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Abstract:
Price-earnings ratios are part of the toolkit that is used for assessing the valuation of individual firms on the stock market as well as the entire market itself. This paper presents consistent P/E series for the liquid Danish shares adjusted for share buy-backs. The results show that over the period from 1969 to 2003, the average (trailing) P/E equals 13.5. The P/E reaches its lowest level in 1980, which is likely to be due to a soaring oil price, high wage increases and interest rates approaching 20 percent. Notwithstanding optimistic equity pricing also in Denmark in the late 1990s, the upturn in Danish valuations was more moderate than in the US. The correction that sets in subsequently reversed essentially the gains in the Danish P/E in the 1990s.

1.Introduction[1]

Price-earnings ratios are part of the toolkit that is used for assessing the valuation of individual firms listed on the stock market as well as the entire market itself. In spite of the popularity of the price-earnings multiple, well documented long price-earnings series are rare outside the Anglo-Saxon countries.[2]

The purpose of this paper is to present price-earnings series for the last 35 years for Danish stock market. To this end we have collected price, earnings and share data information, including information on share buy-backs and option programs, for the 20 largest and most liquid shares. These shares constitute by and large the KFX price index, which, however, only goes back to 1989.

The construction of the P/E index is based on the principles of liquidity and historic consistency. As regards liquidity, we decided the index should only include the liquid B shares but not the A shares since large trades in A shares are generally not feasible given that they typically are owned by the founding family and a few other dominant shareholders. A shares therefore trade with a discount even though they have superior voting rights. As regards consistency, it is obviously important to use the same earnings concept throughout the sample period. Given that the Result for the Year (Årets Resultat) is an earnings measure companies have reported throughout the sample period it is natural to use this measure. Moreover, the Result for the Year has also the desirable feature that it is similar to Standard and Poor's Reported Earnings, which makes a comparison to the S&P series feasible. Sticking to the same earnings concept is necessary but not sufficient to ensure that earnings are comparable over time due to possible changes in accounting. It is therefore important to watch out for significant changes in accounting practices. In our reading of firms' income statements we have on a few occasions encountered abrupt accounting changes; in these cases we only include the most recent data for the particular share. That said, the general impression we have from screening firms' income statements, including their overlapping earnings estimates based on previous and new rules, is that accounting changes have only had marginal effects on firms' earnings.[3]

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[1] The paper has been presented at the Copenhagen Business School, the International Atlantic Economic Conference 2004, Chicago and LD Pensions, Copenhagen. I thank Trewor Chamberlain, Jeppe Christiansen, Carsten Krogholt Hansen, Kurt Kara, Allan Layton and Steen Thomsen for comments and suggestions. I am also grateful to Mikael Mosekilde and Jakob Thomsen for invaluable assistance in compiling and managing the data and to "Account-CBS" and "Erhvervs & Selskabsstyrelsen" for giving me access to the companies' financial reports. Finally, I thank SSF for financial support.

[2] Datastream publishes a P/E series for the Danish market that goes back to 1973. Datastream sets negative earnings arbitrarily to zero and deviates also from the present paper in a number of other ways, cf. below.

[3] This could, however, also reflect some forward-looking behavior. Thus, companies may have incorporated some of the accounting changes prior to the rules were finally enacted into law.

Besides estimating valuation multiples for the liquid part of the market, the paper also assesses the quantitative importance of firms' holdings of own shares and employee option programs, which is usually disregarded. However, as share buy-backs have become increasingly important we have found it relevant also to make an assessment of this issue.

Historic price-earnings data have many applications. They can be used in assessments of current valuations as in Shiller (2000) and in many previous contributions. They can also be used to analyze trading strategies and specific historic events, see for example Fama and French (1998) and Lakonishok et al. (1994). In this paper, we use the data to shed new light on the bull market in 1983 and the bear market in the early 1990s. It is well known that one of the key explanations of the doubling of the share prices in 1983 is the sharp fall in interest rates following the successful Danish Stabilization, see OECD (1986) and Dornbusch (1989). The data in this paper shows, however, that the soaring equity prices also had support in an impressive upturn in earnings. The strong earnings fundamentals indicate that the supply side may have played a larger role in the 1982/83 recovery than what has hitherto been considered to be the case. The point is that firms base their investment and employment decisions on their own profitability estimates and not on economy wide profits and wage data, which show much less movement to justify the unusual strong expansion in output and employment. Barry (1999) also hints at the possibility that the supply side may have been underestimated; future work should look more into this issue.

The remainder of the paper is organized as follows. Section 2 outlines the underlying principles of the P/E series. Section 3 presents and discusses key characteristics of the data. The emphasis is on historic valuations and trends in the market. Section 4 concludes the paper. Annex 1 to 3 presents further evidence.

2. Underlying Principles and Methodology

This section begins by defining a P/E index in theory. Next we describe the principles underlying this paper's empirical P/E index. To this end we first describe the type of shares that enter the index. We then turn to the underlying earnings definition. In this section we also describe how we deal with mergers, fundamental changes in balance sheets, significant changes in accounting and negative earnings. The latter is an issue that we pay particular attention to due to Datastream's unorthodox handling of negative earnings. Finally, we describe how we adjust for companies' share buy-backs and we also discuss the effects of employee option programs.

2.1 Interpretation of a P/E index

We begin by recalling the interpretation of an aggregate P/E index. To this end we use the following notation: Let p_j, n_j , e_j denote the price, the number of shares and earnings per share of firm j. Firm j's total earnings is given as $E_j = n_j e_j$.; total market earnings E is the sum of all individual firm earnings $\sum E_j$. The market value of each firm is $V_j = p_j n_j$.

A P/E index is defined as a weighted average of the individual firms' price-earnings p_j/e_j; weights are firms' earnings $e_j n_j$ relative to market earnings E,

$$P/E = \sum(p_j/e_j)(e_j n_j/E) \qquad (1)$$

By multiplying the numerator and the denominator by n_j, the aggregate P/E can also be shown to equal the market value of all companies relative to their total earnings

$$P/E = \sum V_j/E \qquad (2)$$

A P/E index can therefore be thought of as a weighted average of firms' price-earnings, as shown by (1), but is also equal to the total market value relative to total earnings as shown by (2). Let us now move on to present the shares that enter the index.

2.2 Shares in the Index

Table 1 presents the shares in the KFX (the Danish Blue Chips) price index from its inception in 1989 to 2003. The table shows that the number of shares in the index has varied from 19 (minimum) to 25 (maximum), but has for more than a decade been held at 20. Over its lifetime, 57 shares have been into the KFX index.

Table 1: Shares in the KFX portfolio; market capitalization in billions of DKK(selected years)

Company	1989	1990	1991	1992	1995	1997	1999	2001	2003
Banking									
Andelsbanken	3,2								
BG Bank						13,7			
Bikuben		3,7	4,4						
Den Danske Bank	9,7	15,7	16,8	12,6	20,3	48,4	42,9	98,9	98,8
Handelsbanken	6,0								
Jyske Bank	2,6	2,8	2,6		3,4	7,7	6,1	6,4	11,2
Nordic Baltic Holding/Nordea								23,5	15,7
Privatbanken	4,7								
Provinsbanken	4,1								
Unidanmark		11,4	9,2	4,7	12,9	23,8	34,0		
Insurance									
Baltica			9,7						
Baltica Holding	6,9	13,3	10,1	2,3					
Codan forsikring	5,2	6,6							
Hafnia Holding A	2,3	3,1	2,3						
Hafnia Holding B	3,1	3,6	2,8						
Kapital Holding (RealDanmark)							20,9		
Topdanmark	2,8	3,4	2,5	1,8	2,6				7,9
Industry									
Bang & Olufsen						5,0			
Carlsberg A	3,5	3,9	13,3	9,0					
Carlsberg B			6,4	7,2	8,9	10,6	8,0	10,0	7,8
Chr. Hansen									
Coloplast					3,6	5,9	7,8	12,2	11,2
Danisco	8,7	9,2	11,0	6,8	14,8	23,4	16,8	17,3	13,9
FLS B		5,6	4,7	3,3	3,3	6,3	7,3		
GN Store Nord				1,5	2,7	4,3	14,3	10,9	8,4
H. Lundbeck							17,2	49,1	23,1
i-data international									
Navision Damgaard (Navision)								8,1	
Navision Software							6,2		
NEG Micon								5,5	2,6
NKT	2,8	3,1	2,8						
Novo Nordisk B	8,2	8,6	15,4	17,6	24,4	63,3	63,4	102,0	72,4
Novozymes B								10,9	14,0
Radiometer B			2,0	1,9	3,5				
Superfos	2,2	2,1	2,2		3,0	5,4			
Vestas Wind Systems							13,7	24,0	10,2
William Demant							10,4	16,1	14,1
Service & Trade									
Danske Luftfartselskaber					3,9				
DSV B									5,5
Group 4 Falck						3,8	10,0	19,3	10,8
ISS B	1,9	2,1	2,9	3,4	3,3	6,5	16,9	17,2	13,0
KBH Lufthavne					3,8	7,5			
Luftfart A	3,1	1,7							
Ratin							16,5		
SAS Danmark						4,8			
S. Berendsen A									
S. Berendsen B	3,0	3,9	6,1	6,9	11,2	22,5		3,4	
Teledanmark B/TDC					19,2	27,0	118,8	63,8	46,3
ØK	5,8	4,7	4,0	1,8	2,4				
Shipping									
DFDS				1,3					
D/S 1912 A	9,6	8,8	11,3	8,5					
D/S 1912 B	9,6	8,8	11,3	8,3	11,4	34,2	47,0	30,4	
J. Lauritzen Holding	3,6	3,2	4,3	3,2					
Svendborg B	9,7	8,7	11,2	8,2	11,4	33,7	45,8	28,0	
Svendborg A	9,7								
A.P. Møller - Mærsk A									88,8
A.P. Møller - Mærsk B									93,2
Investment									
FIH B									
Potagua B		3,0	2,5						
Number of shares in KFX	25	24	25	19	20	20	20	20	20

Source: Copenhagen Stock Exchange

Table 1 also lists the market value of the shares in selected years (the complete table can be found in Annex 1). The table shows that Danske Bank, D/S 1912 B and D/S Svendborg B (now A.P. Møller Mærsk), Novo Nordisk B and Teledanmark (now TDC), have over an extended period been the largest shares accounting for more than 50 percent of the market. Moreover, D/S 1912 B and D/S Svendborg B, the two parent companies of the A.P. Møller Group, account for well above 10 percent of the market until 2003.[4] Following the merger of D/S 1912 and Svendborg in 2003, the Stock Exchange included not only the B share but also the A share in the KFX. The inclusion of the A share in combination with a soaring share price tripled the weight of the A.P. Møller in the KFX. The A share is, however, not nearly as liquid as the B share given that the A share to a very large extent is held by the founding family, including family foundations, and a few other dominant investors. Due to that the A share also trades with a discount in spite of superior voting rights. Because of the reduced liquidity one can argue that it should only be the B share that should enter the index. And indeed this is also the approach taken in this paper. The P/E index we outline therefore includes the B shares and the other companies in the KFX who only have one share class. In this respect, the P/E universe deviates from the KFX as the KFX also included other A shares in the past, see Table 1.

Like many other indexes, the KFX also suffers from an element of cross ownership. In general, it is not possible to clean the KFX up for this simply because historic data on cross holdings are unpublished. There are, however, a few adjustments that can be done. We have for example taken Potagua out of the P/E index because Potagua is a pure holding company with large ownerships in the two KFX shares FLS and NKT.[5]

To prevent that the universe (sample) becomes too small due to the above mentioned adjustments (exclusions), we have each year replaced those shares we take out with new shares adopting the same criteria as the Stock Exchange uses in picking the KFX shares in the first place. Prior to the inception of the KFX in 1989, we decided that the P/E index should contain 20 shares. The P/E index extends the KFX universe 20 years back in time to 1969.

The KFX provides information on the (value weighted) share price development but the Stock Exchange does not publish an index that relates this development to firms'

[4] The A.P. Møller Group is the largest Danish company. The company is into shipping (world leader in container transportation), oil, manufacturing and retail, see Risager (2003). Novo Nordisk is into pharmaceuticals with world leadership in insulin production. TDC is the "old Danish telephone company" now entirely owned by private investors like all the other companies in the KFX. Danske Bank has by far the largest market capitalization of the banks reflecting that only a minor portion of Nordea (a merger of Swedish, Finnish and Danish banks) is traded on the Copenhagen Stock Exchange.

[5] Potagua was in the KFX in 1990 and 1991. As the KFX in some years also included both DFDS and Lauridsen Holding (who had a large stake in DFDS) we also excluded DFDS in those years where Lauridsen entered the index. We adopted a similar procedure for Baltica and Baltica Holding.

profits. Given that the aim of this paper is to construct such an index we now outline the underlying earnings concept.

2.3 Earnings Concept, Changes in Accounting and Mergers & Acquisitions

We use the Result For the Year (Årets Resultat) as our profit measure, defined as revenue less (almost all) costs, including interest, taxes, depreciation and payments to minority shareholders.[6] This is a natural profit measure to use in a historic analysis given that it is the only profit measure firms have consistently reported throughout the sample period. Moreover, it should also be noted that this unadjusted earnings measure has probably not been managed (massaged) as much as other and more recent earnings measures that adjust for so-called non-recurrent events since the latter tend to invite to earnings management as emphasized by Cortes, Lyon and Marsh (2002). On a few occasions, one-time events may, however, be of such an importance that some action (adjustment) seems appropriate to prevent that numbers convey a false impression. This is the case when companies fundamentally change their balance sheets due to e.g. divestures. In those cases we decided to exclude companies from the index since it is generally impossible to sort out how much of the reported earnings that is due to a sell off of assets and how much that is due to normal business. Fortunately, it is only a few times we have found it necessary to do this.[7] Finally, it should be noted that the Result For the Year is similar to Standard and Poor's Reported Earnings, and it is therefore meaningful to compare our index with one of the P/E series published by the Standard and Poor's say e.g. the S&P 500 (for the largest shares in the US).

As shares represent ownership of both the parent company and its associates, earnings should include profits from associates. Provided firms follow the so-called equity principle, reported earnings will also include earnings from associates. A.P. Møller (D/S 1912 and D/S Svendborg) did, however, not report earnings on a consolidated basis prior to the new accounting law of 2002. In the official earnings statements, the company only included dividends from the associates. P/E multiples for the two stocks were therefore significantly higher in the past and simply not comparable to current multiples due to differences in accounting.[8] The company itself has restated its earnings 5 years back in time under the new accounting rules, see A.P. Møller (2002). It is therefore possible to include the A.P. Møller shares from 1997 and onwards (using the restated earnings) whereas the share for consistency reasons should not be included in the index prior to 1997.

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[6] In general, firms have not expensed stock options, which is an issue we will return to.
[7] GN Store Nord's and NKT's divestures of Sonofon and Giga in 2000 are cases in point.
[8] D/S Svendborg and 1912 traded at an average P/E above 80 in the period 1983-01. The company (A.P. Møller-Mærsk) now trades at a multiple significantly below 20 (in spite share prices roughly doubled in 2003).

In the sampling of the other companies' earnings we have also looked for abrupt changes in earnings in particular in 2002 and in the early 1990s when new accounting rules were implemented. The lesson we draw from reading firms' overlapping earnings estimates based on new and previous rules is that accounting changes only have had moderate effects on earnings in general. This could, however, also reflect that firms have been forward looking and hence gradually implemented the new rules prior to the enactment of the law.[9]

In years with M&A, the P/E concept becomes blurred. Thus, in the beginning of the year we have well defined separate balance sheets and P/E's, but when companies are merged into a single entity with one new share price we can not construct a meaningful price-earnings ratio for that year. We therefore exclude companies that merge in the year where the merger takes place.[10]

The next issue is how one should deal with negative individual firm earnings? If earnings are negative, the P/E for a single share is obviously without meaning. Given that the aggregate index is a weighted average of individual price-earnings as shown by (1), one may think that firms with negative price-earnings should not enter the index. Following this line of thinking, the aggregate P/E would then only provide information on the valuation of the firms with positive earnings.

However, when we think about the P/E index from an aggregate perspective equal to the total market value relative to total earnings as shown by (2), it seems reasonable also to include the negative earnings. In this case the index preserves the desirable property embodied in (2), that is, states the valuation of all companies relative to total market earnings. This is the approach taken by Standard and Poors in the construction of their P/E series and this will also be the approach adopted in this paper.

This approach differs from the P/E series published by Datastream. The Datastream approach is to exclude companies with negative earnings in the denominator but not in the numerator in (2). In other words, Datastream includes the market value in the numerator, but sets earnings equal to zero in the denominator in case the company has negative earnings. The latter approach seems hard to justify on a conceptual level.[11] Moreover, when negative earnings arbitrarily are set to zero, the P/E index does no longer equal the total market value relative to total earnings. We expect that

[9] There are a few other cases where earnings change abruptly because of new practices. In these years, the share is excluded from the index.

[10] There is one exception to this and that is the merger of D/S 1912 and D/S Svendborg into A.P. Møller-Mærsk that took place in June 2003 given that the companies were already effectively operating under the same umbrella prior to the merger and given that it is straightforward to consolidate the two shares at the year end of 2002.

[11] As I found this procedure puzzling, I contacted Thomson Financial who confirmed that this indeed the approach.

the P/E multiple in this case is lower than in the case where negative earnings are included.[12] Below, we estimate how much the Datastream approach biases the P/E downwards.

2.4 Share Buy-Backs and Options

Like in many other countries share buy-backs have become increasingly popular in Denmark in the late 1990s. Table 2 lists Danish companies' holding of own shares in 2003. The table shows that almost all companies have share buy-back programs. The (simple) average holding of own shares is 3.3 percent. The table also shows that out of these companies there are three who do not have options or any other share based remuneration scheme in 2003. This is A.P. Møller, Nordea and William Demant.[13] For this group of firms we should adjust (increase) the earnings per share figure with a factor that reflects these companies' own share holdings. For A.P. Møller, the P/E in 2003 declines by a factor 0.7 from 10.8 to 10.1 due to this adjustment. For the other two firms the adjustment is much smaller given that their own holdings are significantly lower.

For firms who simultaneously engage in share buy-backs and employee option programs matters are more complicated. Thus, in case the company's stock of own shares equals the value of the options, one should not adjust given that these shares upon exercise of the options will be handed over to the employees who will then become a new group of shareholders. From our reading of companies' reports it appears that firms often hold large inventories of own shares because they want to be on the safe side in the hedging strategy and because the share acquisition programs also serve the purpose of reducing the share capital and in some cases reducing the risk of a hostile takeover. Unfortunately, firms do not in general publish how large a proportion of their own holdings that meets the option commitments and the aim of reducing the share capital. Due to that it is not possible to come up with a precise estimate of the appropriate adjustment factor for the remainder of the firms.

[12] This is strictly speaking an empirical issue because negative earnings may also reduce the numerator.
[13] Nordea in particular had option programs in earlier years, which will be taken into account.

Table 2: Holding of own shares 2003 (Year end)

Company	Total number of shares	Own shares in percent	Option programs[1)]
Banking			
Den Danske Bank	711675849	5,5	YES
Jyske Bank	36000000	0	NO
Nordic Baltic Holding/Nordea	2846499727	2,9	NO
Insurance			
Topdanmark	24717501	10,7	YES
Industry			
Carlsberg B	35.257.090 A, 28.649.192 B	4,8	YES
Coloplast	1.800.000 A, 22.200.000 B	2,2	YES
Danisco	53199602	2,6	YES
GN Store Nord	219775063	3,9	YES
H. Lundbeck	233741985	1,0	YES
Neg Micon	26711027	1,4	YES
Novo Nordisk B	53.743.600 A, 300.950.560 B	4,7	YES
Novozymes B	10.748.720 A, 64.690.112 B	7,9	YES
Vestas	105003966	0	NO
William Demant	70293953	2,5	NO
Service & Trade			
DSV B	20770206	3,7	YES
Group 4 Falck	88862400	0,7	YES
ISS	44309894	0,4	YES
TDC	216459540	1,5	YES
Shipping			
A.P. Møller - Mærsk A+B	2197800 A, 2197800 B	6,4	NO
Average own holding		**3,3**	

Source: Company Reports
Notes: 1) The exsistence of remuneration schemes based on the value of the company's shares (options and warrants)

However, to obtain insight into the quantitative magnitude of the problem we look at two polar cases

Let us first consider the extreme case where the options never get into the money. In this case we should make an adjustment for all companies' own holdings. When we adjust for all companies' share buy-backs we obtain for example for 2003 a P/E that equals 13.5. In the polar case where companies' own holdings are committed to option programs we can ignore the share buy-backs of the 16 companies in 2003. In this case, the aggregate P/E equals 13.9 in 2003. These calculations show that there is a margin of uncertainty of around 0.4. Put differently, a P/E at 13.9 in 2003 is potentially upward biased with a factor that at maximum equals 0.4 due to an incomplete treatment of share buy-backs for those companies who also have share based incentive programs.

For the previous years 1997-2002, we have also collected data on own holdings and share based incentive schemes. On the basis of this information, we adjust the price-earnings for those companies who hold own shares but who do not have option based remuneration schemes. Subsequently, we estimated the max error that we are making by not adjusting for those companies who also have option based remuneration schemes. On average, the result is that our reported P/E estimate is upward biased

with a factor that at maximum equals 0.4 due to an incomplete treatment of share buy-backs for those companies who also have option based remuneration schemes.

Before ending this discussion it should, however, also be noted that options and share buy-backs not only affect the proper estimate of the number of shares to be used in the eps calculation, it also affects the estimate of earnings itself given that firms have not expensed options. In other words, the official earnings numbers overstate the true earnings. Unfortunately, it is a hard if not an impossible task to estimate the bias in the reported earnings for a number of reasons that we will not go into in this paper.[14] That said, it should be noted that guesstimates point to a bias in the interval 2 to 4 percent. If there is something to that, the "true" P/E should be about 0.4 higher. In other words, the P/E we report (and which adjust for own shares for those companies who do not have option programs) is likely to be fairly close to the theoretical correct P/E.

2.5 Differences and Similarities to Datastream's P/E

Finally, we briefly explain key differences and similarities to Datastream's P/E series. First, Datastream sets negative earnings to zero, while we include both negative and positive earnings. We estimate the importance of this below. Like Datastream we also work with the Result for the Year. Secondly, Datastream includes both A and B shares, whereas we only include the liquid B shares. Third, unlike Datastream we have controlled for large changes in accounting methods and have for example excluded the A.P. Møller shares prior to 1997 simply because earnings were grossly understated in the past reflecting that earnings were not reported on a consolidated basis. We also made adjustments for large divestures and mergers. Fourth, we adjust the P/E for companies' own holding of shares if they do not have option programs but not in case they have option schemes. Due to that the reported P/E could at maximum be 0.4 too high. However, since firms have not expensed options in the first place and since earnings could be overstated by 2 to 4 percent, it seems likely that the P/E we report is fairly close to the theoretical correct P/E. Finally, Datastream does not make adjustments for companies' share buy-backs or option programs.

[14] Beckmann and Jørgensen (2004) present a wealth of interesting evidence on the use of option-based compensation in Danish firms. They also discuss valuation issues, but they do not estimate the consequence of expensing options on firms' income statements. Companies will start expensing options in 2005.

3. Price-Earnings: An Overview of the Landscape

This section gives a broad overview of the major trends. Following this we turn to some of the more remarkable years in the history of the stock market.

3.1 Major Trends

Table 3 summarizes key statistics on the P/E multiple over the 35-year period from 1969 to 2003. The average trailing P/E, defined as the year-end market price relative to earnings over the year, equals 12.3 if we disregard the two crisis years 1990 and 1992, but equals 13.5 if those years are included, cf. below.

In the early 1990s, the P/E skyrocketed due to highly depressed earnings in banking but also in other sectors, cf. below. The gloomy business environment culminates in 1992. In that year total earnings is actually negative. Hence, the P/E is negative. In 1990 and 1991, the P/E stands at 327.5 (three hundred and twenty seven point five) and 33.2, respectively. As noted, the estimated mean of 12.3 excludes two of the crisis years but includes the P/E for 1991. Obviously, we cannot include the negative P/E for 1992 because that would incorrectly drag the average down, and it seems also a bit too much to include the absurd P/E for 1990. We have therefore replaced the two extreme observations with the more meaningful P/E for 1991. By following that procedure we arrive at a mean P/E that equals 13.5.

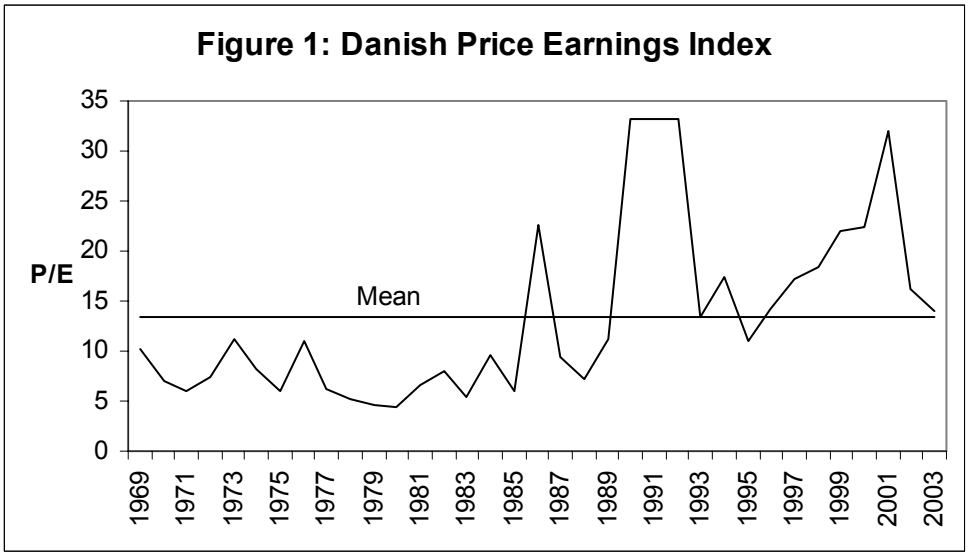
Table 3: P/E mean, minimum and maximum[1)]

	1969-2003	1969-1981	1982-2003
Mean	13,45	7,22	17,14
Mean (without 90 & 92)	12,26	7,22	15,53
Minimum	4,43	4,43	5,47
Maximum	33,19	11,17	33,19

1) Adjustments have been made for own shares but only for those companies who do not have option programs.

Figure 1 shows that the P/E is hovering around a fairly constant level until the late 1970s. In 1980, the P/E reaches a 35-year low at 4.4, cf. below. The P/E is then drifting upwards until it peaks in the early 1990s. Following the crisis in the early 1990s, valuations decline to more reasonable levels. From the mid 1990s, the P/E shows solid gains until the multiple peaks in 2001. The sharp decline that begins in 2002 reverses essentially the gains in the P/E in the late 1990s. The Danish market is therefore at the end of 2003 traded at a P/E multiple close to the historic average.

Having said that it should also be noted that the mean P/E has drifted up, that is, the market has since the mid 1980s been traded at an earnings multiple that is about twice the level in the 1970s, see also Table 3. The upward drift in the P/E is likely to reflect – among other things – the fall in interest rates; we return to this at the end of this section when we discuss the development of the earnings yield.[15]



3.2 From Bust to Boom in the beginning of the 1980s

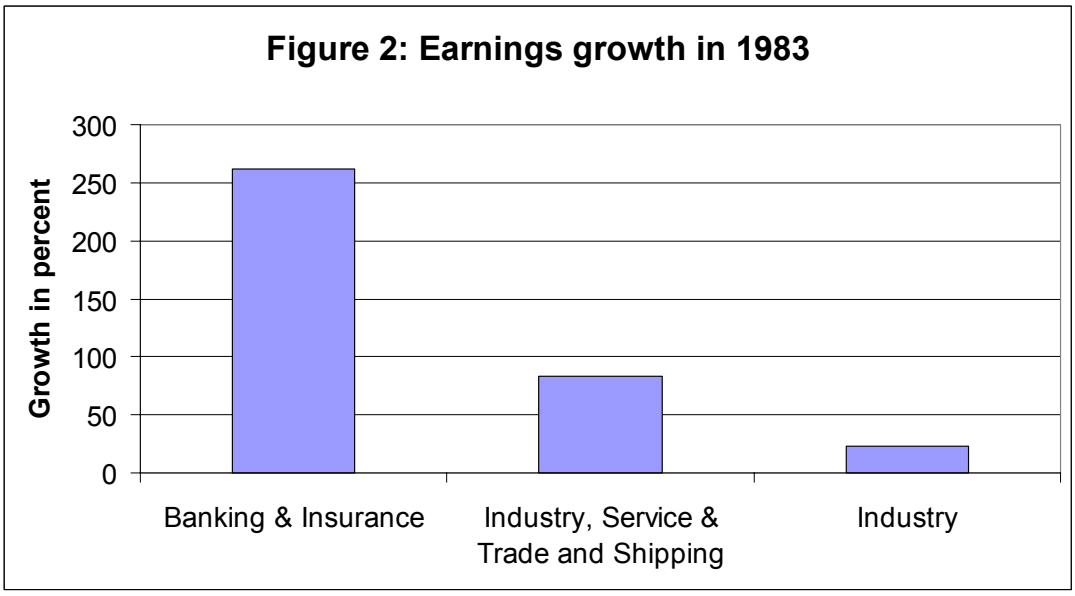
As noted, the Danish P/E reaches its 35-year low in 1980. In that year the market is traded at a P/E equal to 4.4. A hike in the oil price (the second OPEC shock), persistent high wage growth, rising nominal interest rates to near 20 percent and a weak overall performance of the economy are likely to be key explanations of the historic low P/E multiple. The dismal performance of the economy prompted a policy regime shift in 1982, which paved the way for the outstanding bullish 1983.

In 1983, the total share price index increased by 114 percent, which is the biggest price increase recorded in the 20th century in Denmark. It is common to attribute the soaring stock prices to three factors: First, there is a shift in economic policy towards a non-accommodation strategy in late 1982; key elements included a considerable tightening of the fiscal stance and a replacement of a soft peg with a firm commitment to a fixed exchange rate policy, see OECD (1986) and Dornbusch (1989). These policy changes resulted in a drop in long interest rates by around 7 percentage points and in a more optimistic outlook, see Andersen and Risager (1988). The sharp drop in interest rates, the improved outlook for the economy and the higher risk appetite are likely to have spurred the market. Second, a new tax on institutional

[15] There are several other factors that could have played a role; future work should look more into this issue.

investors' real bond yields (passed by the Parliament in 1983 to become effective in 1984) made stocks more attractive to institutional investors given that stocks were exempt from this tax. Third, the rise in world stock markets in 1983 may also have had spill over effects even though capital market integration was not as deep as it is today. That said, it should also be noted that the international upturn was moderate relative to the Danish bull market; the S&P 500 for example went up by 17.9 percent in 2003.

So far there has not been an attempt to link the soaring share prices to earnings. An important insight that follows immediately from the P/E index is that the bullish stock market had support in an even faster increase in profits; that explains why the aggregate P/E declines from 8.0 in 1982 to 5.5 in 1983. Figure 2 shows that the strong turn a round in profits is particular obvious in the banking sector. However, other branches also experience a considerable increase in profits. Taken together, profits in industry, service, trade and shipping are up by 82.9 percent. In industry alone, earnings are up by 22.6 percent.[16]



Company specific developments in share prices, earnings and price-earnings are given in Tables 4a and 4b. These tables show a diverse P/E development in the various firms and sectors. For all banks in the index, the price-earnings multiple declines in 1983 due to a sky rocketing earnings development. For all other companies (in industry, service, trade and shipping), the P/E goes up as the sharp increase in equity prices outweighs the earnings gains. It is therefore the outstanding earnings development in the banking sector that explains why the aggregate P/E fell in 1983 in spite of a (more than) doubling of share prices.

[16] Note that the comparison is of course based on the same sample in the two years.

The considerable improvement in 1983 of the leading companies' profits and share prices indicates that the supply side could have played a larger role than what is normally considered to be the case in generating the strong employment and investment recovery following the macroeconomic regime change in 1982, see OECD (1986)[17]. The point is that firms base their investment and employment decisions on their own profitability estimates and not on economy wide profits and wage data, which (of course) show much less movement to justify the unusual strong expansion of the economy (under conventional labor demand elasticities etc.). Barry (1999) also hints at the possibility that the supply side may have been under-estimated; future work should try to assess this hypothesis using firm specific earnings, employment and investment data.

Table 4a: Share prices, earnings and P/E's in 1982

	Price	Earnings [1] (mio. DKK)	Shares	EPS	P/E	Market value (DKK)
Banking						
Andelsbanken	164,75	144,04	3.000.000	48,01	3,43	494.250.000
Danske Bank	187	517,16	9.500.000	54,44	3,44	1.776.500.000
Handelsbanken	187	477,43	9.350.000	51,06	3,66	1.748.450.000
Jyske Bank	275	117,90	2.260.000	52,17	5,27	621.500.000
Privatbanken	180	284,85	5.736.710	49,65	3,63	1.032.607.800
Provinsbanken	160	74,47	3.200.000	23,27	6,87	512.000.000
Insurance						
Codan Forsikring	331	181,30	1.253.688	144,61	2,29	414.970.563
Industry						
Carlsberg B	642	87,94	1.496.250	58,77	10,92	960.592.500
Danisco	561	57,64	767.058	75,14	7,47	430.319.538
De Danske Spritfabrikker	517	50,00	650.000	76,92	6,72	336.050.000
De Danske Sukkerfabrikker	402	269,81	4.352.834	61,98	6,49	1.749.839.268
FLS Industries B	176	191,00	5.444.085	35,08	5,02	958.158.960
GN Store Nord	179,75	65,00	2.013.064	32,29	5,57	361.848.290
NKT	169,5	30,99	2.554.340	12,13	13,97	432.960.630
Novo Nordisk	1.860	425,14	3.807.253	111,67	16,66	7.081.490.580
Superfos B	97,5	-106,89	3.697.972	-28,90	-3,37	360.552.270
Service and Trade						
KFK	300	76,50	1.300.000	58,84	5,10	390.000.000
Sophus Berendsen B	590	57,44	1.090.790	52,66	11,20	643.566.100
ØK	92,25	-349,19	7.650.000	-45,65	-2,02	705.712.500
Shipping						
J.Lauritzen	1.525	46,96	396.000	118,58	12,86	603.900.000
Total		2699,47			**8,01** [2]	21.615.268.998

1) Earnings represent earnings for the shares in our universe. In case the company has several share classes this is not total company earnings.

2) Weighted average P/E

[17] The Danish economy experienced the strongest increase in employment (in the private sector) among the OECD countries in these years, see OECD (1986).

Table 4b: Share prices, earnings and P/E's in 1983

	Price	Earnings [1] (mio. DKK)	Shares	EPS	P/E	Market value (DKK)
Banking						
Andelsbanken	352	518,31	4.100.000	126,42	2,78	1.443.200.000
Danske Bank	371	1677,09	9.500.000	176,54	2,10	3.524.500.000
Handelsbanken	338	1390,20	10.400.000	133,67	2,53	3.515.200.000
Jyske Bank	690	912,55	2.300.000	396,76	1,74	1.587.000.000
Privatbanken	359	1312,00	6.453.800	203,29	1,77	2.316.914.200
Provinsbanken	352	472,44	4.000.000	118,11	2,98	1.408.000.000
Insurance						
Codan Forsikring	885	219,60	1.257.028	174,70	5,07	1.112.469.338
Industry						
Carlsberg B	1.230	97,66	1.496.250	65,27	18,85	1.840.387.500
Danisco	1.050	76,42	1.086.500	70,34	14,93	1.140.825.000
De Danske Spritfabrikker	995	76,20	710.000	107,32	9,27	706.450.000
De Danske Sukkerfabrikker	731	310,55	5.223.400	59,45	12,30	3.818.305.400
FLS Industries B	300	-161,51	5.444.085	-29,67	-10,11	1.633.225.500
GN Store Nord	659,00	95,00	2.013.064	47,19	13,96	1.326.609.308
NKT	407,0	47,51	2.554.340	18,60	21,88	1.039.616.380
Novo Nordisk	2.770	599,49	4.270.654	140,38	19,73	11.829.711.580
Superfos B	518,0	171,50	3.971.096	43,19	11,99	2.057.027.728
Service and Trade						
KFK	772	132,04	1.300.000	101,57	7,60	1.003.600.000
Sophus Berendsen B	1.145	77,98	1.094.550	71,25	16,07	1.253.259.750
ØK	183,00	96,63	7.650.000	12,63	14,49	1.399.950.000
Shipping						
J.Lauritzen	1.600	36,09	396.000	91,13	17,56	633.600.000
Total		8157,76			**5,47**[2]	44.589.851.683

1) Earnings represent earnings for the shares in our universe. In case the company has several share classes this is not total company earnings.

2) Weighted average P/E.

3.3 Plummeting Earnings and P/E multiples in the Banking Sector in the early 1990s and the Problems with ignoring Negative Earnings

Following a number of profitable years for the banking sector after the successful stabilization of the economy, the profitability deteriorates in 1986 and in particular in the beginning of the 1990s. For those years it is crucial whether the P/E index includes all earnings or only positive earnings.[18]

The unsatisfactory earnings performance in the beginning of the 1990s reflects in particular a dismal growth performance of the macro economy due to a tight domestic policy stance following the adoption of an austerity package (labeled the potato diet) in 1987. The considerable tightening of the policy stance came in response to signs of an overheating of the economy that led to excessive wage growth and a record high current account deficit in 1986. Thus, while almost all other OECD countries were

[18] That is also the case in a number of other years notably 1986. The development in 1986 is outlined in Annex 3 to save space.

growing fast in the late 1980s and in the beginning of the 1990s, the Danish economy went through a period with low growth and sharply increasing after tax interest rates following the adoption of the Potato Diet and the cut in the tax deductibility of interest payments. This led to falling real estate prices, business failures in the construction and real estate sector in particular and therefore to a sharp increase in the banking sector's bad loan provisions. Moreover, as the banking sector also experienced portfolio losses and a slowdown in lending growth the scene was set for red numbers, which in 1992 outweighed the small albeit positive earnings reported by the other companies in the index, see Annex 3 for details.[19] The sharp increase in the banking sectors' losses shows how stressful a time it was for this sector; all the major banks managed, however, to muddle through without a rescue operation in the form of an injection of Government capital.[20]

As noted earlier, the P/E skyrocketed in the early 1990s due to the depressed earnings. Had we not included the negative earnings we would have conveyed a completely different picture. Thus, by applying the Datastream method, the P/E in the three years from 1990 to 1992 stands at 20.7, 19.8 and 22.2.[21] These ratios signal high valuations but they do not signal that the economy is in a crisis that could have led to a meltdown of some of the banks like in the other Nordic countries. The special filter that Datastream applies on the bad years has therefore the role of downplaying crisis situations.

Table 5 states the results over the different sub periods when one applies the Datastream approach. For the first period 1969 to 1981, the mean P/E equals 7.04 and is only slightly below the 7.22 reported earlier in Table 3. In the period 1982 to 2003, the method that sets negative earnings to zero produces a P/E that equals 14.3, whereas the P/E in Table 3 equals 17.1. Thus, over the last 20 years the bias in the P/E estimation equals 2.8.

[19] Baltica, Danske Bank, Top Danmark, Unibank and ØK reported negative earnings in 1992 that outweigh the relatively small profits of the other KFX companies, see Annex 3. Besides suffering from a tight domestic policy stance, the economy is in 1992 also adversely affected by the widespread turmoil in the international financial markets including a number of currency crises in Europe.

[20] This was not the case in the other Nordic countries, see Englund (1999), Steigum (1992) and Vihriala (1997) who contain insightful accounts of the Swedish, Finnish and the Norwegian banking crises.

[21] Companies with negative earnings enter the numerator in equation (2) with their market cap but their earnings are arbitrarily set to zero in the denominator. If one wanted to calculate a kind of "permanent P/E" one could work with a moving average of past earnings.

Table 5: P/E mean, minimum and maximum[1)]

	1969-2003	1969-1981	1982-2003
Mean	11,62	7,04	14,33
Minimum	4,43	4,43	5,36
Maximum	22,37	11,17	22,37

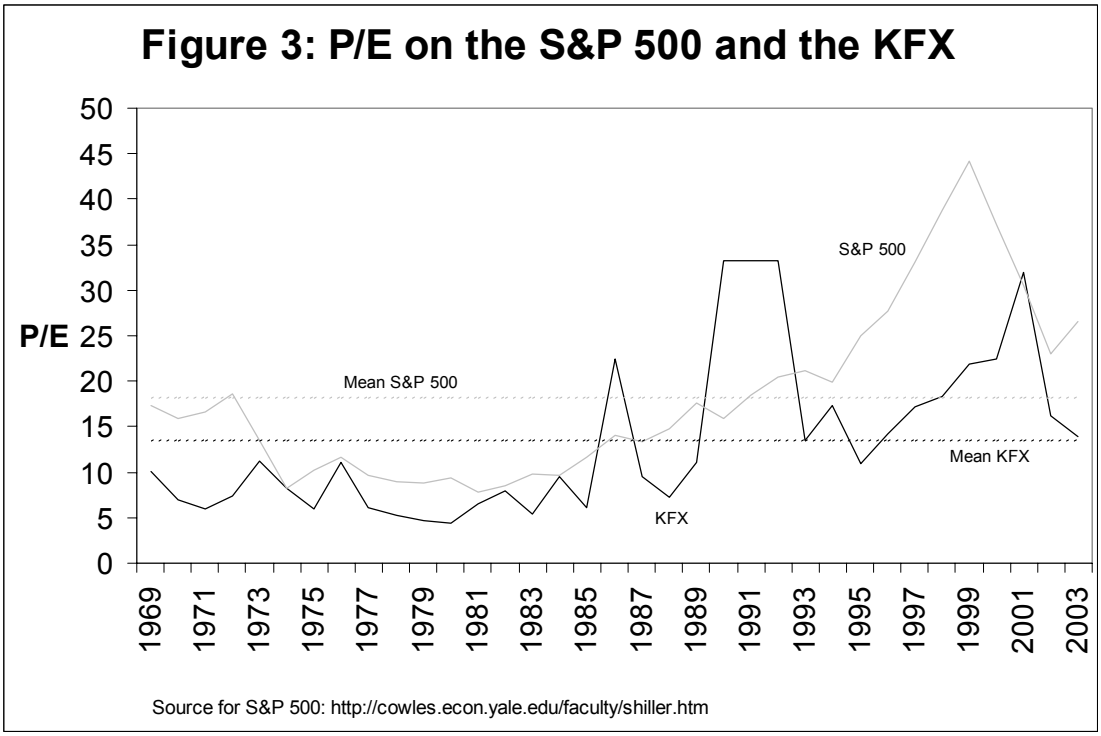
1) Using Datastreams method (negative earnings are set to zero).

3.4 Lagged Share Price Correction following the Bursting of the Bubble

The strong co movement of equity markets and the trend setting role of US markets are stylized facts and also evident from Figure 3 that plots the P/E on the S&P 500 and the KFX. Like the S&P 500, the Danish P/E is also following an increasing trend from the mid 1990s. That said, it is perhaps more interesting to comment on the large differences between the two markets: An obvious yet important difference is that Danish valuations never reached the levels in the US. In addition, the Danish P/E continued to go up following the bursting of the IT bubble in March 2000. Thus, the market peaks in 2001 at a P/E equal to 31.9, which is much later than the S&P 500. The more moderate upturn and the lagged correction are likely to reflect among other things that IT stocks only play a minor role in the Danish market.

The correction of the Danish market essentially reverses the gains in the P/E in the 1990s. The Danish market is therefore at the end of 2003 traded close to its historic mean. This is yet another difference to the S&P 500, which was traded significantly above its historic mean, see Figure 3.

Figure 3: P/E on the S&P 500 and the KFX



Source for S&P 500: http://cowles.econ.yale.edu/faculty/shiller.htm

Table 6: Comparative Statistics: Mean P/E on the S&P 500 and the KFX

Period	1969-2003	1969-1994	1995-2003
S&P 500[1)]	18,24	13,54	31,81
Danish P/E	13,45	11,68	18,57

1) Source for S&P 500: Shiller

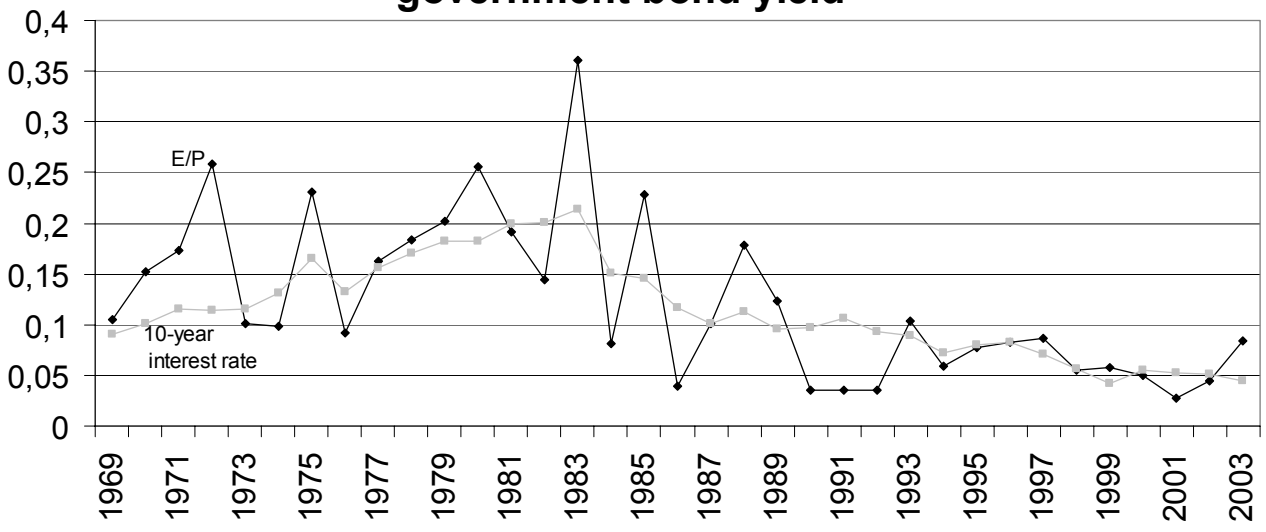
According to the most basic equity valuation model, the current market value equals next year's expected earnings capitalized by the required rate of return. Another way to put this is to say that the expected earnings yield (expected E relative to current P) should equal the required return.[22] Because the latter equals the yield on a risk free bond plus a risk premium, the expected earnings yield should in the absence of large swings in the premium vary in line with the yield on a Government bond. This is also sometimes labelled the Fed Method because the US Federal Reserve uses this method in assessing the valuation of stocks relative to bond yields. The Fed's and the Markets' use of this model does of course reflect its simplicity; nobody claims that this approach gives the complete picture. Moreover, in the absence of expected (forward) earnings yields over long historic periods it is common to plot the actual earnings yield (earnings relative to equity prices last year) and the yield on a Government bond in order to get a first impression of the relation, see Figure 4. By inspecting Figure 4 it is obvious that the earnings yield is more volatile than the bond yield. The volatility of the earnings yield seems, however, to have declined in recent years. That said, it is also clear that high (low) interest rates tend to go hand in hand with high (low) earnings yields as expected from the theory. Indeed, had we drawn the moving average of the series that tendency would stand out very clearly.

The interest rate hike that most economists are expecting at this juncture should therefore lead to rising earnings yields, which could lead to declining share prices, assuming that the risk premium does not decline or that earnings growth does not accelerate.[23] Finally, it is also interesting to note that during the last years of the bubble period, the government bond yield exceeded the earnings yield. The risk premium had therefore turned negative, which is another indicator of highly optimistic equity pricing. In 2003, the earnings yield did, however, again exceed the government bond yield.

[22] This assumes that investors are concerned about earnings growth only in the short term, that is, over the next year. Short sighted (myopic) investors is a theme that is often emphasized by the Behavioral Finance School, see Barberis and Thaler (2003) and by Keynes (1936) and earlier authors. Another approach is to assume that investors have infinite horizons like in the Gordon model. Under the assumption of constant earnings growth, the expected earnings yield is then given as (Expected E)//Current P) = (R-g)/k where k is the payout ratio, R is the required nominal return and g is expected nominal earnings growth. If g and k are constant, the expected earnings yield should be closely correlated with the required return R and therefore with the bond yield.

[23] It goes beyond the purpose of this paper to discuss the likely adjustment of equity prices to the future rate hikes.

Figure 4: The earnings-price ratio and the 10-year government bond yield[1)]



1) Earnings over the year relative to ex-ante prices. The bond yield is the yield recorded at the beginning of the year.

4. Conclusions

The main purpose of this paper has been to present price-earnings series for the last 35 years for Danish stock market and to make these data available for researchers and analysts. To this end we have collected price, earnings and share data information, including information on share buy-backs and option programs, for the 20 largest and most liquid shares. These shares constitute by and large the Copenhagen Stock Exchange's KFX price index, which has existed since 1989.

The construction of the P/E index is based on the principles of liquidity and historic consistency. The index therefore includes the liquid B shares but not the A shares since large trades in A shares are generally not feasible. As regards earnings consistency, we used The Result for the Year since this is the only earnings measure that has been reported throughout the sample period. Moreover, we systematically screened firms' income statements in order to detect abrupt accounting changes, which we did on a few occasions. In these cases we only included the most recent data for the particular share.

The results show that over the 35 years from 1969 to 2003 the average P/E equals 13.5. The P/E reaches a 35-year low in 1980 at 4.4. A hike in the oil price, persistent high wage cost increases and annual interest rates approaching 20 percent are likely to be key factors in explaining the depressed valuation ratio. The market peaks in the

early 1990s (due to depressed earnings in the financial sector in particular) and in 2001 (due to optimistic equity pricing). The high P/E in the late 1990s and in the beginning of the 21st century are of course intimately related to the developments in US markets, but there are also important differences across markets. Notwithstanding optimistic equity pricing also in Denmark, valuations did never reach the levels in the US. In addition, Danish P/E multiples continued to go up following the bursting of the IT bubble on Nasdaq in March 2000 unlike the S&P 500 that started to dive already in 2000. The more moderate upturn and the lagged correction of the Danish market are likely to reflect the minor role of IT and growth stocks in the Danish market. The correction that sets in subsequently reverses essentially the gains in the Danish P/E in the 1990s. The Danish market is therefore at the end of 2003 traded at a P/E close to the historic average unlike the S&P, which was traded significantly above the historic average.

In constructing the P/E series the paper took account of share buy-backs, which is a phenomenon that has become increasingly important. The paper also discussed the likely effects of employee option programs. Finally, the paper estimated the consequence of setting negative company earnings to zero as is done by Datastream. The results show that this introduces a negative bias in the mean P/E over the last 20 years of almost three points. Moreover, the special filter is also dampening the effect of the financial sector crisis in the early 1990s. Thus, the filtered P/E does not signal "crisis" even though some of the large players in the financial sector were not far from collapsing like several large financial institutions did in the other Nordic countries, see Englund (1999), Steigum (1992) and Vihriala (1997).

The price-earnings data allow us to analyze important historic events like the record share price increase in 1983, which so far has not been related to firms' earnings development. The evidence shows that the soaring equity prices had support in an impressive earnings development in particular in the banking sector but also in industry and services. The strong improvement in the leading companies' profitability indicates that the supply side could have played a larger role than what is normally considered to be the case in generating the strong recovery following the macroeconomic regime shift in 1982. Barry (1999) is hinting at this possibility, which deserves to be thoroughly examined in future work.

The period we have looked at has vigorous upturns but also sharp declines in earnings as witnessed by the banking sector crisis in the beginning of the 1990s. We suspect that high earnings volatility is one factor that will help to explain the low Danish P/E relative to the S&P besides differences in sector composition. The data

that we have presented in this paper can help us obtaining some insight into this and a number of other earnings related issues.[24]

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[24] To this end it would be attractive to have quarterly data but that is unfortunately only possible for the last five to eight years simply because firms previously did not report quarterly earnings (and there is still one KFX company that reports only twice a year).

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Annex 1: Companies in the KFX portfolio; market capitalization in billions of DKK, 1989-2003

Company	1989	1990	1991	1992	1993	1994	1995	1996
Banking								
Andelsbanken	3,2							
BG Bank								8,1
Bikuben		3,7	4,4					
Den Danske Bank	9,7	15,7	16,8	12,6	20,3	17,6	20,3	25,0
Handelsbanken	6,0							
Jyske Bank	2,6	2,8	2,6		2,7		3,4	4,0
Nordic Baltic Holding/Nordea								
Privatbanken	4,7							
Provinsbanken	4,1							
Unidanmark		11,4	9,2	4,7	8,7	10,9	12,9	14,3
Insurance								
Baltica			9,7					
Baltica Holding	6,9	13,3	10,1	2,3				
Codan forsikring	5,2	6,6						
Hafnia Holding A	2,3	3,1	2,3					
Hafnia Holding B	3,1	3,6	2,8					
Kapital Holding (RealDanmark)								
Topdanmark	2,8	3,4	2,5	1,8	2,9		2,6	
Industry								
Bang & Olufsen								
Carlsberg A	3,5	3,9	13,3	9,0	10,3	9,3		
Carlsberg B			6,4	7,2	8,5	7,4	8,9	11,2
Chr. Hansen					2,8	2,2		3,7
Coloplast							3,6	4,9
Danisco	8,7	9,2	11,0	6,8	10,8	11,9	14,8	19,9
FLS B		5,6	4,7	3,3	3,0	3,8	3,3	5,8
GN Store Nord				1,5	3,3	2,9	2,7	3,4
H. Lundbeck								
i-data international								
Navision Damgaard (Navision)								
Navision Software								
NEG Micon								
NKT	2,8	3,1	2,8			2,5		
Novo Nordisk B	8,2	8,6	15,4	17,6	21,4	18,6	24,4	35,0
Novozymes B								
Radiometer B			2,0	1,9	4,0	2,5	3,5	3,1
Superfos	2,2	2,1	2,2		2,0	2,5	3,0	4,6
Vestas Wind Systems								
William Demant								
Service & Trade								
Danske Luftfartselskaber						2,5	3,9	
DSV B								
Group 4 Falck								
ISS B	1,9	2,1	2,9	3,4	5,0	4,3	3,3	4,0
KBH Lufthavne						2,9	3,8	5,5
Luftfart A	3,1	1,7						
Ratin								
SAS Danmark								3,4
S. Berendsen A					3,2			
S. Berendsen B	3,0	3,9	6,1	6,9	9,7	8,8	11,2	15,1
Teledanmark B/TDC						19,5	19,2	20,4
ØK	5,8	4,7	4,0	1,8	3,8	3,0	2,4	
Shipping								
DFDS				1,3				
D/S 1912 A	9,6	8,8	11,3	8,5				
D/S 1912 B	9,6	8,8	11,3	8,3	13,9	12,6	11,4	16,4
J. Lauritzen Holding	3,6	3,2	4,3	3,2				
Svendborg B	9,7	8,7	11,2	8,2	13,9	12,4	11,4	16,3
Svendborg A	9,7							
A.P. Møller - Mærsk A+B								
Investment								
FIH B					2,2			
Potagua B		3,0	2,5					
Number of shares in KFX	25	24	25	19	20	20	20	20

Source: Copenhagen Stock Exchange

Annex 1: Companies in the KFX portfolio; marketcap. in billions of DKK, 1989-2003

Company	1997	1998	1999	2000	2001	2002	2003
Banking							
Andelsbanken							
BG Bank	13,7						
Bikuben							
Den Danske Bank	48,4	44,3	42,9	67,2	98,9	86,0	98,8
Handelsbanken							
Jyske Bank	7,7	4,6	6,1	6,3	6,4	7,2	11,2
Nordic Baltic Holding/Nordea				41,9	23,5	13,7	15,7
Privatbanken							
Provinsbanken							
Unidanmark	23,8	22,2	34,0				
Insurance							
Baltica							
Baltica Holding							
Codan forsikring							
Hafnia Holding A							
Hafnia Holding B							
Kapital Holding (RealDanmark)		10,7	20,9	30,8			
Topdanmark		4,4				5,5	7,9
Industry							
Bang & Olufsen	5,0	4,6					
Carlsberg A							
Carlsberg B	10,6	11,4	8,0	10,5	10,0	8,9	7,8
Chr. Hansen							
Coloplast	5,9	7,0	7,8	8,7	12,2	11,4	11,2
Danisco	23,4	21,9	16,8	20,2	17,3	12,8	13,9
FLS B	6,3	5,6	7,3				
GN Store Nord	4,3	7,7	14,3	34,9	10,9	4,5	8,4
H. Lundbeck			17,2	35,1	49,1	43,5	23,1
i-data international				6,6			
Navision Damgaard (Navision)					8,1		
Navision Software			6,2				
NEG Micon				10,4	5,5	3,2	2,6
NKT				11,2			
Novo Nordisk B	63,3	47,6	63,4	120,3	102,0	63,0	72,4
Novozymes B					10,9	9,6	14,0
Radiometer B							
Superfos	5,4						
Vestas Wind Systems			13,7	49,7	24,0	7,4	10,2
William Demant			10,4	31,2	16,1	11,4	14,1
Service & Trade							
Danske Luftfartselskaber							
DSV B						3,6	5,5
Group 4 Falck	3,8	5,8	10,0	22,1	19,3	13,2	10,8
ISS B	6,5	10,8	16,9	21,7	17,2	11,3	13,0
KBH Lufthavne	7,5	6,5					
Luftfart A							
Ratin		21,4	16,5				
SAS Danmark	4,8						
S. Berendsen A							
S. Berendsen B	22,5	5,1			3,4		
Teledanmark B/TDC	27,0	74,2	118,8	89,8	63,8	37,8	46,3
ØK							
Shipping							
DFDS							
D/S 1912 A							
D/S 1912 B	34,2	25,6	47,0	45,4	30,4	26,8	
J. Lauritzen Holding							
Svendborg B	33,7	25,3	45,8	43,2	28,0	26,6	
Svendborg A							
A.P. Møller - Mærsk A+B							186,4
Investment							
FIH B							
Potagua B							
Number of shares in KFX	20	20	20	20	20	20	20

Source: Copenhagen Stock Exchange

Annex 2. Shrinking profits in the Banking sector in 1986

In 1986 earnings drop due to a lacklustre performance of the Banking sector in particular. The fall in earnings sends the P/E index up given that share prices did not fall as much as earnings. The P/E multiple increases to 22.5 in 1986. Had we set the negative earnings to zero (like Datastream), the P/E would have been equal to 15.5. Again, this filter is downplaying the role of unusual bad performance.

The Banking sector in 1985

	Price	Earnings	Shares	EPS	P/E	Market value
Banking						
Andelsbanken	415	662,198	5.227.500	126,675849	3,276078	2.169.412.500
Danske Bank	400	1852,2806	14.175.000	130,672350	3,061091	5.670.000.000
Handelsbanken	349	1433,2151	14.465.000	99,081584	3,522350	5.048.285.000
Jyske Bank	850	909,9239	2.749.000	331,001772	2,567962	2.336.650.000
Privatbanken	339	509,6030	10.526.010	48,413691	7,002151	3.568.317.390

The Banking sector in 1986

	Price	Earnings	Shares	EPS	P/E	Market value
Banking						
Andelsbanken	343	19,307	6.628.590	2,912686	117,760728	2.273.606.370
Danske Bank	314	31,7711	16.200.000	1,961181	160,107620	5.086.800.000
Handelsbanken	260	-821,2250	14.465.000	-56,773246	-4,579622	3.760.900.000
Jyske Bank	470	-51,2545	3.850.000	-13,312861	-35,304207	1.809.500.000
Privatbanken	254	60,9080	11.379.800	5,352291	47,456314	2.890.469.200
Provinsbanken	324	70,0738	9.200.000	7,616715	42,538025	2.980.800.000

Annex 3: Total earnings in millions of DKK 1990-1992[1)]

Company	1990	1991	1992
Banking			
Bikuben	166	-20	
Den Danske Bank		1.318	-1.583
Jyske Bank	-204	44	
Unidanmark	-945	-1.427	-4.006
Insurance			
Baltica Holding	-1.791	128	-4.434
Codan forsikring	-28	275	
Hafnia Holding B	-878	-772	
Topdanmark	8	-273	-53
Industry			
Bang & Olufsen	-68	-28	
Carlsberg B	212	221	383
Chr. Hansen	49	63	91
Coloplast		68	79
CW Obel	58	172	87
Danisco	995	988	809
FLS B	482	524	232
GN Store Nord	185	93	33
NKT	121	110	43
Novo Nordisk B	665	795	1.093
Novozymes B			
Radiometer B	103	97	149
Superfos	174	124	
Service & Trade			
ISS B	154	201	219
KFK	200	165	169
Luftfart	-228		
S. Berendsen B	297	290	332
ØK	321	245	-1.184
Shipping			
J. Lauritzen Holding	230	320	74
Total earnings	280	3.721	-7.468
Number of shares in the index	24	25	19

1) The shares in the index follows the KFX which included 24, 25 and 19 shares in the three years. Because we excluded the A shares some of the above shares are substitutes for those that were taken out.