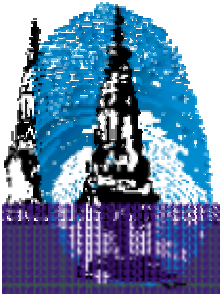


# LEFIC

Copenhagen Business School  
Solbjerg Plads 3  
DK-2000 Frederiksberg



## Center for Law, Economics and Financial Institutions at CBS

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### **Evaluating the Nordea Experiment: Evidence from Market and Accounting Data**

Lawrence G. Goldberg  
Richard J. Sweeney  
Clas Wihlborg

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Lawrence G. Goldberg <sup>a</sup>

Richard J. Sweeney <sup>b</sup>

Clas G. Wihlborg <sup>c</sup>

*In Memory of Larry Goldberg who initiated and inspired our joint research on banking in the Nordic countries*

**Abstract:** This paper discusses results and difficulties of comparing banks' performance based on publicly available data for the case of Nordea, a pan-Nordic bank created through mergers of important national banks. The objective of the performance comparison is to determine whether Nordea's unique strategy of functional intergation across four countries can be advantageous. For stock-market data, however, Nordea does not have stable betas on risk factors, as illustrated by market betas, and thus the comparables method must be used with great care. The Nordea holding company performed about as well as the comparables, both in terms of stock-market and accounting data. Nordea banks in individual countries outperformed comparable holding companies; by arithmetic, Nordea non-bank operations are not as profitable as its bank operations. In event studies, the market views Nordea's acquisitions as adding value.

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<sup>a</sup> University of Miami. Deceased, March 11, 2005.

<sup>b</sup> The McDonough School of Business, Georgetown University. 1-202-687-3742. e-mail: sweeneyr@georgetown.edu

<sup>c</sup> Copenhagen Business School. + 45 3815 3628. e-mail: cw.fi@cbs.dk

## **Evaluating the Nordea Experiment: Evidence from Market and Accounting Data**

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# **Evaluating the Nordea Experiment: Evidence from Market and Accounting Data**

## **1. Introduction**

Nordea provides a virtually unique experiment in cross-border banking. Most cross-border banks are large relative to the market in their home countries but small relative to their host-country markets. Further, the degree of integration across home- and host-country operations is typically rather small—back office and information operations may be integrated, and the bank typically tries to use lessons learned in the home country to improve techniques in its host-country operations, but seldom more. Many financial institutions have portfolio investments in financial institutions outside their home countries, some have branches in foreign countries mainly to provide services there to their major home-country customers, and some have full-service subsidiaries that are, however, substantially smaller than home country operations. In contrast, Nordea's strategy is to provide a full range of financial services throughout each of the Nordic countries—Denmark, Finland, Norway and Sweden—in an integrated organization as if the four countries were one. Nordea was built by merger and acquisition of on-going well-established full-service financial institutions with sizeable market share. Nordea's strategy is built on the assumption that there are economies of scope and scale in financial services that cannot be reaped even by a bank that is large relative to any single Nordic market, but can be reaped by a bank with large operations in each Nordic country. In the future, other banks may adopt the Nordea full-service multiple-country strategy, especially if Nordea's experiment proves successful.

There are pro and con arguments about whether Nordea's strategy is likely to work. On the one hand, a big Nordic bank is small relative to big banks in the U.K., Germany, France, the

U.S., ... Some argue that, ultimately, such Nordic minnows cannot compete against these large-country whales, because the whales reap economies of scale and scope, and possibly can save on taxes by internalizing operations. On the other hand, some argue that individual Nordic countries are niches, and niche players can be quite profitable if they are nimble and sophisticated. They can outperform any big foreign bank that tries to move in. In this view, the economies of scale and scope are much oversold and if they exist they cannot offset the advantages niche-players have in their knowledge and skills in their niches. This implies that a Nordicization strategy such as Nordea's is likely to fail—it incurs extra costs in pursuing economies of scale and scope that are likely not important and perhaps forfeits nice advantages.

Nordea's experiment raises a host of questions regarding, for example, transnational regulation, the source and existence of economies of scope and scale in financial services and the appropriate mix of uniformity across countries for some services versus the use of national banking practices in each country for other services. A fundamental question is the economic success of Nordea's experiment. It may well be too early to give a satisfactory evaluation of Nordea's economic success. First, a number of the constituent financial institutions from which Nordea was built were in need of improvements when incorporated into Nordea. Second, Nordea is an on-going experiment in which previously foreseen problems are still being addressed, for example, optimal legal and functional organization. Third, unforeseen problems arise in any experiment, and Nordea is still addressing these, for example, problems due to the Nordic countries' different legal and tax systems. Further, an observer must make allowances for factors specific to Nordea's current management team; maybe the team is so good that it can make a bad strategy work; or maybe the team is sub-par and unable to make a fine strategy work as it should.

Nevertheless, the Nordea experiment is of sufficient interest that it is useful to present results of evaluating Nordea's economic track record thus far. Further, in evaluating Nordea, comparables play a large role, and this paper lays out some of the serious difficulties that must be faced in using comparables to evaluate Nordea, and future possible cross-border banking experiments, and provides possible solutions to the problems encountered below in using comparables.

The results for Nordea are mixed. Nordea is clearly not an outstanding success relative to a variety of benchmarks used here, but Nordea is hardly a failure. Further, Nordea seems to be doing relatively better in some countries than in others, adding further complications to the picture. Finally, Nordea's banking activities appear to be substantially more profitable than its other activities, though the evidence for Nordea's profitability in banking must be taken as tentative, because it comes from evaluating Nordea *banks* relative to *holding companies* of competitors. In considering the profitability of Nordea bank, it should be noted banking is the least integrated product area across the four countries, and thus a candidate for earning rents.

The main analytical tool is to evaluate Nordea's performance in terms of stock-market rates of return and accounting rates of return relative to a group of comparable Nordic financial institutions. Use of comparables as a benchmark is common in firm valuation and in event studies; indeed, whatever other methods a study might use, a complete study includes results from using comparables as a benchmark. In the Nordea case, however, the use of comparables as a benchmark is difficult at a minimum and many may view it as highly questionable. This is because analysis below shows that the underlying parameters in the Data Generating Process for Nordea rates of return shift importantly over time, but the parameters in the DGP for the comparables do not shift as much or in the same way. In particular, the required rate of return for

the Nordea holding company shifts importantly a number of times over the sample period, but the required rate of return for the comparables index shows much less important shifts. Thus, substantial variations in Nordea's stock-market performance relative to the comparables may be explained in important part by variations in Nordea's required rate of return. This explanation still leaves the puzzle, however, of why Nordea's management adopted policies that led to large swings in the holding company's required rate of return.

## **Section 2. Data and Data Issues**

The Nordea holding company that exists in 2005 was formed by combining four Nordic financial institutions. Nordbanken, a Swedish institution, announced the planned merger with Merita, a Finnish institution, on October 12, 1997, and the deal was completed on November 26, 1997. The combined Norbanken plus Merita (Nordic Baltic Holding Company) announced the attempt to acquire Unidanmark, a Danish institution, and the attempt's success, on the same day, March 6, 2000. Finally, the combined bank (MeritaNordbanken) announced its attempt to acquire Christiana Bank, a Norwegian institution, on September 24, 1999 (observation 1242) and the attempt's success on October 16, 2000 (observation 1518).

In evaluating Nordea's performance, two types of comparisons are used. The first is financial rates of return from the Nordea holding company versus rates of return (a) from the competitors in the Nordic countries and (b) from measures of the world market. The full names of the Nordic comparables are listed in Appendix A; all appendices are omitted from this paper but are available from the authors. Data from the Nordic competitors allow construction of benchmarks against which Nordea can be measured. The Data Appendix (Appendix B) provides information on the sources of data for Nordea and its competitors and on the various benchmarks; the benchmarks are also discussed in the text below. The second type of

comparison is accounting data for Nordea versus a number of competitors from each of the Nordic countries. Though Nordea provides accounting data on its banking operations in individual countries, its competitors do not break out banking operations; hence, Nordea banks are evaluated relative to competitors' holding companies, thus allowing some inferences that are more limited and less solid than if data on competitors' banks were available.

The various Nordea organizations and the financial institutions used as comparables in this study are listed in Appendix A; there are 16 comparable financial institutions, six in Denmark, four in Finland, three in Norway and three in Sweden. The Appendix B (the Data Appendix) discusses how they were selected. The criteria emphasized comparable size and lines of business, and aimed at having a minimum of five comparables from each country. In practice, it was impossible to find as many comparable as the initial research design called for, and essentially all Nordic financial service firms were included in the comparables if they were large enough, had a full line of financial services and had an adequate number of time-series observation. Note that the Nordea banks and comparable banks cover approximately 95 percent of the banking operations in each of the Nordic countries. The exact definitions of the variables and ratios used in this paper's analysis are in Appendix C. As signaled by the differences in Appendix C in variable definitions across the Nordic countries, the four countries' accounting systems differ importantly; further, the differences are greater than those Appendix C reveals. Without access to internal data, it is impossible to restate the four countries' banks' accounting data on the same basis. Thus, this paper uses the only data available, in the belief that if the data are treated with care and caution, cross-country comparisons can be useful. Note that such data problems are general in cross-country bank studies; further, similar problems arise in any cross-country study of firms, and is not necessarily worse for banks than for other types of firms.



### 3. Nordea's Financial-Market Performance

This section examines financial markets' judgement of Nordea's economic performance. The analysis begins by examining Nordea holding company<sup>1</sup> rates of return relative to an index of comparables. When using accounting data, the subject firm's results are typically examined relative to comparables, and this is done below. If the comparables approach is also used to evaluate financial performance, the researcher can judge financial and accounting results on the same basis; further, in the 1990s it became fairly standard to use comparables for judging performance and for examining the financial-market wealth effects of various events. For both reasons, this paper initially uses the comparables approach to evaluate Nordea's financial-market performance; Lee (1997) and Lyons et al. (1999) discuss the use of comparable firms in evaluating performance.

*Nordea's Performance Relative to Comparables.* This section begins by comparing the log of the relative wealth index of Nordea, measured in Danish kronor, to an equally-weighted average of the log of the relative wealth indices of 11 comparables<sup>2</sup>, also measured in Danish kronor; note that abnormal returns are independent of the currency in which the returns are calculated, and this is so whether the benchmark is comparables' rates of return or market rates of return.<sup>3</sup> Of the 16 comparables available for this study, only 11 have price and dividend data available that allow them to be used as comparables for Nordea rates of return.

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<sup>1</sup> The Nordea parent company went by a variety of names over time; the evolution of the company and its names are discussed below.

<sup>2</sup> This approach means that the first difference of the the comparables index is an equally weighted average of the eleven log rates of return. An alternative is to take the log of the average of the relative wealth indices of the 11 countries; the first difference of this log index is not an equally weighted average of the log rates of return of the eleven comparables.

<sup>3</sup> This can be seen by supposing that it is desired to convert the rates of return to another currency, say the U.S. dollar. Each rate of return  $[1 + (P_{j,t} + \text{Div}_{j,t} - P_{j,t-1}) / P_{j,t-1}]$  can be divided by  $(1 + \Delta S_t / S_{t-1})$  where  $S_t$  is the number of DKK per USD, to give  $[1 + (P_{j,t} + \text{Div}_{j,t} - P_{j,t-1}) / P_{j,t-1}] / (1 + \Delta S_t / S_{t-1})$ . The natural log is  $\ln[1 + (P_{j,t} + \text{Div}_{j,t} - P_{j,t-1}) / P_{j,t-1}] - \ln(1 + \Delta S_t / S_{t-1})$ . If abnormal returns in USD are formed, the abnormal return is  $\ln[1 + (P_{j,t} + \text{Div}_{j,t} - P_{j,t-1}) / P_{j,t-1}] - \ln(1 + \Delta S_t / S_{t-1}) - \{\Delta \ln \text{RWI}_{C,t} - \ln(1 + \Delta S_t / S_{t-1})\} = \ln[1 + (P_{j,t} + \text{Div}_{j,t} - P_{j,t-1}) / P_{j,t-1}] - \Delta \ln \text{RWI}_{C,t}$ .

A relative wealth index supposes that one krone is invested at the start of the period in a given asset, and shows how the value of this krone changes over time, due to price appreciation and dividend payments. The relative wealth index for asset  $j$  at time  $t$  is

$$\begin{aligned} RWI_{j,t} &= [1 + (P_{j,1} + Div_{j,1} - P_{j,0}) / P_{j,0}] [1 + (P_{j,2} + Div_{j,2} - P_{j,1}) / P_{j,1}] \\ &\dots [1 + (P_{j,T} + Div_{j,T} - P_{j,T-1}) / P_{j,T-1}] \\ &= \prod_{h=1}^t [1 + (P_{j,h} + Div_{j,h} - P_{j,h-1}) / P_{j,h-1}]. \end{aligned}$$

The natural logarithm of  $RWI_{j,t}$  is

$$\begin{aligned} \ln(RWI_{j,t}) &= \ln[1 + (P_{j,1} + Div_{j,1} - P_{j,0}) / P_{j,0}] + \ln[1 + (P_{j,2} + Div_{j,2} - P_{j,1}) / P_{j,1}] \\ &\dots + \ln[1 + (P_{j,t} + Div_{j,t} - P_{j,t-1}) / P_{j,t-1}] \\ &= \sum_{t=1}^T \ln[1 + (P_{j,t} + Div_{j,t} - P_{j,t-1}) / P_{j,t-1}] = \sum_{t=1}^T \ln[(P_{j,t} + Div_{j,t}) / P_{j,t-1}]. \end{aligned}$$

The benchmark rate of return based on the eleven comparables is an equally weighted average of the  $\Delta \ln(RWI_{j,t})$ ,

$$\begin{aligned} R_{C,t} &= (1/11) \sum_{j=1}^{11} \Delta \ln(RWI_{j,t}) = (1/11) \sum_{j=1}^{11} \ln[1 + (P_{j,t} + Div_{j,t} - P_{j,t-1}) / P_{j,t-1}] \\ &= (1/11) \sum_{j=1}^{11} \ln[(P_{j,t} + Div_{j,t}) / P_{j,t-1}]. \end{aligned}$$

The overall period, which ends on October 8, 2005, has 2591 observations for Nordea and 2811 observations for the comparables.<sup>4</sup> Figure 1.A gives a comparison of Nordea and comparables (log) relative wealth indices over the period 1995 through 2003. This was the period initially examined, and it reveals important instabilities which carry over to the additional data for 2004 through October 8, 2005, which were used to update the sample. Each series is normalized to set its index equal to 100 (and the indices in natural logs to 4.6051702) at the start of the data for Nordea (November 2, 1995); the two series are then plotted on the same scale. As

<sup>4</sup> The first 221 (220) observations for the index (rate of return) are missing for Nordea. This corresponds to the start of data availability for Nordbanken, and reflects Data Stream's decision that Nordbanken rather than Merita is the initial Nordea holding company (Merita data are available for the full 2811 days). Without examining the data, it was decided to follow Data Stream's approach. The comparables rates of return start at day 1, even though FNSPK starts at 116; the decision to start with 10 and then go to 11 comparables was made before examining the data.

Figure 1.A illustrates, Nordea outperformed the comparables in the early part of the sample period, in the sense of having larger average rates of return, but underperformed in the later part. Figure 1.B shows that Nordea performed roughly as well as the comparables for the sample after 2003; the data in Figure 1.B are broken into 1995 through 2000, 2001 through 2003, and 2004 through October 7, 2005. As some readers have noted, the last of Nordea's major acquisitions was completed on October 16, 2000, (see Section 2 for the timing of Nordea's acquisitions) and thus Nordea's overperformance in the sample period 1995-2000 may be related to these acquisitions. The market's reactions to Nordea acquisitions are discussed in detail below.

The relationship in Figure 1.A can be seen in two other sets of figures. Figures 2 and 3 give the rates of return on Nordea and the comparables, in graphical and tabular forms for the sample period 1995-2003, in decimal percent per day. For 1995-2003, Nordea and the comparables have very similar mean rates of return, for Nordea 18.7%/annum ( $= 0.000748 \times 100 \times 250$ ), and for the comparables 17.35%/annum ( $= 0.000694 \times 100 \times 250$ ), calculated for years with 250 trading days.<sup>5</sup> Descriptive statistics for the 784 days' worth of observations from 2001-2003 are shown in Figures 4 and 5 for both Nordea and the comparables. The mean rate of return for Nordea is -7.15%/annum, and for the comparables 10.25%/annum. Thus, Nordea underperformed by 17.40%/annum over this period. (The mean rates of return for Nordea and the comparables for the earlier period that omits the 2001-2003 are 33.80%/annum and 20.825%/annum, or Nordea outperformed the comparables by 12.975%/annum.) On the one hand, the rates of return on financial institutions as a whole are notably lower in 2001-2003,

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<sup>5</sup> The comparables have a median of 0.000852, reflecting the left skewness of the comparable rates of return; Nordea has a median of zero, reflecting the right skewness on its rates of return. The Nordea and comparables standard deviations of rates of return are 0.023632 and 0.009511, or 37.365473%/annum and 15.038211%/annum; the difference reflects in part the fact that the comparables are an average and thus show diversification effects that reduce the average's variance. Both distributions show positive and significant excess kurtosis (fat tails relative to a normal distribution). Further, from the Jarque-Bera statistic, both distributions are far from normal.

measured by both Nordea and the comparables. On the other hand, Nordea underperformed the comparables in the sample period 2001-2003.

Two possible interpretations of the data suggest themselves. First, assuming that Nordea and the comparables have the same expected/required rates of return over the sample period 1995-2003, the comparables approximately matched their required rate of return and Nordea beat its (and the comparables') required rate of return over the sample period 1995-2000, but Nordea underperformed relative to its required rate of return in the sample period 2001-2003. Second, consider a hypothesis which is investigated below. Nordea's performance approximately matched its required rate of return in both sample periods, 1995-2000 and 2001-2003, but Nordea's required rate of return was substantially lower in the second sample period. Turn to evidence relative to this second possibility.

***Parameter Instability.*** The results in Figures 1-5 suggest that (a) the relationship between Nordea rates of return and comparables rates of return may be unstable, and related (b) the use of comparables as the benchmark may not be appropriate. Though the use of comparables as a benchmark is common, its underlying assumptions do not always hold. In particular, if the abnormal return is formed as  $AR_{N,t} = R_{N,t} - R_{C,t}$ , where  $R_{N,t}$  is the rate of return on Nordea at  $t$  and  $R_{C,t}$  the benchmark rate of return on the comparables, the implicit assumption is that the beta for each priced, economy-wide factor is the same for Nordea and the comparables, or  $\beta_{N,k,t} \approx \beta_{C,k,t}$  for  $k = 1, K$ , where  $K$  is the number of priced factors, so that both Nordea and the comparables have the same required rate of return.<sup>6</sup> This assumption is not valid in the Nordea case, as seen below by examining market models.<sup>7</sup>

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<sup>6</sup> Let the expected/required rate of return be  $ER_{j,t} = E_0 + \sum_{k=1}^K \beta_{j,k,t} \lambda_k$ , where  $E_0$  is the required rate of return on a portfolio with no beta risk,  $\beta_{j,k,t}$  the beta of asset  $j$  on risk factor  $k$  at  $t$ , and  $\lambda_k$  the risk premium on risk factor  $k$  (assumed time-constant), and exact factor pricing is assumed. The actual return is  $R_{j,t} = E_0 + \sum_{k=1}^K \beta_{j,k,t} \lambda_k + \sum_{k=1}^K \beta_{j,k,t} \delta_{k,t} + \epsilon_{j,t}$ , where  $\delta_{k,t}$  is the surprise in risk factor  $k$  at time  $t$ , and  $\epsilon_{j,t}$  the idiosyncratic return to  $j$ . If an index of

Table 1 shows three types of regressions for four sub-periods. Nordea rates of return are regressed on market rates of return and on comparables rates of returns, and comparables rates of return are regressed on market rates of return. Results are reported for the sample periods 1995 through 2003, for 1995 through 2000, for 2001 through 2003, and for 2004 through October 7, 2005. The market proxy is the Financial Times world market index including dividends, converted from U.S. dollars to Danish kroner. (In experiments, alternative market indices do not affect major conclusions.) These market models can be thought of as simplified versions of linear multi-factor asset-pricing models, where non-market, priced risk factors are omitted;<sup>8</sup> Sweeney and Warga (1986) discuss multi-factor asset-pricing models.

***Instability in Nordea's Market Beta.*** The market betas for both the comparables and Nordea, but especially Nordea, show instability over time,<sup>9</sup> as illustrated in Table 1, columns A and C: for the 1995-2003 sample period and its two sub-periods, the betas for Nordea are [0.327234, 0.550798, 0.083736] and for the comparables are [0.394593, 0.419814, 0.365004]. For the 1995-2003 period, the market beta estimates are 0.394593 for the comparables and

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comparables is used to adjust  $R_{j,t}$ , the abnormal return is  $AR_{j,t} = R_{j,t} - R_{C,t} = E_0 + \sum_{k=1}^K \beta_{j,k,t} \lambda_k + \sum_{k=1}^K \beta_{j,k,t} \delta_{k,t} + \varepsilon_{j,t} - (E_0 + \sum_{k=1}^K \beta_{C,k,t} \lambda_k + \sum_{k=1}^K \beta_{C,k,t} \delta_{k,t} + \varepsilon_{C,t})$ . If  $\beta_{j,k,t} \approx \beta_{C,k,t}$  for all  $k,t$  then  $ER_{j,t} - ER_{C,t} = E_0 + \sum_{k=1}^K \beta_{j,k,t} \lambda_k - E_0 - \sum_{k=1}^K \beta_{C,k,t} \lambda_k \approx 0$ , and  $AR_{j,t} \approx \sum_{k=1}^K (\beta_{j,k,t} - \beta_{C,k,t}) \delta_{k,t} + (\varepsilon_{j,t} - \varepsilon_{C,t}) \approx (\varepsilon_{j,t} - \varepsilon_{C,t})$ . Assuming that the comparables portfolio is well diversified, then  $\varepsilon_{C,t} \approx 0$  and  $AR_{j,t} \approx \varepsilon_{j,t}$ . The method of comparables is designed to detect significant averages of  $\varepsilon_{j,t}$ . But consider the effects of  $\beta_{j,k,t} \neq \beta_{C,k,t}$ , for example,  $\beta_{j,k,t} > \beta_{C,k,t}$ . If  $\delta_{k,t} = 0 = \varepsilon_{j,t} = \varepsilon_{C,t}$  so the analyst would expect expected  $AR_{j,t} = 0$ , instead  $AR_{j,t} = (\beta_{j,k,t} - \beta_{C,k,t}) \lambda_k > < 0$  as  $\lambda_k > < 0$ ; thus,  $j$  will appear to out- or under-perform the comparables simply because it has higher beta risk. Note that if the average  $AR_{j,t}$  is positive, this is interpreted as the average  $\varepsilon_{j,t}$  being positive, and the firm earning a higher average return over the period than can be explained by risk. Note further that if the market reacts to an event such as an acquisition by showing a sequence of say positive  $\varepsilon_{j,t}$  before and after the event, this can be interpreted as the market efficiently learning about the event and its implications, or as slow adjustment due to inefficiency.

<sup>7</sup> A closely related issue is the stability of the parameters in the data generating processes for both Nordea and the comparables: if the DGPs show temporal instability, this instability must be accounted for if parameters are to be correctly estimated in investigating whether  $\beta_{N,k,t} \approx \beta_{C,k,t}$ .

<sup>8</sup> Experiments were tried on using some multi-factor models to explain Nordea rates of return, essentially using levels and first differences of interest rates (see Sweeney and Warga 1986). In models that included the market, none of the variables was statistically significant.

<sup>9</sup> In experiments, adding lagged values of the market term to allow for possible thin-trading typically does not significantly affect the sum of market betas, sometimes raising and sometimes reducing the point estimates of the market beta.

0.327234—20.58% less—for Nordea. For the comparables, sub-period beta estimates range from a high of 0.419814 in the first sub-period to a low of 0.365004 (15.02% less) in second sub-period (2001-2003). Nordea betas show a substantially greater range, from a high of 0.550798 in the first sub-period to a low of 0.083736 [less by 557.78% =  $(0.550798 / 0.083736 - 1) \times 100$ ] in the second sub-period, and the data reject the null that the betas are the same across the two sub-periods at the 0.00004 significance level. The comparables market beta thus shows some instability, but is relatively stable compared to the Nordea beta.<sup>10</sup>

It might be wondered whether the market beta is stable across the sample period 1995-2000: when the sample period 1995-2000 is broken into 1995-1997 and 1998-2000, the estimated betas (t-values) [ $R^2$ s] are 0.548119 (4.555669) [0.057358] and 0.550374 (5.560694) [0.078781], consistent with market-beta stability. It should be noted that the first of Nordea's three major acquisitions started on October 12, 1997, and the third was completed by October 16, 2000; thus, the stability of the beta across sub-periods of 1995-2000 strongly suggests that the acquisitions were not per se the cause of beta instability.

***Jensen's Alpha.*** Jensen's alpha is a common measure of performance. In the Nordea market-model regressions in Table 1, the issue is whether the estimated intercept is significantly different from  $(1 - \beta) r_f$ , where  $\beta$  is the market beta and  $r_f$  is the risk-free rate. For both the 1995-2000 and 2001-2003 sample periods, the estimated intercept is not significantly different from  $(1 - \beta) r_f$  at conventional significance levels, where a short-term DKK rate is used as the risk-free rate.

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<sup>10</sup> If the sample period 1995-2000 is taken as the base case, data reject the null that the true beta is the 2001-2003 sample period estimate of 0.365004 at the 9.01% significance level. If the sample period 2001-2003 is taken as the base case, data reject the null that the true beta is the 1995-2000 sample period estimate of 0.419814 at the 9.54% level.

**Updating the Data.** After an earlier version of this paper analyzed the data for 1995 through 2003, the data were updated to include data for 2004 through October 8, 2005. For the sample period 2004-2005, the Nordea market beta jumps to 0.497619 with a t-value of 6.006368, and  $R^2 = 0.091248$ . Thus, the instability in Nordea betas detected by examining the sub-periods 1995-2000 and 2001-2003 continues in the latest sub-period considered. (The data strongly reject the null that the Nordea betas are the same in the 2001-2003 and the 2004-2005 sub-periods. The data cannot reject the null, however, that the betas are the same in the 1995-2000 and 2004-2005 sub-periods.<sup>11</sup>)

The results above are consistent with the view that Nordea did not outperform the comparables in the 1995-2000 period or underperform in the 2001-2003 period, but rather the apparent performance arose from temporal instability in Nordea's required rate of return.

**Comparables as the Benchmark in Regressions.** Results from regressing the Nordea holding company rate of return on the comparables rate of return are consistent with these market-model results and also with the implications of Figures 1.A and 1.B. In Table 1, column B, for the first sub-period 1995-2000, the Nordea and comparables rates of return series tended to move together (a slope of 1.172931 with a t-value of 16.95523, and an  $R^2 = 0.272837$ ), but in the period 2001-2003, the series show essentially no relationship—indeed the slope is negative, -0.043613, and insignificant (a t-value of -0.406356), with an  $R^2 = 0.000259$ . Thus, in the first sub-period, the generally positive movements in comparables are matched by more than proportionate movements in Nordea's total return index, but in the second sub-period, the

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<sup>11</sup> In market-model regressions for comparables, the data strongly reject the null that the betas in the 2001-2003 and 2004-2005 sample periods (0.365004 and 0.255341) are equal and that the betas in the 1995-2003 and 2004-2005 sample periods (0.394593, 0.255341) are equal.

Note that in the sample period 2004-2005, the market betas for Nordea and the comparables are 0.497619 and 0.255341, suggesting that Nordea should have a larger average rate of return than the comparables. The mean rates of return, however, are 0.000895/day and 0.001182/day, a difference of 32%; this might, of course, be due to the sample size (462 days).

generally positive movements in comparables are accompanied by essentially unrelated movements in Nordea's total return index.

**Announcement Effects.** Nordbanken announced the planned merger with Merita on October 12, 1997, a Sunday (so the event date is taken as Oct. 13, observation 733), and the deal was completed on November 26, 1997 (observation 765). The combined Norbanken plus Merita (Nordic Baltic Holding Company) announced the attempt to acquire Unidanmark, and the attempt's success, on the same day, March 6, 2000 (observation 1358). Finally, the combined bank (MeritaNordbanken) announced its attempt to acquire Christiana Bank on September 24, 1999 (observation 1242) and the attempt's success on October 16, 2000 (observation 1518).

To start, rates of return and abnormal returns for the **acquiring** Nordea institution<sup>12</sup> are calculated around these five events; the benchmark for the abnormal rates of return for the acquiring Nordea institution is the index of comparables. (The components of Nordea of course change with acquisitions; the evolution of Nordea is given above. Note that Nordbanken is viewed as the acquiring institution in the combination with Merita.) In each case, a window of 20 trading days before and 20 trading days after is initially used. The acquiring Nordea institution's **mean** log rates of return (**standard error**)<sup>13</sup> for each event are:

Event	Rate of Return	Abnormal Return
1. Announcement of attempt to acquire Merita	-0.000830 (0.002298)	-0.001602 (0.002107)
2. Acquisition of Merita successful	0.003927 (0.003401)	0.001587 (0.002682)
3. Announcement of successful attempt to acquire Unidanmark	0.000805 (0.002761)	-0.000991 (0.002438)
4. Announcement of attempt	0.000249 (0.003000)	0.000271 (0.002643)

<sup>12</sup> A footnote below discusses the wealth effects on the acquired institutions.

<sup>13</sup> The standard error of the mean return or mean abnormal return is the standard deviation divided by the  $N^{1/2}$ , where N is the number of observations used to form the mean, here  $N = 41$ . The square root of 41 is 6.403124237, and  $1/N^{1/2} = 0.156173761$ . The standard deviation is calculated as the standard deviation of the 100 observations before the event window.



to acquire Christiana Bank		
5. Acquisition of Christiana Bank successful	0.002456 (0.003337)	0.000314 (0.003296)
Average	0.0012422 → 33.555%/yr	-0.000421 → -10.525%/yr

The results are quite different for the Nordea rates of returns and the abnormal rates of return: the average of the Nordea returns across the five events is 33.555%/annum, but the average abnormal return across events is -10.525%/annum. Note, however, that no event's rate of return or abnormal return is significantly different from zero at conventional levels. Note further that examination of the abnormal returns shows that the 20 days prior to the events show little evidence of leakage and add little on average to the mean abnormal return; hence, only the event date and the next 20 days are used in what follows. Figures 6-10 show cumulative abnormal returns (CARs) for each of the five events, for the event date and 20 following days; a number of the positive CARs in events 2 and 3 are statistically significant. To investigate the significance of each event in its 20-day window, regression analysis is used.

The sensitivity of results to forming abnormal returns suggests experimenting with other indices to form abnormal returns, as is done below by using the rates of return from the market index. The parameter instability detected above also suggests trying alternative sample periods.

***Market-Model Results for Nordea and Comparables.*** Table 2.A shows event-study market-model regressions in which each of the five events is represented by a dummy that takes on the value of unity on the event date and for 20 days thereafter, with the dummy equal to zero otherwise (footnotes discuss 101-day event windows). Regressions are run for both Nordea and for the equally weighted index of comparables as the dependent variable; a regression is also run for Nordea as the dependent variable and the equally weighted index of comparables as the dependent variable. For the Nordea market-model regression, all event-coefficients are positive, and the second and third events' coefficients are significant at the 4.17% and 0.53% levels

respectively.<sup>14, 15</sup> For the comparables market-model regression, the first and fourth events have negative coefficient, with the other events' coefficients positive; the second event is has a positive coefficient that is statistically significant at the 0.00004% level. Wald tests, of the null that *all* event-coefficients in a given regression are *zero*, are used to judge whether the set of events as a whole is statistically significant. In the Wald tests, the F-statistic is statistically significant at the 3.12% level for the Nordea market-model regression<sup>16</sup>, and at the 0.004% level for the comparables market-model regression.<sup>17, 18</sup>

***Event-Study Regressions, with Comparables as the Independent Variable.*** Results from the market-model event-study regressions suggest re-running the regressions with the rate of return on the comparables as the explanatory variable. Table 2.A shows the results for the whole

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<sup>14</sup> This footnote discusses the wealth effects on the acquired institutions; the reported results take account of the parameter instability in market models that a subsection below discusses. For Merita, both events have positive coefficients and the second event's coefficient is significant at the 0.39% level. For Unidanmark, the third event (the announcement of the merger attempt and its success was the same day) has a positive coefficient that is significant at only the 34.8% level. Bank Scope does not provide data on Christiana Bank of Norway, the third target, for the period of its acquisition.

<sup>15</sup> An important literature discusses the behavior of abnormal returns over long windows; for a summary and important work, see Eberhart and Siddique (200X). When a 101 day window (including the event day) is used, four of the five events have a positive coefficient (the fourth event's is negative), but none is significant at even the 10% level. In a Wald test that all coefficients are zero, the data reject the null at the 0.3832 significance level.

<sup>16</sup> Under the assumption that each event has a 21-day window and the slope is the same for each event, the single event dummy has a slope of 0.004252, significant at the 7.89% level. Under the assumption that each event has a 101-day window and the slope is the same for each event, the single event dummy has a slope of -0.027481, highly insignificant, at the 80.11% level.

<sup>17</sup> Including lagged values of the market rate of return, to adjust for possible thin-trading, does not importantly affect the coefficients on the event dummies or their significance.

<sup>18</sup> When major events such as Nordea mergers and acquisitions occur, betas may well show volatility. Following Chan (1986), suppose the Nordea beta shifts at the dates of the events. In a market-model regression that allows for five shifts in beta for the duration of each event window, only the interaction term of the market and the event dummy at the time of the first event is significant, at the 4.64% level. When event dummies are included separately in a regression that allows for shifts in the market beta at each event date for the duration of each event window, the second and third event dummies have significantly positive coefficients, at the 4.07% and 4.21% levels; again only the beta-shift at the first event is significant. The slopes on the second and third event dummies in this regression are 0.014547 and 0.006577 as compared to the slopes 0.015168 and 0.006588 in Table 2.

When 101-day event windows are used, and betas shift with event dummies, and event dummies are entered separately, the first and fifth beta-shifts are significant, at the 6.50% and 5.98% levels, and only the third event dummy's coefficient is significant, at the 8.64% level.

When 101-day event windows are used and the slope is the same for each event, the interaction term between the market and the event dummy is insignificant, and the single event dummy entered separately has a slope of 0.001757, significant at the 5.94% level.

period. All events have positive effects, and events 2 and 3 are statistically significant at the 10.63% and 0.56% levels respectively. In a Wald test that all event coefficients enter with zero coefficients, the probability is 5.27%.<sup>19</sup>

***Effects of Parameter Instability.*** The parameter instability that Table 1 reveals for regressions of Nordea rates of return on either market or comparables rates of return suggests that the event study results in Table 2.A might be affected by rerunning the regressions to allow for parameter shifts. This is done over the period 1995-2003, allowing for intercept and beta shifts at the end of 2000 (comparable to Table 1). The shift in the intercept is far from significant and has little effect on estimated slopes of event dummies, and hence is omitted in regressions reported here. In the three regressions in Table 2.B, the shift in the beta is important. In regressions of Nordea rates of return on the market, the slope on the second event dummy becomes less significant, and the slope on the third event dummy becomes insignificant. In regressions of Nordea rates of return on comparables, the slopes on the second and third event dummies both become insignificant. In regressions of comparables rates of return on the market, the slope on the second event dummy becomes less significant.<sup>20</sup>

***Results for Two Individual Comparables.*** When using an index of comparables as a benchmark, it is possible that the index misrepresents or distorts what is going on with some of the important constituents of the index. To shed light on this issue, Table 3 reports market-model and event-study regressions for two major banks, Danske (Danske Banken) of Denmark and SHB (Svenska Handelsbanken) of Sweden, both viewed by many as profit leaders and among the stronger Nordic financial institutions. For the sample periods 1995-2003, 1995-

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<sup>19</sup> Including lagged values of the comparables rate of return does not importantly affect the coefficients on the event dummies and their significance.

<sup>20</sup> In the three regressions in Table 2.B, at conventional significance levels the data cannot reject the null that all of the slopes on the event dummies are equal to zero.

2000 and 2001-2003, the market betas for Danske and SHB are (0.386581, 0.358502, 0.412774) and (0.618432, 0.592077, 0.646364). It is notable that Danske has lower market betas in general than does SHB. More important for present issues, it is clear that both institutions' betas show much greater temporal stability than do Nordea's betas, verifying the greater stability of the comparables' betas relative to Nordea's betas.

***Parameter Instability, and Market versus Comparables as Benchmark.*** For evaluating Nordea, this evidence of the sensitivity of results suggests that one should investigate parameter instability before accepting the existence of non-zero wealth effects. Further, at a methods level, these results suggest that it is important to investigate and report the sensitivity of wealth effects to the benchmark used. Finally, it is clear that use of comparables in evaluating Nordea's performance is difficult at a minimum and likely to be viewed by many as questionable.

***Beta Instability, and Nordea's Small Beta in the 2001-2003 Sample Period.*** Whether the benchmark is the market or the comparables, Tables 1 and 2 show that Nordea's beta on the benchmark is highly unstable; in particular, though Nordea's benchmark-beta is positive at highly significant levels in the 1995-2000 sub-period, the beta declines until it is essentially zero in the three-year period from 2001 to 2003. In evaluating this instability, the discussion focuses for convenience on the market index.

The instability in Nordea's market beta is a warning to the analyst evaluating Nordea's performance. Evaluation cannot be carried out as though the beta were approximately constant, or rather fluctuated only with the amount consistent with sampling variability. The low Nordea beta over the 2001-2003 sub-period suggests that Nordea's expected rate of return should be low, approximately the risk-free rate of return.

Mechanically, the later period's beta of (approximately) zero implies that consciously or not Nordea arranged its assets and liabilities to provide a virtually complete net hedge against (world) market movements.<sup>21</sup> Success is then measured by beating the risk-free rate. An important question is why Nordea's management adopted policies that set its market beta to zero; only Nordea's management can answer this question. Related, another important question was whether the market knew that the beta was so low and thus the implied hurdle rate for measuring success was so low. From the results above, the data are consistent with the view that the market understood that Nordea's hurdle rate was low: Because of Nordea's high market beta and thus high required rate of return in the sample period 1995-2000, Nordea could be expected to outperform the comparables, as it did; because of Nordea's low market beta and thus low required rate of return in the sample period 1995-2000, Nordea could be expected to underperform the comparables, as it did.

An interpretation of the decline in beta in the sample period 2001-2003 and its subsequent rise during 2004-2005 is that the original merger of the four entities (finished towards the end of 2000) created a diversified low risk financial conglomerate but, thereafter, management's restructuring removed or reduced the weight of low return-low risk activities. Management's focus on increasing profitability can have these consequences, if management is unaware of the relative riskiness of different product lines and if market signals about risk and return are initially hard to read. One can argue that in banking market signals with respect to risk and return are often hard to read as a result of explicit and implicit guarantees of creditors. It appears that after

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<sup>21</sup> This low beta is reminiscent of risk-neutral or zero-beta hedge funds. This is not an assertion that Nordea can be thought of as a hedge fund, but simply an observation. For a discussion of systematic risk in hedge funds, see Chan et al. 2004. For a discussion and analysis of the notorious Long-Term Capital Management hedge fund, see Jorion (2000).

pursuing a low risk-low return strategy during 2001-2003, management saw the consequences that low risk had for returns and reverted to a higher risk-higher return strategy.

***Problems in Using Comparables to Evaluate Nordea.*** It is worthwhile to spell out some of the problems encountered in using comparables to evaluate Nordea. Using comparables to adjust to give abnormal returns makes most sense when the required rates of return on Nordea and the comparables are equal. Suppose the required rate of return on Nordea's levered equity is determined by the CAPM, or  $RR_{N,eq,t} = r_{f,t} + \beta_{N,eq,t} (ER_{M,t} - r_{f,t})$ , where  $r_{f,t}$  is the risk-free rate at time  $t$ ,  $\beta_{N,eq,t}$  Nordea's levered equity beta and  $(ER_{M,t} - r_{f,t})$  the risk premium on the market. Similarly, in the CAPM the required equity rate of return on the comparables is  $RR_{C,eq,t} = r_{f,t} + \beta_{C,eq,t} (ER_{M,t} - r_{f,t})$ . The difference is  $RR_{N,eq,t} - RR_{C,eq,t} = r_{f,t} + \beta_{N,eq,t} (ER_{M,t} - r_{f,t}) - r_{f,t} - \beta_{C,eq,t} (ER_{M,t} - r_{f,t}) = (\beta_{N,eq,t} - \beta_{C,eq,t}) (ER_{M,t} - r_{f,t})$ . If  $\beta_{N,eq,t} \approx 0.0$ , then  $RR_{N,eq,t} \approx r_{f,t}$ , and the difference  $RR_{N,eq,t} - RR_{C,eq,t}$  is  $(\beta_{N,eq,t} - \beta_{C,eq,t}) (ER_{M,t} - r_{f,t}) \approx -\beta_{C,eq,t} (ER_{M,t} - r_{f,t})$ . Because  $\beta_{C,eq,t}$  is perhaps 0.50, the difference  $RR_{N,eq,t} - RR_{C,eq,t}$  is substantial and likely too large for use of the comparables as the benchmark to make sense for the sample period 2001-2003. The comparables expected rate of return should be higher by their beta for this period ( $\approx 0.50$ ) times the risk premium on the market, or should be higher by about 2 1/2% if the market risk premium is taken as 5%/annum.

***Implications for Analysis of Accounting Data.*** The arrangement of assets and liabilities that gives a Nordea beta of approximately zero in the sample period 2001-2003 implies expected values of ROE and ROA that are similarly low, and also implies a low expected Return on Invested Capital (ROIC) in free cash flow (FCF) models. Do analysts understand this?

Accounting valuation models depend on discount rates versus accounting rates of return. Residual Income models (Edwards-Bell-Ohlson models) of equity value (Ohlson 1995, Feltham

and Ohlson 1999) have received much attention (Dechow et al. 1999, Myers 1999a,b, Nissim and Penman 1999, Penman and Sougiannis 1998, Francis et al. 2000); these models require use of levered-equity discount rates. The Residual Income model of equity value depends on the  $ROE_t - RR_{eq,t}$  and the Penman model of firm value depends on  $ROA_t - RR_{U,eq,t}$  where  $RR_{U,eq,t}$  is the unlevered equity beta at t. For example, in the Residual Income model, the current value of the firm's levered equity is

$$EQ_0 = \sum_{t=1}^{\infty} RI_t / \prod_{j=1}^t (1 + RR_{eq,j}) + B_0 = \sum_{t=1}^{\infty} [(ROE_t - RR_{eq,t}) B_{t-1}] / \prod_{j=1}^t (1 + RR_{eq,j}) + B_0,$$

where  $RI_t = (ROE_t - RR_{eq,t}) B_{t-1}$  and  $B_t$  is the book value of equity at time t. In expositions of the RI model (Ohlson 1995, Feltham and Ohlson 1999), it is generally assumed that over time  $ROE_t \rightarrow RR_{eq,t}$ , ceteris paribus, and thus  $EQ_t \rightarrow B_t$ . Assuming  $ROE_t \rightarrow RR_{eq,t}$  and  $RR_{eq,t}$  varies over time,  $ROE_t$  will also vary over time from this source (among other sources of variation), though with lags as  $ROE_t$  "tries" to catch up with a time-varying  $RR_{eq,t}$ . Note that if Nordea's levered equity beta is approximately zero, then  $RR_{N,eq,t} \approx r_{f,t}$  and eventually competitive pressures will drive  $ROE_{N,t}$  to  $r_{f,t}$ . Similarly, competitive pressures will drive  $ROA_{N,t}$  to  $RR_{N,U,eq,t}$ , where  $RR_{N,U,eq,t} \approx r_{f,t}$  (supposing that the betas on Nordea's debt and tax savings are approximately zero).<sup>22</sup>

In contrast to RI models of equity value, many analysts find the firm's overall value from Free Cash Flow models, most frequently using a weighted average cost of capital that requires a levered-equity discount rate (Copeland et al. 2000). In WACC versions of the Free Cash Flow Model of firm valuation, the firm's current value depends on  $ROIC_t - WACC_t$ ,

$$V_0 = \sum_{t=1}^{\infty} ROIC_t / \prod_{j=1}^t (1 + WACC_j) + K_0$$

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<sup>22</sup> The assumption that the betas on Nordea's debt and tax savings are approximately zero is consistent with the assumption that the levered-equity beta is zero. The unlevered equity beta can be found by the same procedures for non-zero betas on debt and tax savings.

$$= \sum_{t=1}^{\infty} \{[(\text{NOPLAT}_t / K_{t-1}) - \text{WACC}_t] K_{t-1}\} / \prod_{j=1}^t (1 + \text{WACC}_j) + K_0$$

where  $\text{ROIC}_t = (\text{NOPLAT}_t - \text{WACC}_t K_{t-1}) / K_{t-1}$ ,  $\text{NOPLAT}_t$  is Net Operating Profit less Adjusted Taxes (see Copeland et al. 2000), and  $K_t$  is the firm's capital stock. The Nordea WACC discount rate is  $\text{WACC}_{N,t} = w_{N,t-1} \text{RR}_{N,\text{eq},t} + (1 - w_{N,t-1}) (1 - t^*) \text{RR}_{N,D,t}$ , where  $w_{N,t-1}$  is the equity value ratio for Nordea,  $t^*$  is the tax rate, and  $\text{RR}_{N,D,t}$  is the required rate of return on Nordea's debt financing. For  $\text{RR}_{N,\text{eq},t} \approx r_{f,t}$ ,  $\text{WACC}_{N,t} \approx w_{N,t-1} r_{f,t} + (1 - w_{N,t-1}) (1 - t^*) \text{RR}_{N,D,t}$ . Competitive pressures will drive  $\text{ROIC}_{N,t}$  to  $\text{WACC}_{N,t} \approx w_{N,t-1} r_{f,t} + (1 - w_{N,t-1}) (1 - t^*) \text{RR}_{N,D,t}$ ; in particular, if  $\text{RR}_{N,D,t} \approx r_{f,t}$ , then competitive pressures will drive  $\text{ROIC}_t$  to  $\text{WACC}_{N,t} \approx r_{f,t} [1 - t^* (1 - w_{N,t-1})] < r_{f,t}$  for  $t^*, w_{N,t-1} > 0$ . Hence, the low value of  $\beta_{N,\text{eq},t}$  and hence  $\text{RR}_{\text{eq},t}$  implies that  $\text{ROE}_{N,t}$ ,  $\text{ROA}_{N,t}$  and  $\text{ROIC}_{N,t}$  must eventually be comparably low. Similar to the analysis above, if  $(\text{NOPLAT}_t / K_{t-1}) \rightarrow \text{WACC}_t$ , ceteris paribus, then  $\text{ROIC}_t \rightarrow 0$  and  $V_t \rightarrow K_t$ . Assuming  $\text{ROIC}_t \rightarrow \text{WACC}_t$  and  $\text{WACC}_t$  varies over time,  $\text{ROIC}_t$  will also vary over time from this source (among other sources of variation), though with lags as  $\text{ROIC}_t$  "tries" to catch up with a time-varying  $\text{WACC}_t$ .

As noted above, the small Nordea market beta of 0.083736 in the 2001-2003 rebounds substantially to 0.497619 in the sample period 2004-2005. From discussion above, these fluctuations in Nordea's market beta imply fluctuations in Nordea's required rate of return and thus in  $\text{ROE}_t$ ,  $\text{ROA}_t$  and  $\text{ROIC}_t$ .

**Financial Results for 1999-2004.** The following section analyzes accounting data for Nordea relative to comparables. Accounting data are available for the Nordea holding company for the six years 1999-2004. As preparation analysis of accounting data, note that over these six years, the mean rate of return on Nordea shares is 0.000375 (9.375%) and the mean return on comparables shares is 0.000749 (18.725%). The difference between the means for Nordea and the comparables is -.000374. But note that the standard error is 0.0005255, and the t-value of the



difference is  $-0.000374 / 0.0005255 = 0.7076179$ , insignificant at conventional levels. In a regression of the Nordea returns on the comparables, the slope (t-value) is 0.356113 (5.747967), with  $R^2 = 0.018385$ ;<sup>23</sup> further, the intercept is 0.000108, or in annual terms 2.70%/annum. The financial data suggest that Nordea might be expected to show sub-par performance relative to the comparables when accounting data are analyzed. But note that from the results in Table 1 the accounting-data sample period 1999-2004 appears to be made up of two separate regimes, the low-beta period identified for 2001-2003, and the higher-beta period identified for 2004-2005.

#### **4. Accounting Data and Nordea's Performance**

In the following, accounting data are used in three ways for evaluation purposes. First, the Nordea holding company is compared with six of the largest Nordic financial institutions in the sample of comparables: Danske Bank and Jyske Bank from Denmark, Sampo from Finland, DnB NOR Bank ASA from Norway, and SEB and SHB from Sweden. Second, the Nordea holding company is compared with the complete set of 16 Nordic comparables. Third, the Nordea *bank* in each Nordic country is compared with the comparables *holding companies* from that country. Data on ROE (Return on Equity) and ROA (Return on Assets) are in Table 4 for the six largest comparables, in Table 5 for the complete set of comparables; both tables give data on the Nordea holding company, Nordea Bank AB (consolidated), and the Nordea banks. Table 7 shows cost/income ratios for Nordea banks and large comparables. More complete data for the Nordea holding company and banks and for the comparables are in Appendix D (available from the

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<sup>23</sup> These results are consistent with market-model regressions of Nordea and comparables rates of returns. In a regression of Nordea rates of return on the market, the slope (t-value) are 0.186641 (4.157926), with  $R^2 = 0.009706$ , and in a regression of comparables rates of return on the market, the slope (t-value) are 0.322326 (20.97804), with  $R^2 = 0.199665$ .

authors). Note that the levered financial rates of return used in the preceding section are comparable to the levered ROE,<sup>24</sup> not to the unlevered ROA.

Because each of the comparables is a financial holding company, the validity of comparisons is greater when evaluating the Nordea holding company relative to the comparables than when the individual Nordea banks are evaluated relative to the comparables. Each comparable contains commercial banking operations, investment banking, asset management and insurance activities, as does the Nordea holding company (though over time Nordea has disposed of some of its insurance activities). The Nordea banks in the four countries, however, essentially include only banking operations, not the full range of financial services as the comparables do. The Nordea banks, as is true of the comparables' banks, are not traded separately in the market; Nordea puts together its banks' data separately from Nordea holding company data, and the Nordea bank data are not necessarily stated in the ways that would be required if these banks traded in the market.

***The Nordea Holding Company.*** To examine the performance of the Nordea holding company, Nordea Bank AB (consolidated) is used. Nordea Bank AB data are available for six years, 1999-2004. For evaluation purposes, these data may be examined alongside data for comparables over the same six years, or for the longer period for which data on (some though not all of) the comparables are available. Both sorts of comparisons are made in Tables 6.A and 6.B.

Relative to the average of the ***largest*** Nordic comparables, ROE is smaller for the Nordea holding company in both the longer and shorter periods, but ROA is larger for the Nordea holding company in both the longer and shorter periods. (In these comparisons, the larger value is in boldface in Tables 6.A and 6.B.) Relative to the average of ***all*** Nordic comparables,

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<sup>24</sup> For example, recall from the preceding section that residual income is calculated as  $(ROE_t - RR) B_{t-1}$ , where  $B_t$  is the book value of equity and RR is the required rate of return implicit in financial rates of return.

however, the Nordea holding company ROE is larger for both the longer and shorter periods.

Relative to the average for all Nordic comparables, the Nordea holding company ROA is smaller for both the longer and shorter periods. Taken together, the results for the large comparables and for all comparables, and for ROE and ROA, suggest that Nordea performed about as well as the Nordic comparables.<sup>25</sup>

Looking at the developments after Nordea's mergers were completed at the end of 2000, the Nordea holding company has approximately caught up with the average ROE and ROA for the large comparables after relatively weak performance in 2002 and 2003.

Cost/income ratios should shed light on whether Nordea has benefited from scale and scope economies after the mergers or whether the costs of integrating four financial institutions in and with different cultures have offset such benefits. Table 7 shows the cost/income ratios for Nordea and five large comparables.<sup>26</sup> Comparing Nordea as a whole with the average for the comparables it can be seen that Nordea had a lower ratio than the comparables at the time the mergers were completed at the end of 2000. Thereafter, Nordea's efficiency declined sharply in 2002 before nearly catching up with the comparables again in 2004. Thus, it seems that any efficiency benefits from the mergers have yet to appear.

*Nordea Banks in Individual Nordic Countries.* In general for Nordic countries, the Nordea bank has a larger ROE, for both the longer period and the shorter period, than comparable Nordic holding companies; the exception is Norway for the shorter period. For ROA, however, results are somewhat mixed: for eight comparisons, Nordea banks have larger ROA in five cases, and the same ROA in a sixth case. Note that the Nordea bank in Sweden has

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<sup>25</sup> The somewhat different results for ROE and ROA can, of course, be explained by arithmetic as arising from somewhat different leverage between Nordea and the comparables.

<sup>26</sup> Data for Jyske Bank are unavailable. Nevertheless, at least one large comparable is available for each Nordic country.

outliers in 2001 of 59.90 for ROE and 2.29 for ROA. The averages are recalculated omitting these data, with the results in parentheses; the values fall importantly, but the Nordea bank in Sweden still outperforms the comparables.

Note that the Nordea banks appear to show better performance relative to comparables in Denmark and (particularly) Sweden than in Finland and Norway.

Cost/income ratios in the individual Nordea banks in Table 7 are not exactly comparable to the ratios for the other large banks in the table, since the Nordea banks do not include the full conglomerate activities in the individual countries. Thus, it is more interesting to look at relative trends in cost efficiency. Comparing Nordea Denmark with Danske Bank it appears that Danske Bank has become relatively more efficient after the integration of the Danish Unibank in Nordea late in 2000. In Finland both Nordea and its major comparable Sampo have become more efficient; in Norway the competitor DnB has lowered its cost/income ratio relative to Nordea Norway during the period after 2000. In Sweden Nordea's bank has lost ground even more strongly relative to the major competitors SEB and SHB during the same period.

The trends in profitability in Table 6.B indicate that ROE has been declining relatively for Nordea in all four Nordic countries, though less pronounced in Sweden in than elsewhere in spite of falling behind more there in terms of cost efficiency. The comparables show an upward trend in ROE for Denmark and Finland, but not Norway and Sweden. For ROA, the Nordea banks show a downward trend in three Nordic countries but a slight increase in Finland. The comparables show an upward trend in ROA in Finland, 0.72 rising to 0.80, and small fluctuations for the other three countries. Thus, both profitability- and cost efficiency trends of Nordea banks are somewhat less favorable than the comparables.

***Trends in Profitability.*** By comparing results in Table 6.B for the longer and shorter periods, the data can be used to investigate trends in profitability. For ROE there is a downward trend in Nordea's profitability in all for Nordic countries, though less pronounced in Sweden (in relative terms) than elsewhere. The comparables show an upward trend in ROE for Denmark and Finland, but not Norway and Sweden. For ROA, the Nordea banks show a downward trend in three Nordic countries but a slight increase in Finland. The comparables show an upward trend in ROA in Finland, 0.72 rising to 0.80, and fluctuations of 0.01 for the other three countries. Profitability for Nordea banks thus tends to show somewhat less favorable trends than the comparables. Perhaps the Nordea banks' superior performance is being reduced over time.

***Nordea Holding Company versus Nordea Banks.*** When these comparisons for the Nordea banks in individual countries are taken with comparisons for the Nordea holding company, they offer a puzzle. Focus on results for ROE; recall that ROE is comparable to the financial rates of return discussed in Section 3. On the one hand, the Nordea holding company does about as well on average as than the comparables in both the longer and shorter periods (Table 6.A). On the other hand, when Nordea banks are examined, for ROE the Nordea banks do better than the comparables in seven of eight cases (Table 6.B); the simple averages across the four countries for Nordea and the comparables are 17.91% versus 13.323% in the longer period, and 15.32% versus 13.58% in the shorter period. (For ROA, the results are substantially more mixed.) Arithmetic implies that Nordea non-bank operations are less profitable than are Nordea banking operations.

One explanation offered for this puzzle is that the performance of Nordea as a whole, but not the individual Nordea banks, was dragged down by Nordea's "General Insurance" operation. Nordea disposed of this operation in 2002. It is quite difficult to take account of the effect of

General Insurance. First, comparables holding companies all have some insurance operations, so both the Nordea and the comparables figures must be adjusted for general insurance. Second, the individual comparables treat general insurance in a variety of ways. For example, SHB's insurance operation was a mutual company and not included in the holding company's consolidated accounts until de-mutualization in 2002, and thus its effects need not be eliminated in earlier years. Some of SEB's insurance operations were consolidated in holding company accounts, some not. Sampo changed its relationship to various insurance operations over time, and its ownership share. DnB NOR ASA uses the equity method and thereby includes only the group's share in profits from the insurance subsidiary in their income statement, under "other income." For purposes of adjusting ROE to reflect General Insurance operations, the analyst needs the net income generated by the operations and the equity allocated to the operations; clearly, the data needed to calculate these figures are unavailable for many of the comparables. For this reason, only the effects of Nordea are shown.

As the rough figures in Table 8 show, eliminating Nordea's general insurance operation appears to explain part of the puzzle, but by no means the whole.

## **5. Summary Evaluation and Some Conclusions**

Data for Nordea's price and dividends are available for November 2, 1995 to October 8, 2005. For the sample period 1995-2000, Nordea outperformed the comparables, but for the sample period 2001-2003, Nordea underperformed the comparables substantially. Nordea's market beta, however, was larger than the comparables' beta in the earlier period and smaller in the later period. It appears that Nordea's earlier over-performance and later under-performance can largely be explained by differences in systematic risk, and thus required and expected rates of return, across the two periods. Nordea's beta risk rebounded in the sample period from

January, 2004, to October, 2005, to a point estimate even larger than the beta estimate for the sample period 1995-2000—the instability of Nordea's beta risk continues.

Announcements of the mergers and acquisitions that led to the creation of Nordea, when evaluated in a market-model regression, all have positive wealth effects, with one event having a statistically significant wealth effect.

For the Nordea holding company, accounting data are available only for the six-year period 1999-2004. Over this period, Nordea's ROE and ROA are roughly the same as those of the comparables, when judged relative to both the large comparables and the set of all comparables. Again, the data support the view that Nordea performed about as well as the comparables.

In terms of accounting data, Nordea banks in individual Nordic countries outperformed comparables holding companies. In light of the roughly equal performance of the Nordea holding company relative to comparables holding companies, Nordea's non-banking businesses must perform less well than Nordea banks. One possible source of underperformance that is sometimes raised is Nordea's general insurance operations, which were sold in 2002. Calculations suggest that this is part of the story, but only a part.

One viewpoint is that Nordea is correct about the gains to be reaped by being a large, integrated financial institution across all of the four Nordic countries. Another is that the economies of scale and scope that Nordea can hope to reap are not really there and that the costs of being a large, integrated financial institution across all of the four Nordic countries will defeat the Nordea experiment. So far the stock-market and accounting data cannot discriminate between the two views.

## References

- Chan, Nicholas, Mila Getmansky, Shane H. Haas, and Andrew W. Lo, "Systematic Risk and Hedge Funds," NBER Working Paper, October, 2004.
- Copeland, Tom, Tim Koller, and Jack Murrin. *Valuation. Measuring and Managing the Value of Companies*. 3<sup>rd</sup> ed. New York: John Wiley and Sons, Inc., 2000.
- Dechow, Patricia M., Amy P. Hutton, and Richard G. Sloan, "An Empirical Assessment of the Residual Income Valuation Model," *Journal of Accounting and Economics* 26 (1999), 1-34.
- Eberhart, Allan C., and Akhtar Siddique. "The Long-Term Performance of Corporate Bonds and Stocks Following Seasoned Equity Offerings" *The Review of Financial Studies* 15 (2002), 1385-1406.
- Feltham, Gerald A., and James A. Ohlson, "Residual Earnings Valuation with Risk and Stochastic Interest Rates," *The Accounting Review* 74 (1999), 165-183.
- Francis, Jennifer, Per Olsson and Dennis R. Oswald, "Comparing the Accuracy and Explainability of Dividend, Free Cash Flow, and Abnormal Earnings Equity Value Estimates," *Journal of Accounting Research* 38 (2000), 45-70.
- Jorion, Philippe, "Risk Management Lessons from Long-Term Capital Management," *European Financial Management* 6 (2000), 277-300.
- Lee, I., "Do Firms Knowingly Sell Overvalued Equity?" *Journal of Finance* 52 (1997), 1439-1466.
- Lyon, J.D., B.D. Barber, and C. Tsai, "Improved Methods for Tests of Long-Run Stock Abnormal Returns," *Journal of Finance* 54 (1999), 165-201.
- Myers, James M., "Implementing Residual Income Valuation with Linear Information Dynamics," *The Accounting Review* 74 (1999a), 1-28.
- Nissim, Doron, and Stephen H. Penman. *Ratio Analysis and Equity Valuation*. Berkeley: Working Paper, The Walter A. Haas School of Business, University of California, 1999.
- Ohlson, James A., "Earnings, Book Values and Dividends in Security Valuation," *Contemporary Accounting Research* 11 (1995), 661-687.
- Penman, Stephen H., and Theodore Sougiannis. "A Comparison of Dividend, Cash Flow, and Earnings Approaches to Equity Valuation," *Contemporary Accounting Research* 14 (1998), 343-384.



Sweeney, Richard J., and Arthur D. Warga, "The Pricing of Interest-Rate Risk: Evidence from the Stock Market," *Journal of Finance* 41 (1986), 393-410.

**Table 1. Market-Model Regressions of Nordea and Comparables Rates of Return;  
Regressions of Nordea on Comparables Rates of Return**

A. Nordea				B. Nordea				C. Comparables			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
1995-2003											
Intercept	0.000654	1.449299	0.1474	Intercept	0.000207	0.523571	0.6006	Intercept	0.000586	3.352421	0.0008
Market	0.327234	5.040393	0.0000***	Comparables	0.718861	7.778601	0.0000***	Market	0.394593	16.58197	0.0000
R-squared	0.026185			R-squared	0.087444			R-squared	0.223605		
1995-2000											
Intercept	0.000939	1.709098	0.0877*	Intercept	0.000238	0.541985	0.5879	Intercept	0.000556	2.406359	0.0162
Market	0.550798	6.830442	0.0000***	Comparables	1.172931	16.95523	0.0000***	Market	0.419814	12.98374	0.0000
R-squared	0.071515			R-squared	0.272837			R-squared	0.210741		
2001-2003											
Intercept	-0.000243	-0.301133	0.7634	Intercept	-0.000268	-0.332088	0.7399	Intercept	0.000602	2.354054	0.0188
Market	0.083736	0.908614	0.3638	Comparables	-0.043613	-0.406356	0.6846	Market	0.365004	11.10576	0.0000
R-squared	0.001785			R-squared	0.000259			R-squared	0.249238		
=====											
2004-2005											
Intercept	0.000639	1.480158	0.1395	Intercept	-0.000771	-1.953224	0.0514*	Intercept	0.001050	5.000109	0.0000
Market	0.497619	6.006368	0.0000***	Comparables	1.409609	11.80393	0.0000***	Market	0.255341	6.184821	0.0000
R-squared	0.091248			R-squared	0.357274			R-squared	0.133617		

Notes: All data are from Data Stream. Rates of return are measured in Danish kroner (DKK). Rates of return are calculated as differences of natural logs on indices. The data for the Nordea holding company start on day 221. The rate of return of the market is found from the Financial Times Total Returns Index, in USD, converted to DKK. The index for the comparables is computed from the eleven comparables for which daily returns data are available; for the first 116 days, only ten comparables are available.

Regressions were initially computed for the nine years 1995-2003, and the sub-periods of 1995-2000 and 2001 to 2003. Regressions were then computed for 2004 and data from 2005 up through October 8, 2005.

\*\*\*, \*\*, \* Significant at the 1%, 5% and 10% levels.

**Table 2.A. Regression Analysis of Event Wealth Effects**

Nordea Rates of Return  
1995-2003 (2129 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.000470	0.000453	1.037305	0.2997
Market	0.326757	0.065135	5.016601	0.0000***
EVDUM1	0.000129	0.005350	0.024119	0.9808
EVDUM2	0.014827	0.007276	2.037751	0.0417**
EVDUM3	0.007005	0.002507	2.793772	0.0053***
EVDUM4	0.001433	0.003716	0.385554	0.6999
EVDUM5	0.002331	0.004681	0.497929	0.6186
R-squared	0.029157			

Nordea Rates of Return  
1995-2003 (2129 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	5.08E-05	0.000398	0.127603	0.8985
Comparables	0.715166	0.092695	7.715252	0.0000***
EVDUM1	0.000388	0.004778	0.081111	0.9354
EVDUM2	0.011430	0.007074	1.615664	0.1063
EVDUM3	0.006385	0.002302	2.773659	0.0056*
EVDUM4	0.002791	0.003332	0.837887	0.4022
EVDUM5	0.000576	0.004593	0.125376	0.9002
R-squared	0.089471			

Comparables Rates of Return  
1995-2005 (2348 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.000553	0.000179	3.093410	0.0020***
Market	0.395103	0.023844	16.57008	0.0000***
EVDUM1	-0.000520	0.001228	-0.423461	0.6720
EVDUM2	0.004734	0.001012	4.679539	0.0000***
EVDUM3	0.001056	0.000838	1.260242	0.2077
EVDUM4	-0.001676	0.001190	-1.408740	0.1590
EVDUM5	0.002397	0.001730	1.385044	0.1662
R-squared	0.225736			

Note: All regressions use Newey-West Heteroskedasticity and Autocorrelation Consistent Standard Errors and Covariances.

Events: Nordbanken announced the planned merger with Merita on October 12, 1997, a Sunday (so the event date is taken as Oct. 13, observation 733), and the deal was completed on November 26, 1997 (observation 765). The combined Nordbanken plus Merita (Nordic Baltic Holding Company) announced the attempt to acquire Unidanmark, and the attempt's success, on the same day, March 6, 2000 (observation 1358). Finally, the combined bank (MeritaNordbanken) announced its attempt to acquire Christiana Bank on September 24, 1999 (observation 1242) and the attempt's success on October 16, 2000 (observation 1518). The event dummies are unity for the event date and the following twenty days, zero otherwise.

\*\*\*, \*\*, \* Significant at the 1%, 5% and 10% levels.

**Table 2.B. Event Wealth Effects—Parameter Shifts**

Nordea Rates of Return

1995-2003 (2129 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000312	0.000515	0.606808	0.5440
Market	0.085576	0.061779	1.385196	0.1661
Market_inter	0.468622	0.086170	5.438336	0.0000***
EVDUM1	0.000993	0.005086	0.195138	0.8453
EVDUM2	0.015168	0.007005	2.165444	0.0305**
EVDUM3	0.006588	0.005083	1.295990	0.1951
EVDUM4	0.000890	0.005084	0.174971	0.8611
EVDUM5	0.002820	0.005083	0.554884	0.5790
R-squared	0.042509			

Nordea Rates of Return

1995-2003 (2129 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.25E-05	0.000486	-0.169858	0.8651
Comparables	-0.044415	0.079587	-0.558066	0.5769
Comparables_inter	1.214578	0.100566	12.07747	0.0000***
EVDUM1	0.001064	0.004795	0.221930	0.8244
EVDUM2	0.009303	0.006612	1.406884	0.1596
EVDUM3	0.005332	0.004795	1.112047	0.2662
EVDUM4	0.002882	0.004793	0.601239	0.5477
EVDUM5	-0.000370	0.004795	-0.077206	0.9385
R-squared	0.148060			

Comparables Rates of Return

1995-2003 (2348 observations)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000536	0.000177	3.031646	0.0025
Market	0.365195	0.022337	16.34913	0.0000***
Market_inter	0.055650	0.030487	1.825399	0.0681*
EVDUM1	-0.000423	0.001838	-0.230361	0.8178
EVDUM2	0.004771	0.002532	1.884323	0.0596*
EVDUM3	0.001008	0.001837	0.548549	0.5834
EVDUM4	-0.001739	0.001837	-0.946291	0.3441
EVDUM5	0.002451	0.001837	1.334361	0.1822
R-squared	0.226837			

\*\*\*, \*\*, \* Significant at the 1%, 5% and 10% level.

**Table 3. Analysis of Two Comparables**

Danske				
1995-2005 (2810 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000642	0.000267	2.405286	0.0162
MKT	0.376532	0.034888	10.79247	0.0000***
R-squared	0.060890			
1995-2003 (2348 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000630	0.000314	2.008765	0.0447
MKT	0.386581	0.037172	10.39990	0.0000***
R-squared	0.062110			
1995-2000 (1565 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000817	0.000415	1.969652	0.0491
MKT	0.358502	0.044696	8.020832	0.0000***
R-squared	0.046690			
2001-2003 (784 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000344	0.000482	0.713489	0.4758
MKT	0.412774	0.061280	6.735876	0.0000***
R-squared	0.084861			
2004-2005 (463 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000754	0.000312	2.413243	0.0162
MKT	0.249111	0.058444	4.262421	0.0000***
R-squared	0.046110			
1995-2005 (2810 observations)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000519	0.000254	2.042686	0.0412
MKT	0.379696	0.034954	10.86268	0.0000***
EVDUM1	0.002645	0.002190	1.207698	0.2273
EVDUM2	0.007615	0.002523	3.018085	0.0026**
EVDUM3	-0.002457	0.005359	-0.458480	0.6466
EVDUM4	-0.001983	0.001882	-1.054030	0.2920
EVDUM5	0.014177	0.007966	1.779661	0.0752*
R-squared	0.067636			

**Table 3. Analysis of Two Comparables (cont.)**

SHB					
1995-2005 (2810 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000541	0.000291	1.858893	0.0631	
MKT	0.599201	0.038984	15.37055	0.0000***	
R-squared	0.131539				
1995-2003 (2348 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000605	0.000338	1.790037	0.0736	
MKT	0.618432	0.041348	14.95675	0.0000***	
R-squared	0.136672				
1995-2000 (1565 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000789	0.000454	1.737592	0.0825	
MKT	0.592077	0.053429	11.08158	0.0000***	
R-squared	0.101292				
2001-2003 (784 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000291	0.000485	0.600343	0.5485	
MKT	0.646364	0.063046	10.25231	0.0000***	
R-squared	0.205913				
2004-2005 (463 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000314	0.000406	0.772699	0.4401	
MKT	0.357374	0.063523	5.625931	0.0000***	
R-squared	0.068679				
1995-2005 (2810 observations)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	0.000464	0.000292	1.590456	0.1118	
MKT	0.599291	0.039144	15.30998	0.0000***	
EVDUM1	0.002394	0.003170	0.755315	0.4501	
EVDUM2	0.002743	0.003938	0.696553	0.4861	
EVDUM3	0.006719	0.003046	2.205663	0.0275**	
EVDUM4	-0.001537	0.002398	-0.641021	0.5216	
EVDUM5	0.001256	0.002878	0.436432	0.6626	
R-squared	0.132894				

Note: Newey-West HAC Standard Errors and Covariances are used.  
 \*\*\*, \*\*, \* Significant at the 1%, 5% and 10% levels

**Table 4. Nordea versus Major Comparables—ROE and ROA**

<b>ROE</b>	<b>Short Average (2004-1999)</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>	<b>1999</b>	<b>1998</b>	<b>1997</b>	<b>1996</b>	<b>1995</b>	<b>1994</b>	<b>Average</b>
NB Danmark Group AS.cons	16.61	16.77	16.72	14.26	11.86	24.90	15.15	20.48	21.30				17.68
NB Finland Plc.cons	14.86	7.37	14.40	6.64	21.22	18.14	21.38	15.83	24.37				16.17
NB Norge ASA.cons	11.53	13.48	2.98	5.99	15.52	14.76	16.45	13.77	20.38	23.21			14.06
NB Sweden AB cons	26.59		13.82	18.13	59.90	22.11	18.96	26.73	23.78	35.57			27.38
Nordea Bank AB cons	14.11	<b>16.26</b>	<b>12.99</b>	<b>7.90</b>	<b>13.23</b>	13.94	<b>20.33</b>						14.11
<b>Average of Below</b>	<b>14.42</b>	<b>16.28</b>	<b>14.07</b>	<b>12.57</b>	<b>11.80</b>	<b>17.62</b>	<b>16.44</b>	<b>13.59</b>	<b>13.02</b>	<b>17.08</b>			<b>14.23</b>
Danske Bank	14.75	17.77	15.61	13.83	15.48	9.24	16.59	13.11	15.55	14.25			14.60
Jyske Bank	14.67	17.56	16.32	7.70	10.24	18.91	17.28	10.06	9.30	15.05			13.60
Sampo	10.29	14.30	11.18	13.98	1.70								10.29
DnB Nor Bank ASA	16.03	17.98	13.57	12.42	13.55	21.68	16.96	12.62	13.26	13.86			15.10
SEB	13.84	13.69	12.50	12.40	12.16	17.50	14.80	15.25	9.28	23.66			14.58
SHB	16.96	16.39	15.25	15.08	17.69	20.75	16.58	16.91	17.69	18.55			17.21
<b>ROA</b>	<b>Short Average (2004-1999)</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>	<b>1999</b>	<b>1998</b>	<b>1997</b>	<b>1996</b>	<b>1995</b>	<b>1994</b>	<b>Average</b>
NB Danmark Group AS.cons	0.56	0.50	0.49	0.40	0.37	0.95	0.65	0.88	0.90				0.64
NB Finland Plc.cons	0.96	0.74	1.65	0.32	1.02	0.98	1.06	0.74	1.09				0.95
NB Norge ASA.cons	0.81	0.88	0.20	0.43	1.14	1.02	1.17	1.04	1.20	1.33			0.94
NB Sweden AB cons	1.00		0.55	0.69	2.29	0.78	0.70	1.01	1.14	1.54			1.09
Nordea Bank AB cons	0.70	<b>0.76</b>	<b>0.62</b>	0.36	0.65	0.69	<b>1.09</b>						0.70
<b>Average of Below</b>	<b>0.68</b>	<b>0.78</b>	<b>0.68</b>	<b>0.56</b>	<b>0.53</b>	<b>0.80</b>	<b>0.78</b>	<b>0.67</b>	<b>0.63</b>	<b>0.87</b>			<b>0.68</b>
Danske Bank	0.52	0.51	0.51	0.47	0.57	0.35	0.72	0.67	0.76	0.81			0.59
Jyske Bank	0.81	1.15	1.10	0.33	0.47	0.85	0.97	0.67	0.70	1.09			0.82
Sampo	0.59	0.88	0.63	0.77	0.09								0.59
DnB Nor Bank ASA	0.92	0.95	0.70	0.71	0.91	1.30	0.91	0.80	0.67	0.75			0.86
SEB	0.53	0.46	0.47	0.45	0.46	0.66	0.65	0.63	0.36	0.85			0.56
SHB	0.69	0.73	0.67	0.59	0.69	0.83	0.65	0.60	0.64	0.86			0.69

**Table 5. Nordea versus All Comparables—ROE and ROA**

<b>ROE</b>	<b>Short Average (2004-1999)</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>	<b>1999</b>	<b>1998</b>	<b>1997</b>	<b>1996</b>	<b>1995</b>	<b>1994</b>	<b>Average</b>
NB Dan. Group AS.cons	16.61	16.77	16.72	14.26	11.86	24.90	15.15	20.48	21.30				17.68
NB Finland Plc.cons	14.86	7.37	14.40	6.64	21.22	18.14	21.38	15.83	24.37				16.17
NB Norge ASA.cons	11.53	13.48	2.98	5.99	15.52	14.76	16.45	13.77	20.38	23.21			14.06
NB Sweden AB cons	26.59		13.82	18.13	59.90	22.11	18.96	26.73	23.78	35.57			27.38
Nordea Bank AB cons	14.11	<b>16.26</b>	<b>12.99</b>	<b>7.90</b>	<b>13.23</b>	13.94	<b>20.33</b>						14.11
<b>Average of Below</b>	<b>13.39</b>	<b>15.25</b>	<b>13.46</b>	<b>9.85</b>	<b>11.78</b>	<b>17.32</b>	<b>14.52</b>	<b>12.36</b>	<b>11.38</b>	<b>13.54</b>			<b>12.98</b>
Arbejdernes Landsbank	8.38	9.93	15.13	5.03	6.18	9.21	4.78	7.81	7.30	9.62			8.33
Danske Bank	14.75	17.77	15.61	13.83	15.48	9.24	16.59	13.11	15.55	14.25			14.60
Jyske Bank	14.67	17.56	16.32	7.70	10.24	18.91	17.28	10.06	9.30	15.05			13.60
Spar Nord Bank	10.94	14.19	11.48	6.35	3.67	15.74	14.24	9.44	15.74	10.60			11.27
Sydbank	15.00	17.40	16.28	11.77	13.79	18.33	12.44	11.33	9.23	9.44			13.33
Akti Sparbank Abp	13.34	11.06	11.00	7.25	13.32	21.83	15.60	12.73	10.21	7.06			12.23
OKO	13.91	13.59	19.32	9.98	12.92	19.87	7.78	-3.10	6.72	7.66			10.53
OP Bank	15.04	10.18	11.22	11.35	13.57	21.80	22.13	29.14	13.27	7.65			15.59
Sampo	10.29	14.30	11.18	13.98	1.70								10.29
DnB Nor Bank ASA	16.03	17.98	13.57	12.42	13.55	21.68	16.96	12.62	13.26	13.86			15.10
DnB Nor ASA Cons	12.29		7.16		8.94	15.87	16.80	12.69	5.53				11.17
Gjensidige NOR ASA	11.40			9.25	13.55								11.40
Sparbanken Midt-Norge	11.34	18.00	10.11	0.33	9.92	12.12	17.57	14.93	19.04	17.72			13.30
SEB	13.84	13.69	12.50	12.40	12.16	17.50	14.80	15.25	9.28	23.66			14.58
SHB	16.96	16.39	15.25	15.08	17.69	20.75	16.58	16.91	17.69	18.55			17.21
Swedbank	16.13	21.52	15.83	11.90	14.92	18.72	13.87	17.29	1.33	20.88			15.14
<b>ROA</b>	<b>Short Average (2004-1999)</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>	<b>1999</b>	<b>1998</b>	<b>1997</b>	<b>1996</b>	<b>1995</b>	<b>1994</b>	<b>Average</b>
NB Danmark Group AS.cons	0.56	0.50	0.49	0.40	0.37	0.95	0.65	0.88	0.90				0.64
NB Finland Plc.cons	0.96	0.74	1.65	0.32	1.02	0.98	1.06	0.74	1.09				0.95
NB Norge ASA.cons	0.81	0.88	0.20	0.43	1.14	1.02	1.17	1.04	1.20	1.33			0.94
NB Sweden AB cons	1.00		0.55	0.69	2.29	0.78	0.70	1.01	1.14	1.54			1.09
Nordea Bank AB cons	0.70	<b>0.76</b>	<b>0.62</b>	0.36	0.65	0.69	<b>1.09</b>						0.70
<b>Average of Below</b>	<b>0.76</b>	<b>0.85</b>	<b>0.79</b>	<b>0.54</b>	<b>0.66</b>	<b>0.97</b>	<b>0.79</b>	<b>0.68</b>	<b>0.65</b>	<b>0.75</b>			<b>0.73</b>
Arbejdernes Landsbank	0.93	1.09	1.81	0.61	0.70	0.91	0.47	0.76	0.67	0.93			0.88
Danske Bank	0.52	0.51	0.51	0.47	0.57	0.35	0.72	0.67	0.76	0.81			0.59
Jyske Bank	0.81	1.15	1.10	0.33	0.47	0.85	0.97	0.67	0.70	1.09			0.82
Spar Nord Bank	0.65	0.86	0.73	0.37	0.20	0.91	0.87	0.59	1.11	0.76			0.71
Sydbank	0.80	0.98	0.92	0.62	0.69	0.95	0.62	0.64	0.52	0.59			0.72
Akti Sparbank Abp	0.66	0.54	0.58	0.36	0.66	1.11	0.71	0.59	0.62	0.43			0.62
OKO	0.68	0.63	0.86	0.50	0.63	1.08	0.37	-0.17	0.39	0.39			0.52
OP Bank	1.29	1.00	1.07	1.08	1.22	1.87	1.48	1.64	0.58	0.33			1.14
Sampo	0.59	0.88	0.63	0.77	0.09								0.59
DnB Nor Bank ASA	0.92	0.95	0.70	0.71	0.91	1.30	0.91	0.80	0.67	0.75			0.86
DnB Nor ASA Cons	0.84		0.43	0.61	1.14	1.17	0.88	0.36					0.76
Gjensidige NOR ASA	0.75			0.59	0.91								0.75
Sparbanken Midt-Norge	0.74	1.11	0.60	0.02	0.64	0.81	1.26	1.08	1.39	1.22			0.90
SEB	0.53	0.46	0.47	0.45	0.46	0.66	0.65	0.63	0.36	0.85			0.56
SHB	0.69	0.73	0.67	0.59	0.69	0.83	0.65	0.60	0.64	0.86			0.69
Swedbank	0.70	0.96	0.72	0.53	0.65	0.78	0.57	0.64	0.05	0.77			0.63



**Table 6.A. Nordea  *Holding Company versus Comparables***

A. Longer Time Period	ROE	ROA
Nordea	14.11 %	<b>0.70</b>
Large Comparables	<b>14.23</b>	0.68
Nordea - comparables	-0.12	0.02
Nordea	<b>14.11</b>	0.70
All Comparables	12.98	<b>0.73</b>
Nordea - comparables	1.13	-0.03
 B. Shorter Time Period		
	ROE	ROA
Nordea	14.11 %	<b>0.70</b>
Large Comparables	<b>14.42</b>	0.68
Nordea - comparables	-0.31	0.02
Nordea	<b>14.11</b>	0.70
All Comparables	13.39	<b>0.76</b>
Nordea - comparables	0.72	-0.06

Note: In the comparisons in Tables 6.A and 6.B, the larger number is in boldface. The Nordea Holding Company is the Nordea institutions as a whole, whatever the actual name was in a particular period. The comparables are holding companies, and are thus not strictly comparable to the Nordea banks in Table 7.B.

**Table 6.B. Nordea *Banks* versus Comparables**

	ROE	ROA
Denmark		
Longer:		
Nordea	<b>17.68 %</b>	0.64
Comparables	12.23	<b>0.75</b>
Nordea - comparables	5.45	-0.11
Shorter:		
Nordea	<b>16.61</b>	0.56
Comparables	12.75	<b>0.74</b>
Nordea - comparables	3.86	-0.18
Finland		
Longer:		
Nordea:	<b>16.17</b>	<b>0.95</b>
Comparables	12.16	0.72
Nordea - comparables	4.01	0.23
Shorter:		
Nordea	<b>14.86</b>	<b>0.96</b>
Comparables	13.15	0.80
Nordea - comparables	1.71	0.16
Norway		
Longer:		
Nordea	<b>14.06</b>	<b>0.94</b>
Comparables	12.74	0.82
Nordea - comparables	1.32	0.12
Shorter:		
Nordea	11.53	0.81
Comparables	<b>12.77</b>	0.81
Nordea - comparables	-1.24	0.00
Sweden		
Longer:		
Nordea	<b>27.38 (22.73)</b>	<b>1.09 (0.82)</b>
Comparables	15.64	0.63
Nordea - comparables	11.74 (7.09)	0.46 (0.19)
Shorter:		
Nordea	<b>26.59 (18.26)</b>	<b>1.00 (0.68)</b>
Comparables	15.64	0.64
Nordea - comparables	10.95 (2.62)	0.36 (0.04)

**Table 7. Cost/Income Ratios: Nordea and Large Comparables**

Cost/Income	Short Average (2004-2000)	2004	2003	2002	2001	2000	1999	1998	1997	1996	Average
NB Danmark Group AS.cons	0.64	0.63	0.61	0.65	0.61	0.68	0.72	0.71	0.69		0.66
NB Finland Plc.cons	0.61	0.55	0.64	0.72	0.63	0.53	0.62	0.60	0.59		0.61
NB Norge ASA.cons	0.59	0.58	0.59	0.60	0.58	0.58	0.55	0.63	0.65	0.64	0.60
NB Sweden AB cons	0.64		0.67	0.71	0.61	0.58	0.61	0.57	0.54	0.47	0.59
<b>NB AB cons</b>	<b>0.62</b>	<b>0.59</b>	<b>0.64</b>	<b>0.68</b>	<b>0.61</b>	<b>0.56</b>	<b>0.57</b>				<b>0.61</b>
<b>Average of Below</b>	<b>0.61</b>	<b>0.57</b>	<b>0.59</b>	<b>0.64</b>	<b>0.65</b>	<b>0.63</b>	<b>0.67</b>	<b>0.67</b>	<b>0.64</b>	<b>0.64</b>	<b>0.64</b>
Danske Bank	0.61	0.55	0.56	0.60	0.61	0.72	0.67	0.64	0.63	0.55	0.62
Sampo	0.73	0.68	0.75	0.72	0.75						0.73
DnB Nor Bank ASA	0.58	0.57	0.59	0.61	0.59	0.56	0.64	0.66	0.71	0.73	0.63
SEB	0.72	0.63	0.65	0.76	0.83	0.76	0.85	0.82	0.70	0.58	0.73
SHB	0.45	0.41	0.44	0.49	0.47	0.45	0.52	0.54	0.50	0.42	0.47

**Table 8. Effects of General Insurance on Nordea's Accounting Profitability** <sup>a, b</sup>

<b>Nordea Holding Co.</b>	2000	2001	2002
Income before Tax	2,424.00	1,928.00	1,292.00
Tax	675.74	363.32	443.29
Income after Tax	1,748.26	1,564.68	848.71
Total Equity	11,152.00	11,819.00	11,897.00
<b>Nordea's General Insurance</b>	2000	2001	2002
Income before Tax	53.00	(18.00)	(122.00)
Total Equity	662.50	437.00	576.76
<b>Holding Co. less Insurance</b>	2000	2001	2002
Income before Tax	2,371.00 <sup>27</sup>	1,946.00	1,414.00
Tax	675.74	363.32	443.29
Income after Tax	1,695.27 <sup>28</sup>	1,582.68	970.71
Total Equity	10,489.50	11,382.00	11,320.24
<b>ROE</b>	2000	2001	2002
Nordea Holding Co.	15.68% <sup>29</sup>	13.24%	7.13%
Holding Co. less Insurance	<b>16.16%</b> <sup>30</sup>	<b>13.91%</b>	8.58%

<sup>a</sup> Note: In 2002, Nordea Bank AB, the Nordea holding company, sold its General Insurance operations.

The calculations in these tables are designed to show the order of magnitude of the effects of the General Insurance operation on Nordea's ROE. Because the income and equity figures in this table have not been adjusted in the same way as those used to calculate ROE in Tables 4 and 5, the ROE estimates for the Nordea holding company in this table do not match those in Tables 4 and 5.

There are many plausible ways of allocating a share of total taxes to the General Insurance operations. For simplicity, the total taxes used in calculations are the same for the holding company and the holding company less insurance. This overstates taxes for the latter in 2000, and understates them in 2001 and 2002, as opposed to most ways of allocating taxes.

<sup>b</sup> Because of rounding, sub-totals may not add to totals.

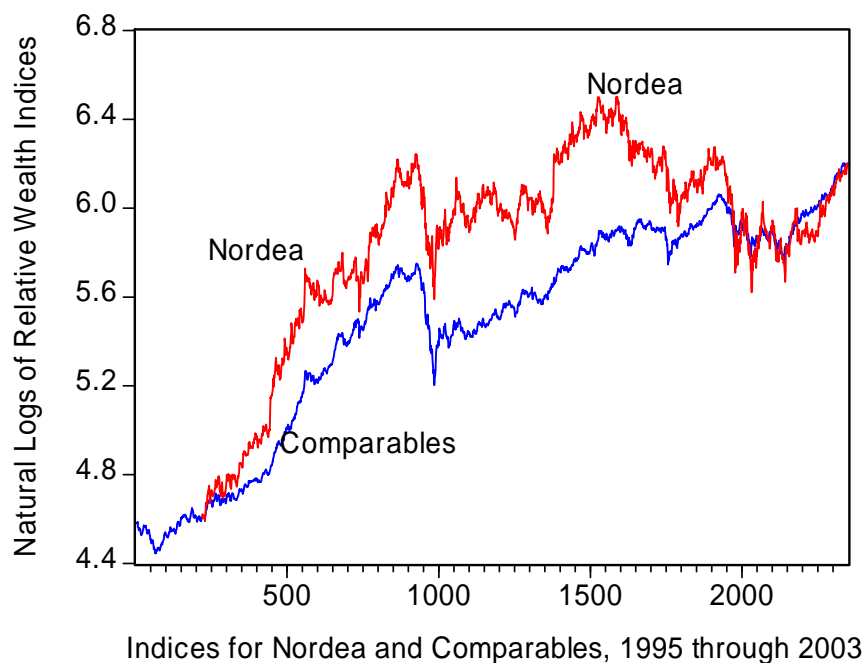
<sup>27</sup> 2,371.00 = 2,424.00 - 53.00.

<sup>28</sup> 1,695.27 = 2,371.00 - 675.74.

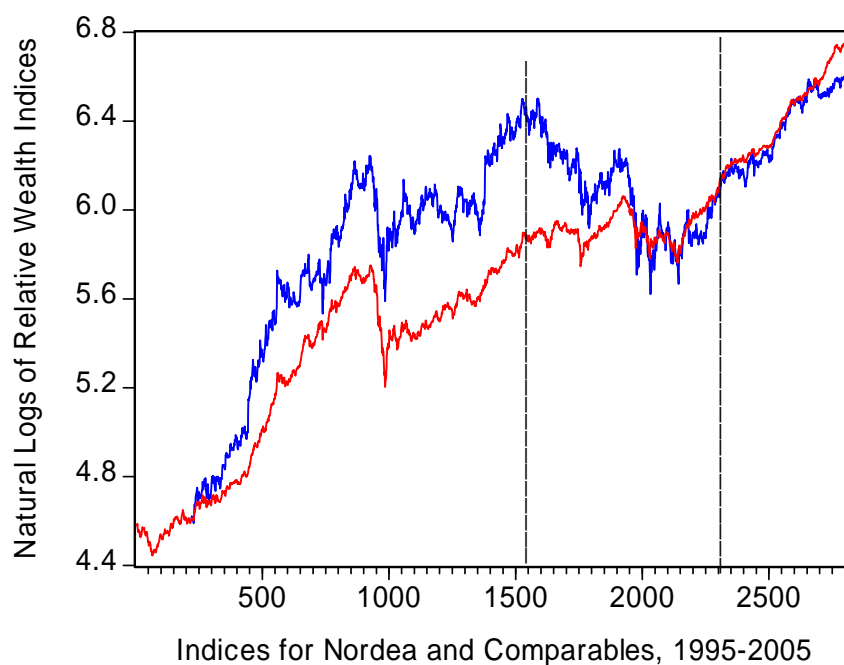
<sup>29</sup> 1,748.26 = 2,424.00 - 675.74. (1,748.26 / 11,152.00) x 100 = 15.67665%.

<sup>30</sup> (1,695.27 / 10,489.50) x 100 = 16.16159%.

**Figure 1.A. Relative Wealth Indices: 1995 through 2003**

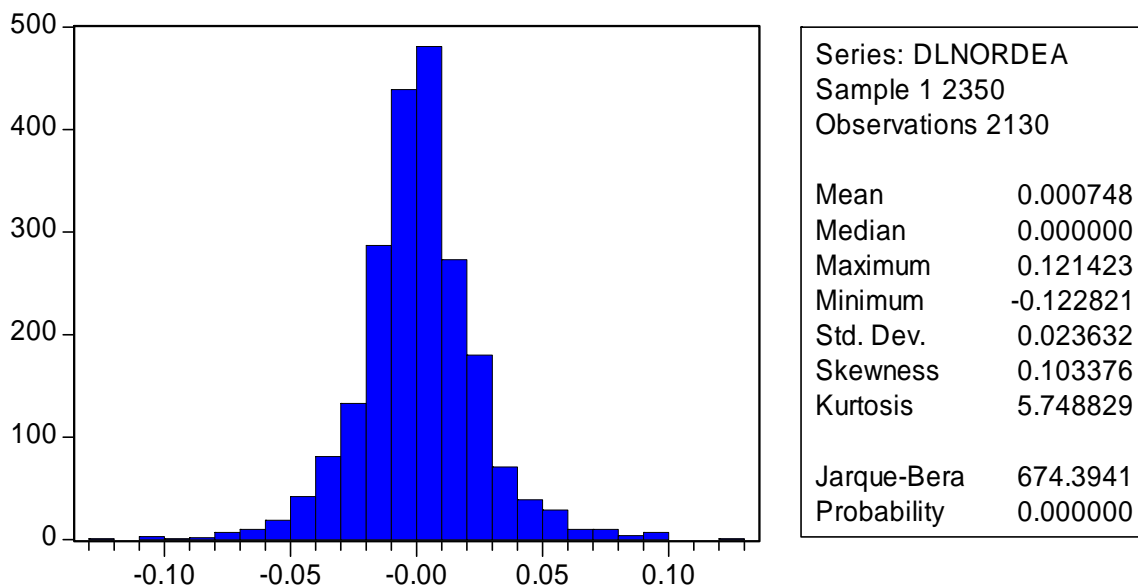


**Figure 1. B. Relative Wealth Indices: 1995 through 2005**

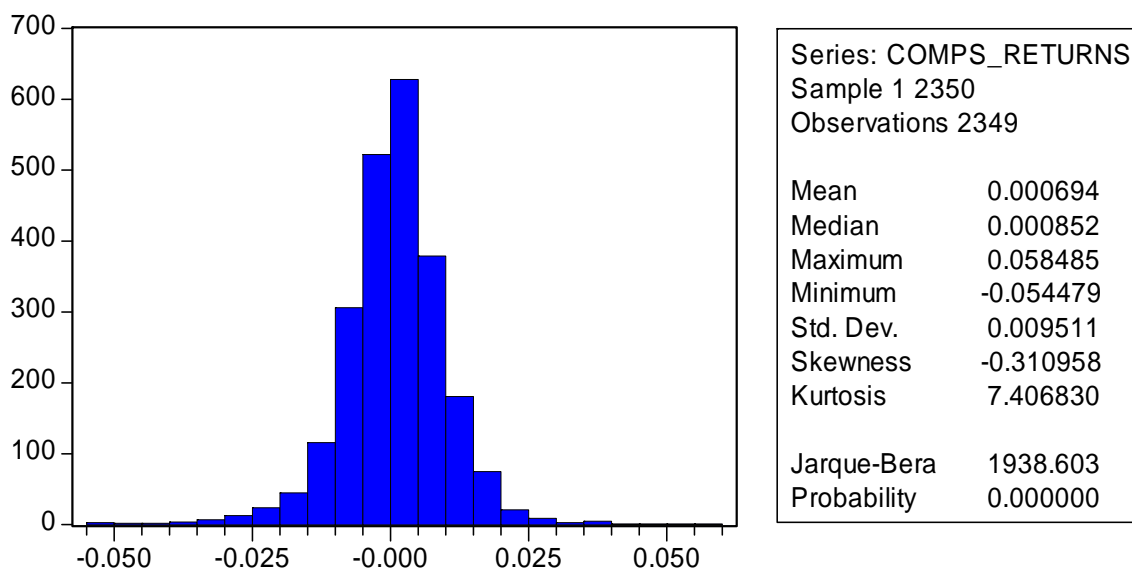


Notes: On day 220, both indices are 100, or in natural logarithms are 4.6051702.

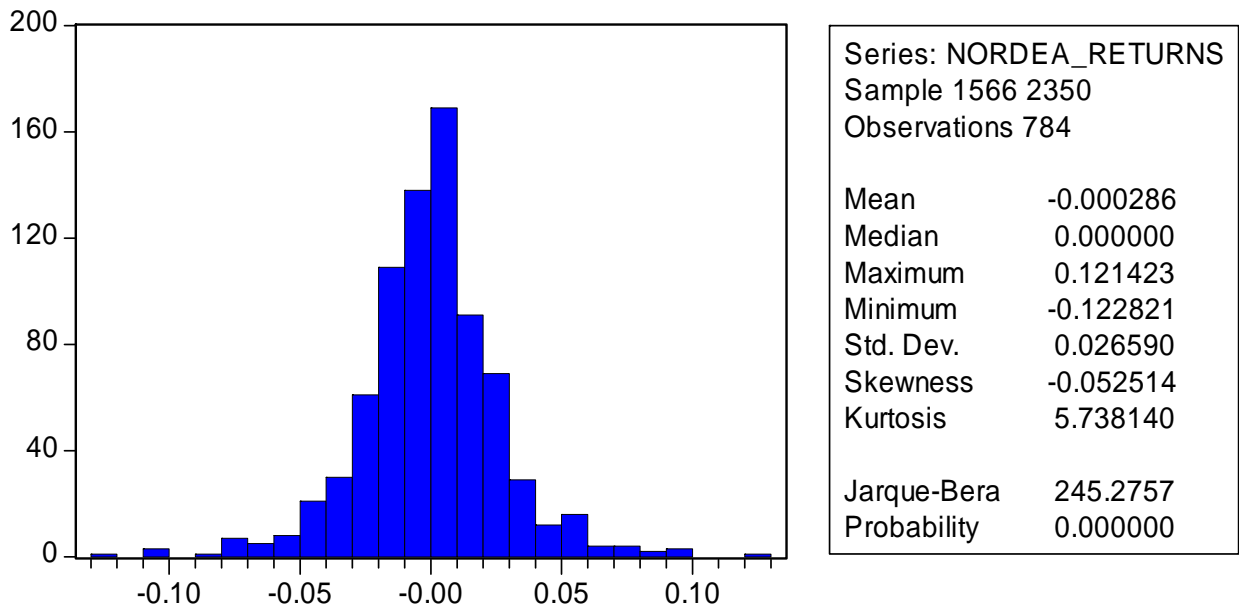
**Figure 2—Nordea Descriptive Statistics, 1995-2003**



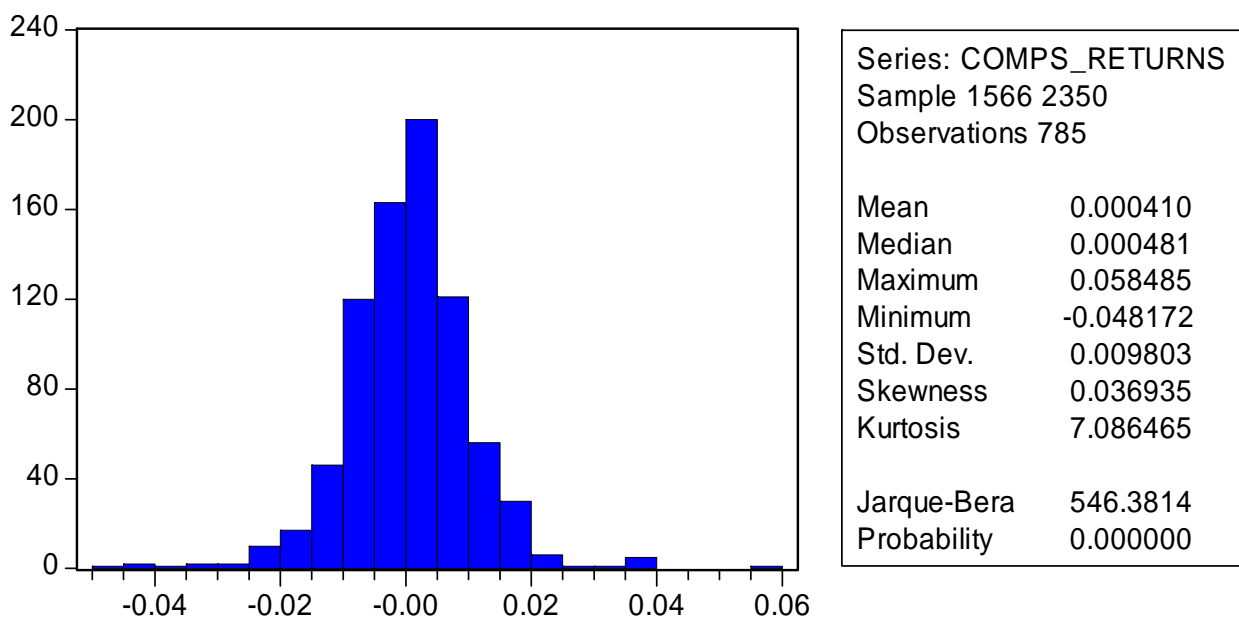
**Figure 3—Comparables Descriptive Statistics, 1995-2003**



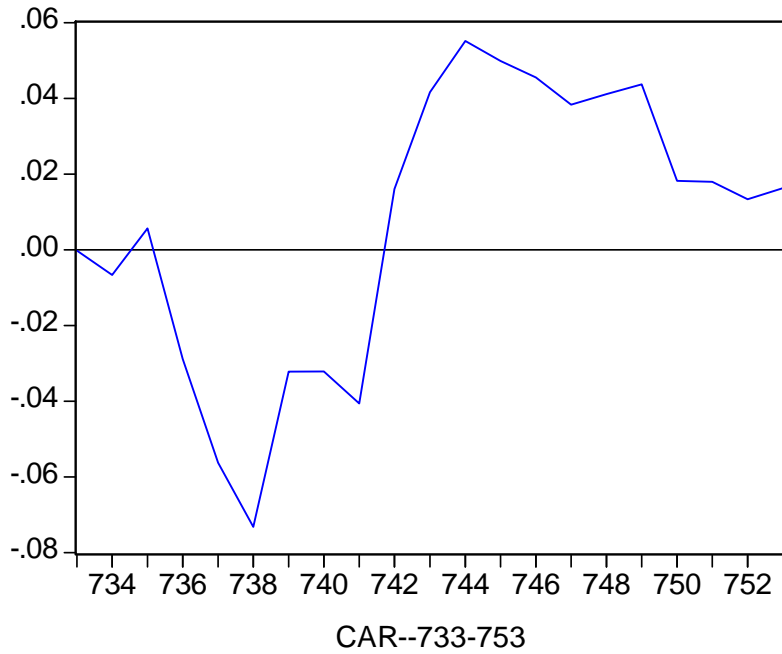
**Figure 4—Nordea Descriptive Statistics, 2001-2003**



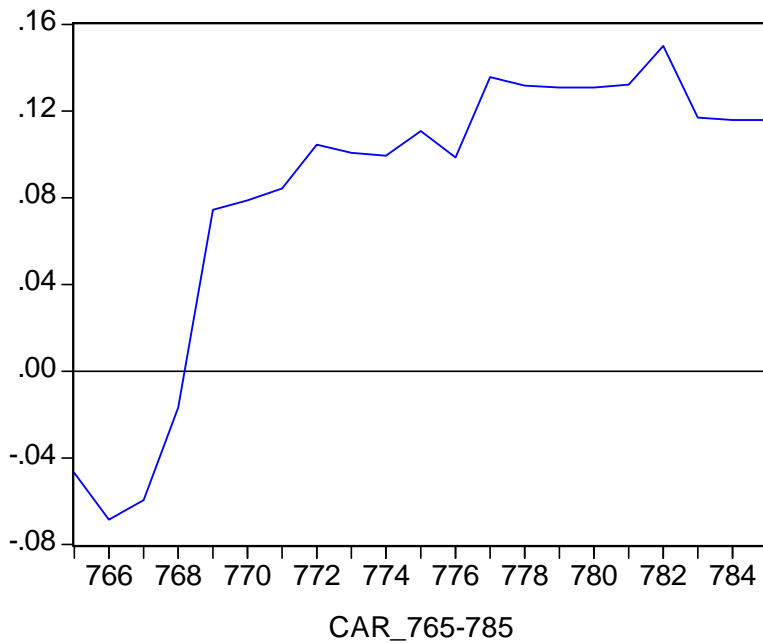
**Figure 5—Comparables Descriptive Statistics, 2001-2003**



**Figure 6. Cumulative Abnormal Returns, First Event:  
 Nordbanken (Sweden) and Merita (Finland) Announce Negotiations**

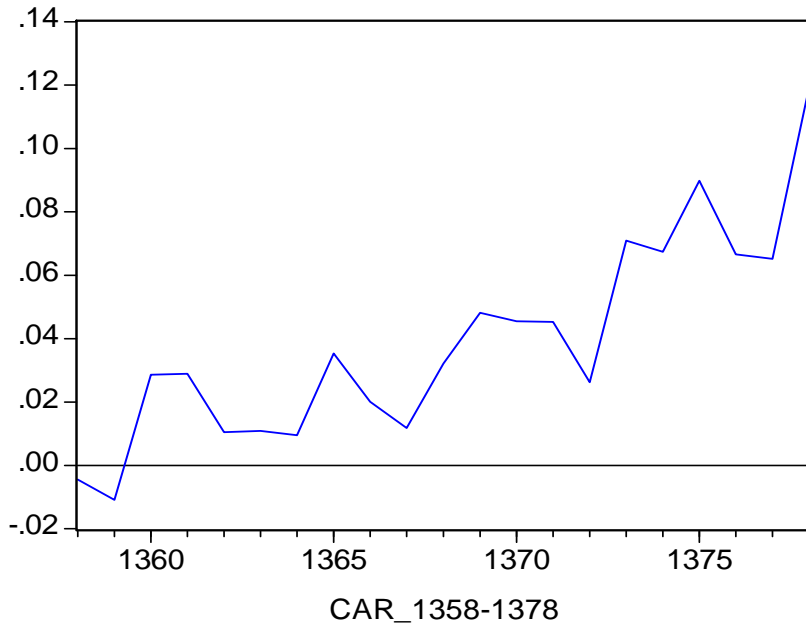


**Figure 7. Cumulative Abnormal Returns, Second Event:  
 Nordbanken and Merita Meger Accepted**

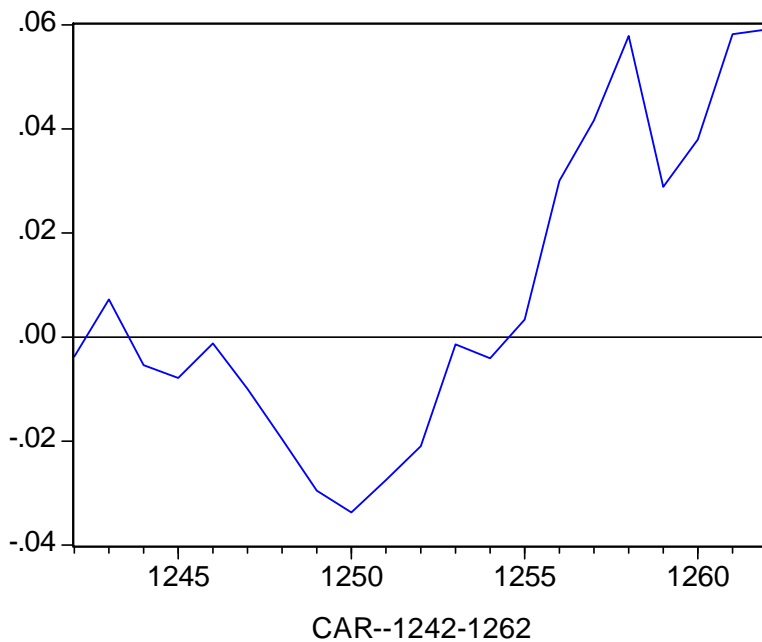




**Figure 8. Cumulative Abnormal Returns, Third Event:  
Baltic Holding Company Announces Both Its Intention and Success  
in Acquiring Unidanmark**



**Figure 9. Cumulative Abnormal Returns, Fourth Event:  
Nordea Announces Intention to Acquire Christiania (Norway)**



**Figure 10. Cumulative Abnormal Returns, Fifth Event:  
Nordea Announces Success in Acquiring Christiania (Norway)**

