Are men more optimistic?

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Abstract

Men are strikingly more optimistic about the future performance of key economic and financial indicators than women. We report surprisingly strong and highly significant gender differences in consumer confidence data of seventeen out of eighteen countries, including the US. We confirm these findings using data from US and European Gallup opinion polls. This gender difference is present in key indicators such as economic growth, interest rates, inflation and future stock market performance and persists after we control for income, employment, wealth, education and marital status. Our results hold regardless whether we consider questions about respondent's personal future economic situation or the general state of the economy. This suggests that the optimism we document in this study is different from the well-documented overconfidence phenomenon, as it extends beyond the personal influence sphere of respondents. We also document significant gender differences in perceived stock market risk. Thus, we show that not only differences in risk aversion but also differences in optimism and perceived risk may explain why women hold on average less risky portfolios than men.

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JEL-classification: D1, D8, D9, G11, Z1

1. Introduction

Gender differences are not only a popular topic of discussion[1] but also an important field of study in all social sciences, which is not surprising given the important consequences that gender differences can have in our society. To a large extent, academic studies in psychology seem to offer support for the popular view that different genders "originate from different planets". For instance, research seems to confirm the stereotypes that women are more socially oriented (selfless) and men are more individually focused (selfish).[2] Men and women also differ in their views on a variety of issues and topics like the likelihood of nuclear war, dangers of alcohol and drugs, technology, radioactive waste, preferred US presidents, economic consumption, the labor market and investment decisions. Some of these differences are attributed to gender differences in risk aversion.[3,4,5]

This paper focuses on optimism and tests for the existence of gender differences in future economic outlook. We find that men are significantly more optimistic about the future performance of key economic and financial indicators. Consumer confidence data of eighteen different countries show strong gender differences, with women being the less optimistic gender. For instance, in the US we find that since 1978 there has only been one month (March 2000) when consumer confidence of women was higher than consumer confidence of men. This gender

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[1] According to Hyde (2005), the well known book by John Gray *Men Are From Mars, Women Are From Venus* has sold over 30 million copies and has been translated into 40 languages.

[2] See for numerous references for instance the overview by Eckel and Grossman (2007a).

[3] See for instance the overviews by Eckel and Grossman (2007b) and Croson and Gneezy (2004).

[4] There occasionally seems to be confusion in the terminology used. For clarity: we follow the convention in the finance literature and distinguish between the (perceived) characteristics of the probability distribution - the (perceived) likelihood of states, (perceived) differences in mean and standard deviation - versus risk aversion (the willingness to take on risk). In other words, two people may have exactly the same perception of a probability distribution but still take different decision due to a difference in risk aversion. Vice versa people may have the same level of risk aversion but still take different decisions based on a difference perception of the likelihood of different states occurring. We refer to optimism and pessimism when we refer to a difference in (perceived) likelihood of different states.

[5] It may be worthwhile to point out that a debate is still ongoing. For instance, in her meta analysis of psychological differences, Hyde (2005) argues that while differences between genders may be present, we should consider the implications of those differences. In many cases, the variation between men and the variation between women is so large that difference can be safely ignored (the gender similarities hypothesis). The argument is to focus on differences that may have strong implications for the different genders.

difference is not only remarkably persistent over time, but it is also present in the general economic and personal outlook. We confirm these findings using 56 US Gallup polls. These polls allow us to test whether this gender difference is present in other more specific key economic indicators as well. We find this to be the case. Men are more optimistic about future outlooks for economic factors like economic growth, interest rates, inflation and future stock market performance. Moreover these polls enable us to test for robustness with respect to income, employment, wealth, education and marital status. The patterns we observe persist after controlling for these personal characteristics. As with Consumer Confidence Index, we show that gender differences we document in US Gallup polls are also present in other European countries. Our results also hold regardless of whether we consider questions about respondent's personal future economic situation or the general economy.

Apart from documenting this highly significant gender difference in optimism with respect to the economic outlook, our paper makes several other contributions to the literature. While our findings deal with future economic and financial outlook, these results are in line with other findings in the literature that suggest that men are more optimistic. For instance, Gwartney-Gibbs and Lach (1991) report that women are significantly and substantially more pessimistic in their nuclear war attitudes than men. If this gender difference in optimism holds more generally as our findings suggest this may help to shed new light on several well-known reported gender differences in the literature and may have implications for many other gender studies in other fields of science. For example, there is a large body of literature that suggests that optimism is beneficial in the health domain (see for instance Felton, Gibson and Sanbonmatsu (2002) and the references within: lower blood pressure, cope better with stress, better recovery from cancer and coronary bypass surgery, less likely to become depressed).

Our findings also contribute to the literature as the gender difference in optimism we report here extends beyond the personal influence sphere of respondents in many of the cases we consider. This has several advantages. Our results are not confounded by individual opportunity sets. It is well known that men and women differ in their perspective of their own future or are perceived to be different by others and therefore treated differently. For instance, Schubert, Brown, Gysler and Brachinger (1999) suggest perceptions rather than actual differences may be responsible for the "glass ceilings" women face on the corporate ladder. Similarly – as they argue – if investment advisors perceive women to be more risk averse they may advice less risky portfolios, causing women to have on average lower funds available during retirement. These perceptions about their own future, or for this matter, perceptions of outsiders, are less likely to play a role in our results because we focus on macroeconomic outlook, which is beyond control of individuals. We find that men are more optimistic even if the questions clearly deal with issues outside the personal sphere.

As another example – one which we discuss more extensively below – our finding may also explain why women invest on average less in risky portfolios than men, i.e. women invest less in the stock market as opposed to more safe assets. While the literature to date, to a large extent, attributes this to gender differences in risk aversion, there are two alternative explanations (see also our discussion in footnote 2). Two investors may have the same risk aversion but if one is more pessimistic about the future performance of the market or perceives the future risk of the market to be higher, then the asset allocation of the two investors may still differ. In other words, if men are more optimistic about the future state of economy in general or, more specifically, the performance of the stock market or, if men perceive the future risk to be lower, they may be willing to invest more in stocks. Our results suggest that both alternative explanations may contribute to a difference in observed portfolio allocations between men and women. Particularly

interesting is the fact that differences in expectations do not need to be large: we show how a one percent difference in expected return might already explain the observed difference in portfolio holdings.

Our alternative explanation for the difference in portfolio holdings also would align the current experimental evidence with the field data. While field studies based on difference in portfolio holdings claim that women are more risk averse, evidence from laboratory experiments studying gender differences in risk aversion is inconclusive (Eckel and Grossman (2006) provide an extensive overview of the literature). Our alternative hypothesis explains both findings jointly and suggest that differences in the riskiness of actual portfolios need not necessarily be caused by differences in risk aversion.[6] As gender differences in investment strategies may have drastic consequences for instance with respect to consumption in retirement (see for instance, Bajtelsmit and Bernasek, 1996) our results hopefully also provide new insights in resolving potentially negative effects of gender differences on asset allocations.

While we discuss optimism, it may be useful to distinguish our results from overconfidence results reported for instance by Barber and Odean (2001). They find that the average man trades more frequently than the average woman in stock markets. They suggest that these differences in trading frequency may be caused by men being overconfident about their own stock picking ability. As we stated above our results do not consider overconfidence in trading in the sense of Barber and Odean (2001), but a general confidence in the future – optimism – as we consider macroeconomic variables beyond the control of individuals and do not consider trading frequency.

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[6] Our alternative hypothesis would also explain the finding of Schubert, Brown, Gysler and Brachinger (1999) who find no difference in risk propensity when subjects face contextual decisions.

Our study is related to several other studies in economic literature. Puri and Robinson (2007) show that their measure of optimism based on self-reported life expectancy is related to numerous life and economic choices such as work intensity, remarriage, retirement, savings decision and among other things investment in individual stocks. On gender difference, Cohn et al. (1975) found that non-professional women investors allocate less of their portfolios to volatile assets. Sunden and Surette (1998) conclude, using household data over 1992 and 1995, that women tend to invest their retirement funds in less risky assets than men. Jianakoplos et al. (1998) document that single men invest more of their wealth, on average 46%, in risky assets than single women who invest on average 40% of their wealth in risky assets using survey data. Similarly, Agnew et al. (2003) find that male pension fund participants' equity allocation is higher at 425% compared to that of female participants at 33%.

There are a couple of studies that mention gender differences in optimism. Chaney, Alvarez and Nagler (1998) try to explain the gender gap in US elections and report some evidence for the US that women are significantly more pessimistic about the current state of the economy in general and their current personal finances. Dominitz and Manski (2007) document significant gender differences in beliefs about future stock returns and find that the heterogeneity of reported beliefs lead to differences in the probability of holding stocks. Our study differs in that we show gender differences in optimism in a wider range of economic indicators such as economic growth, unemployment rate, inflation, as well as stock market performance. It may also be worthwhile to point out that their measure of asset allocation is a binary variable, one for those who hold stocks as a part of their portfolios and zero for those who do not. Our measure of stock holding is the reported percentage of stocks in the portfolio, which can further differentiate larger stock holdings

and small stock holding. We also illustrate the pervasiveness of the gender difference in optimism. We observe that the observed gender difference persists from 1978 to 2005 and in seventeen European countries as well as in US. We also show gender differences in perceived risk in the stock market in addition to optimism.

This paper is organized as follows. We examine and the gender difference in international consumer confidence survey data in the next section. The results with US Gallup survey data are presented in Section 3. Section 4 discusses implications of our findings on stock holdings and also reports related empirical findings. In Section 5 we verify robustness with respect to marital status and Gallup surveys conducted in other countries. Finally Section 6 concludes.

2. Consumer Confidence Survey Data

2.1. Data

In order to study the difference in confidence between men and women, we use monthly consumer confidence data from eighteen countries. We use different countries to ensure that our results are not country specific and to some extent not culture specific.[7] Moreover, as there are slight differences between exact formulations of the different questions in the different surveys, using different surveys results in more robust inference. We consider the following eighteen countries: Australia, Austria, Belgium, Czech rep., Denmark, Germany, Finland, France, Greece, Hungary, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, the United Kingdom and the United States. For the United States we use the Conference Board (CB) Consumer Confidence Index. The survey is conducted on a monthly basis and the consumer index is available since January 1978. The survey poses questions on both the present situation and on expectations on the

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[7] We tried to obtain more gender specific confidence data from a broader range of non-Western countries. Unfortunately these were not available.

future situation. The CB index has a sample size of 5,000 and considers the following issues in each survey (we report the exact questions below):

1)   Respondents appraisal of current business conditions,

2)   Respondents expectations regarding business conditions six months hence,

3)   Respondents appraisal of the current employment conditions,

4)   Respondents expectations regarding employment conditions six months hence, and

5)   Respondents expectations regarding their total family income in six months.

For Australia, the Westpac Melbourne Institute of Applied Economics and Social Research publishes the consumer confidence index and this index is available for the period January 1987 - December 2005. For the European Union member states, we use the EU Consumer Confidence Survey data. The EU Commission conducts the EU Consumer Confidence Survey since May 1972 as part of the EU Consumer Survey and its aim is to acquire information on consumer expenditure, saving intentions and the factors affecting these figures. Separate research institutes in every country survey the data, based on uniform criteria and the results are sent to the European Commission, which in its turn aggregates the data, conducts seasonal adjustment and publishes them. The sample sizes vary per country: 2500 consumers in Germany, 2000 in Spain, France, Italy and the UK and 1500 in each of the remaining countries. The Consumer Confidence Index is calculated from the answers respondents give on the following points:

1)   Expectations of financial position,

2)   Assessment of economic prospects,

3)   Expectations of

4)   Employment situation, and

5) Planned saving intentions.

For most European countries the time series for men and women separately start at January 1990 and end at December 2005. The exceptions are Portugal, starting at June 1986, Hungary starting at February 1993, The Czech Republic starting at May 2001, Austria and Sweden starting at October 1995 and Finland starting only at November 1995. Table 1 contains basic characteristics of the consumer confidence data used in this study.

[Table 1 around here]

2.2. Gender Difference in Consumer Confidence

Table 1 shows the t-statistics for gender difference in confidence index for the all countries in our data. Across all the countries, except for Germany, the gender difference in consumer confidence index is highly significant, indicating that women are more pessimistic about the current and future economic conditions in general. The statistical significance is strongest for the US, with a t-statistic of more than 10. Strikingly, for Europe on aggregate, there has never been a month between January 1990 and December 2005 with greater consumer confidence for women than for men.

[Table 2 around here]

Although sample sizes are different to a large extent, it may be good to verify explicitly that our results are independent of the time period we consider. Looking at the US consumer confidence index separately, which has the longest time-series, Table 2 illustrates the gender differences in

US consumer confidence index for the entire sample period from January 1978 to December 2005 and those in two sub-sample periods, January 1978 – September 1991 and October 1991 – December 2005. Again, we find that consumer confidence index from female respondents are significantly and consistently lower than that from male respondents. For the other countries in our sample, we find qualitatively similar results when looking at subsamples. The average confidence index for United States women is 83.8 over the full sample period, which is more than 10 points less than the average for men (93.9). In fact, Figure 1, in which we plot month-by-month mean gender differences for the United States, shows that there is only one month over the whole sample period when the average female consumer confidence index is higher than its male counterpart. This was in March 2000 (the difference was marginal (-0.3) and we have no explanation why women would be more optimistic during this month).

[Figure 1a and 1b around here]

The United States consumer confidence index is based on the respondent's perception of both current and future state of personal and general economic condition. As discussed before there may be more than one reason why men are more optimistic (or less pessimistic) than women regarding their own private situation. Therefore we consider both personal and general questions separately. We report the gender differences in the five questions in the questionnaire that are used to construct the United States consumer confidence index in Table 3. These questions are:

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

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

III. General Short
"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?"

IV. General Long
"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 will have periods of widespread unemployment or depression, or what?"

V. Durables
"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 or bad time for people to buy major household items?"

[Table 3 around here]

Table 3 shows that men are less pessimistic (or more optimistic) in all dimensions – current, future, personal and general economic conditions. If anything, differences tend to be larger when we consider general economic circumstances on which respondents have no direct influence.

So far we find that women are less optimistic than men. In all countries except Germany this difference is highly significant. The result is robust over time and does not depend on whether questions are formulated about personal or general economic conditions. There may be other characteristics that may cause this difference. To be able to use other control variables in our analysis and to examine individual responses more closely, we now turn our attention to the United States Gallup Surveys.

3. United States GALLUP Survey

Although we observe significant and persistent gender differences in optimism from the consumer confidence indices the differences may be due to personal characteristics. That is, the gender differences in optimism we observe may merely reflect those in personal characteristics and

circumstances that in turn affect optimism. To control for other confounding factors that may affect optimism, we use United States UBS/Gallup data. In addition to having more detailed personal information of respondents, the UBS/Gallup questionnaires specifically ask about the subject's perception of future stock market performance and risk as well as general economic condition, which enables us to perform a clean test for the link between optimism and investment behaviour.

3.1. Data

The data were gathered by the United States GALLUP Organization that conducted telephone interviews with randomly chosen heads of United States households or spouses with total savings and investments of $10,000 or more. The data are available for the period from November 1996 to December 2002, in a roughly quarterly interval until February 1999 and in a monthly interval afterwards. Data from a total of 56 surveys with around 1,000 observations for each survey available from the Roper Center are used for this study. The survey questions ask the subjects' outlook for future general economic conditions and stock market performance. In addition to questions related to future stock market performance, the GALLUP data contain personal information of the respondents such as income, level of education and age, that enable us to control for factors other than gender difference.

The questions we focus on ask about the respondent's outlook of macroeconomic factors, economic growth (United States GALLUP code 1523), unemployment rate (code 1524), inflation rate (code 1526), interest rate (code 1527) and outlook of stock market performance (code 1525):

Questions 1524 – 1527
Now, I would like to ask you to think about the factors that could affect the overall investment environment OVER THE NEXT TWELVE MONTHS. On the same five-point scale, as far as the general condition of the economy is concerned, how would you rate (read and rotate A-D), OVER THE NEXT TWELVE MONTHS? (emphasis in original)

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5 Very optimistic
4 Somewhat optimistic
3 Neither optimistic nor pessimistic
2 Somewhat pessimistic, OR
1 Very pessimistic
6 (DK)
7 (Refused)


A. Economic growth (1523)
B. The unemployment rate (1524)
C. Performance of the stock market (1525)
D. Inflation (1526)
E. Interest rates (1527)
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Note that these questions ask how optimistic respondents are instead of asking the respondent to predict a direction of future changes. Thus, these questions can capture optimism of a respondent regardless of the position of the respondent, e.g., how optimistic a respondent is about interest rates regardless of whether he is a net lender or a net borrower. For stock market outlook, we also examine whether the respondents believe the stock market will go up or down in three months (code 2332) and in one year (code 2485).[8] In addition, we investigate the respondent's perception of stock market risk (code 2707). UBS/Gallup made changes in questionnaire design throughout the sample period and thus, not all questions are present in all surveys; for instance, the question about stock market risk, code 2707, is present in only 10 surveys. The additional survey questions are:

Question 2332
Over the next THREE MONTHS, do you think the stock market will go up, go down, or remain about the same?

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3 Go up
2 Remain about the same
1 Go down
4 (DK)
5 (Refused)
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Question 2485
A year from now, do you think the stock market will be higher than it is now, lower, or about the same?(Probe for "much higher" or "somewhat higher"; probe for "much lower" or "somewhat lower")

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[8] We reverse the original coding scheme of question 2485, the greater the numeric response the more pessimistic the respondent, in order to make it in line with the other questions.

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1 Much higher
2 Somewhat higher
3 About the same
4 Somewhat lower
5 Much lower
6 (DK)
7 (Refused)
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Question 2707

Using a ten-point scale, where "1" means no risk and "10" means very high risk, how would you rate the CURRENT level of risk for investing in the stock market?

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10 Very high risk      04
09                     03
08                     02
07                     01 No risk
06                     11 (DK)
05                     12 (Refused)
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For the questions we analyze, we treat answers indicating "Don't Know" and "Refused" as missing. We also discard observations with obvious coding errors such as an undefined value for gender. We disregarded the questions in the UBS/Gallup survey that ask specifically about expected returns on personal portfolios (which may differ due to portfolio composition) and on short and long term expected market returns as these are likely to be error prone.[9]

[Table 4 around here]

Table 4 presents some summary statistics of the responses to the Gallup survey questions that we analyze. The average numerical answers from both male and female respondents are greater than the mid-point of the scales. This indicates that on average both men and women are optimists with respect to the economic future. However, in all questions related to optimism, the average from

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[9] As Campbell (2003) points out, the respondents need to understand the difference between annual and cumulative returns in those questions about expected returns. Moreover, the questionnaire did not allow for negative expected returns before 2000 (private correspondence with Terrance Odean) and answers have to be coded by interviewers in two steps afterward (separate codes for size and sign) which may result in a high error level. An evaluation of responses given suggest that these questions may have been too difficult to answer in a survey that involves telephoning people at home in the evening as also Campbell (2003) suggests. See McFadden et al. (2005) for detailed discussion about potential biases in survey responses.

female respondents is less than that from male respondents. The *t*-statistics for the gender differences are – as with our consumer confidence data - highly significant. The last question about perceived stock market risk shows that the risk perception of women is significantly higher than that of men. The results in Table 4 confirm what we find in the consumer confidence data: men are more optimistic than women. However, simple *t*-tests cannot control for other confounding factors, which we will now address.

3.2. Gender Difference in United States GALLUP Survey

Table 5 presents the results of ordered logit regressions of the survey questions responses on female dummy equal to 1 for females and other control variables with month fixed effects.[10] The control variables are WORTH, a dummy variable equal to 1 if the respondent's total amount of investment is greater than $100,000; EDU, a categorical variable assuming the value of 1 for education level below undergraduate degree, 2 for undergraduate education and 3 for postgraduate education; INC, a categorical variable equal to 1 for an annual income below $50,000, 2 for an annual income between $50,000 and $100,000 and 3 for an annual income above $100,000; RETIRED, a dummy variable equal to 1 if the respondent is retired; EMP, a categorical variable taking a value of 1 if the respondent is unemployed, 2 if the respondent has a part-time job and 3 if the respondent works full-time; and AGE, the self-reported age of the respondent. If the gender difference in optimism we document in previous sections merely reflects differences in personal characteristics between genders, one would expect the coefficient of the dummy variable for females to be insignificant.

[Table 5 around here]

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[10] Results without month fixed effects are similar.

The ordered logit regression results confirm those of consumer confidence in that female respondents are less likely to give an optimistic response compared to their male counterparts. For all the questions related to both macroeconomic and stock market outlook, the coefficient on the female dummy is significantly negative with t-statistics in all cases greater than 10 (in absolute values). The results are robust to the inclusion of control variables indicating that female respondents are more likely to give a less optimistic answer than male respondents after taking personal differences into account.

It is interesting that total worth of investment account, WORTH, affects optimism negatively. We take this as an indication that the responses do not merely mirror risk-aversion. That is, risk-averse respondents weigh undesirable outcome heavily when forming their subjective probability distribution and thus appear to be pessimistic. Empirical evidence on the relation between risk-aversion and wealth would be at odds with the results if we were to interpret the negative impact of wealth on optimism as an increase in risk-aversion. For example, Guiso and Paiella (2004) show a negative relation between risk aversion and endowment whereas Brunnermeier and Nagel (2006) find no relation. Annual income, INC, is positively related to optimism. The effects of the other control variables on optimism are less consistent in general. For instance, the coefficient on the level of education, EDU, is insignificant in several regressions and also flips sign.

The responses to the only question about the respondent's perception of stock risk available from ten surveys show that there is a gender difference as well. Female respondents tend to predict a higher level of stock market risk than male respondents do. The t-statistics corresponding to the female dummy are close to 6 with and without the control variables. While literature has generally reported that women are more risk averse than men, it is a novel finding that women foresee a greater level of stock market risk. This finding is consistent with the gender difference

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in optimism. Thus, apart from a gender difference in the level of financial indicators, there appears to be a similar phenomenon in the riskiness of financial investments. Unfortunately, there is no more data available to examine this finding more thoroughly.

In order to examine how gender affects the probability of the respondent answering individual categories, we run multinomial logit regressions. For brevity we report the results for only three survey questions, Question 1523 about economic growth, Question 1525 about stock market performance and Question 2707 about stock market risk, in Table 6. The results for the other questions are similar and available upon request.

[Table 6 around here]

We set the neutral answer, 3, as the baseline category for the questions about optimism in economic growth and stock market performance. The effect of gender is clearly not uniform across the response categories. The pessimism of female respondents documented in Table 5 seems to stem from the fact that they are less likely to give optimistic answers compared to male respondents. The estimated coefficient on the female dummy is significantly negative for optimistic responses 4 and 5, with or without the control variables. Turning to prediction of stock market risk, where the response indicating a moderate level of risk, 5, is set as the reference category, the gender difference is more striking in low risk categories suggesting that female respondents are less likely to predict low stock market risk. To summarize, the multinomial regression results suggest that men are more optimistic and more likely to expect low stock market risk than women.

4. Optimism and Risky Stock Holding

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Women hold on average less risky portfolios than men. For this reason it is often believed that women are more risk averse than men regarding financial risk. Using a standard formula in finance that relates the optimal weight in risky assets and risk aversion it is easy to see why. Consider a risky and risk free asset. The mean-variance optimal weight for an investor in the risky asset (stocks) is given by:[11]

$$ w^{opt}_{stocks} = \frac{E[r_{stocks}] - r_f}{A \sigma^2_{stocks}} , $$

where $E[r_{stocks}]$ denotes the expected return on stocks; r_f the return on the risk free asset; A the degree of risk aversion of an investor and σ^2_{stocks} the variance of the risky assets.

If women hold on average less risky portfolios it is tempting to conclude that they are more risk averse. However, there are at least two alternative possibilities that might explain this difference. If men are more optimistic than women regarding the economic future they might have higher expectations regarding stock returns. As expected stock returns depend on expectations about future company cash flows which in turn depend on future economic conditions this does not seem an unreasonable assumption. If difference in opinion between future economic conditions would imply for instance, a one percent lower expected return on stocks, this would – using reasonable parameter estimates[12] – imply a five to ten percent lower portfolio weight in stocks with no difference in risk aversion between men and women.[13] Jianakoplos and Bernasek (1998) report that single women invested 40 percent of their wealth in risky assets and single men 46 percent.[14] Alternatively as a second possibility, if women perceive the risk of stock market to be

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[11] We assume a simple one period mean-variance optimization here for simplicity. However, our argument holds more generally.
[12] For instance, using data for the S&P500 including dividends and the short-term Treasury bill from 1920 gives an annual risk premium of six percent and a standard deviation of twenty percent. With a risk aversion of three this would imply a portfolio weight in stocks of 50 percent. A one percent lower expected return would result in a portfolio weight of 42 percent.
[13] We assume a simple one period mean variance optimizer here for simplicity. However, our argument holds more generally.
[14] Only few studies in this fast growing strand of the literature (see for instance, Bajtelsmit and Bernasek, 1996) do report actual differences in portfolio holdings.

higher - all else equal - they would also invest less in stocks. Although only one question in the Gallup polls deals explicitly with risk, the evidence we report here does offer some support for that possibility.

Can we establish this link between optimism and portfolio holdings more directly using these survey data? We have to be very careful. The main problem is that we can only use Gallup data question 1525 which considers whether respondents are optimistic about future performance of the stock market. Optimism or pessimism about economic growth, inflation, interest rates or unemployment (questions 1523, 1524, 1526 and 1527) does not necessarily translate into that about future performance of stocks. Secondly, the other questions regarding stock markets do not overlap with our portfolio holdings data. Still, it may be useful to see whether the evidence contradict the alternative explanation that we suggest.

We take the following approach. We regress the reported current stock holding in percentage from the Gallup data on stock market outlook (code 1525), female dummy and other control variables.[15] Individual stock holding data are available only in five UBS/Gallup surveys in November 1996, February 1997, August 1997, November 1997 and September 1998. The total number of observations with non-missing stock holding is 4,343. Unfortunately, the limited sample period for stock holding data does not overlap with other stock market related questions (code 2332, 2485 and 2707).

[Table 7 around here]

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[15] We report the results with raw percentage stock holdings as dependent variable because there are 785 observations with stock holding of either 0 or 100%, which is undefined under the logit transformation. The OLS regression results with the logit-transformed stock holdings are similar to those reported, however.

If stock market outlook of respondents affect their stock holdings, one would expect negative (positive) coefficients on dummy variables for pessimism (optimism). Female dummy would pick up the effects of gender differences other than optimism/pessimism such as different risk-aversion and perception of risk. The results in Table 7 support our conjecture that optimism or pessimism affects investor's stock holding. In Panel A, the dummy variables for pessimism (Pes1 for extreme pessimism and Pes2 for moderate pessimism), have negative coefficients and those for optimism (Opt4 for moderate optimism and Opt5 for extreme optimism), except for in one case, have positive coefficients. Out of twenty such coefficients, thirteen are statistically significant at the conventional 5% significance level. Moreover, moderately pessimistic investors on average put a greater fraction of their wealth in stocks than extremely pessimistic investors as the differences in the coefficients on dummies, Pes2 and Pes1, are positive.[16] On the other hand, the results show that the degree of optimism from the survey in general is less important than the fact that the respondent is optimistic in that the coefficients on the dummy for extreme optimism are not different from those on the dummy for moderate optimism.[17] The female dummy is negative indicating that female investors tend to invest less in stocks after their outlook about stock market is taken into account. However, the coefficient of the female dummy loses its statistical significance when other personal characteristics are controlled for.

As women have a tendency to observe less extreme alternatives this may bias our results. Therefore we group alternatives into simply optimistic, neutral and pessimistic. The results are presented in Panel B of Table 7. Grouping pessimistic and optimistic responses together makes little change. Pessimism leads to lower stock investment while optimism leads to higher stock

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[16] The differences (not reported) are statistically significant in all cases.
[17] Puri and Robinson (2007) also find that moderate optimists and extreme optimists behave differently with regard to savings decision, repayment of credit card debts and planning horizon.

investment. Stock holdings for female investors are not statistically different from those of male investors when all other things are controlled for.

Overall, the results support our conjecture that differences in opinion can play a role in the observed gender difference in stock holdings. Given the limited sample size and the consistently negative sign on the female dummy, we do not argue that gender difference in opinion is the only cause, however. Moreover, one may criticize (see Campbell, 2003) whether reported portfolio holdings are actual portfolio holdings in this survey. Our point is that, if anything, the data do at least not contradict our hypothesis.

5. Further Robustness Checks

5.1 Marital Status

Our findings that females are less optimistic about economic outlook are provocative. One concern is, however, that what we attribute to gender difference may be due to different marital status. For instance, if disproportionately more female respondents are married and expressed the views on behalf of the family, what we capture would be the differences between singles and married couples. Moreover, Jianakoplos and Bernasek (1998), Sunden and Surette (1998) and Agnew et al. (2003) report different investment behavior within genders depending on marital status. Given the findings in Table 7 that pessimism leads to less stock holdings, the different investment behavior may stem from marital status affecting optimism or pessimism about economic outlook. To address the concern, we re-run the first five sets of ordered logit regressions as in Table 5 (those with optimism about economic growth, unemployment rate, stock market performance, inflation rate and interest rate as dependent variable) with marital status and interaction between marital status and gender included as independent variables.

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[Table 8 around here]

Unfortunately, the data for marital status are only available in four GALLUP surveys, February 1997, May 1997, September 1998 and November 1998. The sample size with non-missing marital status is 3,996. The results in Table 8 also suggest that the gender difference in optimism we observe in Table 5 is not due to marital status and interaction. The estimated coefficients on the female dummy are all negative after controlling for the effect of marital status and interaction. On the contrary, Married, a dummy for a married respondent and its interaction with the female dummy flip signs and are statistically insignificant in all but one regression. In four out of ten regressions, the estimated coefficient of the female dummy is statistically insignificant, possibly due to the small sample size. The coefficients on Worth and Inc, that are consistently significant in Table 5, also have the same signs as before but show a reduction in statistical significance level.

5.2 European UBS/Gallup Data

Finally, we examine a similar survey for some European countries to see whether the above results are country specific. UBS/GALLUP conducted similar surveys with a smaller number of questions in UK, France, Germany, Italy and Spain. The surveys were run in each month with a sample size of approximately 200 in each country for thirteen months from January 2002 to January 2003. The survey questions related to optimism in economic conditions that we focus on are the following.

Now, I would like to ask you to think about the factors that could affect the overall investment environment OVER THE NEXT TWELVE MONTHS. On the same scale, as far as the general condition of the economy is concerned, how would you rate (read and rotate A – D), OVER THE NEXT TWELVE MONTHS?

5 Very optimistic
4 Somewhat optimistic
3 Neither optimistic nor pessimistic
2 Somewhat pessimistic, OR

23

1 Very pessimistic
6 (DK)
7 (Refused)

A. Economic growth
B. The unemployment rate
C. Performance of the stock market
D. Inflation

In addition, we also analyze gender differences in opinions about financial markets:

Good Time to Invest:[18]
Do you think now is a good time to invest in the financial markets, or not?

1 Yes
2 No
3 (DK)
4 (Refused)

A unique question in the European survey about the introduction of Euro is the following.

Euro:
How optimistic do you feel about the introduction of the Euro and its effects on the European economy? Do you feel (read 5-1)?

5 Very optimistic
4 Somewhat optimistic
3 Neither optimistic nor pessimistic
2 Somewhat pessimistic, OR
1 Very pessimistic
6 (DK)
7 (Refused)

Finally, we examine gender difference in perceived risk of the stock market:

Risk:
Using a ten-point scale, where 1 means no risk of loss and 10 means very high risk of loss, how would you rate the current level of risk for investing in the stock market?
10 Very high risk 04
09   03
08   02
07   01 No risk
06   11 (DK)
05   12 (Refused)

[Table 9 around here]

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[18] For ease of comparison, we transformed the responses by assigning larger numbers to more optimistic answers for the questions.

The results in Table 9 corroborate their US counterparts. In all countries, males are more optimistic about all economic and market outlook than females. The gender differences in optimism, except for those for economic growth and unemployment rate in UK, are statistically significant. The European surveys also show a similar pattern in perceived risk of the stock market. Across all the countries, female respondents indicate significantly higher perceived level of risk in the stock market than male respondents.

[Table 10 around here]

Controlling for other factors available in the European UBS/GALLUP data does not affect the gender differences substantially.[19] In the ordered logit regressions in Table 10, the female dummy is significantly negative for all the responses gauging optimism and significantly positive for perceived risk in the stock market. These results are also robust to the inclusion of country fixed effects. In sum, the results from the European UBS/Gallup data indicate that the gender differences documented in this study are not country specific.

6. Conclusion

We document a consistent and strikingly large gender difference in optimism using consumer confidence indices in eighteen countries. The gender difference persists in US and European UBS/Gallup data after taking into account several control variables. Men are more optimistic than women over time and across countries. We show that in the US men are more optimistic about the future economic conditions than women over the period 1978-2006. This difference is large and statistically significant. In fact, we only find one month during this period when women were

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[19] The only control variables available in the European data are total investment (Worth) and age (Age).

more optimistic than men. Our finding holds for confidence about respondents own future financial situation but even stronger for the general economic outlook and is very robust over time. We also show that the gender difference in optimism is not country specific. Differences in consumer confidence between men and women are statistically significant 17 out of 18 countries we consider. Using the US GALLUP survey data, we show that the observed gap in optimism is not due to differences in personal characteristics. Similar surveys in several European countries show similar patterns to the US surveys.

While it is often assumed that women are more risk-averse than men due to observed risk differences in their portfolios, we propose how this difference in future economic outlook might also explain the difference in the riskiness of portfolio holdings of men and women. Our empirical analyses support our conjecture in that investors with pessimistic opinion about stock market outlook tend to invest less in stocks. We also show some evidence that there exists a gender difference in perceived stock market risk. These alternative hypotheses could explain why we observe actual differences in the riskiness of portfolios even though experimental studies regarding gender differences in risk aversion show mixed results.

A limitation of our research is that we have to rely to a large extent on survey results. Nowadays, survey results are generally accepted in social sciences as they are often the only way to discover insights about motives. Moreover, the strong response of capital markets to the publications of the Consumer Confidence data suggests that at least investors feel that the surveys we use here contain useful information on the economy. Still, this does not mean we should not interpret results with caution. For instance, as pointed out by Campbell (2003), one of the most serious doubts would be whether respondents answer the survey questions accurately. To safeguard ourselves against over subjective interpretation and biases due to questionnaire design, we limited

ourselves to the simplest questions in different surveys and leave out questions, which can be interpreted in more than one way by respondents. Nevertheless, even if we consider simple questions we should remain careful when it comes to the interpretation of these results. Our results point in that direction; for instance, we find some evidence that women choose extreme options less frequently than men. While this is an interesting finding in itself – and to the best of our knowledge not reported in the market research literature – the female tendency of avoiding extreme answers go both ways and do not explain the difference in one-sided optimism that we observe. Our results continue to exist regardless of whether we include or exclude these extreme values.

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Table 1. Summary Statistics of Consumer Confidence Data

This table gives descriptive statistics for the difference in consumer confidence for men and women for 18 countries and for Europe. The starting date for each country is given in the second column and the ending date for all series is December 2005. *Std.Dev.* denotes standard deviation. *N* represents the number of observations in the sample for the corresponding country. The final column presents the *t*-statistics corresponding to the null hypothesis whether the average consumer confidence between men and women does not differ.

Country	Starting date	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	N	t-stat.
Australia	January 1978	8.86	20.30	-1.70	3.83	0.01	3.00	332	9.18*
Austria	October 1995	6.16	12.55	-2.83	2.66	-0.24	3.46	123	7.36*
Belgium	January 1990	6.00	14.28	-3.22	3.01	0.07	3.20	192	5.96*
Czech Republic	May 2001	6.42	12.42	0.31	2.87	-0.13	2.42	56	5.38*
Denmark	January 1990	6.09	13.51	-14.24	3.65	-1.63	9.16	192	7.89*
Spain	January 1990	3.26	7.89	-4.16	2.15	-0.79	4.19	192	3.35*
Finland	November 1995	4.25	8.32	-2.19	1.71	-0.71	4.39	122	8.57*
France	January 1990	3.74	9.60	-0.88	2.34	0.17	2.41	192	4.13*
Germany	January 1990	1.32	7.32	-3.45	1.99	0.08	3.05	192	1.51
Greece	January 1990	5.79	16.13	-3.01	3.31	0.17	3.02	192	7.38*
Hungary	February 1993	4.98	10.25	-0.39	2.09	-0.05	2.95	119	2.82*
Ireland	January 1990	3.16	11.24	-6.16	3.06	-0.28	2.75	192	2.33*
Italy	January 1990	4.15	9.68	-1.43	1.93	0.09	3.37	192	5.00*
Netherlands	January 1990	6.41	16.96	-0.96	3.61	0.13	2.49	192	4.83*
Portugal	January 1990	5.04	11.06	-7.77	2.32	-0.79	7.25	192	4.41*
Sweden	October 1995	7.87	16.60	-11.05	3.41	-1.37	9.76	123	8.23*
UK	January 1990	3.79	10.06	-7.07	2.53	-0.50	4.10	192	4.64*
USA	January 1978	10.05	20.10	-0.30	3.72	0.02	2.88	331	10.37*
Europe	January 1990	3.46	6.13	0.87	1.08	-0.23	2.79	192	4.83*

Table 2. Basic characteristics of US consumer confidence data over the period January 1978-December 2005 and two subsamples.

This table gives descriptive statistics for the difference in consumer confidence for men and women for the US over the entire period and two subsamples. The *t*-statistics correspond to the null hypothesis of equal average consumer confidence between men and women.

	Men	Women	Difference
Entire Period: January 1997-December 2005			
Mean	93.86	83.80	10.05
Median	96.80	86.30	10.00
Maximum	115.90	110.50	20.10
Minimum	57.00	46.20	-0.30
Std. Dev.	12.07	12.87	3.72
t-test of equal mean:	10.37 (*p*-value: 0.00)		
Subsample I: January 1971-September1991			
Mean	89.04	78.23	10.81
Median	94.10	82.60	11.00
Maximum	109.00	96.70	20.10
Minimum	57.00	46.20	1.90
Std. Dev.	12.64	12.60	3.59
t-test of equal mean:	7.78 (*p*-value: 0.00)		
Subsample II: October 1991-December 2005			
Mean	98.65	89.34	9.30
Median	99.25	88.25	9.30
Maximum	115.90	110.50	19.80
Minimum	73.00	62.70	-0.30
Std. Dev.	9.29	10.56	3.72
t-test of equal mean:	8.52 (*p*-value: 0.00)		

Table 3. Basic Characteristics for subquestions.

This table presents the basic characteristics and a *t*-test of equal mean on the gender differences in the five subquestions in the questionnaire that are used to construct the US consumer confidence index. These questions are about the Personal Current situation (are you now better off financially?); the Personal Future (do you think that a year from now you will be better off financially?), the General Short Term (business conditions in the country as a whole, do you think that during the next 12 months we'll have good times financially?), the General Long Term (Do you think it's likely that in the country as a whole we'll have continuous good times during the next 5 years?) and the Durables (About the big things people buy for their homes, do you think now is a good time for people to buy major household items?). The *t*-statistics correspond to the null hypothesis of equal average consumer confidence between men and women.

	Men	Women	Difference
I. Personal Current			
Mean	116.52	105.80	10.72
Median	118.10	107.30	10.55
Maximum	147.10	144.30	34.90
Minimum	79.80	65.60	-10.40
Std. Dev.	13.98	13.81	7.31
t-test of equal mean:	10.00 (*p*-value: 0.00)		
II. Personal Future (one year)			
Mean	127.82	120.93	6.89
Median	130.10	122.50	7.25
Maximum	147.80	145.60	23.90
Minimum	93.00	87.00	-11.20
Std. Dev.	11.26	10.61	6.33
t-test of equal mean:	8.16 (*p*-value: 0.00)		
III. General Short term (12 months)			
Mean	116.41	99.62	16.79
Median	122.00	104.50	17.05
Maximum	167.40	167.30	46.00
Minimum	32.10	27.80	-7.40
Std. Dev.	29.58	29.55	9.56
t-test of equal mean:	7.36 (*p*-value: 0.00)		
IV. General Long term (5yrs)			
Mean	116.41	105.85	22.93
Median	119.10	108.30	22.40
Maximum	167.40	167.30	55.20
Minimum	11.26	10.61	-7.60
Std. Dev.	18.67	18.06	9.65
t-test of equal mean:	14.89 (*p*-value: 0.00)		
V. Durables			
Mean	153.55	143.07	10.48
Median	157.55	149.25	10.40
Maximum	183.70	180.80	35.30
Minimum	96.80	63.90	-22.40
Std. Dev.	17.31	21.07	9.19
t-test of equal mean:	7.04 (*p*-value: 0.00)		

Table 4. Summary Statistics of the Gallup Survey Responses

This table presents the basic characteristics if the US Gallup economic outlook variables along with *t-statistics* on the gender differences (male – female). N refers to the number of non-missing values present in the data. The total number of surveys is 56.

		Mean	Median	Std. Dev	N	Range	*t*-stat	Availability
q1523	Male	3.53	4	1.04	31376	1 - 5	12.91	56 surveys
(economic growth)	Female	3.42	4	1.04	24647			199611 - 200212
q1524	Male	3.46	4	1.14	30965	1 - 5	11.99	56 surveys
(unemployment rate)	Female	3.35	4	1.15	24476			199611 - 200212
q1525	Male	3.39	4	1.11	31103	1 - 5	9.59	56 surveys
(stock market)	Female	3.30	4	1.08	24259			199611 - 200212
q1526	Male	3.48	4	1.09	31045	1 - 5	32.48	56 surveys
(inflation)	Female	3.19	3	1.05	24364			199611 - 200212
q1527	Male	3.49	4	1.08	24179	1 - 5	15.61	44 surveys
(interest rate)	Female	3.33	4	1.05	19446			199611 - 200112
q2485	Male	3.67	4	0.79	18540	1 - 5	20.50	34 surveys
(1-yr stock outlook)	Female	3.49	4	0.77	14857			200003 - 200212
q2332	Male	2.19	2	0.73	11770	1 - 3	11.64	21 surveys
(3-mth stock outlook)	Female	2.08	2	0.68	9173			199811 - 200009
q2707	Male	6.14	6	2.02	5745	1 - 10	-6.09	10 surveys
(stock risk)	Female	6.39	6	2.02	4187			200203 - 200212

Table 5. Ordered Logit Regression Results

The table reports the results of ordered logit regressions of the categorical responses on gender and other control variables with month fixed effects. The questionnaire questions for the response variables are in Appendix A. Reponses indicating "Don't Know" or "Refused" are treated as missing values. Fem is a dummy variable equal to 1 if the respondent is female. Worth is a dummy variable assuming a value of 1 if the total amount of investment is greater than $100,000. Edu is a categorical variable that takes a value of 2 if the respondent has an undergraduate degree and 3 if the respondent holds a postgraduate degree. Inc is categorical variable which is equal to 2 if the annual income is between $50,000 and $100,000 and 3 if the annual income is above $100,000. Retired is a dummy variable equal to 1 if the respondent is retired. Emp is a categorical variable taking a value of 2 when the respondent works part-time and 3 when the respondent has a full-time job. Age is the age of the respondent. The t-statistics are reported in parentheses.

	Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age*100
q1523 (growth)	-0.21 (-13.58)									
	-0.20 (-11.53)	-0.06 (-3.10)	-0.04 (-1.81)	-0.13 (-6.10)	0.08 (3.52)	0.11 (4.12)	0.08 (2.38)	-0.06 (-1.65)	0.02 (0.81)	0.31 (3.90)
q1524 (unemployment)	-0.20 (-12.75)									
	-0.18 (-10.22)	-0.07 (-3.68)	0.01 (0.62)	-0.05 (-2.16)	0.08 (3.76)	0.12 (4.62)	0.03 (0.91)	0.03 (0.82)	0.09 (3.26)	0.25 (3.21)
q1525 (stock market)	-0.16 (-10.37)									
	-0.16 (-9.13)	-0.15 (-7.85)	-0.06 (-2.78)	-0.18 (-8.47)	0.08 (3.50)	0.05 (2.03)	0.16 (4.90)	-0.05 (-1.53)	0.03 (0.95)	0.04 (0.47)
q1526 (inflation)	-0.51 (-32.82)									
	-0.46 (-26.44)	-0.18 (-9.80)	0.07 (3.62)	0.13 (6.24)	0.11 (5.14)	0.27 (10.02)	-0.02 (-0.54)	-0.04 (-1.23)	0.04 (1.61)	0.61 (7.84)
q1527 (interest rate)	-0.29 (-16.28)									
	-0.24 (-12.09)	-0.12 (-5.80)	-0.04 (-1.58)	-0.05 (-1.99)	0.11 (4.37)	0.28 (9.14)	-0.02 (-0.65)	-0.03 (-0.66)	0.07 (2.19)	0.34 (3.82)
q2485 (stock outlook)	-0.49 (-22.71)									
	-0.44 (-18.55)	-0.29 (-11.45)	0.13 (4.79)	0.08 (2.76)	0.15 (5.07)	0.27 (7.61)	0.08 (1.85)	0.04 (0.88)	0.07 (1.77)	-0.53 (-4.96)
q2332 (stock outlook – SR)	-0.32 (-12.12)									
	-0.30 (-10.23)	-0.08 (-2.59)	-0.03 (-0.78)	-0.04 (-0.96)	0.00 (-0.03)	0.06 (1.46)	0.05 (0.93)	-0.03 (-0.54)	-0.01 (-0.11)	0.12 (0.89)
q2707 (stock risk)	0.21 (5.76)									
	0.23 (5.90)	0.10 (2.39)	-0.02 (-0.49)	-0.04 (-0.89)	0.04 (0.74)	0.05 (0.90)	-0.02 (-0.22)	-0.12 (-1.55)	-0.02 (-0.38)	-0.53 (-3.02)

Table 6. Multinomial Logit Regression Results

The table reports the results of multinomial logit regressions of the categorical questionnaire responses on gender and other control variables in each panel with and without month fixed effect. The baseline category for each categorical variable is the mid-point of the range (arbitrarily chosen). The questionnaire questions for the response variables are in Appendix A. Reponses indicating "Don't Know" or "Refused" are treated as missing values. Fem is a dummy variable equal to 1 if the respondent is female. Worth is a dummy variable assuming a value of 1 if the total amount of investment is greater than $100,000. Edu is a categorical variable that takes a value of 2 if the respondent has an undergraduate degree and 3 if the respondent holds a postgraduate degree. Inc is categorical variable which is equal to 2 if the annual income is between $50,000 and $100,000 and 3 if the annual income is above $100,000. Retired is a dummy variable equal to 1 if the respondent is retired. Emp is a categorical variable taking a value of 2 when the respondent works part-time and 3 when the respondent has a full-time job. Age is the age of the respondent. The *t*-statistics are reported in parentheses.

	Intercept	Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
	Panel A: q1523 – Economic Growth										
1 Pessimistic	-1.51	0.03									
	(-9.40)	(0.53)									
2	-0.28	0.05									
	(-2.71)	(1.75)									
4	0.74	-0.12									
	(8.81)	(-5.28)									
5 Optimistic	-0.53	-0.37									
	(-4.51)	(-11.87)									
1 Pessimistic	-1.67	-0.01	0.16	-0.40	-0.48	-0.20	-0.18	-0.12	-0.23	-0.06	0.01
	(-9.27)	(-0.26)	(2.71)	(-6.53)	(-7.12)	(-3.03)	(-2.21)	(-1.29)	(-2.13)	(-0.68)	(2.28)
2	-0.46	0.03	0.04	-0.13	-0.10	-0.11	-0.10	0.04	0.00	0.00	0.00
	(-3.69)	(0.80)	(1.09)	(-3.38)	(-2.49)	(-2.60)	(-1.95)	(0.75)	(0.07)	(-0.04)	(1.47)
4	0.67	-0.13	-0.03	-0.03	-0.12	0.01	-0.01	0.03	-0.07	-0.06	0.01
	(3.83)	(-4.98)	(-1.18)	(-1.04)	(-3.59)	(0.35)	(-0.20)	(0.55)	(-1.26)	(-1.45)	(5.27)
5 Optimistic	-0.52	-0.38	-0.03	-0.33	-0.48	0.01	0.13	-0.21	-0.19	0.12	0.01
	(-4.15)	(-10.72)	(-0.72)	(-8.16)	(-10.98)	(0.20)	(2.46)	(-3.34)	(-2.58)	(2.06)	(4.08)
	Panel B: q1525 – Stock Market Performance										
	Intercept	Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
1 Pessimistic	-1.94	-0.08									
	(-9.48)	(-2.05)									
2	-0.49	0.01									
	(-4.19)	(0.26)									
4	0.75	-0.09									
	(8.60)	(-3.92)									
5 Optimistic	0.05	-0.39									
	(0.51)	(-12.10)									
1 Pessimistic	-2.09	-0.13	0.15	-0.38	-0.40	-0.18	-0.14	0.08	-0.20	-0.05	0.01
	(-13.15)	(-2.83)	(3.04)	(-7.02)	(-6.88)	(-3.15)	(-2.01)	(0.95)	(-2.14)	(-0.72)	(3.67)
2	-0.39	0.02	0.05	-0.04	-0.01	-0.08	-0.06	-0.08	0.04	0.09	0.00
	(-3.66)	(0.74)	(1.66)	(-1.05)	(-0.30)	(-1.98)	(-1.33)	(-1.44)	(0.65)	(1.87)	(0.73)
4	0.86	-0.09	-0.10	-0.08	-0.17	0.02	0.00	-0.10	-0.08	0.02	0.00

	Intercept	Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
	(5.41)	(-3.36)	(-3.70)	(-2.58)	(-5.33)	(0.58)	(-0.12)	(-2.04)	(-1.60)	(0.36)	(3.73)
5 Optimistic	0.75	-0.40	-0.15	-0.30	-0.55	0.00	0.01	-0.37	-0.12	0.16	0.00
	(5.10)	(-11.03)	(-3.83)	(-7.40)	(-12.26)	(0.10)	(0.17)	(-5.88)	(-1.59)	(2.69)	(0.80)

Panel C: q2707 – Stock Market Risk

	Intercept	Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
1 No Risk	-2.49	-0.43									
	(-23.79)	(-2.23)									
2	-2.26	-0.46									
	(-24.30)	(-2.66)									
3	-1.10	-0.39									
	(-20.45)	(-4.03)									
4	-0.81	-0.37									
	(-16.93	(-4.37)									
6	-0.42	-0.29									
	(-10.21)	(-4.05)									
7	-0.12	-0.20									
	(-3.18)	(-3.21)									
8	-0.35	0.05									
	(-8.62)	(0.83)									
9	-1.75	0.16									
	(-24.04)	(1.45)									
10 High Risk	-1.07	0.14									
	(-20.05)	(1.64)									
1 No Risk	-0.96	-0.47	-0.26	-0.10	-0.37	-0.46	-0.39	-0.27	-1.22	-0.19	-0.02
	(-1.46)	(-2.20)	(-1.19)	(-0.41)	(-1.32)	(-1.86)	(-1.28)	(-0.73)	(-1.95)	(-0.58)	(-1.57)
2	-1.32	-0.51	0.06	0.17	0.14	-0.41	-0.52	-0.36	0.13	-0.05	-0.01
	(-2.29)	(-2.78)	(0.31)	(0.82)	(0.61)	(-1.96)	(-1.94)	(-1.16)	(0.39)	(-0.18)	(-1.21)
3	-0.82	-0.35	-0.15	0.12	0.08	-0.04	0.14	0.06	0.18	0.02	-0.01
	(-2.41)	(-3.35)	(-1.39)	(1.02)	(0.63)	(-0.30)	(0.89)	(0.30)	(0.86)	(0.13)	(-1.57)
4	-0.73	-0.42	0.05	0.26	0.17	0.10	0.29	0.12	-0.08	-0.21	-0.01
	(-2.42)	(-4.53)	(0.50)	(2.47)	(1.52)	(0.83)	(2.08)	(0.76)	(-0.46)	(-1.45)	(-1.34)
6	0.15	-0.23	0.07	0.32	0.34	0.14	0.10	-0.19	0.20	0.17	-0.02
	(0.57)	(-2.97)	(0.81)	(3.60)	(3.51)	(1.41)	(0.81)	(-1.35)	(1.24)	(1.31)	(-5.25)
7	0.65	-0.14	0.05	0.22	0.29	0.16	0.16	0.02	-0.05	-0.06	-0.02
	(2.80)	(-2.06)	(0.65)	(2.73)	(3.34)	(1.71)	(1.48)	(0.14)	(-0.32)	(-0.54)	(-6.95)
8	-0.10	0.09	0.18	0.17	0.10	0.08	0.19	0.06	-0.23	-0.04	-0.01
	(-0.41)	(1.24)	(2.35)	(2.06)	(1.09)	(0.91)	(1.70)	(0.45)	(-1.53)	(-0.32)	(-3.30)
9	-1.25	0.17	-0.10	0.05	0.06	-0.10	-0.11	-0.02	0.24	0.04	-0.01
	(-3.10)	(1.43)	(-0.76)	(0.39)	(0.37)	(-0.63)	(-0.57)	(-0.10)	(1.05)	(0.19)	(-1.62)
10 High Risk	-0.62	0.10	0.13	-0.16	-0.37	-0.10	0.13	-0.08	-0.30	-0.19	0.00
	(-2.03)	(1.15)	(1.35)	(-1.48)	(-3.04)	(-0.88)	(0.91)	(-0.48)	(-1.58)	(-1.31)	(-1.00)

Table 7. OLS Regression Results for Stock Holding

The table reports the results of OLS regressions of stock holding in percentage on stock market outlook, gender, interaction between economic outlook and gender and other control variables. The original responses about stock market outlook, 1 to 5, are used in Panel A. Panel B shows the results with pessimistic responses, 1 and 2 and optimistic responses, 4 and 5 grouped together. Pes1 is a dummy variable equal to 1 if the stock market outlook (q1523) equals 1, Pes2 if q1523 = 2, Opt4 if q1523 = 4 and Opt5, if q1523 = 5. Pes is a dummy variable equal to 1 if the stock market outlook equals 1 or 2 and Opt, if q1523 = 4 or 5. FEM is a dummy variable equal to 1 if the respondent is female. The control variables are defined as in Table 5. In all regression, month dummies, whose coefficients are not shown to conserve space, are included as independent variables. T-statistics are shown in parentheses. Individual stock holding data are available only in five GALLUP surveys in November 1996, February 1997, August 1997, November 1997 and September 1998.

Panel A: Original Responses

Intercept	Pes1	Pes2	Opt4	Opt5	Fem	Pes1*Fem	Pes2*Fem	Opt4*Fem	Opt5*Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
45.05	-7.68	-1.58	4.03	4.24														
(31.34)	(-2.55)	(-0.95)	(3.17)	(2.69)														
46.65	-8.04	-1.74	3.95	3.97	-3.78													
(31.22)	(-2.67)	(-1.05)	(3.11)	(2.52)	(-3.83)													
48.17	-9.47	-4.29	3.23	-0.04	-7.12	3.28	6.19	1.57	10.40									
(28.30)	(-2.54)	(-1.99)	(1.93)	(-0.02)	(-3.39)	(0.52)	(1.83)	(0.61)	(3.22)									
51.55	-8.58	-2.51	3.84	4.14	-1.56					-3.98	4.01	4.89	1.48	-0.08	-5.03	0.95	4.17	-0.12
(11.30)	(-2.51)	(-1.34)	(2.69)	(2.31)	(-1.35)					(-3.16)	(3.01)	(3.45)	(0.91)	(-0.04)	(-2.79)	(0.40)	(2.34)	(-2.45)
52.67	-9.30	-5.17	3.45	0.56	-4.36	1.33	6.48	0.85	9.12	-3.86	4.06	4.90	1.48	-0.06	-4.88	1.01	4.18	-0.13
(11.33)	(-2.20)	(-2.12)	(1.84)	(0.24)	(-1.82)	(0.18)	(1.71)	(0.30)	(2.51)	(-3.07)	(3.05)	(3.46)	(0.91)	(-0.03)	(-2.71)	(0.42)	(2.35)	(-2.52)

Panel B: Pessimistic and Optimistic Responses Grouped Together

Intercept	Pes	Opt	Fem	Pes*Fem	Opt*Fem	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age
45.05	-2.64	4.09												
(31.35)	(-1.68)	(3.37)												
46.62	-2.83	3.95	-3.74											
(31.22)	(-1.80)	(3.27)	(-3.80)											
48.12	-5.25	2.28	-7.11	5.91	3.89									
(28.24)	(-2.58)	(1.43)	(-3.39)	(1.84)	(1.59)									
51.47	-3.55	3.92	-1.52			-3.99	4.09	4.94	1.51	-0.06	-5.06	0.96	4.17	-0.12
(11.29)	(-2.00)	(2.86)	(-1.32)			(-3.17)	(3.08)	(3.50)	(0.93)	(-0.03)	(-2.81)	(0.40)	(2.35)	(-2.39)
52.73	-5.93	2.65	-4.33	5.88	2.97	-3.92	4.15	4.97	1.53	-0.06	-5.02	0.91	4.13	-0.12
(11.35)	(-2.58)	(1.48)	(-1.80)	(1.63)	(1.08)	(-3.12)	(3.12)	(3.52)	(0.94)	(-0.03)	(-2.79)	(0.38)	(2.32)	(-2.44)

Table 8. Ordered Logit Regression Results with Marital Status Dummy

The table reports the results of ordered logit regressions of the categorical responses on gender, marital status and other control variables with month fixed effects. The questionnaire questions for the response variables are in Appendix A. Reponses indicating "Don't Know" or "Refused" are treated as missing values. Fem is a dummy variable equal to 1 if the respondent is female. Married is a dummy variable equal to 1 if the respondent is currently married. Worth is a dummy variable assuming a value of 1 if the total amount of investment is greater than $100,000. Edu is a categorical variable that takes a value of 2 if the respondent has an undergraduate degree and 3 if the respondent holds a postgraduate degree. Inc is categorical variable which is equal to 2 if the annual income is between $50,000 and $100,000 and 3 if the annual income is above $100,000. Retired is a dummy variable equal to 1 if the respondent is not retired. Emp is a categorical variable taking a value of 2 when the respondent works part-time and 3 when the respondent has a full-time job. Age is the age of the respondent. The *t*-statistics are reported in parentheses.

	Fem	Married	Fem*Married	Worth	Edu=2	Edu=3	Inc=2	Inc=3	Retired	Emp=2	Emp=3	Age*100
q1523 (growth)	-0.24	-0.13	0.02									
	(-1.98)	(-1.35)	(0.12)									
	-0.30	-0.18	0.13	-0.12	-0.08	-0.11	0.11	0.16	-0.01	0.02	0.09	1.01
	(-2.31)	(-1.70)	(0.84)	(-1.75)	(-1.00)	(-1.30)	(1.21)	(1.43)	(-0.05)	(0.12)	(0.81)	(3.40)
q1524 (unemployment)	-0.15	0.08	-0.14									
	(-1.26)	(0.80)	(-1.01)									
	-0.16	0.06	-0.08	0.08	0.15	0.10	0.17	0.19	0.11	-0.03	0.12	0.00
	(-1.31)	(0.55)	(-0.53)	(1.10)	(2.06)	(1.25)	(1.84)	(1.69)	(0.98)	(-0.21)	(1.12)	(1.69)
q1525 (stock market)	-0.12	-0.14	-0.06									
	(-0.97)	(-1.39)	(-0.40)									
	-0.16	-0.19	0.01	-0.15	-0.10	-0.19	0.22	0.19	0.16	0.09	0.12	0.00
	(-1.25)	(-1.84)	(0.09)	(-2.15)	(-1.27)	(-2.38)	(2.39)	(1.71)	(1.42)	(0.66)	(1.10)	(1.26)
q1526 (inflation)	-0.34	0.28	-0.36									
	(-2.84)	(2.90)	(-2.64)									
	-0.35	0.19	-0.26	-0.17	0.09	0.29	0.20	0.41	0.04	0.04	0.17	0.01
	(-2.76)	(1.87)	(-1.77)	(-2.49)	(1.23)	(3.67)	(2.23)	(3.71)	(0.35)	(0.30)	(1.59)	(3.65)
q1527 (interest rate)	-0.29	0.14	-0.14									
	(-2.40)	(1.49)	(-1.00)									
	-0.30	0.05	-0.07	-0.09	-0.02	0.06	0.26	0.40	0.01	0.10	0.13	0.01
	(-2.40)	(0.51)	(-0.46)	(-1.29)	(-0.31)	(0.71)	(2.78)	(3.65)	(0.10)	(0.71)	(1.27)	(1.99)

Table 9. Descriptive Statistics for European GALLUP data

The table reports descriptive statistics for the European UBS/GALLUP survey data in each country. The first four questions ask how optimistic the respondent is about economic growth, unemployment rate, inflation rate and stock market performance in one year. The next two questions ask whether the respondent thinks that it is a good time to invest in financial markets and that stock market is over-valued. The next question is on optimism about the introduction of Euro and its effects on the European economy. The last question asks the respondent to indicate her perceived level of risk in the stock market. Reponses indicating "Don't Know" or "Refused" are treated as missing. P-values reported are for Wilcoxon rank sum tests for gender difference.

		Economic Growth		Unemployment		Inflation		Stock Market		Good Time To Invest		Euro		Risk	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F
UK	Mean	3.00	2.91	2.96	2.93	3.38	3.07	2.84	2.65	1.48	1.34	3.02	2.87	5.60	5.90
	Std. Dev	1.08	1.06	1.13	1.11	1.09	1.08	1.16	1.09	0.50	0.47	1.31	1.28	1.85	1.86
	N	1348	1179	1338	1194	1352	1185	1327	1122	1331	1191	1356	1234	1357	1216
	P-value	0.05		0.60		0.00		0.00		0.00		0.00		0.00	
Germany	Mean	2.76	2.56	2.26	2.08	2.79	2.47	2.89	2.67	1.50	1.36	3.48	3.07	5.28	5.69
	Std. Dev	1.08	1.06	1.00	1.00	1.04	0.98	1.09	1.05	0.50	0.48	1.15	1.20	1.83	1.84
	N	1308	1309	1305	1313	1300	1287	1283	1234	1260	1254	1310	1316	1276	1273
	P-value	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
France	Mean	2.97	2.79	2.52	2.40	3.15	2.69	2.90	2.62	1.49	1.33	3.86	3.60	4.91	5.35
	Std. Dev	1.03	0.94	0.99	0.96	1.04	0.97	1.06	0.98	0.50	0.47	0.87	0.90	1.96	2.03
	N	1597	989	1597	985	1585	977	1579	962	1559	951	1605	1003	1590	986
	P-value	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Spain	Mean	3.05	2.90	2.81	2.59	2.66	2.49	2.72	2.46	1.51	1.36	3.98	3.59	5.90	6.35
	Std. Dev	1.04	1.05	1.06	1.05	1.05	1.02	1.11	1.13	0.50	0.48	0.97	1.10	1.97	2.01
	N	1192	1352	1161	1336	1150	1224	1083	1147	1098	1224	1199	1375	1168	1330
	P-value	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Italy	Mean	3.12	2.87	2.97	2.71	2.83	2.46	2.83	2.58	1.46	1.29	3.91	3.46	5.86	6.46
	Std. Dev	1.06	1.06	1.06	1.10	1.03	0.98	1.08	1.03	0.50	0.46	1.01	1.13	2.02	2.10
	N	1434	1173	1431	1163	1438	1169	1414	1143	1380	1108	1437	1176	1424	1175
	P-value	0.00		0.00		0.00		0.00		0.00		0.00		0.00	

Table 10. Order Logit Regression Results for European GALLUP data

The table reports the results of ordered logit regressions of the categorical responses on gender and other control variables with (Panel B) and without (Panel A) country fixed effects for the European UBS/GALLUP data. The questionnaire questions for the response variables are in Section 4.2. Reponses indicating "Don't Know" or "Refused" are treated as missing values. Fem is a dummy variable equal to 1 if the respondent is female. Worth is a dummy variable assuming a value of 1 if the total amount of investment is greater than €100,000. Age is the age of the respondent. t-statistics are reported in parentheses.

Panel A: Without Country Fixed Effects			
Dependent Variable	Fem	Worth	Age
Economic Growth	-0.33	0.09	-0.51
	(-10.03)	(2.22)	(-4.15)
Unemployment	-0.27	0.18	0.12
	(-8.20)	(4.35)	(1.02)
Inflation	-0.59	0.22	0.21
	(-17.33)	(5.29)	(1.74)
Stock Market	-0.42	0.13	-0.62
	(-12.43)	(3.13)	(-4.96)
Good Time to Invest	-0.63	0.25	-0.72
	(-16.20)	(5.35)	(-5.11)
Euro	-0.57	-0.03	-0.18
	(-17.03)	(-0.68)	(-1.45)
Risk	0.42	0.00	-0.51
	(12.91)	(0.11)	(-4.26)
Panel B: With Country Fixed Effects			
Economic Growth	-0.34	0.07	-0.56
	(-9.99)	(1.62)	(-4.54)
Unemployment	-0.29	0.10	0.04
	(-8.68)	(2.42)	(0.36)
Inflation	-0.58	0.16	0.19
	(-16.99)	(3.78)	(1.54)
Stock Market	-0.42	0.13	-0.61
	(-12.24)	(3.10)	(-4.90)
Good Time to Invest	-0.64	0.27	-0.72
	(-16.34)	(5.60)	(-5.10)
Euro	-0.58	0.04	-0.23
	(-17.02)	(0.94)	(-1.86)
Risk	0.39	-0.01	-0.49
	(11.99)	(-0.32)	(-4.13)

Figure 1a. Monthly consumer confidence levels for men and women in the US over the period January 1978- December 2005.
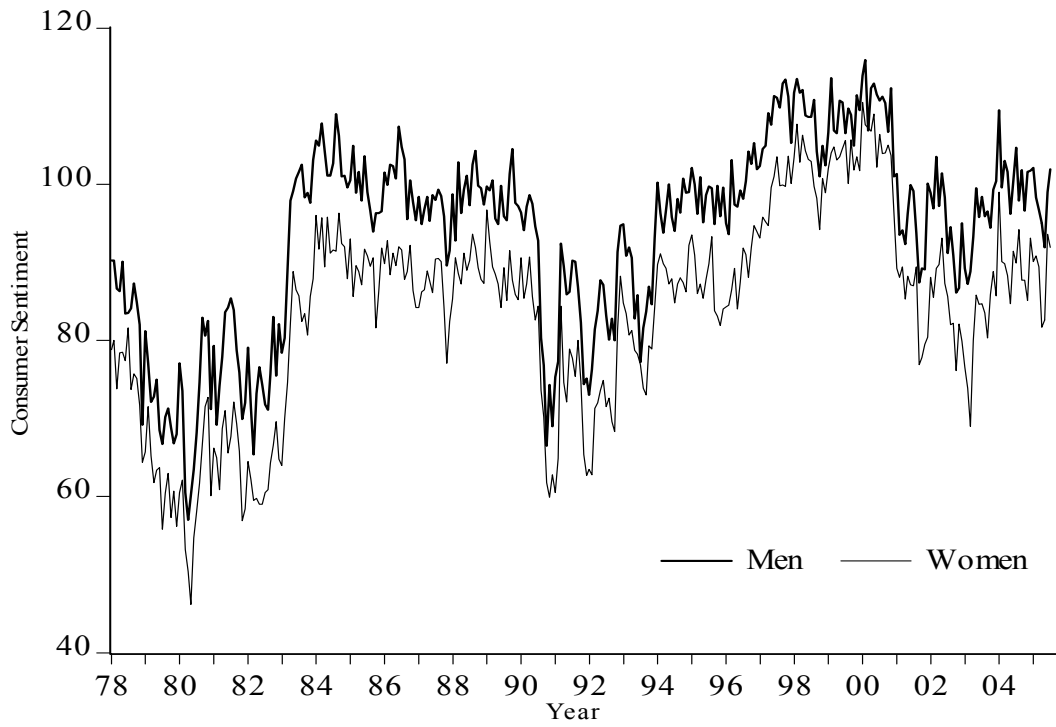

Figure 1b. Difference in consumer confidence between man and women in the US over the period January 1978-July 2005.