CONSUMER SENTIMENT AND THE STOCK MARKET

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Abstract

This paper examines the relationship between movements in consumer sentiment and stock prices. At the aggregate level, the two share a strong contemporaneous relationship — an increase in equity values boosts sentiment. However, I also sought to examine the nature of the relationship between the two. Does an increase in stock prices raise aggregate sentiment because people are wealthier or because they use movements in stock prices as an indicator of future economic activity and potential labor income growth? Using individual observations from the Michigan survey I found results more consistent with the view that people use movements in equity prices as a leading indicator. Although the findings do not rule out a traditional wealth effect, they do raise some questions about the causal role of wealth in aggregate spending.

I. Introduction

This paper examines whether changes in equity prices have an important influence on consumer confidence, and if so, how this is accomplished. Figure 1 shows the Michigan Survey Research Center (SRC) and the Conference Board (CB) measures of consumer sentiment. Beginning in January 1995, U.S. equity markets soared to one record high after another. Although consumer confidence was little changed in 1995, it too began to rise in 1996--reaching historical highs in early 1998. Then, in mid-1998, both the stock market and sentiment fell abruptly. Later in that year, equities staged a recovery and sentiment revived. An obvious question is whether sentiment and stock prices were both reacting to some other set of economic developments in similar ways or whether movements in one influenced the other.

In earlier work with individual observations from the Michigan survey, I found that sentiment and income were positively related even after controlling for a variety of other factors.[1] In addition, because of the way in which the Michigan and Conference Board measures are constructed, a more favorable current financial situation or the expectation of higher income in the future raises sentiment.[2] Thus, factors that boost current wealth or expected income also could be expected to boost consumer sentiment. With this in mind, there are two general ways in which movements in the stock market could affect consumer sentiment. First, an increase in the stock market might reflect higher-than-expected current wealth, boosting consumer sentiment directly. A second way that sentiment and stock prices could be related can be found in the work

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[1]Otoo (1997).

[2]The Michigan index of consumer sentiment incorporates views on current and expected personal finances. The Conference Board measure includes opinions on future income gains.

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of Poterba and Samwick (1995) and Morck, Shleifer, and Vishny (1990). In these models, a rising stock market boosts consumer spending by acting as a leading indicator of higher expected labor income. This link between the stock market and spending differs from that found in standard life cycle/permanent income models of consumption in which an increase in the stock market raises expected lifetime wealth, which in turn leads to higher spending. Thus, under this "leading indicator" hypothesis, a rising stock market boosts sentiment because it signals good economic times ahead.[3]

Carroll, Fuhrer, and Wilcox (1994) established a link between consumer sentiment and real consumer spending. Thus, it is useful to understand the factors that drive sentiment in part because of its possible implications for consumption. If the relationship between sentiment and stock prices is more consistent with a traditional wealth effect, then this bolsters the view that changes in net worth directly *cause* changes in consumer spending. But, if stock prices serve as a leading indicator of future labor income growth and this drives spending then this raises some questions about the traditional role of wealth in the consumption function.

Using individual observations from the Michigan survey, I found that the sentiment levels of households that owned stock and those that did not responded similarly to a change in overall equity prices. This suggests that households use changes in stock prices as a leading indicator of future labor income. However, it does not rule out a traditional wealth effect. The component of the consumer sentiment index that was most affected by changes in share prices was the index of

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[3]It also is possible that consumer sentiment actually responds to changes in consumption (which is driven by movements in expected income and wealth). However, at the aggregate level, causality tests failed to find that growth in real consumer spending had any affect on changes in consumer sentiment.

expected business conditions over the next 12 months. Changes in share prices had little affect on views of current or expected personal finances. This result also appears more consistent with equity prices serving as a leading indicator of future economic conditions: A standard wealth effect might be expected to have a greater influence on opinions about current or expected personal finances. Using aggregate data, I found that growth in consumer sentiment and stock prices share a strong contemporaneous correlation. Tests indicated that stock prices influence consumer sentiment, but the reverse was not true.

In the next section, I look at the relationship between consumer sentiment and stock prices using aggregate data. The following section uses micro data to examine how movements in stock prices affect sentiment: By affecting the net worth of households or by acting as a leading indicator of future labor income growth.

II. Consumer Confidence and the Stock Market at the Aggregate Level

The relationship between consumer confidence and the stock market was examined first using aggregate data. Below are simple regressions of the first difference of the log of the Michigan SRC index of consumer sentiment (MICH) and the first difference of the log of the Wilshire 5000 stock price index (STOCKS).[4] The equations were estimated with monthly data from June 1980 to June 1999. Monthly data was used in order to focus on the relationship at as high a frequency as the data allow.[5]

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[4]MICH and STOCKS were created by taking the first difference of the log of each series and multiplying by 100.

[5]Both series were multiplied by 100. The results were similar using quarterly data. However, the coefficient on $STOCKS_{t-1}$ in equation (1) was insignificant when estimated with

$$\Delta \ln(MICH)_t = -.27 + .33\Delta \ln(STOCKS)_t + .19\Delta \ln(STOCKS)_{t-1}$$

(1)
$$(.09) \qquad\qquad (.08)$$
$$R^2 = 0.11, \ S.E. = 4.3,$$

$$\Delta \ln(STOCKS)_t = 1.0 + .24\Delta \ln(MICH)_t + .06\Delta \ln(MICH)_{t-1}$$

(2)
$$(.05) \qquad\qquad (.05)$$
$$R^2 = 0.10, \ S.E. = 3.4$$

Equations (1) and (2) indicate that consumer sentiment and stock prices share a strong

contemporaneous correlation--the coefficients on the current values of the variables are

statistically significant in both equations.[6] The relationship between the two appears to be fairly

robust, although stock prices explain only about 10 percent of the variation in sentiment. When

additional variables were added to (1) and (2), the contemporaneous terms remained significant

but the coefficient on lagged growth in stock prices in equation (1) was not. In addition, when

equations (1) and (2) were estimated with data only through the end of 1994, the coefficients

changed very little relative to those shown above, suggesting that the recent run-up in stock

prices has not altered the relationship between these variables.

The simple regressions in (1) and (2) suggest that stock prices and consumer sentiment

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quarterly data.

[6]Standard errors are in parentheses. The same regressions were also conducted with the Conference Board measure in which the first difference of the log of CB sentiment was regressed against contemporaneous and lagged values of STOCKS. The results were the same: The coefficients on contemporaneous and lagged STOCKS were significantly different from zero. However, when STOCKS was regressed on contemporaneous and lagged values of the first difference of the log of CB sentiment, only the coefficient on the current value was statistically significant.

are simultaneously determined; however, it would be useful to know whether the two series are reacting to each other directly or reflecting responses to other common factors. For example, both series may move in response to interest rate movements rather than keying directly off changes in each other. In an attempt to obtain more information on the relationship between the two, I ran causality tests using the Michigan and Conference Board consumer sentiment indexes and stock prices. The results are shown in table 1. As can be seen in the table, the causality tests suggest that stock price movements affect changes in consumer sentiment, but, once again, lagged changes in sentiment have no explanatory power for stock prices.

To obtain a better understanding of the dynamic relationship between the two, I ran a simple unrestricted VAR of the form below:

$$(3a) \qquad \Delta\ln(MICH)_t = \alpha_1 + \sum_{i=1}^{8} \beta_{1i}\Delta\ln(MICH)_{t-i} + \sum_{j=1}^{8} \delta_{1j}\Delta\ln(STOCKS)_{t-j} + \varepsilon_1,$$

$$(3b) \qquad \Delta\ln(STOCKS)_t = \alpha_2 + \sum_{i=1}^{8} \beta_{2i}\Delta\ln(MICH)_{t-i} + \sum_{j=1}^{8} \delta_{2j}\Delta\ln(STOCKS)_{t-j} + \varepsilon_2,$$

where the variables are defined the same as in equations (1) and (2) and the ε_i are randomly distributed error terms with zero means. The parameters to be estimated are the α_i, β_i, and the δ_i. Once again, the models were estimated with monthly data from 1980:6 to 1999:6.[7]

Panel 1 of figure 2 shows the impulse response of stock prices from a shock to consumer sentiment. As seen in the panel, shocks to sentiment have virtually no impact on stock prices. In

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[7]The lag length was selected using likelihood ratio tests. The tests rejected restricting the VAR from 12 to 4 lags but did not reject the restriction to eight lags. Thus, eight lags were used in the system. For simplicity, I only show the results using Michigan sentiment. The VAR was also estimated with the Conference Board measure and produced similar results.

panel 3, the variance decomposition shows that consumer sentiment explains a statistically

insignificant two percent of the variance in stock prices after eight months. Panel 2 shows the

impulse response of consumer sentiment to a shock to stock prices. The increase in stock prices

boosts growth in sentiment briefly for only two months before it falls back. However, the

variance decomposition in panel 4 reveals that stock prices account for a little more than six

percent of the variation in sentiment after eight months, but this also is not statistically

significant. Although the response to sentiment from a change in stock prices is modest, it

appears on par with its other variables that are often believed to be important determinants of

consumer sentiment. Figure 3 shows the variance decomposition of consumer sentiment from

shocks to the unemployment rate, consumer price inflation (CPI), and to changes in real interest

rates (12-month treasury).[8] These series separately are able to explain only about five percent of

the variance in consumer sentiment after eight months.[9]

III. Individual Responses to Changes in Stock Prices

In this section, I use observations on individuals to examine the relationship between

stock prices and sentiment. An important advantage of using the micro data is that endogeneity

is not a concern because no single individual's level of sentiment can affect the entire U.S. stock

market. If stock prices serve as an indicator of future income trends, then one should see a

response in the level of sentiment to movements in stock prices from households regardless of

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[8]The variance decomposition for each series was generated from VARs estimated
separately for consumer sentiment and the CPI, consumer sentiment and the unemployment rate,
and consumer sentiment and interest rates.

[9]The VAR also was estimated with quarterly data with very similar results.

whether they own stock. If sentiment is capturing a true wealth effect then one is unlikely to see a response from households that do not own stocks from movements in stock prices. However, for households that do own equities, the response of sentiment to a change in the overall stock market is ambiguous, since individual portfolios may not move in sync with aggregate stock prices.

I used observations from Michigan surveys conducted from October 1995 through December 1997. This period captures part of the stunning rise in the stock market that began in early 1995. It also is a relatively short period, which helps to reduce problems that might arise from structural changes in investment patterns, stock ownership, or technological innovations.

Some observations were lost due to incomplete responses on some questions in the survey (particularly income) which left a total of 11,610 observations. All of the analysis was conducted using demographically weighted data. Table 2 shows sample means of the variables used in the analysis by category of stock ownership. The survey asks respondents a number of questions to determine whether the household holds stocks in any way--either by managing its own portfolio or in the form of a mutual fund, 401-(K), IRA, or some other saving plan. As seen in the table, about 41 percent of households reported owing stock of some kind in the sample--similar to the share reported in Starr-McCluer (1998) and the 1995 Survey of Consumer Finances.[10]

For each respondent, I constructed an individual sentiment index using the same five

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[10]In the 1995 Survey of Consumer Finances, 39.8 percent of households reported that they owned stock in some form. In Starr-McCluer (1998), 35.4 percent on Michigan survey households responded that they owned stock.

questions that are used to construct the aggregate index. These questions are reproduced below:[11]

1. We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?

2. Now looking ahead--do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?

3. Now turning to business conditions in the country as a whole--do you think that during the next 12 months we'll have good times financially, or bad times or what?

4. Looking ahead, which would you say is more likely — that in the country as a whole we'll have continuous good times during the next 5 years or so, or that we'll have periods of widespread unemployment or depression, or what?

5. About the big things people buy for their homes — such as furniture, a refrigerator, stove, television, and things like that. Generally speaking, do you think now is a good time or a bad time for people to buy major household items?

The monthly SRC survey records qualitative responses (better, worse, or about the same) and numerical values are assigned to each of the three responses. The aggregate index is then constructed by giving the mean response across individuals to each question an equal weight.[12] I followed a similar procedure to construct my measures of sentiment for each respondent. I assigned an arbitrary value to each response: a value of 200 for better, 150 for about the same, and 100 for worse. In this way, the individual sentiment indexes fall between 500 for the most pessimistic to 1,000 for the most optimistic.

The top of table 2 shows the average indexes for households that own stock and those that

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[11]A full list of the survey questions can be found in *Surveys of Consumers* published by the SRC.

[12]More information on the survey can be found in *Survey of Consumers*, May 1998 published by the SRC.

do not. The average sentiment levels between the two groups appear relatively similarly--differing only by about five percent. The table also reveals that households that hold equities report considerably higher average annual incomes and greater educational attainment than households that do not.[13]

Table 3 shows the results of regressing the level of the individual Michigan measures on a variety of demographic controls, as well as a dummy variable for those households that hold equities either directly or indirectly (EQUITY), the percent change in the Wilshire 5000 stock index (WILSHIRE), and an interaction term (EQUITY*WILSHIRE).[14] The interaction term is intended to capture whether the sentiment of households that hold equities and those that do not respond differently to changes in stock prices as measured by the Wilshire 5000. As seen in the table, the coefficient on the dummy variable EQUITY is positive and statistically significant indicating that households that hold stock tend to have higher levels of consumer sentiment holding everything else constant. The coefficient on the monthly percent change in the Wilshire 5000 index also is positive and statistically significant so that a higher growth rate in the Wilshire boosts the level of sentiment. However, the coefficient on the interaction term (EQUITY*WILSHIRE) is statistically insignificant. This suggests that changes in stock prices affect sentiment levels about the same regardless of whether a household owns stock. This is

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[13]In the Michigan survey, income is self reported and can incorporate income from a variety of sources including dividends and realized capital gains.

[14]I used the Wilshire 5000 stock index because it is a broader index than the S&P 500 and the regressions appear to perform better with broader indices. The Wilshire is only available since 1980. As a result, it could not be used in the time series analysis of section II. The model in table 3 also was estimated with the simple percent change in the Wilshire with very similar results. The average return of 12 percent is the average annual growth rate in the Wilshire from January 1985 to December 1994.

more consistent with stock prices serving as a leading indicator since the sentiment of households

that own no stock respond to movements in equity prices. However, it does not rule out a

traditional wealth effect.[15]

The model also reveals some interesting demographic characteristics. The higher the

household's income, the higher the level of sentiment *ceteris paribus*. Also, according to the

model's estimated coefficients, the factors that tend to raise sentiment include being male, having

a college education, having a college educated spouse, or living in the Midwest. Consumer

sentiment tends to decline with the age of the respondent and is lower in households located in

the Northeast or in households with children under the age of 17. Sentiment also tends to be

lower in households in which the respondent is Hispanic.

In columns 2 and 3 of table 3, the data set is divided into those households that report

owing no stock (column 2) and those that report owning stock (column 3). This was done as

another check of the results in column 1. The coefficients on WILSHIRE in column 2 (no

equities) is 0.65 and is statistically significant at the ten percent level. The coefficient on

WILSHIRE in column 3 (holds equities) is 0.41 and is insignificant. However, the difference

between the coefficients is not statistically significant. Thus, at face value these results also

suggest that changes in stock prices have about the same impact on households that own stock as

those that do not.

The model specifications were checked by examining the error terms in each regression.

Tests for heteroskedasticity (a common problem when cross section and time series data are

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[15]The models also were estimated without family income to see whether income and stock market variables might be capturing similar effects. The regression results changed very little when income was excluded.

combined) were rejected for all the models in table 3.

Table 4 examines the impact of stock price movements on the individual components of the Michigan index and expected unemployment change. The explanatory variables in each regression are the same as in table 3, but for convenience, table 4 presents only the coefficients on EQUITY, WILSHIRE, and the interaction term. As can be seen, the coefficient on EQUITY is positive and significant in each regression with the exception of expected unemployment change. However, changes in stock prices (WILSHIRE) only is significant in the regression with expected business conditions over the next 12-months, and the interaction term is insignificant in all estimations. This also supports the view that respondents use changes in stock prices as a leading indicator since it appears to have a greater impact on their assessments of business conditions. If it reflected a wealth effect, then changes in stock prices likely would have more of an impact on their views of current or expected personal finances.

IV. Conclusions

This paper examined the relationship between movements in consumer sentiment and stock prices. At the aggregate level, the two share a strong contemporaneous relationship — an increase in equity values boosts sentiment. However, I also sought to examine the nature of the relationship between the two. Does an increase in stock prices raise aggregate sentiment because people are wealthier or because they use movements in stock prices as an indicator of future economic activity and potential labor income growth? Using individual observations from the Michigan survey I found results more consistent with the view that people use movements in equity prices as a leading indicator. Although the findings do not rule out a traditional wealth effect, they do raise some questions about the causal role of wealth in aggregate spending.

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Table 1

CAUSALITY TESTS BETWEEN SENTIMENT AND EQUITY PRICES
(Monthly data)

Dependent variable:	MICH	CB	STOCKS	
	(1)	(2)	(3)	(4)
$MICH_{t-1}$	-.06 (.07)		.01 (.05)	
$MICH_{t-2}$	-.03 (.07)		.02 (.05)	
$MICH_{t-3}$	-.01 (.07)		-.01 (.05)	
CB_{t-1}		.004 (.07)		-.03 (.03)
CB_{t-2}		-.03 (.07)		.02 (.03)
CB_{t-3}		-.02 (.06)		-.04 (.03)
$STOCKS_{t-1}$	.29 (.10)	.27 (.14)	.35 (.07)	.38 (.07)
$STOCKS_{t-2}$	.10 (.09)	.24 (.14)	-.12 (.07)	-.12 (.07)
$STOCKS_{t-3}$	-.18 (.10)	.01 (.14)	-.08 (.07)	-.05 (.07)
constant	.10 (.33)	-.14 (.50)	.93 (.24)	.90 (.24)
	$F(3,222)=5.99$	$F(3,222)=3.28$	$F(3,222)=.07$	$F(3,222)=.84$
	$p = .001$	$p = .022$	$p = .97$	$p = .47$
	$R^2 = .08$	$R^2 = .05$	$R^2 = .13$	$R^2 = .14$

Notes: The equations were estimated using monthly data from 1980:6 to 1999:6. MICH, CB, and STOCKS are the first difference of the log of the Michigan index of consumer sentiment, the Conference Board index of consumer sentiment, and the Wilshire 5000 stock price index, respectively. Standard errors are in parentheses.

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Table 2

MEANS OF SAMPLE VARIABLES BY STOCK OWNERSHIP
(Weighted data from Michigan surveys, Oct. 1995 to Dec. 1997)

Variable definitions	Variable Means	
	STOCK OWNER (EQUITY=1)	NO STOCKS (EQUITY=0)
MICHI = individual confidence index, a value of 500 is most pessimistic and 1000 is most optimistic	852	808
INCOME = total household annual income, all sources	**$62,000**	**$29,000**
AGE = age of the respondent (years)	47	47
MALE = 1 if the respondent is male, zero otherwise	51	40
COLLEGE = 1 if the respondent attended college, zero otherwise	**52**	**22**
KIDS = 1 if household has any children under age 17, zero otherwise	38	38
MARRIED = 1 if the respondent is married, spouse may or may not be present, and zero otherwise	67	52
WHITE = 1 if the respondent is white, zero otherwise	89	74
BLACK = 1 if the respondent is black, zero otherwise	5	11
HISPANIC = 1 if the respondent is Hispanic, zero otherwise	2	10
OTHER = 1 if respondent is not white, black, or Hispanic and zero otherwise	4	5
WEST = 1 if the respondent lives in the western U.S., zero otherwise	20	21
MIDWEST = 1 if the respondent lives in the middle west, zero otherwise	28	26
NORTH = 1 if the respondent lives in the northern U.S., zero otherwise	21	18
AGE_SPOUSE = age of respondent's spouse (years)	31	24
COLL_SPOUSE = 1 if the respondent's spouse attended college, zero otherwise	32	11
Number of observations	4,728	6,882

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Table 3

OLS REGRESSION RESULTS WITH INDIVIDUAL RESPONSES FROM
THE MONTHLY MICHIGAN SURVEYS (1995:10 TO 1997:12)

Dependent variable	Consumer sentiment (scale of 500 to 1000)		
	(1): Full sample	(2): No equities	(3): Holds equities
EQUITY	**24.98 (2.43)****		
WILSHIRE	**.63 (.34)***	**.65 (.37)***	**.41 (.41)**
EQUITY*WILSHIRE	**-.24 (.57)**		
AGE	-1.34 (.07)**	-1.38 (.09)**	-.97 (.14)**
MALE	29.08 (2.13)**	27.67 (2.87)**	29.94 (3.15)**
COLLEGE	17.86 (2.47)**	15.55 (3.54)**	18.54 (3.33)**
KIDS	-8.77 (2.48)**	-6.44 (3.34)*	-14.67 (3.73)**
MARRIED	-4.46 (3.28)	-7.59 (3.97)*	11.5 (9.83)
WHITE	7.54 (4.9)	11.77 (6.20)*	-5.56 (8.19)
BLACK	.36 (5.92)	6.66 (7.29)	19.05 (10.64)*
HISPANIC	-12.48 (6.21)**	-6.66 (7.51)	-24.18 (12.94)*
WEST	-1.62 (2.95)	-6.47 (3.89)*	5.11 (4.5)
MIDWEST	5.68 (2.71)**	6.66 (3.61)*	3.36 (4.03)
NORTH	-19.50 (2.97) **	-21.04 (3.97)**	-17.52 (4.40)**
AGE_SPOUSE	.00 (.04)	.01 (.05)	-.38 (.19)**
COLL_SPOUSE	8.98 (3.2)**	7.15 (4.92)	11.77 (4.15)**
INCOME	.21 (.03)**	.49 (.06)**	.12 (.03)**
Constant	851.47 (6.32)**	8.43.03 (8.17)**	878.08 (10.87)**
Number of obs.	11,610	6,882	4,728

Notes: Estimates in column 1 are the full sample. Column 2 estimates only incorporate households that hold no stocks. Column 3 estimates only incorporate households that hold stocks. WILSHIRE is the monthly percent change in the Wilshire 5000 stock price index relative to an average expected return of 12 per year. AGE is the age of the respondent. MALE=1 if the respondent is male, and COLLEGE = 1 if the respondent has attended college, zero otherwise. KIDS = 1 if the household has any children under the age of 18, MARRIED = 1 if the respondent is married, WHITE = 1 if the respondent is white, BLACK = 1 if the respondent is black, HISPANIC = 1 if the respondent is of Hispanic origin, WEST = 1 if the household is in the western U.S., MIDWEST = 1 if the household is in the Midwest, NORTH = 1 if the household is in the Northeast, AGE_SPOUSE is the age of the respondents spouse, and COLL_SPOUSE equals 1 if the spouse attended college--all variables are zero otherwise. INCOME is total reported annual household income. A ** indicates significance at the 5 percent level, and * indicates significance at the 10 percent level. Standard errors are in parentheses.

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Table 4

OLS REGRESSIONS WITH COMPONENTS OF THE AGGREGATE MICHIGAN INDEX
AND EXPECTED UNEMPLOYMENT CHANGE
(Using individual observations, 1995:10 to 1997:12)

Dependent variable:	WILSHIRE	EQUITY = 1 or 0	WILSHIRE*EQUITY
Current financial situation	.16 (.12)	6.64 (.85)**	-.32 (.20)
Expected financial situation	.02 (.09)	1.71 (.64)**	-.01 (.15)
Expected business conditions (12-mos.)	.23 (.13)*	6.73 (.94)**	-.06 (.22)
Expected business conditions (5 years)	.11 (.14)	5.90 (.99)**	.26 (.23)
Buying conditions for large appliances	.11 (.11)	4.0 (.78)**	-.11 (.18)
Expected unemployment change	-.05 (.10)	-.11 (.71)	-.11 (.16)

Note: A * indicates significance at the 5 percent level. A ** indicates significance at the 10 percent level. WILSHIRE is the percent change in the Wilshire 5000 stock index, and EQUITY is a dummy variable equal to one if a household holds equities (either directly or indirectly) and zero otherwise.
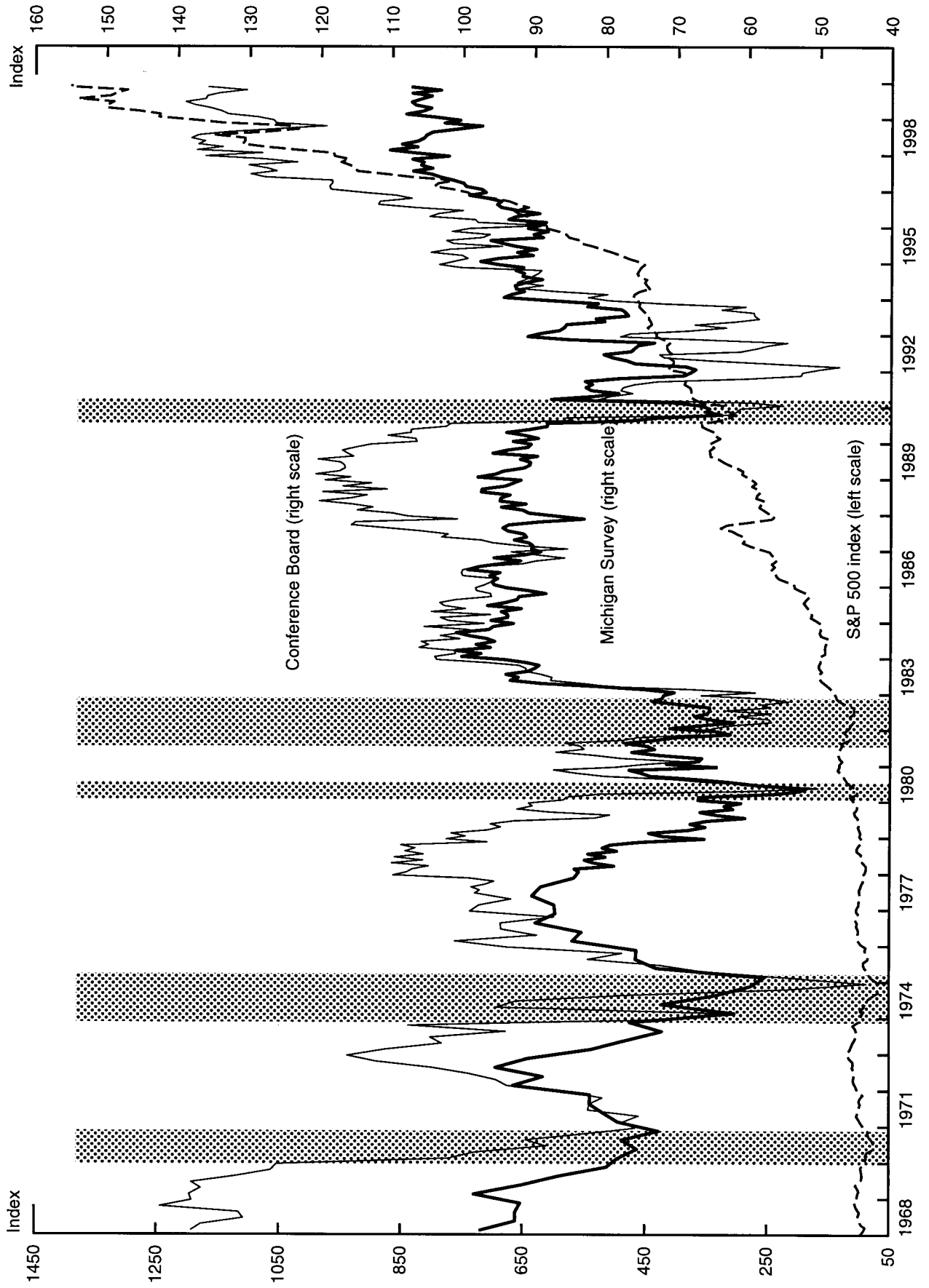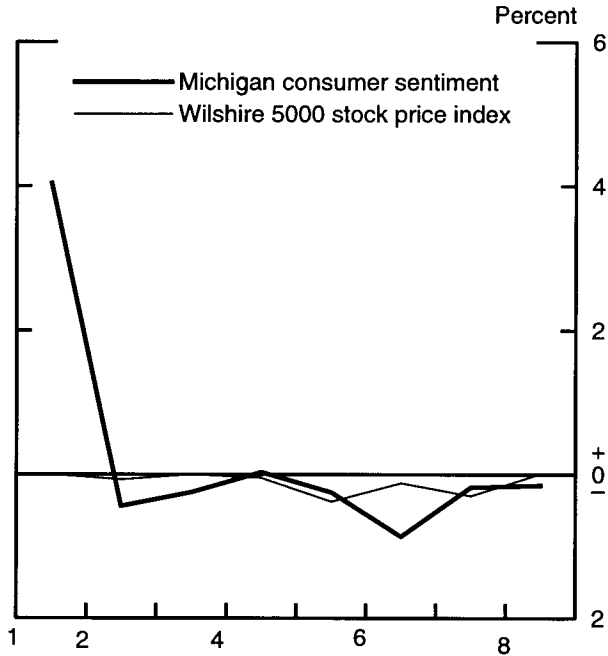
Figure 1

CONSUMER CONFIDENCE AND STOCK PRICES

Conference Board (right scale)

Michigan Survey (right scale)

S&P 500 index (left scale)

Figure 2

VAR IMPULSE-RESPONSE FUNCTIONS AND VARIANCE DECOMPOSITIONS

Panel 1: Shock to Consumer Sentiment

Percent

—— Michigan consumer sentiment
—— Wilshire 5000 stock price index

Note: Response to one standard deviation innovation.

Panel 2: Shock to Equity Prices

Percent

—— Wilshire 5000 stock price index
—— Michigan consumer sentiment
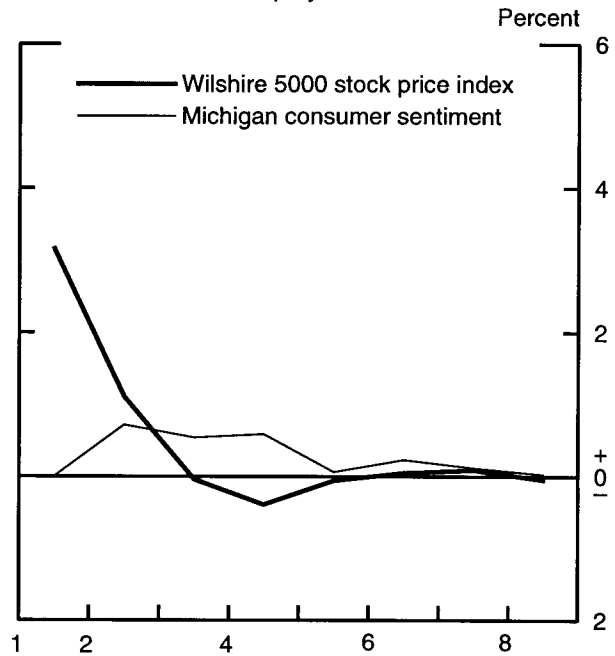
Note: Response to one standard deviation innovation.

Panel 3: Variance Decomposition

Percent

—— Equity variance due to sentiment
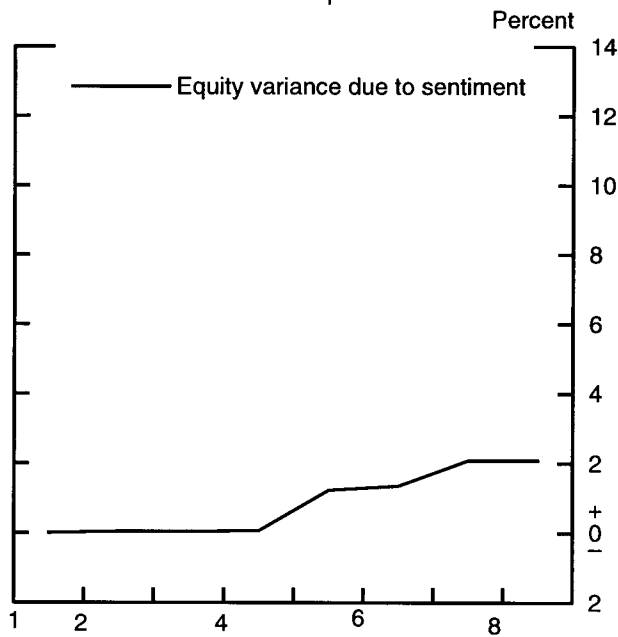
Note: Wilshire 5000 index and Michigan SRC index.

Panel 4: Variance Decomposition

Percent

—— Sentiment variance due to equities
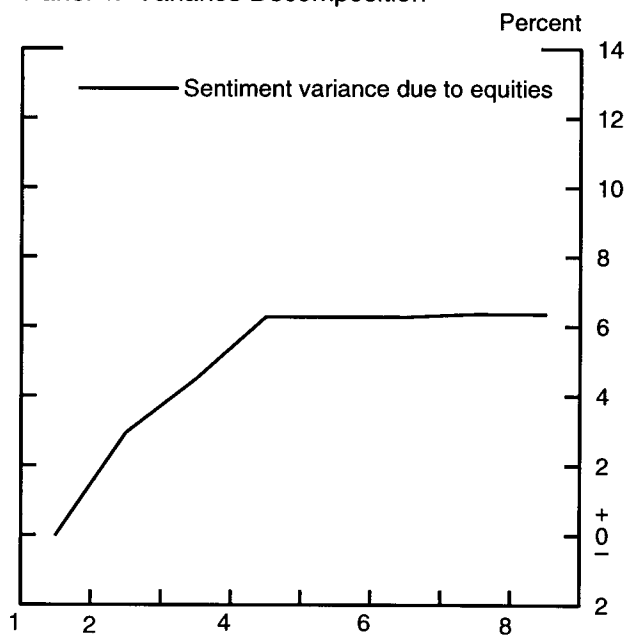
Note: Wilshire 5000 and Michigan SRC index.

Figure 3

VARIANCE DECOMPOSITION OF SENTIMENT DUE TO VARIOUS SERIES