | 0.63000 | 0.64000 | 0.65000 |
| 60 | 0.76000 | 0.77000 | 0.78000 |

*VANILLA CALLS*

| Strike | Sell At | Closing Price | Purchase At |
|---|---|---|---|
| 53 | 4.96403 | 5.06403 | 5.13403 |
| 53.5 | 4.56971 | 4.67471 | 4.63971 |
| 54 | 4.03108 | 4.09108 | 4.15108 |
| 54.5 | 3.56195 | 3.61695 | 3.67195 |
| 55 | 3.16553 | 3.16553 | 3.20553 |
| 55.5 | 2.66544 | 2.71044 | 2.75544 |
| 56 | 2.24420 | 2.28420 | 2.32420 |
| 56.5 | 1.84382 | 1.87882 | 1.91382 |
| 57 | 1.47000 | 1.50000 | 1.53000 |
| 57.5 | 1.12858 | 1.16358 | 1.19858 |
| 58 | 0.82296 | 0.84296 | 0.86296 |
| 58.5 | 0.55525 | 0.57025 | 0.58525 |
| 59 | 0.326328 | 0.335328 | 0.346328 |
| 59.5 | 0.13600 | 0.14100 | 0.14600 |

*VANILLA PUTS*

| Strike | Sell At | Closing Price | Purchase At |
|---|---|---|---|
| 53.5 | 0.008301 | 0.009770 | 0.010757 |
| 54 | 0.023534 | 0.026149 | 0.028764 |
| 54.5 | 0.04682 | 0.05202 | 0.05723 |
| 55 | 0.08184 | 0.09071 | 0.09978 |
| 55.5 | 0.13096 | 0.14561 | 0.16006 |
| 56 | 0.19735 | 0.21928 | 0.24120 |
| 56.5 | 0.28250 | 0.31389 | 0.34528 |
| 57 | 0.38597 | 0.43597 | 0.47597 |
| 57.5 | 0.54365 | 0.58865 | 0.63365 |
| 58 | 0.72804 | 0.77804 | 0.82804 |
| 58.5 | 0.95032 | 1.00532 | 1.06032 |
| 59 | 1.21140 | 1.27140 | 1.33140 |
| 59.5 | 1.51107 | 1.57607 | 1.64107 |
| 60 | 1.86507 | 1.93507 | 2.00507 |

The next auction will be on Thursday 4th December for US Non-farm Payrolls.



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# Appendix II – Data

| Event | Release Period | Release Date | Auction Date | Auction Implied Market Forecast | Economist Consensus Forecast | Actual Announcement |
|---|---|---|---|---|---|---|
| ISM | Oct-02 | 11/1/2002 | 10/31/2002 | 47.5 | 48.9 | 48.5 |
| ISM | Nov-02 | 12/2/2002 | 12/2/2002 | 51 | 51 | 49.2 |
| ISM | Jan-03 | 2/3/2003 | 1/31/2003 | 53.2 | 54 | 53.9 |
| ISM | Feb-03 | 3/3/2003 | 2/28/2003 | 52.2 | 52 | 50.5 |
| ISM | Mar-03 | 4/1/2003 | 3/31/2003 | 48.1 | 49 | 46.2 |
| ISM | Apr-03 | 5/1/2003 | 4/30/2003 | 47 | 47.2 | 45.4 |
| ISM | May-03 | 6/2/2003 | 5/30/2003 | 48.4 | 48.65 | 49.4 |
| ISM | Jun-03 | 7/1/2003 | 7/1/2003 | 51.2 | 51 | 49.8 |
| ISM | Jul-03 | 8/1/2003 | 7/31/2003 | 51.8 | 52 | 51.8 |
| ISM | Aug-03 | 9/2/2003 | 9/2/2003 | 54.4 | 54 | 54.7 |
| ISM | Sep-03 | 10/1/2003 | 10/1/2003 | 53.4 | 54.5 | 53.7 |
| ISM | Oct-03 | 11/3/2003 | 11/2/2003 | 56.2 | 56 | 57 |
| ISM | Nov-03 | 12/1/2003 | 12/1/2003 | 58.4 | 58.5 | 62.8 |
| ISM | Jan-04 | 2/2/2004 | 2/2/2004 | 64.6 | 64 | 63.6 |
| ISM | Feb-04 | 3/1/2004 | 3/1/2004 | 61.1 | 62 | 61.4 |
| Retail Sales | Oct-02 | 11/14/2002 | 11/13/2002 | 0.01 | 0.30 | 0.70 |
| Retail Sales | Nov-02 | 12/12/2002 | 12/11/2002 | 0.13 | 0.20 | 0.50 |
| Retail Sales | Dec-02 | 1/14/2003 | 1/13/2003 | 0.23 | 0.30 | 0.00 |
| Retail Sales | Jan-03 | 2/13/2003 | 2/12/2003 | 0.53 | 0.50 | 1.30 |
| Retail Sales | Feb-03 | 3/13/2003 | 3/12/2003 | -0.21 | -0.10 | -1.00 |
| Retail Sales | Mar-03 | 4/11/2003 | 4/10/2003 | 0.41 | 0.40 | 1.10 |
| Retail Sales | Apr-03 | 5/14/2003 | 5/13/2003 | -0.14 | 0.20 | -0.90 |
| Retail Sales | May-03 | 6/12/2003 | 6/11/2003 | 0.17 | 0.20 | 0.10 |
| Retail Sales | Jun-03 | 7/15/2003 | 7/14/2003 | 0.16 | 0.30 | 0.70 |
| Retail Sales | Jul-03 | 8/13/2003 | 8/12/2003 | 0.63 | 0.60 | 0.80 |
| Retail Sales | Aug-03 | 9/12/2003 | 9/12/2003 | 0.82 | 0.80 | 0.70 |
| Retail Sales | Sep-03 | 10/15/2003 | 10/15/2003 | 0.57 | 0.40 | 0.30 |
| Retail Sales | Oct-03 | 11/14/2003 | 11/14/2003 | 0.09 | 0.20 | 0.20 |
| Retail Sales | Nov-03 | 12/11/2003 | 12/11/2003 | 0.32 | 0.30 | 0.40 |
| Retail Sales | Dec-03 | 1/15/2004 | 1/15/2004 | 0.41 | 0.40 | 0.10 |
| Retail Sales | Jan-04 | 2/12/2004 | 2/12/2004 | 0.6 | 0.50 | 0.90 |
| Nonfarm Payroll | Sep-02 | 10/4/2002 | 10/1/2002 | -38 | 6 | -43 |
| Nonfarm Payroll | Sep-02 | 10/4/2002 | 10/3/2002 | -18 | 6 | -43 |
| Nonfarm Payroll | Oct-02 | 11/1/2002 | 10/29/2002 | -16 | 0 | -5 |
| Nonfarm Payroll | Oct-02 | 11/1/2003 | 10/31/2002 | -13 | 0 | -5 |
| Nonfarm Payroll | Nov-02 | 12/6/2002 | 12/5/2002 | 70 | 35.5 | -40 |
| Nonfarm Payroll | Dec-02 | 1/10/2003 | 1/9/2003 | 36 | 20 | -101 |
| Nonfarm Payroll | Jan-03 | 2/7/2003 | 2/6/2003 | 59 | 68 | 143 |
| Nonfarm Payroll | Feb-03 | 3/7/2003 | 3/6/2003 | -13 | 10 | -308 |
| Nonfarm Payroll | Mar-03 | 4/3/2003 | 4/3/2003 | -65 | -35 | -108 |
| Nonfarm Payroll | Apr-03 | 5/2/2003 | 5/1/2003 | -119 | -60 | -48 |
| Nonfarm Payroll | May-03 | 6/6/2003 | 6/5/2003 | -44 | -30 | -17 |
| Nonfarm Payroll | Jun-03 | 7/3/2003 | 7/2/2003 | 4 | 0 | -30 |
| Nonfarm Payroll | Jul-03 | 8/1/2003 | 7/31/2003 | 17 | 10 | -44 |
| Nonfarm Payroll | Aug-03 | 9/5/2003 | 9/4/2003 | 7 | 20 | -93 |
| Nonfarm Payroll | Sep-03 | 10/3/2003 | 10/3/2003 | -3 | -25 | 57 |
| Nonfarm Payroll | Sep-03 | 10/3/2003 | 10/2/2003 | -11 | -25 | 57 |
| Nonfarm Payroll | Oct-03 | 11/7/2003 | 11/6/2003 | 86 | 65 | 126 |
| Nonfarm Payroll | Oct-03 | 11/7/2003 | 11/7/2003 | 88 | 65 | 126 |
| Nonfarm Payroll | Nov-03 | 12/5/2003 | 12/4/2003 | 151 | 150 | 57 |
| Nonfarm Payroll | Nov-03 | 12/5/2003 | 12/5/2003 | 160 | 150 | 57 |
| Nonfarm Payroll | Dec-03 | 1/9/2004 | 1/8/2004 | 181 | 150 | 1 |
| Nonfarm Payroll | Dec-03 | 1/9/2004 | 1/9/2004 | 162 | 150 | 1 |
| Nonfarm Payroll | Jan-04 | 2/6/2004 | 2/5/2004 | 167 | 175 | 112 |
| Nonfarm Payroll | Jan-04 | 2/6/2004 | 2/6/2004 | 174 | 175 | 112 |
| Nonfarm Payroll | Feb-04 | 3/6/2004 | 3/6/2004 | 130 | 130 | 21 |

# The Migration of Corporate Finance from Banks To Capital Markets in Germany

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Glucksman Institute for Research in Securities Markets
Faculty Advisor: Ingo Walter
March 31, 2004

# TABLE OF CONTENTS

# I. INTRODUCTION

The headline of the Wall Street Journal on July 9, 2003 "German Convertible Deal Is Biggest Issue Offer Ever" should not be misinterpreted in the assessment of the European capital markets. Despite this €5.0 billion exchangeable-bond offering that can be switched into shares of Deutsche Telekom, Europe is still dominated by bank financing – a model with a very questionable future.

This research report will analyze the indispensable migration from the dedicated capital system to the Anglo-American fluid capital system. Although this process will take place in most continental European economies, the analysis is focused on Germany. There are mainly two reasons that support this decision: First, the success or the failure of the migration in Germany – as Europe's largest economy – will have a major impact on the developments on the whole continent. Second, Germany is the European country that is lagging behind the most and that has to undergo the most radical structural reforms in order to satisfy the changing financing needs of its economy. One instance of this is that corporate debt securities in Germany only make up for 4% of the GDP while this ratio amounts to 22%, 27%, and 29% in France, the UK, and the US, respectively.[7]

The first of the report's four parts is dedicated to the historical assessment and the development of the traditional bank-corporate relationships.

The historical discussion in the first part provides the background for the analysis of the pressures for systemic change in the second part.

[7] Lehman Brothers European Research. 2003.

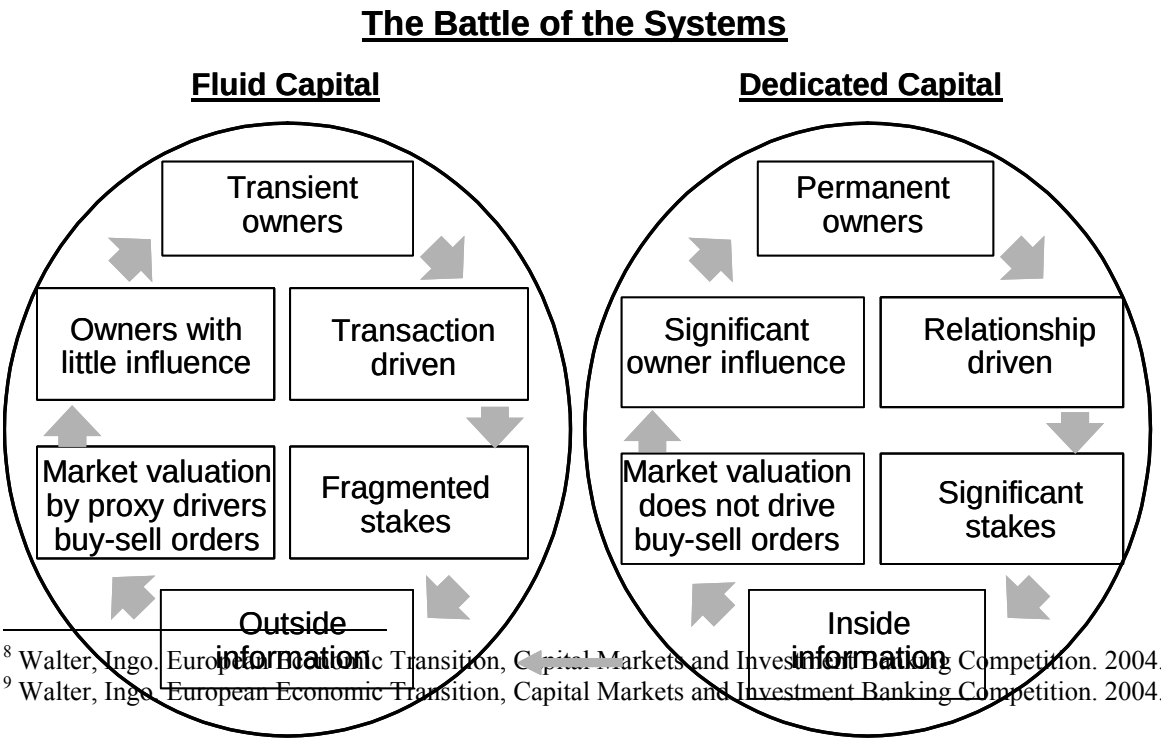
Part three of the report makes use of quantitative data in order examine the current and the expected development of the instruments on the German capital market.

The last part describes the anticipated transformation of intermediaries and corporations as well as the (re-)action of the regulatory bodies.

## II. HISTORICAL PERSPECTIVE ON GERMANY'S BANKING MODEL

In order to put the German banking model into a global perspective, it is important to have a look at the two different capital markets models that are available. On the left side of Exhibit 1, the fluid capital system is described that is mostly used in Anglo-American countries and that is characterized by highly mobile capital and a transaction driven environment.[8] Conversely, the dedicated capital system that is shown on the right side has relatively immobile capital and permanent owners as its main feature.

**Exhibit 1: The Battle of the Systems[9]**

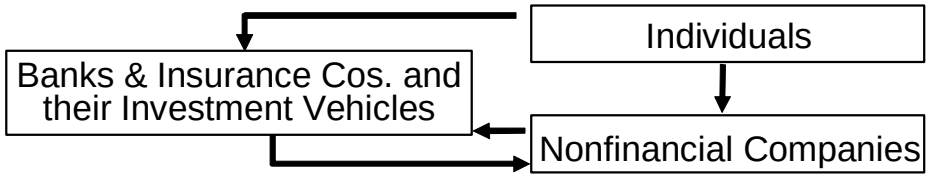



[8] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.
[9] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.

A result of the history of continental Europe, the dedicated capital system has significant drawbacks in the globalizing world. Therefore, in order to keep up with global competition and the requisites of more rapid growth, the continental European markets are migrating towards the fluid capital system. Among the developed European countries, Germany lags far behind in this migration process and will therefore have to undergo the most significant changes in the next future in order to keep its economy competitive.

The special position of the German capital market is also a result of its corporate control structure that is known as the "bank-based system". The respective control linkages of this structure are shown in Exhibit 2:

**Exhibit 2: Control Linkages in the Bank-Based System**[10]




In this system, the banks play a central 'coordinating' role as they influence the direction of the economy in multiple ways such as in debt and equity financing as well as in corporate control through voting rights and boardroom participation.[11]

First, German corporations cannot rely on a well developed bond market for their financing needs. Therefore, debt financing through banks is of high importance. One instance of this is that in Germany corporate loans currently amount to about 121% of GDP while corporate

[10] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.
[11] Traditionally, German banks are "universal" banks providing both commercial and investment banking services.

debt securities only make up for 4% of GDP. In order to mitigate the liquidity risk that results from the difficult access to the fluid capital markets, German corporations maintain a long-standing relationship to one bank ('Hausbank') on which they can rely even in difficult times and with which they run the core of their banking business.[12]

Second, in this system, banks and their investment companies hold large equity stakes in non-financial companies. Due to the underdeveloped German equity market those shareholdings are extremely high in the international context. For example, there is a majority shareholder for 57% of listed German companies while this percentage amounts only to 6% for listed UK companies.[13] The importance of financial institutions in German equity investing can also be seen in some of the investments that Allianz, the financial services conglomerate, still held in 2000: Beiersdorf 38.4%, Munich Re 33.3%, Karstadt 16.5%, E.ON 12.1%, BASF 11.3%, and RWE 11.2%.[14]

Third, in addition to the direct debt and equity stakes, German banks do influence the corporate sector through delegated voting rights ('Depotstimmrecht') and interlocked directorates in the supervisory boards. These important links with their clients give the banks the monitoring rights and (inside) information they need to provide long-term financing.[15] However, this private information creates reluctance of 'outsiders' to invest in corporate bonds and shares and it thereby slows down the development of strong capital markets.

[12] Quack, Sigrid / Hildebrandt, Swen. 1995. Hausbank or Fournisseur.
[13] Franks, Julian / Mayer, Colin. 2001. Ownership and Control of German Corporations, p. 947: Sample of the 171 and 173 largest German and UK listed companies, respectively.
[14] Allianz AG. 2003. Staying the Course. For an extensive list and the current shareholdings refer to the Appendix.
[15] Quack, Sigrid / Hildebrandt, Swen. 1995. Hausbank or Fournisseur, p. 6; Walter, Ingo / Smith, Roy C. 2000. High Finance in the EURO-Zone, p. 201.

This part has provided the historical perspective of the German banking and capital market and has already shown some of the problematic areas of the system. In the next part, the pressures for the migration from the dedicated capital system to the fluid capital system will be analyzed.

# III. PRESSURES FOR SYSTEMIC CHANGE IN THE MIGRATION PROCESS

The current market environment puts immense pressure on the German banking and capital markets for an expeditious migration to the fluid capital system. This migration process will be indispensable in order to maintain the competitiveness of Germany's financial and non-financial institutions. The pressures result from legal and institutional changes as well as from changes in the competitive environment.

## *III.1 Competitive pressures facing non-financial firms and the cost of capital*

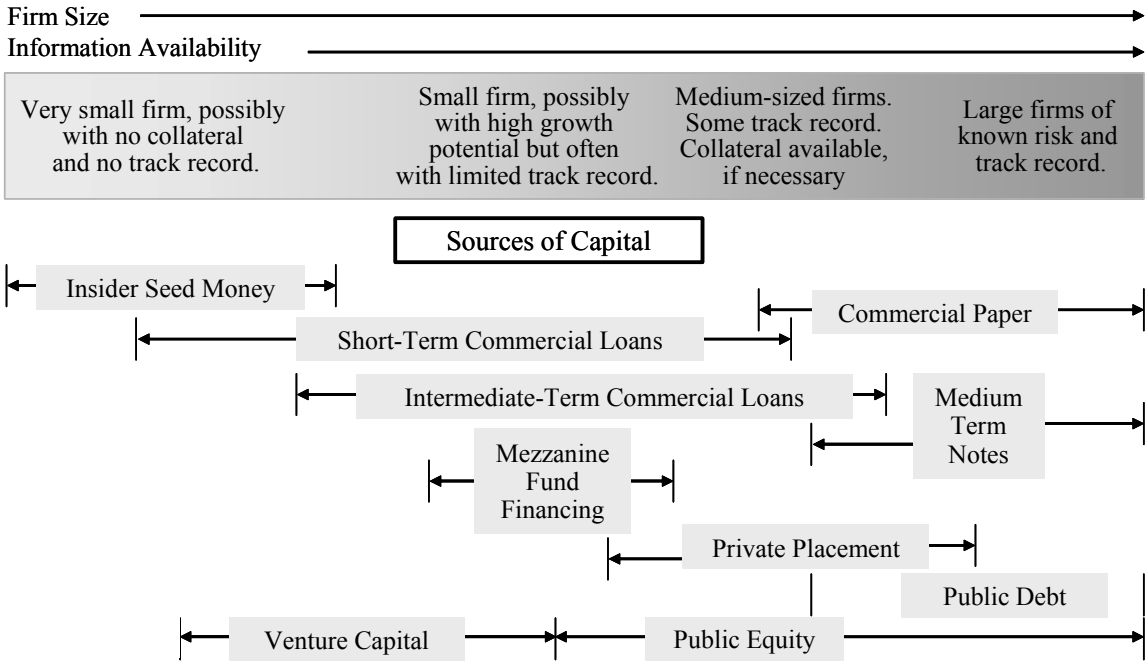
With hourly costs of labor that are 13% higher than in the U.S. and 43% higher than in Britain Germany has been relying heavily on its productivity and its innovation.[16] However, those advantages have almost disappeared over the last couple of years. Nowadays, the economy is burdened with a very inflexible labor market and over-regulation. In addition to that, German companies are facing the restrictive credit policies of their formerly generous Hausbanks.

In this market environment, German corporations are turning to corporate finance in an effort to uncover potential efficiency gains in order to maintain their competitiveness. In effect, this process can be described as a move to the right on the firm continuum that is shown in

[16] The Economist. 2002. Is Deutschland AG kaputt?

Exhibit 3. Thereby, they are taking advantage of capital markets products that represent more effective solutions in terms of WACC optimization.

**Exhibit 3: The Firm Continuum**[17]




### *III.2 High risk, low reward – the dilemma of German banks*

The crisis of the German banking system is exemplified by the recent discussions of the German government with the banks to create a "bad bank".[18] With corporate bankruptcies and bad-debt provisions at record levels, this creation was intended to help banks offloading their non-performing loans and returning them into a stable financial position. Finally, the idea of the bad bank has been rejected in order not to admit a crisis.

[17] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.
[18] The Economist. 2003. Shuffling the pack.

However, the problem of the German banks does not primarily result from the current economic downturn but from structural reasons. The coexistence of private banks with public-sector banks that obtain cheap refinancing through state guarantees has held interest margins even for medium-sized companies consistently below 1%.[19] Thereby, the profitability has been squeezed out of the system. This marginal profitability is further diminished by having the luxury of 50,000 branch offices in Germany – far more than anywhere else in Europe.[20]

In order to position themselves effectively in the expected consolidation process, German banks need to diversify away from the risk-loaded lending to the fee-based capital markets businesses. This has been the approach of the Anglo-American banks that is described in the next paragraph.

### *III.3 Penetration of Anglo-American intermediaries*

"[German banks'] migration in corporate advisory to capital markets products such as equity or bond issuance has been sluggish. This gap was filled with might and main by foreign financial institutions."[21] This quote by Rolf E. Breuer, Chairman of Deutsche Bank, reflects the current market sentiment among German banks that are still focused on the high-risk, low reward corporate lending.

In order to analyze the accuracy of this perception of the changing market structure and the penetration of the Anglo-American intermediaries on the German market, the SDC Platinum[22] database was used. It provides issuance and M&A data for the last 20 years and gives

[19] The Economist. 2002. This is tomorrow calling. Financial Times. 2004. Das Kapital - Allianz: The average interest margin in Germany has risen by 25 basis points in 2003 – "a sign that the banking sector starts to act more rationally".
[20] Der Spiegel. 2002.Kassieren und abhauen.
[21] Der Spiegel. 2002. "Alle haben Fehler gemacht".
[22] SDC Platinum is a product of the Thomson Corporation.

the possibility to create league tables in order to analyze the market penetration of domestic and foreign banks. An important caveat for this analysis is that a detailed disclosure of issuance data and investment banking fees has just been initiated gradually over the last 20 years. However, the reliability of the available data can be assumed since crosschecks with other, less detailed databases have led to no significant deviations.

The analysis is split-up into IPOs, secondaries, debt and M&A. In order to analyze changes over time, each area is divided into five 4-year brackets for which the number of issues/transactions, the principal/transaction value and the top three underwriters/advisors are analyzed.

As the following table shows, the German IPO market until recently has been dominated by the major German banks that have had long-standing relationships with the issuers. In recent years, however, more and more Anglo-American firms such as Goldman Sachs have obtained important roles in that market. The most probable explanation for this development seems to be the relationships and the placing power that they have built in Germany and the rest of Europe over the last years.

**Table 1: Development of the German IPO Market**

| | 1984 - 1987 | 1988 - 1991 | 1992 - 1995 | 1996 - 1999 | 2000 - 2003 |
|---|---|---|---|---|---|
| # of Issues | 1 | 23 | 37 | 298 | 235 |
| Principal amount | $201.1m | $3,205.2m | $3,205.0m | $17,378.6m | $12,433.0m |
| Top 3 Advisors | Deutsche Bank<br>--<br>-- | Deutsche Bank<br>DKW<br>DZ Bank | Commerzbank<br>Deutsche Bank<br>Goldman Sachs | DKW<br>Goldman Sachs<br>Deutsche Bank | Goldman Sachs<br>Deutsche Bank<br>DKW |

Table 2 shows the secondary issues that were separated from the primary offering because it could be expected that the major underwriters change significantly. This is because the secondary market is characterized by bigger, more mature issuers that might have better relationships with the global banks. The analysis, however, has shown that also in this area Anglo-American investment banks do not play a significant role to date.

**Table 2: Development of the German Secondary Market**

| | 1984 - 1987 | 1988 - 1991 | 1992 - 1995 | 1996 - 1999 | 2000 - 2003 |
|---|---|---|---|---|---|
| # of Issues | 12 | 74 | 273 | 143 | 118 |
| Principal amount | $759.1m | $5,619.1m | $28,524.2m | $35,940.7m | $25,034.3m |
| Top 3 Advisors | Deutsche Bank<br>ING<br>DKW | Deutsche Bank<br>DKW<br>WestLB | Deutsche Bank<br>DKW<br>WestLB | Deutsche Bank<br>DKW<br>WestLB | Deutsche Bank<br>Goldman Sachs<br>DKW |

For the corporate debt markets, the SDC database does not provide enough historical data to assess the trend of Anglo-American underwriters on the German bond market. In general, however, this market is still dominated by the German private banks and the Landesbanken. One of the major reasons for this is that the German debt market mainly consists of issuances from the government (48%) and from financial institutions (47%) where domestic institutions usually play the key underwriting roles.[23] This fact – in combination with longstanding 'Hausbank'-relationships – gives the domestic banks a strong marketing tool in attracting the debt business from corporates.

With their international distribution power and their increased coverage, Anglo-American intermediaries will be able to play a more important role in German debt underwriting in the years to come.

[23] Bank for International Settlements. 2003. BIS Quarterly Review..

Although the analysis of the German M&A activity is only remotely related to the financing theme it shows a strategically important area for Anglo-American intermediaries to enter the German market. Through their dominance in German M&A they should develop more and more relationships that help them improve their position as underwriters.

**Table 3: Development of the German M&A Market**

| | 1984 - 1987 | 1988 - 1991 | 1992 - 1995 | 1996 - 1999 | 2000 - 2003 |
|---|---|---|---|---|---|
| # of Transactions | 15 | 66 | 72 | 205 | 201 |
| Transaction Value | $6,164.4m | $34,208.3m | $41,518.4m | $266,282.0m | $237,913.1m |
| Top 3 Advisors | Morgan Stanley<br>CSFB<br>UBS | UBS<br>Morgan Stanley<br>Lehman Brothers | CSFB<br>JP Morgan<br>Deutsche Bank | Goldman Sachs<br>Deutsche Bank<br>Morgan Stanley | Deutsche Bank<br>Morgan Stanley<br>JP Morgan |

In summary the penetration of Anglo-American banks is not as big as the market sentiment has expected. However, due to their good distribution and their focused client coverage, they are gaining momentum. In addition to that, their profitability is still much higher than that of the domestic banks since the former can concentrate on the fee business leaving corporate lending to the domestic players.

### *III.4 Capital adequacy rules Basle II*

While in other developed countries bank credits make up for 30% of corporate capital needs, German companies rely to 70% on banks.[24] These numbers show how important the banks' credit approval practices are for the German economy. Therefore, the new capital

[24] Jenkins, Patrick. 2004. Mezzanine hits the Mittelstand.

adequacy requirements "Basel II" that will enter into force in December 2006 will have a big impact.

The main goal of Basel II is to link banks' capital requirements more closely than in the past to the actual economic risk which they face.[25] In order to operate profitably under the new rules, banks will become more structured in assessing the credit risk of their borrowers. While this appears to be a rational approach, it conflicts somewhat with the Hausbank system. There, loan commitments are rather based on the bank-customer relationship than on risk-adjusted pricing.

In the assessment of the consequences of Basel II, the undercapitalization of German corporations is another important factor. This is especially relevant for Germany's "Mittelstand", the medium-sized, mainly owner-run firms that make up the bulk of the economy. On average, they have a debt-to-equity ratio of 5.0 compared to 2.2 for the same segment in the U.S.[26] Since Basel II obliges banks to weigh this ratio with 15% in their credit risk measurement systems, German corporations will be at a major disadvantage in the international context.

As most banks have started to implement the new rules, the first results for German corporations can already be seen. As a survey of the Ifo-Institute, for example, has shown German banks have become more restrictive in granting loans and the credit terms have become less favorable.[27] This result provides an additional incentive for German corporations to turn to the capital markets to increase their capital base and to optimize their cost of capital.

[25] Deutsche Bundesbank. 2004. Basel II – the new Capital Accord.
[26] The Economist. 2003. Without credit.
[27] N-TV. 2003. Banken verweigern Kredite.

### *III.5 Public-sector intermediaries – abolition of the state guarantees*

With a market share of 34% of all bank loans to companies, German savings banks have a very important position in financing the economy.[28] These savings banks do not operate as isolated entities but form a network with other group members and centralized refinancing institutions – the so-called Landesbanken.[29] The refinancing costs of these Landesbanken that enjoy top credit ratings are extremely low since the state guarantees to bail out potentially ailing institutions.

These guarantees, however, have been forbidden by the European Commission and will be abolished by July 2005. According to Standard & Poor's, this abolition will shift all but three of the eleven Landesbanken into BBB credit-rating territory.[30] Considering the expected annual increase in refinancing costs of €4-5 billion,[31] this would render unworkable the Landesbanks' current business model that is based on borrowing cheaply in international markets.

The effect of this change on German corporate finance will be that the Landesbanken will not be able to lend as cheaply as before. In consequence, the affected corporations trying to minimize their WACC will have to turn to the capital market in order to stay financially competitive.

### *III.6 The growth of the institutional investor pools*

Historically, Germany has been lagging behind in the market capitalization of its equity markets (please refer to IV.3). Furthermore, the development of significant institutional investor

[28] Quack, Sigrid / Hildebrandt, Swen. 1995. Hausbank or Fournisseur, p. 11.
[29] Quack, Sigrid / Hildebrandt, Swen. 1995. Hausbank or Fournisseur, p. 13.
[30] Jenkins, Patrick. 2003. German banks disclose merger talks.
[31] A.T. Kearney in WirtschaftWoche. 2004. Kinder der Sparkassen, p. 58.

pools has been hindered by the system of very conservative investors and an unfunded pension system that did to promote investing in the capital markets.

However, driven by the Deutsche Telekom IPO in 1996, Germans have become aware of the benefits (and some of the drawbacks) of capital markets investing. In combination with the growing unreliability of the public pension system, this has promoted the growth of the institutional investor pools.

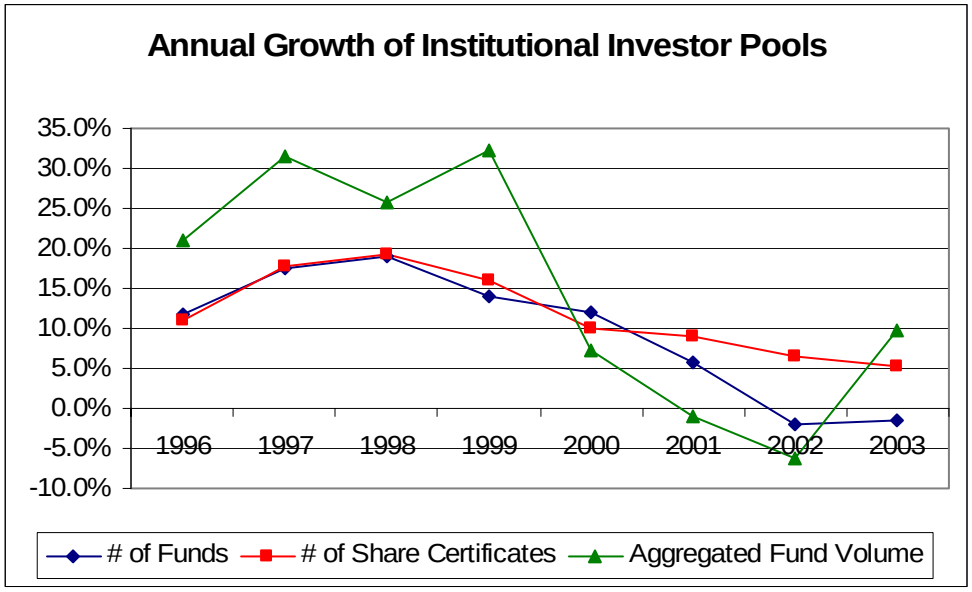
Table 4 and Exhibit 4 show the sustainable trend in the growth of institutional demand for capital market investments in Germany. One instance of this is, that even in difficult years like 2001 and 2002, there is a massive inflow, i.e. increase in # of share certificates, into German investment funds.

**Table 4: Growth of the Institutional Investor Pool**[32]

| | # of Funds | *%-Change* | Number of share certificates *(in millions)* | *%-Change* | Aggregated fund volume *(in EUR millions)* | *%-Change* |
|---|---|---|---|---|---|---|
| 1995 | 3,233 | | 6,648.9 | | 288,852.3 | |
| 1996 | 3,610 | *11.7%* | 7,374.6 | *10.9%* | 349,737.5 | *21.1%* |
| 1997 | 4,240 | *17.5%* | 8,684.3 | *17.8%* | 460,317.1 | *31.6%* |
| 1998 | 5,050 | *19.1%* | 10,365.6 | *19.4%* | 579,102.0 | *25.8%* |
| 1999 | 5,757 | *14.0%* | 12,036.3 | *16.1%* | 766,082.0 | *32.3%* |
| 2000 | 6,447 | *12.0%* | 13,250.2 | *10.1%* | 821,211.0 | *7.2%* |
| 2001 | 6,825 | *5.9%* | 14,429.8 | *8.9%* | 813,292.0 | *-1.0%* |
| 2002 | 6,696 | *-1.9%* | 15,366.5 | *6.5%* | 762,698.0 | *-6.2%* |
| 2003 | 6,592 | *-1.6%* | 16,158.3 | *5.2%* | 836,717.0 | *9.7%* |

[32] Deutsche Bundesbank. 2003. Kapitalmarktstatistik.

**Exhibit 4: Growth of the Institutional Investor Pool**[33]




### *III.7 The launch of the Euro*

As previously described, German corporations are struggling with the ailing banking system and the underdeveloped capital markets. In this context, the launch of the Euro in 1999 has provided major opportunities to satisfy their financing needs on a bigger, more integrated European market for capital.

In the bond markets the effect of the Euro has been the most prominent. It has increased the attractiveness of market-based financing methods by allowing debt issuers to tap institutional

[33] Deutsche Bundesbank. 2003. Kapitalmarktstatistik.

portfolios across and beyond the euro area.[34] One instance of this is the threefold increase in the issuance of bonds denominated in Euro whose timing coincided exactly with the new currency's debut in 1999.[35] This trend is expected to continue as corporations will replace their maturing bank borrowings with capital market financings. The Bank for International Settlements even expects that about one third of all corporate bank loans will eventually be switched into debt securities. This would generate inflows into the corporate bond markets of about $2,000 billion.[36]

In the equity markets, the main effect of the Euro has been that investors now focus more on sectors than on countries. Furthermore, their investment universe comprises the whole Euro area instead of just their national market.[37] Therefore, German corporations have to compete for capital with their European peers from the same sector rather than with other domestic firms.

Considering the underdeveloped domestic capital markets, German corporations do benefit from the Euro and the resulting increase in the investor pools. However, they will also have to be aware of the more international competition for funds.

# IV. DEVELOPMENT OF THE INSTRUMENTS ON THE GERMAN CAPITAL MARKET

## *IV.1 The toolkit of external finance: Hypotheses on external finance migration*

Part one and two have analyzed the history of the German banking model and the pressures that are working against the current system. These analyses imply that German banks

[34] Galati, Gabriele / Tsatsaronis, Kostas. 2001. The impact of the Euro on Europe's financial markets, p. 1.
[35] Galati, Gabriele / Tsatsaronis, Kostas. 2001. The impact of the Euro on Europe's financial markets, p. 11. It should be noted that 1999 was the peak of bond issuance in the telecoms sector. As a result of this, the increased issuance cannot solely be attributed to the new currency.
[36] Schatz, Eric et al. 1997. European monetary union and international capital markets.
[37] Smith, Roy C. / Walter, Ingo. 2003. Global Banking, p. 179.

and corporations need to give up their dedicated capital system and migrate towards the fluid capital system in order to stay competitive.

The existence and the current stage of this migration process can best be assessed by analyzing the development of the different financing alternatives, as the 'toolkit' of external finance. In this analysis we would suspect to find the trends that are shown in Table 5 and that are examined subsequently.

**Table 5: Expected Development of External Finance Products**

| Product area | Expectation |
|---|---|
| Bank lending | ▼ |
| Debt securities (amount outstanding) | ▲ |
| Equity securities (market capitalization) | ▲ |
| Alternative funding sources | ▲ |
| Investor pools | ▲ |
| Share ownership of financial institutions | ▼ |

### *IV.2 Debt financing – bank lending vs. corporate bonds*

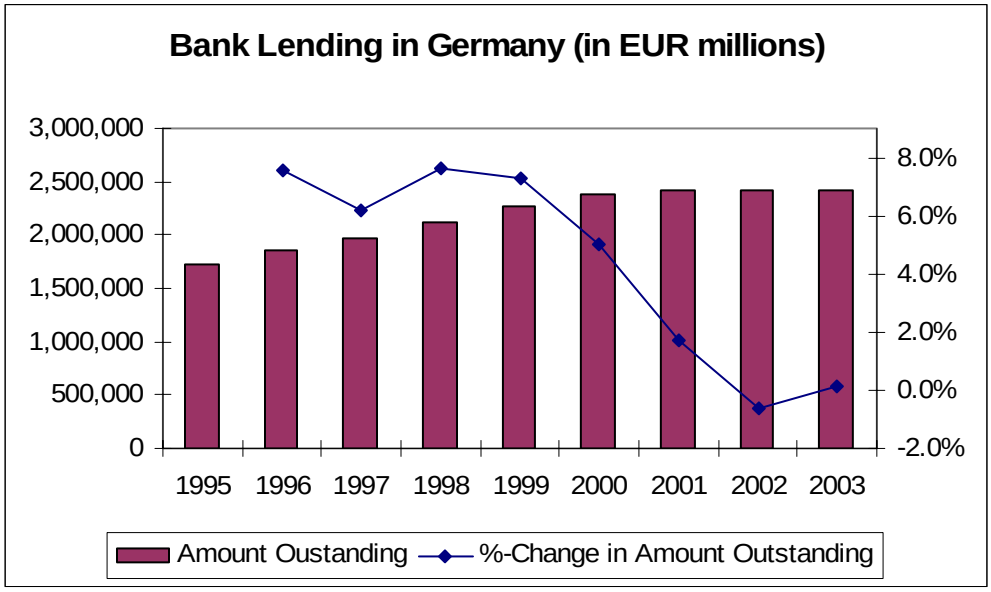
In Germany, banks still provide corporate loans that amount to 121% of GDP.[38] Conversely, corporate debt securities only make up for 4% of GDP while this ratio amounts to 22%, 27%, and 29% in France, the U.K., and the U.S., respectively.[39] In part two, we have described the various legal and competitive constraints that are opposed to the retention of the current way of debt financing in Germany. In our analysis of the actual market data, we would therefore expect a significant shift from bank lending to debt securities.

[38] Deutsche Bundesbank. 2004. Bankenstatistik.
[39] Lehman Brothers European Research. 2003.

*IV.2.1 Bank Lending*

Exhibit 5 shows the development of bank lending in Germany in the last decade:

**Exhibit 5: Bank Lending in Germany**[40]




As the external pressures are relatively new or will enter into force over the course of the next few years, the most important parts of this graph are the years from 2000 to 2003. There, a substantial reduction of the growth or even a decrease in the total amount can be observed. This phenomenon is an important sign for the starting migration away from bank lending to capital markets-based financing. Although one of the drivers of this development is the cyclical economic downturn, the most important reasons for this development are structural.

[40] Deutsche Bundesbank. 2002. Monatsbericht; Deutsche Bundesbank. 2004. Bankenstatistik.

Taking into account all the forces that promote a shift away from bank financing a more important decrease could have been expected. Even by calculating the ratio of bank lending to economic activity (GDP), the result shows an only slightly decreasing importance of the bank lending for German corporations.[41]

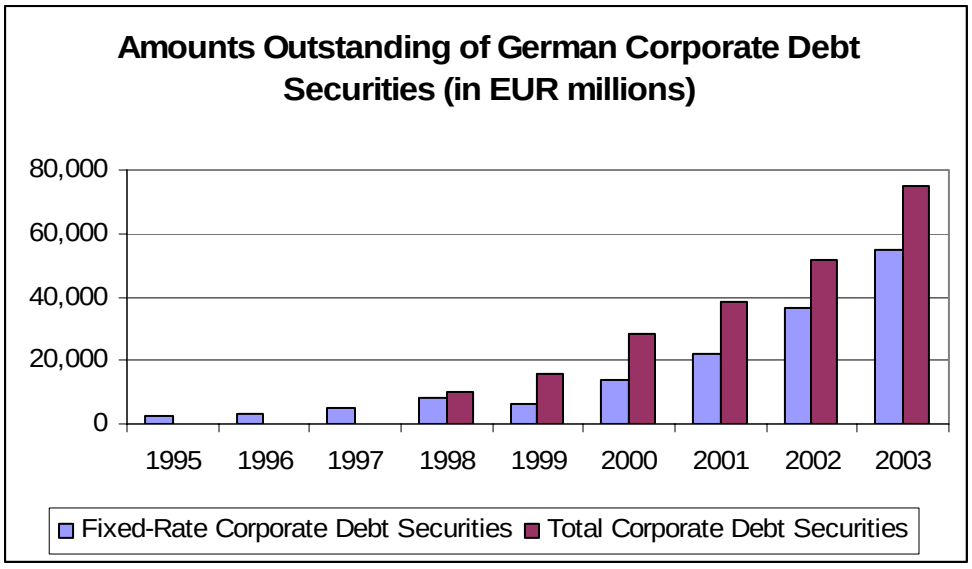
*IV.2.2 Outstanding Debt Securities*

The gathering of the historical data for the amount of outstanding debt securities in the German market has proven to be difficult. The Deutsche Bundesbank for example does only provide corporates-specific data on fixed-rate debt securities. The total amounts could only be found at the Bank of International Settlements which has started to publish a breakdown into corporates and financial institutions in 1998.

The available data (see Exhibit 6) shows a significant increase of outstanding debt securities over the last couple of years. One of the major reasons for this increase has been the favorable interest rate environment in the debt markets. However, more importantly, this trend has been driven by the starting penetration of Anglo-American intermediaries and from the restrictive stance of German banks towards bank lending.

[41] See Table A1 in the Appendix for the complete data table.

**Exhibit 6: Outstanding Debt Securities**[42]



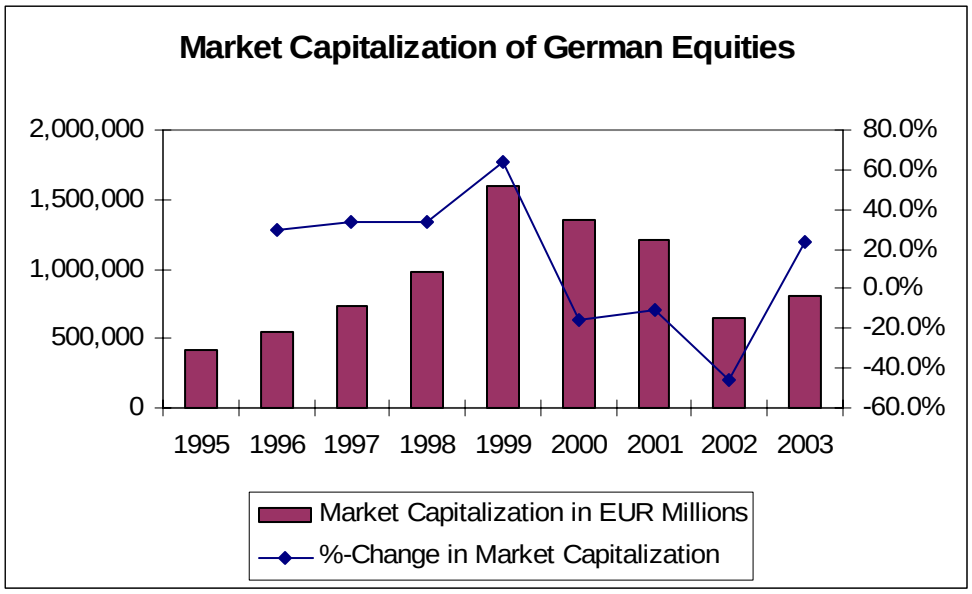

Although the total amount of outstanding debt securities is still only 3% of the bank loans, the migration of debt financing from bank lending towards the capital markets can be recognized.

### *IV.3 The German equity market*

With a capitalization that amounts to 54% of GDP the German equity market lags far behind other developed markets such as the U.S. (136%) or the U.K. (67%). The same relationship holds true when we look at the total number of domestic firms listed on German exchanges – 793 compared to 4,793 and 2,311 in the U.S. and in the U.K., respectively.[43] However, the development during the boom of the late 1990s has shown the potential in the German equity market that is shown in Exhibit 7.

[42] Deutsche Bundesbank. 2004. Kapitalmarktstatistik; Bank for International Settlements. 2003. BIS Quarterly Review.
[43] World Federation of Exchanges. 2003. Newsletter and Statistics.

**Exhibit 7: Market Capitalization of German Equities**[44]




Currently, the main concern of Deutsche Börse is to restore the trust of the investors into the capital markets that was lost through the failure of its small cap and new technology segment "Neuer Markt". In a first attempt to do that, the major German exchange has introduced two new market segments Prime Standard and General Standard that are characterized by much improved transparency and disclosure requirements.[45]

It remains to be seen if this measurement leads to the much needed trading liquidity for mid-caps and if it opens up the window for a meaningful stream of IPOs. In March 2004, the market sentiment at least seems to be positive and investors are looking forward to the first IPOs since 2002. With a strong pipeline of IPO candidates, such as Postbank, and significant inflows into mutual funds, demand seems to find supply again on the German equity market.

[44] Deutsche Bundesbank. 2003. Kapitalmarktstatistik.
[45] World Federation of Exchanges. 2003. Newsletter and Statistics.

### *IV.4 Alternative funding sources*

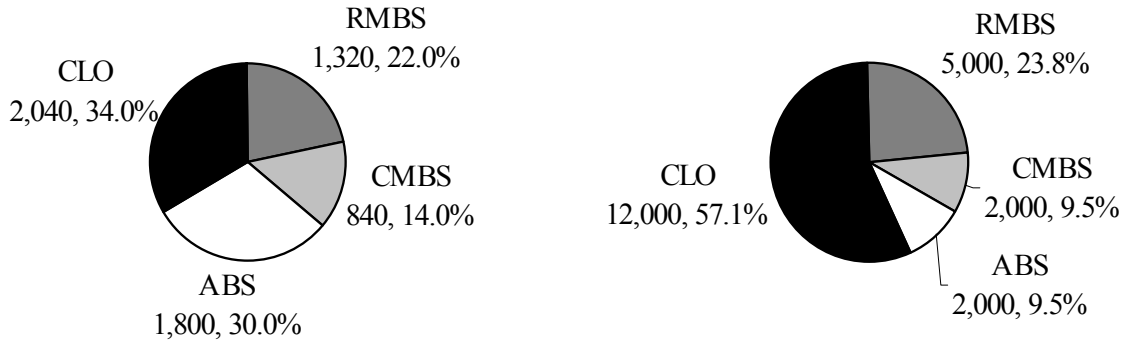
In addition to their migration to bonds and equity instruments, German corporations do adopt innovative financing techniques to satisfy their capital needs. The most important developments in that context take place in the securitization, the private equity and the mezzanine market.

With €6.0 billion of issuance in 2003, German securitization activity was far lower than in most other European countries (e.g., Portugal with €10.1 billion). However, since securitization could help German banks as well as domestic corporations to free-up some capital it is in the interest of the German economy to build a meaningful market in this area. Therefore, important projects have been initiated that feed the hopes for high growth as shown in Exhibit 8.

On the one hand, most German securitizations to date have been constructed synthetically, using credit derivatives to avoid corporation tax. In mid-2003, however, the German legislator has changed the tax law to support securitizations that are "true sales" of assets. On the other hand, twelve major banks[46] have created a joint venture with KfW, the state-owned development bank, which will securitize and sell significant amounts of their loans. In 2004, this initiative is expected to issue Collateralized Loan Obligations (CLOs) of around €10 – 11 billion.[47]

[46] Among those banks are Commerzbank, Deutsche Bank, Dresdner Bank, DZ Bank, and HypoVereinsbank. As the only non-German member, Citigroup is part of the joint venture.
[47] The Economist. 2003. Shuffling the pack.

**Exhibit 8: Securitization in Germany**[48]




In private equity, the restructuring needs of the German economy and the undercapitalization of the corporations provide entry opportunities for investors. The market appears to be divided between German investors focusing on small and medium-sized transactions and Anglo-American investors taking the lead in large buyouts. Overall, Germany has seen an increase in private equity activity from 59 deals with a transaction value of €6.3 billion in 2002 to 70 deals (€11.6 billion) in 2003. Despite this increase, the main struggle of the financial sponsors is the limited exit opportunities due to the dry IPO market. However, as this market appears to improve, the situation is expected to change in 2004.[49]

With € 6.9 billion of European mezzanine invested in the 12 months ending in June 2003 (€5.1 billion in the previous year), this financing technique is still in the early stage of its

[48] Bachmann, Reto et al. 2004. European Structured Products Outlook 2004.
[49] Ernst & Young. 2004. German Private Equity Activity 2002/2003.

development.[50] However, the growth perspectives for mezzanine appear to be advantageous in the German market. This is because mezzanine improves the company's credit rating while maintaining the ownership structure – a feature that is especially important for the German Mittelstand. These prospects explain the eagerness of German banks such as NordLB and SachsenLB to enter into this market and help their clients to organize their financing structure more efficiently.[51]

### *IV.5* Share ownership of financial institutions

In Parts one and two, we have shown that German financial institutions dispose of a high amount of non-core shareholdings and that they are struggling with their profitability and capitalization. Given that there is a growing investor pool that provides the demand for the securities and that most corporate divestments are tax-exempt since 2002, we would expect the institutions to reduce their investments significantly.

In fact, this sell-off of non-core shareholdings can be identified at most of the major financial institutions. One instance of this is Deutsche Bank which reduced its unrealized gains in its investment portfolio from €20 billion in 1998 to € 2 billion in 2003. €12 billion of this reduction directly resulted from the sale of its industrial holdings.[52]

Allianz is another example which is openly promoting its intention to unwind its cross-shareholdings and to sell their non-core investments. As the Table A2 in the Appendix shows, Allianz has been very active in this process over the last few years. Since 2000, it has sold €25 billion of its shareholdings.[53]

[50] Initiative Europe. 2003. Mezzanine Monitor – Second Quarter 2003.
[51] Jenkins, Patrick. 2004. Mezzanine hits the Mittelstand.
[52] Der Spiegel. 2003. Deutsche Bank - Das Milliardengrab.
[53] Fromme, Herbert. 2004. Achleitner will mit Beteiligungen jonglieren können.

### *IV.6 Analysis: Migration in external finance of German corporates*

With the exception of the development in bank lending, all anticipated trends could be verified through the analyses of the different product areas. This result is summarized in the following table.

**Table 6: Actual Development of External Finance Products**

| Product area | Expectation | Result |
|---|---|---|
| Bank lending | ▼ | ► |
| Debt securities (amount outstanding) | ▲ | ▲ |
| Equity securities (market capitalization) | ▲ | ▲ |
| Alternative funding sources | ▲ | ▲ |
| Investor pools | ▲ | ▲ |
| Share ownership of financial institutions | ▼ | ▼ |

In summary, the analysis of the quantitative data shows that the share shift is taking place and that it is expected to accelerate in the years to come due to anticipated changes in the market environment. Going forward, this migration will have a high impact on the profitability and the competitiveness of financial institutions and corporations in Germany. In order to thrive in this market, the participants have to adapt to the changes and to anticipate the future market structure. This market structure will be analyzed in the following part of the report.

# V. ANTICIPATED TRANSFORMATION OF INTERMEDIARIES AND CORPORATIONS

## *V.1 Market shares of intermediaries in the migration to capital markets: The new players and the legacy banks*

As it was analyzed in III.3, German banks are dominating bank lending and they still have the big chunk of the underwriting business. However, all the pressures and recent developments that were described previously are impacting the financial intermediaries, favoring those "in the flow" of debt, equity and M&A and harming those cultivating the classic (Haus-) banking relationships. It will be especially the Anglo-American and similarly positioned institutions which will benefit from the anticipated transformation of the German market for corporate finance. This is because they have a competitive advantage in the fluid capital system as opposed to most of the German legacy banks which are mainly focused on the dedicated capital system.[54]

Currently, there are four main groups of players on the German market for corporate finance: 1. Domestic private banks; 2. Savings and mutual banks; 3. Centralized refinancing institutions of the savings and mutual banks (i.e. *Landesbanken* and *Genossenschaftliche Zentralbanken (GZBs)*); 4. Anglo-American and other foreign institutions. However, since the savings and mutual banks transfer all their capital markets relevant clients to the *Landesbanken* and *GZBs*, group 2 can be excluded from the further analysis.

[54] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.

The following table shows the current strengths and weaknesses of the three groups on the German banking market which will play an important role in the anticipated migration to the capital markets.

**Table 7: Strength and weaknesses of the players on the German banking market**

| | Domestic Private Banks | Landesbanken and GZBs | Anglo-American and other foreign institutions |
|---|---|---|---|
| Strengths: | • Long-standing client relationships (Hausbank)<br>• Domestic distribution through own investment fund companies<br>• Lending capacity<br>• Interlocked directorates<br>• Strong position in domestic market for equities and debt | • Long-standing client relationships (Hausbank)<br>• Domestic distribution through own investment fund companies<br>• Lending capacity<br>• Access to innovative small players through vast network of savings and mutual banks | • International distribution capacities<br>• Market sensitivity<br>• M&A expertise |
| Weaknesses: | • Structural inefficiencies<br>• Concerns over cyclical bad-debt provisions | • Structural inefficiencies<br>• Concerns over cyclical bad-debt provisions<br>• Reliance on state guarantees<br>• Limited international distribution capactities<br>• Sometimes, lack of market sensitivity<br>• Lack of M&A expertise | • Low penetration<br>• Sometimes, limited lending capabilities<br>• Difficulties to access conservative Mittelstand companies |

Most of the domestic private banks have added significant capital markets capabilities to their lending-focused business model over the last decade. Thereby, they have built a dominant market position in equities and debt. However, apart from Deutsche Bank, they could not build a significant international presence. As a result of this, they are struggling with high bad-debt provisions arising from the economic slump of the German economy. In recent years the domestic private banks have been tackling their structural inefficiencies and bolstering their

relationships with the most attractive segments of corporate clients. Going forward, those measures should help them maintaining an important position in the German banking market.

Historically, the Landesbanken have been benefiting from the state guarantees that allowed them to lend money to corporations at unrivaled rates. However, with the abolition of these guarantees most of the banks will experience a significant drop in their credit rating, thereby losing the competitive advantage in bank lending. Therefore, their penetration of the corporate market in the coming years will depend on their efforts and positioning in the capital markets business. Currently, it appears that only a few of the institutions, such as Bayerische LB and LBBW, have already undergone the necessary strategic adjustments to succeed in this space.

Although they do not depend on the state guarantees, the situation for the GZBs is comparable to that of the Landesbanken. Their future success with corporate clients also depends on their positioning in capital markets related areas. After numerous reorganizations in recent years, the actual potential of the GZBs in these areas remains to be seen.

The Anglo-American institutions whose business model heavily relies on the fee-based business will be the main beneficiaries of the migration of corporate finance from banks to capital markets in Germany. While in the 1980s and 1990s, they mainly entered into the market through their M&A expertise, they have been gaining momentum in the underwriting business in recent years. Going forward, their international distribution capabilities and their intense coverage of corporate clients will help them to achieve a strong position in Germany.

However, capital markets financing in Germany will remain – more than anywhere else – a complementary product to the traditional bank lending. Therefore, in order to be successful not only in M&A but also in underwriting, foreign institutions will have to be willing to commit significant amounts from their own balance sheet.

In summary, the ongoing migration process of corporate finance in Germany creates numerous additional requirements to the banks' business models. Since not all current players will fulfill these requirements, a concentration process in the market can be anticipated. Since this concentration process is likely to be comparable to what has been seen in the global wholesale and investment banking market, there will probably be about ten relevant players on the German market.[55] Due to their competitive advantage in the fluid capital system, it can further be expected that the most international domestic private banks and foreign institutions with significant lending capabilities will be the most successful.[56]

### *V.2 (Re-)Action of the regulatory bodies*

The German regulatory bodies have acknowledged that the migration to the capital markets is indispensable for the competitiveness of its domestic corporations and financial institutions. Therefore, the German legislator has initiated numerous commissions and laws that are target to the modernization of the framework of the financial markets.

One of the most important measures – the German Corporate Governance Code – has been introduced in 2002. It has its legal foundations in the also newly created Transparency and Disclosure Law. The aim of the Code is to make Germany's corporate governance rules more transparent to both national and international investors, thus strengthening confidence in the management of German corporations.[57] Among others the Code addresses criticisms such as the inadequate transparency of corporate governance and the inadequate independence of German supervisory boards. In order to adapt the Code to market changes, a Government Commission

[55] See Table A3 in the Appendix on Global Wholesale Banking and Investment Banking Market Concentration.
[56] See Table A4 in the Appendix on Global Wholesale Banking and Investment Banking Rankings.
[57] Cromme, Gerhard. 2003. German Corporate Governance Code.

reviews it annually. This Code and the relating law create an important framework that will foster transparency and investors' understanding.

Furthermore, the legislator has reformed the tax treatment of both private equity firms and securitization transactions. For the former a law was introduced that creates legal security and will thereby attract investors who have previously shied away from the German market.[58] In mid-2003, the legislator passed a bill that grants a preferential treatment of the "true sales" of assets in securitization transactions. This law will increase the competitiveness and the international comparability of the German securitization market.

Prior to 2004, hedge funds were not allowed to set up and market their business in Germany. According to the so-called "Investment Fund Modernization Law", this is now possible. As a result of this law, the market for alternative investments is expected to grow to €100 billion within the next five years.[59] Although this development will not have a direct effect on corporate finance, the increased liquidity will make the German capital market more efficient.

In summary, the German regulators have shown their determination to prepare the banks and corporations for the ongoing change of the markets. Most of the introduced measures have got positive feedback from the parties involved. It is now up to the market players to effectuate the internal adjustments needed for a successful transition.

### *V.3 Impact on the Hausbank system and corporate governance*

Historically, the transparency and the disclosure of German corporations have been quite limited. This can be explained by the fact that most corporations were family owned and that they usually covered their capital needs through their banks. Those banks obtained the relevant

[58] BVK e.V. 2003. BVK begrűβt BMF-Schreiben zur Besteuerung von Private Equity-Fonds.
[59] BAI e.V. 'Alternative investments' comprises both hedge fund and private equity investments.

information for their lending decisions through their close relationship with the management and / or their membership in the supervisory board.

Due to the preferential relationship with their Hausbank, corporations were usually provided with the needed liquidity, even in difficult times. However, in the current competitive and regulatory environment (e.g. Basel II), banks are not able anymore to give this "option for liquidity" without compromising their profitability. Corporations therefore have to be aware that they need to replace the Hausbank system in one of two ways. First, this can be done by adequately priced loans from banks which gradually loose their insights through the board memberships. Second, the capital markets provide a wide variety of financing opportunities even for medium-sized companies.[60]

However, transparency and proper monitoring are prerequisites to take advantage of the two, aforementioned financing alternatives. As a result of this, there is both a strong need and a trend among German corporations to organize their corporate governance policies according to international standards. The German Corporate Governance Code described in V.2 is the basis of those changes. One of its major recommendations is the creation of a capital markets oriented disclosure policy. This will create the transparency that is needed to regularly cover the corporations' financing needs on the public market.

## VI. SUMMARY

The analysis has shown that global competition and pressures for systemic change are pushing the German dedicated capital system to the Anglo-American fluid capital system.

[60] Walter, Ingo / Smith, Roy C. 2000. High Finance in the EURO-Zone, p. 92.

The dedicated capital system has mainly historical reasons and is based on close bank-corporate relationships. Through those relationships with its "Hausbank" German corporations have been able to secure debt as well as equity financing without getting exposed to the capital markets. This setup resulted in a marketplace that was heavily based on the insights of the powerful but hardly profitable banks and that was characterized by underdeveloped capital markets.

In recent years, however, changes in the competitive and legal environment have been promoting the transition towards the market system. As a result of those changes the domestic banking system cannot satisfy the financing needs of the German economy anymore. This has put pressure on companies to reorganize their corporate finance strategy by seeking broader ranges of financing. The growth of the institutional investor pools and the EURO launch have supported this reorganization.

The quantitative analysis of the instruments on the German capital market has proven that the expected transition process is actually happening. This holds not only true for the shift from bank lending to debt securities but also for alternative funding instruments such as private equity or securitization.

In order to be successful in this changing market, intermediaries and corporations have to adapt to the new system. With regard to financial institutions, the analysis has shown that it will be especially the U.S. firms and a handful of capital markets oriented German banks which will improve their market position.

With the support of the regulators, German corporations also try to adjust to the changing system. Namely, they are improving their corporate governance and transparency in order to be able to take advantage of the opportunities that capital markets oriented financing is offering.

In summary, this analysis has shown that Germany has already departed in the transition process from the dedicated capital system to the fluid capital system. Although there are still structural and cultural obstacles the further migration can be expected. If this is executed well, it will increase the financial competitiveness of German corporations as well as financial institutions. Furthermore, it will have a significant impact on the way corporate finance is done in continental Europe.

# APPENDIX

**Table A1: Bank Lending in Germany[61]**

| | Bank lending to corporate and private households *(in EUR millions)* | | | | | |
|---|---|---|---|---|---|---|
| | Total | %-Change | As % of GDP | Short term | Long term | GDP |
| 1995 | 1,722,760 | | *95.7%* | 298,570 | 1,424,189 | 1,800,980 |
| 1996 | 1,853,112 | *7.6%* | *102.1%* | 315,545 | 1,537,568 | 1,815,255 |
| 1997 | 1,968,088 | *6.2%* | *106.8%* | 319,981 | 1,648,107 | 1,842,722 |
| 1998 | 2,118,593 | *7.6%* | *113.0%* | 338,094 | 1,780,498 | 1,874,094 |
| 1999 | 2,272,536 | *7.3%* | *119.0%* | 328,889 | 1,943,647 | 1,909,550 |
| 2000 | 2,386,848 | *5.0%* | *121.2%* | 348,217 | 2,038,631 | 1,968,620 |
| 2001 | 2,426,914 | *1.7%* | *122.1%* | 356,702 | 2,070,212 | 1,988,420 |
| 2002 | 2,411,607 | *-0.6%* | *121.0%* | 331,936 | 2,079,671 | 1,992,750 |
| 2003 | 2,414,466 | *0.1%* | *121.4%* | 317,455 | 2,097,011 | 1,988,820 |

**Table A2: Exemplary Shareholdings of Allianz AG[62]**

| Selected Holdings | Beginning 2000 | End of 2003 | | | |
|---|---|---|---|---|---|
| (Allianz + Dresdner) | (% owned) | < 15% | < 10% | < 5% | < 0% |
| Monachia | 48.7 | | | | X |
| Beiersdorf | 38.4 | | | X | |
| Munich Re | 33.3 | X | | | |
| Hypovereinsbank | 20.5 | | | | X |
| IKB | 19.8 | | | | X |
| Karstadt | 16.5 | X | | | |
| Dyckerhoff | 15.4 | | | | X |
| Hauck & Aufhäuser | 14.7 | | | | X |
| E.ON | 12.1 | | | X | |
| BASF | 11.3 | | | X | |
| RWE | 11.2 | | X | | |
| Leifheit | 10.1 | | | | X |
| Deutsche Börse | 8.2 | | | | X |
| Continental | 7.8 | | | X | |
| BMW | 6.3 | | | X | |
| Deutsche Bank | 5.6 | | | X | |

[61] Deutsche Bundesbank. 2002. Monatsbericht; Deutsche Bundesbank. 2004. Bankenstatistik.
[62] Allianz AG. 2003. Staying the Course.

**Table A3: Global Wholesale Banking and Investment Banking Market Concentration[63]**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Top ten firms** | | | | | | | | | | | | |
| % Market share | 56.0% | 64.2% | 62.1% | 59.5% | 55.9% | 72.0% | 77.9% | 77.0% | 80.0% | 741.0% | 71.3% | 72.0% |
| Herfindahl Index | 327.8 | 459.4 | 434.1 | 403.0 | 464.6 | 572.1 | 715.9 | 664.0 | 744.0 | 603.0 | 549.4 | 595.3 |
| Number of firms from: | | | | | | | | | | | | |
| USA | 5 | 9 | 9 | 9 | 8 | 8 | 7 | 8 | 7 | 7 | 7 | 7 |
| Europe | 5 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 |
| Japan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Top twenty firms** | | | | | | | | | | | | |
| % Market share | 80.5% | 75.6% | 78.1% | 76.0% | 81.2% | 93.3% | 97.1% | 96.3% | 97.5% | 91.5% | 91.0% | 93.1% |
| Herfindahl Index | 392.7 | 478.4 | 481.4 | 439.5 | 517.6 | 620.9 | 764.0 | 709.0 | 784.0 | 639.0 | 591.1 | 603.4 |
| Number of firms from: | | | | | | | | | | | | |
| USA | 8 | 15 | 15 | 14 | 14 | 13 | 11 | 12 | 8 | 8 | 9 | 9 |
| Europe | 11 | 4 | 5 | 5 | 6 | 7 | 8 | 8 | 11 | 11 | 11 | 11 |
| Japan | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |

**Table A4: Global Wholesale Banking and Investment Banking Rankings 2003[64]**

| Firm Rank 2003 | Firm Rank 2002 | Syndicated Bank Loans | Global Debt U/W & Private Placements | Global Equity U/W & Private Placements | M&A Advisory Completed | MTNs Arranged | Total | Share |
|---|---|---|---|---|---|---|---|---|
| 1 JPM-Chase-Bank One | 1 | 426,870 | 345,446 | 31,728 | 243,370 | 32,277 | 1,079,691 | *11.5%* |
| 2 Citigroup | 2 | 251,706 | 449,984 | 42,911 | 240,672 | 28,333 | 1,013,606 | *10.8%* |
| 3 Goldman Sachs & Co | 3 | 19,152 | 225,333 | 41,541 | 446,222 | 26,103 | 758,351 | *8.1%* |
| 4 Morgan Stanley | 7 | 10,180 | 317,365 | 37,134 | 275,730 | 13,500 | 653,909 | *7.0%* |
| 5 Merrill Lynch & Co Inc | 6 | 14,699 | 238,287 | 50,234 | 238,723 | 85,662 | 627,605 | *6.7%* |
| 6 Deutsche Bank AG | 4 | 92,974 | 282,330 | 19,262 | 136,940 | 30,215 | 561,721 | *6.0%* |
| 7 Banc of America / Fleet Boston | 8 | 243,630 | 189,618 | 13,106 | 94,303 | 13,659 | 554,316 | *5.9%* |
| 8 Credit Suisse First Boston | 5 | 41,224 | 290,722 | 23,614 | 182,823 | 8,011 | 546,394 | *5.8%* |
| 9 Lehman Brothers | 9 | 15,277 | 306,152 | 14,524 | 163,099 | 9,100 | 508,152 | *5.4%* |
| 10 UBS | 10 | 13,017 | 243,374 | 35,459 | 168,378 | - | 460,228 | *4.9%* |
| 11 ABN AMRO | 12 | 48,739 | 99,043 | 2,713 | 38,348 | 74,344 | 263,187 | *2.8%* |
| 12 Barclays Capital | 13 | 78,746 | 134,953 | 511 | - | 32,165 | 246,375 | *2.6%* |
| 13 Bear Stearns & Co Inc | 11 | - | 173,081 | 3,775 | 39,556 | 20,896 | 237,308 | *2.5%* |
| 14 BNP Paribas SA | 14 | 50,079 | 81,343 | 3,717 | 57,915 | - | 193,054 | *2.1%* |
| 15 Royal Bank of Scotland | 18 | 38,747 | 142,791 | - | - | 3,511 | 185,049 | *2.0%* |
| **Industry Total** | | **2,166,310** | **4,290,434** | **412393** | **1639280** | **884824** | **9,393,241** | |
| *Top 5 as % of Total* | | *33.4%* | *36.7%* | *49.4%* | *88.1%* | *21.0%* | *44.0%* | |
| *Top 15 as % of Total* | | *62.1%* | *82.0%* | *77.7%* | *141.9%* | *42.7%* | *84.0%* | |

[63] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.
[64] Walter, Ingo. European Economic Transition, Capital Markets and Investment Banking Competition. 2004.

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