The Stock Market and Consumer Confidence:
European Evidence

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This paper studies the (short-run) relationship between stock market developments and consumer confidence in eleven European countries over the years 1986-2001. We find that stock returns and changes in sentiment are positively correlated for nine countries, with Germany as the main exception. Moreover, stock returns generally Granger-cause consumer confidence at very short horizons (two weeks to one month), but not vice versa. The stock market-confidence relationship is driven by expectations about economy-wide conditions rather than personal finances. This suggests that the confidence channel is not part of the conventional wealth effect, but a separate transmission channel.

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1. Introduction

Over the past twenty years, the role of the stock market has substantially increased in many industrialized countries. Market capitalizations, expressed as a percentage of GDP, have doubled or tripled between 1985 and 2001. This development has stimulated research into the linkages between the stock market and the real economy. There is a large literature about the ability of the stock market to predict output growth. Predictive power in itself does not imply a causal relationship running from the stock market to the real economy, since the stock market may just act as a leading indicator, an information processing black box. The theoretical literature distinguishes three well-known causal links between the stock market and the real economy. The first relates to consumption (the conventional wealth effect), the second to investment (Tobin's Q theory), and the third to credit market imperfections and their consequences for expenditures (balance sheet channel).[1]

More recently, another, indirect, causal link has been proposed: rising stock markets may make consumers feel better about the future, and so induce them to spend more. The second part of this link is well-documented in the empirical literature. Carroll, Fuhrer and Cox (1994) and Bram and Ludvigson (1998) find for the US that improvements in consumer sentiment stimulate consumption growth in the short run. Nahuis (2000) presents similar evidence for eight European countries. Romer (1990) argues that the indirect channel of consumer confidence played an important part in the explanation of the Great Depression. The October 1929 stock market crash and the subsequent stock market volatility in 1930 caused a sharp increase in uncertainty, which led to a large-scale postponement of purchases of durable goods by consumers. Otoo (1999) demonstrates for the US that changes in equity values and changes in consumer sentiment are contemporaneously correlated, and also that increases in equity prices boost consumer confidence with a (short) lag, but that the reverse does not hold.

In principle, higher stock prices may boost consumption via the confidence channel for two reasons. The first is that higher stock prices mean higher wealth and therefore greater optimism. This direct effect, which is related to the traditional wealth effect, is likely to be less important in continental Europe than in the US, because in Europe fewer households invest in stocks, and when they do it is a smaller share of their wealth. The second reason is

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[1] See, for instance, Poterba (2000), Boone, Giorno and Richardson (1998), Barnett and Sakellaris (1998) and Bernanke, Gertler and Gilchrist (1998).

that higher stock prices may be interpreted by economic agents as a sign of favorable economic conditions in the future. The leading indicator property of stock prices provides a channel through which equity prices may influence the behavior of all consumers, regardless whether they have a direct stake in the stock market or not.

This paper focuses on several aspects of the link between stock market and consumer confidence for eleven European countries in the period 1986–2001. To our knowledge we are the first to look into the European experience on this issue. First, we analyze the relationship between the stock market and the aggregate consumer confidence index. Second, we disaggregate the confidence index into its components to cast some light on the nature of the relationship between consumer sentiment and the equity market. If the wealth effect is important, one would expect stock market developments to be closely linked to the components that refer to expectations about the personal financial position. If an independent confidence channel exists, stock market developments should be more strongly correlated with expectations about the general economic situation.

The remainder of this paper is structured as follows. Section 2 discusses the data. Section 3 presents the empirical results for the aggregate consumer confidence index and Section 4 those for the components of the confidence index. Section 5 concludes.

2. Data

The consumer confidence indicator is published by the European Commission for all EU countries except Luxembourg.[2] The data are derived from monthly surveys, which are conducted on behalf of the European Commission by various national institutes during the first ten working days of the month. The survey results are published in the first half of the following month and are seasonally adjusted. The surveys are harmonized: the questionnaires are identical in all countries. The consumer confidence indicator is based on the following four questions from the consumer survey:

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[2] The monthly survey consists of 11 questions, which are a mixture of questions about the past 12 months, the present situation and the next 12 months. In month 2000 the Commission changed the way the published indicator is constructed. The new indicator is solely based on questions that ask about the future, while the old indicator was based on questions about the future as well as the immediate past or the current situation. In this paper we use the new indicator.

1. How do you think the financial position of your household will change over the next 12 months? Answers: a lot better (PP), a little better (P), the same (E), a little worse (N), a lot worse (NN) and don't know (NA).

2. How do you think the general economic situation in this country will change over the next 12 months? Answers: a lot better (PP), a little better (P), the same (E), a little worse (N), a lot worse (NN) and don't know (NA).

3. How do you think the level of unemployment in the country will change over next 12 months? Answers: increase sharply (NN), increase slightly (N), remain the same (E), fall slightly (P), fall sharply (PP) and don't know (NA).

4. Over the next twelve months, how likely are you able to save any money? Answers:very likely (PP), fairly likely (P), fairly unlikely (N), very unlikely (NN) and don't know (NA).

Consumer confidence is defined as the difference between the percentages positive and negative answers to these four questions (indexed 1 through 4), where PP- and NN-scores get weight 1 and P- and N-scores get weight ½.[3] Each subindex is thus computed as $CC_i = (PP_i + ½P_i) - (½N_i + NN_i)$, $i = 1, \ldots, 4$. The overall index CC is the unweighted average of the four subindices: $CC = ¼ S CC_i$.

Since we are interested in the possible effect of equity prices on consumer sentiment, we use a country's headline stock market index as the measure of equity prices. This is the index which figures most prominently in news reports on television and in newspapers.[4] To avoid spurious correlation or causality patterns due to nonsynchronous observations, the monthly stock price observation is defined as the average of the stock price index during the period that the monthly survey is conducted, i.e. the first ten working days of the month.

Our analysis covers eleven EU countries: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain and the UK.[5] The sample runs from January 1986 to August 2001, except for Greece (1988:10–2001:12), Portugal (1988:1–2001:12) and Spain (1986:7–2001:12).

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[3] E- and NA-scores get a weight of zero and are thus ignored. The numerical values of the subindices and the overall index vary between –100 and 100.

[4] The following stock indices were used: BEL20 (Belgium), KFX (Denmark), CAC40 (France), DAX (Germany), Athens composite index (Greece), ISEQ (Ireland), Comex (Italy), AEX (Netherlands), PSI (Portugal), Madrid SE (Spain), and FTSE100 (UK).

[5] For Austria, Finland and Sweden the time series of the CC measures are too short to permit a meaningful econometric analysis. Confidence indicators for these countries are available from January 1996.

As a preliminary step, we first examine the time series on stationarity. Augmented Dickey-Fuller tests and Phillips-Perron tests show that both the log of the stock price index and the consumer confidence (sub)indices are I(1) variables for all countries. Moreover, for all countries the Johansen MLE cointegration test cannot reject the hypothesis that stock prices and consumer confidence (or its components) are not cointegrated.[6] Consequently, there is no long-run relationship between stock prices and consumer sentiment. For this reason we will employ first differences of stock price and consumer confidence data in the remainder of the paper, and concentrate on the short-run linkages between stock market and consumer confidence.

3. Empirical results

We first discuss the short-run link between equity prices and the overall consumer confidence indicator *CC*. The first column in Table 1 reports the contemporaneous correlation between (changes in) equity prices and consumer confidence. In general, rising stock prices and rising sentiment tend to go hand in hand. For nine countries we can reject the hypothesis that the contemporaneous correlation between the two variables is zero at the 5% level, while Greece is a marginal case with a correlation of 0.13. Germany is the sole country for which developments in sentiment and stock prices appear to be disconnected.[7] The UK features the highest correlation between stock prices and sentiment (0.29), which may be attributable to the fact that stock ownership is much more widespread in the UK than in continental Europe (Boone, Giorno and Richardson 1998). The size of the correlation varies between 0.16 and 0.23 for the other eight countries.

A positive contemporaneous relationship between stock market and sentiment does not necessarily imply that higher stock prices cause improvements in sentiment. The direction of causality could possibly run the other way round (for instance, because of publication effects) or run in both directions. Moreover, it is also possible that no genuine causal relationship exists, but that a common third factor drives the two variables. To gain more insight into the

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[6] The results of stationarity and cointegration tests are available from the authors upon request.

[7] The low correlation for Germany reflects in part the atypical year 2001 during which sentiment changes and stock market returns were rather strongly negatively correlated. The contemporaneous correlation becomes 0.138 (t-statistic 1.86) if 2001 is dropped from the sample. However, the other entries for Germany in Table 1 are not materially affected by restricting the sample to 1986–2000.

nature of the relationship of stock market and consumer sentiment we conducted Granger-causality tests on the basis of the following equations:

$$\Delta CC(t) = a_c + \sum_{i=1}^{k} b_c(i)\Delta CC(t-i) + \sum_{i=1}^{k} g_c(i)\Delta PS(t-i) + u_c(t) \qquad (1)$$

$$\Delta PS(t) = a_p + \sum_{i=1}^{k} b_p(i)\Delta PS(t-i) + \sum_{i=1}^{k} g_p(i)\Delta CC(t-i) + u_p(t) \qquad (2)$$

where *CC* denotes consumer confidence, *PS* is the log of the stock price index, *u* is a disturbance, and *k* is the maximum lag. Stock prices Granger-cause consumer confidence if lagged stock market returns contain information that is not already contained in past values of the confidence index. Granger-causality running from consumer confidence to stock prices can be defined in a similar way. The Granger-causality tests thus examine whether the $\gamma(i)$ in eqs. (1) and (2) are jointly zero. A finding of Granger-causality in only one direction may be considered corroborative evidence for the view that the positive contemporaneous correlation reflects causality in the same direction. A finding of two-way Granger causality may indicate bidirectional causality. Finally, there are two possibilities if no Granger causality is found. First, a genuine causal relationship does exist but is extremely short-term in nature, so that it cannot be detected within the observation time-span of a month. Second, common driving forces are responsible for the observed positive contemporaneous correlation.

Columns 3 and 4 of Table 1 report the marginal significance levels (*p*-values) of the test statistics for Granger causality in both directions. Our lag selection rule fixed the maximum lag *k* at one for all countries, suggesting that the effects of stock markets on consumer sentiment will be transitory at best.[8] For the majority of countries the tests indicate no Granger causality running from the stock market to confidence. Only for Denmark, Italy and the Netherlands do we find statistically significant Granger causality of this type at the 5% level, and for Ireland at the 10% level. For all countries the null-hypothesis of no Granger causality running from sentiment to equity prices is easily maintained. In other words, the publication

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[8] The number of lags included in eqs. (1) and (2) were determined by the Schwarz criterion with a minimum of one. The Akaike information criterion would also select *k*=1 for all countries.

of consumer survey data – one month after the survey was taken – does not have a discernible systematic effect on the stock market.[9]

The finding of no Granger-causality for the majority of the countries implies that either common factors are responsible for the observed contemporaneous correlation between *CC* and *PS*, or all causal effects take place within the time span of a month. To investigate the latter possibility, we exploit the fact that stock market data are available at a higher frequency than monthly. More specifically, we test whether stock returns affect consumer confidence with a lag of only two weeks, and vice versa. We modify eqs. (1) and (2) as follows:

$$\Delta CC(t) = \boldsymbol{a}_c + \boldsymbol{b}_c \Delta CC(t-1) + \boldsymbol{g}_{c1} R_1(t-1) + \boldsymbol{g}_{c2} R_2(t-1) + u_c(t) \tag{3}$$

$$R_2(t) = \boldsymbol{a}_p + \boldsymbol{b}_{p1} R_1(t) + \boldsymbol{b}_{p2} R_2(t-1) + \boldsymbol{g}_p \Delta CC(t-1) + u_p(t) \tag{4}$$

where R_1 and R_2 denote the half-month change in the log of the stock price index in the first and second half of the month respectively. The test for Granger causality from *PS* to *CC* revolves around determining whether $\boldsymbol{g}_{c1}$ and $\boldsymbol{g}_{c2}$ are jointly zero.

Columns 5 and 6 of Table 1 report the results. Testing at the 5% level, we now see that for seven countries (Belgium, Denmark, Ireland, Italy, Netherlands, Spain and the UK) changes in stock prices positively affect consumer confidence with a very short lag of two weeks. The test statistic for France is significant at the 10% level. There is no empirical support for Granger causality from stock market to sentiment for Germany, Greece and Portugal, which are also the countries with the three lowest and least significant contemporaneous correlations. For nine out of eleven countries we do not find empirical support for Granger causality running from *CC* to *PS* at the two-week horizon. The exceptions are France and, to a lesser extent, Greece. It is difficult to give an explanation for this type of Granger causality.[10] A publication effect can be ruled out, because the survey results are released with a delay of a month.

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[9] Otoo (1999) found for the US that stock market returns Granger-cause changes in consumer sentiment, but not the other way round, in the period 1981-99.

[10] This holds even more so for Greece, since the effect has the wrong (negative) sign, which implies that improvements in sentiment tend to be followed by lower stock prices.

We have also examined whether the short-run relationship between stock market and consumer sentiment has become tighter in more recent years. Table 2 presents the results of our analysis for the period 1991-2001 (the later two-thirds of our sample), which leaves out the October 1987 stock market crash and its aftermath and includes the bull market of the 1990s. The findings in Table 2 do not point to a significant across-the-board increase in the contemporaneous correlation. The average correlation is 0.195 in 1991-2001, compared to 0.189 in 1986-2001. Most countries register an increase, but the UK and Germany display substantial falls in the correlation. Ireland now has the highest correlation (0.306), while for Germany the correlation is zero. The Granger-causality patterns for 1991-2001 are broadly the same as those for the whole sample. The main difference is that for the UK we now detect Granger-causality running from the stock market to sentiment at both the one-month and the two-week lag.

4. On the nature of the link: wealth effect or leading indicator role for the stock market?

The overall consumer confidence index is an aggregate of four subindices. Two of them are based on expectations regarding household finances (questions 1 and 4), while the other two are based on expectations about economy-wide developments (questions 2 and 3). In this section we examine which components appear to drive the link between stock market and consumer sentiment. The results may tell us something about the relevance of the traditional wealth effect on consumption. If the traditional wealth effect is important, the link between stock market and sentiment should mainly reflect the link between stock market prices and expectations about the personal financial situation. In that case the relationship documented above can hardly be considered a genuine confidence channel. By contrast, a finding that expectations about the economy at large are the dominating underlying factor would constitute empirical evidence for a truly distinct confidence channel. In that case, consumers, whether or not they own stocks, exploit the fact that stock prices contain information about future economic conditions.[11] As the large majority of European households does not directly own large stock portfolios, we would expect more empirical support for the latter case on *a priori* grounds.

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[11] See Mauro (2000) and Stock and Watson (2001) for recent evidence on the leading indicator properties of stock prices.

We have repeated the analysis for the four components of the confidence index. Table 3 presents the results. We find that in general expectations about the state of the economy are higher correlated with stock market developments than expectations about the state of personal finances.[12] The differences are especially pronounced for Ireland, Italy, the Netherlands and Portugal. Among the four indicators, expectations about the general economic situation in the next 12 months display the strongest correlation with the stock market for nine countries. As for the Granger causality tests, we similarly discover many more statistically significant Granger-causal links from stock market to expectations regarding the general outlook or employment conditions than expectations about the household itself. Positive stock returns tend to be followed by improvements in economy-wide prospects with a short lag. The perceived ability to save in particular is not affected by past equity market developments.

All in all, the results in this section imply that the short-run impact of stock returns on consumer confidence mainly depends on their effect on perceptions of the future state of the economy. Otoo (1999) reports a similar result for the United States. Our finding can be explained by the fact that all economic agents can make use of the fact that equity prices are a leading indicator for economic activity, not only those that have invested in stocks. Although transitory in nature, the confidence channel is therefore a genuine independent transmission channel between the stock market and the real economy, and not an adjunct to the conventional wealth effect.

5. Conclusions

This paper studies the (short-run) relationship between stock market developments and consumer confidence in eleven European countries over the years 1986-2001. We find that stock returns and changes in sentiment are positively correlated for nine countries, with Germany as the main exception. Moreover, stock returns generally Granger-cause consumer confidence at very short horizons (two weeks to one month), but not vice versa. The stock market-confidence relationship is driven by expectations about economy-wide conditions rather than personal finances. This suggest that the confidence channel is based on the leading indicator property of stock prices, and that it is not a part of the conventional wealth effect. For European policymakers this implies that expenditure effects emanating from the stock

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[12] The unweighted means of the correlations for questions 1–4 are 0.098, 0.202, 0.158 and 0.084, respectively.

market may be larger and more widespread than suggested by the relatively small equity portfolios and the concentrated ownership of stocks in the European economies.

Table 1. Relation between stock market returns and changes in consumer confidence, 1986-2001

| | contemporaneous correlation | | Test for Granger causality (p-values) | | | |
| | | | lag = 1 month | | lag = 2 weeks | |
	estimate	(t-stat)	PS to CC	CC to PS	PS to CC	CC to PS
Belgium	0.182	(2.55)	0.194	0.681	0.002	0.923
Denmark	0.156	(2.17)	0.033	0.923	0.003	0.546
France	0.193	(2.71)	0.570	0.651	0.083	0.046
Germany	0.097	(1.35)	0.427	0.294	0.520	0.629
Greece	0.129	(1.62)	0.679	0.576	0.430	0.087
Ireland	0.225	(3.19)	0.076	0.475	0.000	0.916
Italy	0.222	(3.14)	0.020	0.900	0.004	0.213
Netherlands	0.216	(3.05)	0.011	0.295	0.000	0.458
Portugal	0.155	(2.01)	0.194	0.661	0.243	0.780
Spain	0.210	(2.91)	0.281	0.306	0.006	0.206
United Kingdom	0.291	(4.57)	0.213	0.899	0.001	0.766

Note: sample January 1986 - December 2001 (204 observations); p-values for the CC to PS Granger causality test are based on Newey-West standard errors to correct for heteroskedasticity.

Table 2. Relation between stock market returns and changes in consumer confidence, 1991-2001

| | contemporaneous correlation | | Test for Granger causality (p-values) | | | |
| | | | lag = 1 month | | lag = 2 weeks | |
	estimate	(t-stat)	PS to CC	CC to PS	PS to CC	CC to PS
Belgium	0.246	(2.90)	0.307	0.276	0.004	0.690
Denmark	0.174	(2.01)	0.068	0.331	0.010	0.398
France	0.194	(2.25)	0.251	0.967	0.210	0.049
Germany	0.009	(0.10)	0.734	0.896	0.973	0.478
Greece	0.141	(1.62)	0.263	0.710	0.475	0.184
Ireland	0.306	(3.67)	0.001	0.236	0.000	0.922
Italy	0.215	(2.51)	0.122	0.852	0.048	0.469
Netherlands	0.253	(2.99)	0.077	0.800	0.000	0.542
Portugal	0.172	(1.99)	0.214	0.724	0.243	0.519
Spain	0.198	(2.30)	0.471	0.855	0.100	0.793
United Kingdom	0.243	(2.85)	0.038	0.724	0.014	0.937

Note: sample January 1991 - December 2001 (132 observations); p-values for the CC to PS Granger causality tests are based on Newey-West standard errors to correct for heteroskedasticity.

Table 3. Relation between stock market returns and changes in consumer confidence (by components), 1986-2001

| | contemporaneous correlation | | Test for Granger causality (p-values) | | | |
| | | | lag = 1 month | | lag = 2 weeks | |
	estimate	(t-stat)	PS to CC	CC to PS	PS to CC	CC to PS
Belgium						
personal financial situation	0.047	(0.65)	0.045	0.878	0.265	0.513
general economic conditions	0.130	(1.81)	0.404	0.503	0.004	0.307
unemployment in economy	0.151	(2.10)	0.612	0.363	0.002	0.543
ability to save	0.120	(1.67)	0.140	0.706	0.284	0.956
Denmark						
personal financial situation	0.079	(1.10)	0.558	0.882	0.710	0.547
general economic conditions	0.022	(0.31)	0.057	0.097	0.033	0.888
unemployment in economy	0.146	(2.04)	0.003	0.459	0.000	0.465
ability to save	0.152	(2.12)	0.970	0.238	0.182	0.438
France						
personal financial situation	0.134	(1.87)	0.761	0.609	0.230	0.049
general economic conditions	0.239	(3.39)	0.496	0.677	0.008	0.026
unemployment in economy	0.130	(1.81)	0.427	0.730	0.353	0.186
ability to save	0.151	(2.10)	0.779	0.507	0.213	0.028
Germany						
personal financial situation	0.030	(0.42)	0.773	0.238	0.923	0.844
general economic conditions	0.131	(1.82)	0.199	0.378	0.154	0.700
unemployment in economy	0.080	(1.10)	0.454	0.337	0.517	0.494
ability to save	0.086	(1.19)	0.367	0.947	0.786	0.777
Greece						
personal financial situation	0.130	(1.63)	0.894	0.084	0.406	0.018
general economic conditions	0.198	(2.52)	0.401	0.990	0.082	0.446
unemployment in economy	0.042	(0.52)	0.563	0.784	0.874	0.183
ability to save	0.069	(0.86)	0.286	0.293	0.861	0.151
Ireland						
personal financial situation	0.100	(1.38)	0.685	0.071	0.041	0.323
general economic conditions	0.266	(3.80)	0.509	0.873	0.000	0.315
unemployment in economy	0.192	(2.70)	0.044	0.190	0.001	0.945
ability to save	0.055	(0.76)	0.622	0.891	0.842	0.437
Italy						
personal financial situation	0.014	(0.19)	0.047	0.562	0.858	0.294
general economic conditions	0.253	(3.61)	0.030	0.923	0.000	0.166
unemployment in economy	0.248	(3.52)	0.366	0.389	0.001	0.878
ability to save	0.013	(0.18)	0.900	0.141	0.242	0.006
Netherlands						
personal financial situation	0.100	(1.38)	0.044	0.708	0.042	0.626
general economic conditions	0.250	(3.57)	0.020	0.169	0.000	0.096
unemployment in economy	0.183	(2.57)	0.063	0.619	0.001	0.798
ability to save	0.002	(0.03)	0.937	0.588	0.503	0.916
Portugal						
personal financial situation	0.071	(0.91)	0.050	0.774	0.356	0.745
general economic conditions	0.216	(2.82)	0.127	0.504	0.021	0.220
unemployment in economy	0.204	(2.66)	0.706	0.819	0.096	0.350
ability to save	0.002	(0.02)	0.185	0.136	0.553	0.133
Spain						
personal financial situation	0.157	(2.15)	0.161	0.408	0.024	0.321
general economic conditions	0.227	(3.15)	0.348	0.100	0.015	0.034
unemployment in economy	0.130	(1.79)	0.321	0.034	0.080	0.037
ability to save	0.179	(2.47)	0.665	0.375	0.053	0.370
United Kingdom						
personal financial situation	0.219	(3.09)	0.249	0.717	0.012	0.798
general economic conditions	0.294	(4.23)	0.097	0.794	0.001	0.905
unemployment in economy	0.233	(3.30)	0.568	0.744	0.023	0.916
ability to save	0.098	(1.35)	0.651	0.120	0.238	0.317

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