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Individualism and Momentum around the World

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ABSTRACT

This paper examines the extent to which cultural differences influence the returns of momentum strategies. We measure cultural differences using an index of individualism developed by Hofstede (2001), which we argue is related to overconfidence and self-attribution bias. Our cross-country evidence indicates that individualism is positively associated with trading volume and volatility, and is strongly related to the magnitude of momentum profits. The evidence also indicates that momentum profits are positively related to the dispersion of analyst forecasts, transaction costs, and the familiarity of a market to foreign investors, and negatively related to firm size and stock volatility. However, the addition of these and other variables does not dampen the relation between individualism and momentum profits. These results are robust to whether or not East Asian countries, which exhibit less momentum, are included in our sample. Finally, consistent with the prediction of behavioral models, momentum profits reverse one year after portfolio formation in most countries, and the magnitude of the reversals tends to be higher in countries with higher individualism.

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There is now a substantial literature that examines what is generally referred to as the momentum effect -- the observation that stocks that perform the best in the recent past continue to perform well in the future. For example, Jegadeesh and Titman (1993, 2001) find that stocks in the United States that realize the best (worst) returns over the past 3 to 12 months continue to perform well (poorly) over the subsequent 3 to 12 months. The profitability of momentum strategies is founded in equity markets throughout the world (see, for example, Rouwenhorst (1998) for a study of momentum in Europe and Griffin, Ji, and Martin (2003) for a study of momentum around the world). However, there are important exceptions, most notably in Asia (e.g., Chui, Titman, and Wei (2003)).

Given the magnitude of momentum profits, about 12% per year in the United States and Europe, they are unlikely to be explained by risk-based theories. Indeed, most of the focus in the academic literature has been on behavioral explanations for this phenomenon.[1] For example, Daniel, Hirshleifer, and Subrahmanyam (DHS, 1998) show how the momentum effect can be generated by investors' overconfidence and self-attribution bias and Barberis, Shleifer, and Vishny (BSV, 1998) and Hong and Stein (1999) show how momentum can be generated by investors' initial underreaction to information.

This paper uses international data to examine the extent to which the momentum effect is generated by behavioral biases. In particular, we examine whether or not momentum profits are greater in those countries where investors are likely to exhibit the psychological biases discussed in the behavioral finance literature. Our focus is on what psychologists refer to as "individualism," which according to Hofstede (2001), reflects the degree to which people focus on their internal attributes, such as their own abilities, to differentiate themselves from others. Specifically, we use an index of individualism reported by Hofstede (2001), which is based on

survey evidence from 50 countries.[2] Although we are not aware of this individualism index being used in the finance literature, Hofstede's individualism index and other cultural values have been widely accepted since Hofstede published his results in 1980 (Hofstede (1980)) and they have been used by many researchers in other business disciplines.[3]

Although it does not directly measure the behavioral biases suggested in the momentum literature, as we will argue, individualism is likely to be correlated with overconfidence and attribution bias. In addition, to provide independent support for the idea that investors in more individualistic cultures tend to be more overconfident, we show that the individualism measure is correlated with trading volume and volatility (see Odean (1998), Gervais and Odean (2001), and Scheinkman and Xiong (2003) for models in which more overconfident investors trade more and generate excess volatility).

As we show, there are significant cross-country differences in momentum profits that persist across time. In particular, countries that exhibit the most momentum in the first half of our sample period tend to also exhibit the most momentum in the second half of our sample period. Our analysis indicates that to a large extent, these differences can be explained by cross-country differences in the Hofstede individualism measure. Specifically, the average monthly returns on a zero-cost (long minus short) momentum portfolio are more than 0.6% higher in those countries with individualism indexes in the top 30% than in those countries with individualism indexes in the bottom 30%. This difference in returns is statistically very significant.

In addition to individualism, we consider a number of other variables that can plausibly be related to momentum and can vary across countries. These include country-specific variables that proxy for information uncertainty as well as institutional variables that may be related to the development and integrity of the countries' financial markets. Our use of country-specific

proxies for information uncertainty is motivated by Zhang (2006), who suggests that U.S. stocks, for which information uncertainty is higher (e.g., those with more dispersed analyst earnings forecasts), exhibit stronger momentum. Our measures of market development and integrity are motivated by the idea that these measures may be related to trading costs and the flow of information, which may in turn influence the profitability of momentum strategies.

We find that momentum profits are in fact significantly related to some of these country-specific variables, but their inclusion does not materially affect the significance of the individualism measure. In addition, since we know that both individualism and momentum are weak in East Asian countries (indeed, this was the original motivation of the study) we examine the extent to which our results hold outside of East Asia. We find that the positive relationship between momentum profits and individualism holds even when East Asian countries are excluded from our sample.

To further examine the behavioral momentum theories we examine the long-term returns of momentum portfolios. Both DHS (1998) and Hong and Stein (1999) suggest that momentum is caused by positive feedback trading that leads to a delayed overreaction that is eventually reversed. We find that the reversals observed in the United States' stock market also occur in most countries around the world. Although the evidence is relatively weak, we find that the magnitude of the reversals tends to be higher in countries with higher individualism, especially in the third year after portfolio formation.

The remainder of this paper is organized as follows. In Section I, we discuss the link between individualism and overconfidence as well as the self-attribution bias. In Section II, we describe the data used in the paper. In Section III, we document a positive link between individualism and trading volume as well as stock volatility. In Section IV, we report the results

on the momentum profits for each country as well as for portfolios of countries. Section V reports the results on the relationship between individualism and momentum profitability based on portfolio analysis. In Section VI, we test alternative explanations for the momentum effect. Section VII presents the results from robustness checks. Section VIII reports the results from long-term return reversals and Section IX concludes the paper.

I. Individualism, Overconfidence, and Self-attribution Bias

A. The Definition and Implications of Individualism

Social psychologists distinguish between what they call individualistic and collectivistic cultures. According to Hofstede (2001), this distinction pertains to the degree to which people in a country tend to have an *independent* rather than an *interdependent self-construct*, which is a term used in psychology that relates to an individual's self image or self esteem. In individualistic cultures, individuals tend to view themselves as "an autonomous, independent person" (Markus and Kitayama (1991, p. 226)), while in collectivistic cultures, individuals view themselves "not as separate from the social context but as more connected and less differentiated from others" (Markus and Kitayama (1991, p. 227)). Gelfand et al. (2002, p. 835) describe individualism and collectivism as follows: "The self is served in individualistic cultures by being distinct from and better than others, in order to accomplish the culturally mandated task of being independent and standing out. By contrast, the self is served in collectivistic cultures by being accepted by others and by focusing on negative characteristics, in order to accomplish the culturally mandated task of being interdependent and blending in."[4]

B. The Link between Individualism and Overoptimism/Overconfidence and Self-attribution Bias

The evidence in the psychology literature suggests a link between individualism and over-optimism and overconfidence.[5] For example, Markus and Kitayama (1991) argue that in

individualistic cultures people think positively about themselves and focus on their own internal attributes, such as their abilities. Heine et al. (1999, pp. 769-770) argue that children in individualistic cultures "are encouraged to think about themselves positively as *stars*, as *winners*, as *above average* and as the *repositories of special qualities*," which tend to make them overestimate their abilities (i.e., they are overconfident). Indeed, in reviews of a relatively large body of evidence from cross-cultural psychological experiments and surveys, Markus and Kitayama (1991) and Heine et al. (1999) find that while people in *individualistic cultures*, such as the United States, tend to believe that their abilities are *above average*, people in collectivistic cultures, such as Japan, do not have this belief. As Steen (2004) and others have discussed, when individuals are overoptimistic about their abilities, they tend to overestimate the precision of their predictions, which is the notion of overconfidence discussed in DHS (1998). In contrast, since people in collectivist cultures are concerned with behaving appropriately and adapting to different social situations, they tend to have high self-monitoring (Church et al. (2006)), which means that they are cognizant of social cues and adjust their behavior to what is expected in their social environment (Biais et al. (2005)). In a recent study on trading behavior in an experimental financial market under asymmetric information, Biais et al. (2005) find that self-monitoring helps to reduce the cognitive bias caused by overconfidence.

It should be noted that the cross-cultural psychology literature discusses two types of overconfidence, overconfidence in general knowledge and peer-comparison overconfidence (e.g., Yates et al. (2002)). In a study including subjects from Taiwan, Japan, Singapore, India, and the United States, Lee et al. (1995) find that overconfidence about general knowledge is stronger in Taiwan, Singapore, and India and is weaker in Japan and the United States, but the peer-comparison overconfidence is stronger in the United States than in other countries. Yates,

Lee, and Shinotsuka (1996) suggest that individualism is clearly related to peer-comparison overconfidence, but is not necessarily related to overconfidence about general knowledge. As discussed in Steen (2004), it is overconfidence about one's success relative to others (peer-comparison overconfidence) that causes investors to overestimate the precision of their information (*i.e.*, miscalibration). Therefore, individualism is related to the kind of overconfidence that is discussed in the momentum literature.

There is also a link between individualistic cultures and self-attribution biases, which Zuckerman (1979, p. 245) describes as the tendency of people to "enhance or protect their self-esteem by taking credit for success and denying responsibility for failure." Markus and Kitayama (1991) and Kagicibasi (1997) suggest that the tendency to maintain and promote self-esteem in individualistic cultures results in a pervasive self-attribution bias as well as overconfidence. Indeed, children in individualistic cultures are educated to care about their self-esteem. In a review of the studies on cross-cultural variation in the self-attribution bias, Nurmi (1992, p. 70) concludes, "this cross-cultural difference in *self-attribution bias* is typically explained by Western *individualism* and the *collectivist* orientation of Eastern cultures."[6]

C. The Relationship between Individualism and Momentum Profits, Trading Volume, as well as Volatility

Our survey of the psychology literature suggests that people in individualistic cultures are likely to be more overconfident about the precision of their information and more prone to the self-attribution bias than are people in collectivistic cultures. Hence, motivated by DHS (1998), who indicate that overconfidence and the self-attribution bias can generate momentum profits and long-term return reversals, we examine whether these return patterns are stronger in individualistic countries than in collectivistic countries. In addition, since previous studies also suggest that these behavioral biases generate excess trading volume and volatility (DHS (1998),

Statman, Thorley, and Vorkink (2006), and Glaser and Weber (2008)), we also examine whether or not excess trading volume and volatility are more pronounced in individualistic countries.

II. Data Description and Summary Statistics

A. Hofstede's Individualism Index

The individualism index (*Indv*) that we use comes from a cross-country psychological survey of employee values conducted by Geert Hofstede between 1967 and 1973. The subjects of this survey were IBM employees in seventy-two countries and included about 88,000 respondents. Out of the seventy-two countries surveyed, forty of them had more than fifty respondents.[7] The individualism index was calculated from the country mean scores on fourteen questions about the employees' attitudes towards their work and private lives. Factor analysis was then used to analyze the country mean scores on the work-goal questions and two factors were produced that together explained about 46% of the variance. The individualism index is constructed from the scores on the first factor.[8]

B. Stock Market Data

With the exception of the United States sample that comes from CRSP, we use stock returns and trading volume from Datastream International. The data are available for 55 countries from February 1980 (for some countries) to June 2003.[9] The starting date for each country varies according to the availability of data on Datastream International.[10] We include all common stocks, both domestic and foreign, which are listed on the major stock exchange(s) in each country.[11] A cross-listed stock is included only in its home country sample.[12]

The quality of stock market data obtained from Datastream International, in particular for emerging markets, is not as good as the data from CRSP.[13] To mitigate this problem, we screen out a number of observations. As in Hong, Lee, and Swaminathan (2003), if the market

capitalization of a stock is below the fifth percentile of all the stocks within a given country in any month, its return in that month is treated as missing. Our conclusion on the relationship between individualism and momentum is not affected by this screening process. For Datastream data, we set the returns that are larger (less) than 100% (-95%) equal to 100% (-95%). This procedure not only helps us to filter out suspicious stock returns, but it also ensures that the momentum effect in each country is not driven primarily by small and/or illiquid stocks.[14] To calculate the past six-month cumulative returns on individual stocks as well as to measure the returns on the momentum portfolios, we also require each stock in our sample to have a return history of at least eight months.

Since we need a reasonable number of stocks to form momentum portfolios, we require each country to have at least 30 stocks that meet our stock selection criteria in any month during our sample period. In addition, we require each momentum portfolio in each country to have a return history of at least five years. Because of the last two criteria, our sample includes only forty-one countries for which there are more than 20,000 individual stocks.

Table I lists the countries included in our study along with their scores on the individualism index. Table I also reports the total market capitalization of their stock exchanges and the number of firms that meet our sample requirements at three different times: the first month of the sampling period, December 1996, and June 2003.[15]

[Insert Table I here]

In addition to the individualism index (*Indv*), we explore a large number of variables that may explain the cross-country variation in momentum profits. These variables are discussed in later sections and described in more detail in Internet Appendix B.

III. Individualism, Trading Volume, and Volatility

To check the validity of Hofstede's individualism index (*Indv*) as a measure of overconfidence and self-attribution bias, we examine the extent to which cross-country differences in trading volume and volatility can be explained by this measure. Our motivation for these validity checks is the theoretical literature that suggests that these behavioral biases generate excess trading volume and volatility in stock markets (e.g., DHS (1998), Odean (1998), Gervais and Odean (2001), and Scheinkman and Xiong (2003)). The relationship between trading volume and overconfidence is quite intuitive. Overconfident investors trade more, because they overestimate the precision of their information. In addition, Odean (1998) argues that trading by overconfident investors leads to excess volatility. Previous theoretical and empirical studies also indicate that overconfidence together with the self-attribution bias generate excess trading volume and volatility (DHS (1998), Statman, Thorley, and Vorkink (2006), and Glaser and Weber (2008)).

As in Griffin, Nardari, and Stulz (2007), we measure the trading volume in a country as its turnover (*TN*), the ratio of the market dollar trading volume to the market capitalization of the Datastream global index for the country.[16] Similar to Bae, Chan, and Ng (2004) and Bekaert, Harvey, and Lundblad (2007), we use the squared monthly return to measure the monthly volatility of a stock. The average stock volatility in country j in month t (V_{jt}) is the average of the squared monthly returns on the stocks in month t in country j:

$$V_{jt} = \frac{\sum_{i=1}^{N_{jt}} R_{ijt}^2}{N_{jt}}, \tag{1}$$

where R_{ijt} is the return on stock i in country j in month t and N_{jt} is the number of stocks in country j in month t. To calculate the average volatility of country j in month t, we require country j to have at least thirty stocks in month t.[17]

A. Individualism and Trading Volume

To investigate the relation between individualism and trading volume, we estimate the following regression:

$$LnTN_{jt} = \beta_o + \beta_1 Indv_j + \beta_2 Insider_j + \beta_3 Political_{jt} + \beta_4 Fxvol_{jt} + \beta_5 Credit_{jt} + \beta_6 LnV_{jt} + \varepsilon_{jt}, \quad (2)$$

where subscripts *j* and *t* represent country *j* and month *t*, respectively. Since trading volume is highly persistent, we cluster the residuals by both country and month to compute the *t*-statistics on the estimated coefficients. The dependent variable is the natural logarithm of the market trading volume (*LnTN*). The independent variables include the individualism index (*Indv*) and other determinants of trading volume.

Although there is no empirical study on the determinants of cross-country trading volume, existing theoretical and cross-sectional research on U.S. stocks suggests that trading volume is likely to be related to the cost of trading, information asymmetries and uncertainty about the aggregate economy. Based on studies that show that political risk is a determinant of liquidity costs across countries (Bekaert, Harvey, and Lundblad (2007), Eleswarapu and Venkataraman (2006), and Lesmond (2005)), we include the political risk index (*Political*) from International Country Risk Guide (ICRG) as a measure of political stability in the country. To capture the effect of asymmetric information, we control for the level of financial development with the ratio of total private credit to GDP (*Credit*) (as in Stulz and Williamson (2003)) and for the prevalence of insider trading with the insider trading index (*Insider*) obtained from La Porta et al. (2006). To measure the volatility of the overall economy we follow Du and Wei (2004) and use the volatility of the exchange rates (*Fxvol*), measured as the coefficient of variation of the monthly exchange rate calculated from the previous five years, as a proxy for monetary policy uncertainty. Since the trading volume is affected by information flows that generate stock return

volatility, we also include the natural logarithm of average stock volatility (*LnV*) as a determinant of cross-country trading volume.

Panel A in Table II reports the regression results. The estimated coefficients of *Political* and *Credit* are positive and significant, which is consistent with the idea that countries with lower liquidity costs tend to have larger trading volume.[18] The positive and significant coefficients on *Fxvol* and *LnV* indicate that trading volume is positively related to the uncertainty of monetary policies and information flow.[19] However, the estimated coefficient on *Insider* is significantly negative, indicating that higher insider trading leads to larger trading volume, which is inconsistent with our expectations. After controlling for these variables, we find that the estimated coefficient on *Indv* is significantly positive (*t*-statistic = 2.13).

[Insert Table II here]

To check the robustness of our result to estimation methods, we also use the Fama-MacBeth procedure to estimate Equation (2). Following Chordia, Huh, and Subrahmanyam (2008), who use the Fama-MacBeth procedure to investigate the cross-sectional variation in turnover in the U.S. market, we use the Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors to compute the *t*-statistics on the Fama-MacBeth coefficients.[20] The results from the Fama-MacBeth regressions are similar to those reported in Panel A of Table II except that the significance levels are much higher. We also ran a simple regression using average values of trading volume and independent variables from January 1995 to June 2003 to estimate Equation (2) and the result from this OLS regression again is similar to our result from the panel regression. The results on the volume regressions from alternative estimation methods are reported in Table A2 of the Internet Appendix.

In summary, we find that there is a strong and robust positive relationship between individualism and cross-country trading volume even after controlling for variables that potentially explain the normal level of trading volume.

B. Individualism and Volatility

In a cross-country study, Du and Wei (2004) document that market volatility is negatively related to the development of the financial market, and it is positively related to the volatility of the real GDP growth rates, the volatility of the exchange rates (*Fxvol*), the country's debt ratio (*Debt*), and the prevalence of insider trading (*Insider*). In a study of emerging market volatility, Bekaert and Harvey (1997) find that cross-country volatility is also negatively related to the ratio of market capitalization to GDP (*MCap*) and the openness of the capital market (*Open*). Bae, Chan, and Ng (2004) report that volatility in emerging markets is positively related to the investability of the stocks in these markets. We use the ratio of total private credit to GDP (*Credit*) as a measure of financial market development. The volatility of real GDP growth is computed as the standard deviation of the real GDP growth rates from 1988 to 2003 (*Gwvol88*) or from 1995 to 2003 (*Gwvol95*). As in Bekaert, Harvey, and Lundblad (2007), we use the investability index in each country as a measure of stock market openness (*Open*). The country's debt ratio (*Debt*) is the average leverage ratio of firms.

Panel B of Table II provides estimates of the following volatility regression with standard errors clustered by country and month:

$$LnV_{jt} = \beta_o + \beta_1 Indv_j + \beta_2 Insider_j + \beta_3 Credit_{jt} + \beta_4 Gwvol88_j + \beta_5 Fxvol_{jt} + \beta_6 Open_{jt} + \beta_7 Debt_{jt} + \beta_8 MCap_{jt} + \varepsilon_{jt}. \quad (3)$$

Consistent with Du and Wei (2004), we find that *Insider* has a negative effect on stock volatility and the volatility of the real GDP growth rates (*Gwvol*88) has a positive effect on stock volatility. Similar to Bekaert and Harvey (1997), we find that the volatility of the exchange rates

(*Fxvol*) has a positive effect on stock volatility. In contrast to their finding, we find that the ratio of market capitalization to GDP (*MCap*) has a strong positive effect on stock volatility. One should note, however, that their finding is from the emerging markets, while our sample includes both developed and emerging markets. More importantly, we find that the estimated coefficient on *Indv* is positive and significant (*t*-statistic = 2.62). The estimated coefficients on other variables are not significant.[21]

To investigate whether the positive relationship between individualism and volatility is robust to estimation methods, we use the Fama-MacBeth procedure, with Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors, to estimate Equation (3). We also run a simple regression using average values of volatility and independent variables from January 1995 to June 2003 to estimate Equation (3). The results in Table A3 of Internet Appendix indicate that the estimated coefficient on *Indv* is positive and significant for all specifications and, with a few exceptions, the coefficient estimates of the other variables are similar to those estimated by the OLS regression.

IV. Returns on Momentum Portfolios

This section reports, for each country, the profitability of momentum strategies that form portfolios based on the stocks' past six-month returns and hold the stocks for six months. For each market, stocks with performance in the bottom one-third during the formation period are assigned to the loser (L) portfolio, while those in the top one-third are assigned to the winner (W) portfolio. These portfolios are equally weighted and are not rebalanced over the six-month holding period.[22] We use the top and the bottom one-third rather than the 10% cutoffs used by Jegadeesh and Titman (1993) because of the smaller sample sizes in most countries. In addition, to minimize the effect of the bid-ask bounce and the lead-lag effect, we skip one month between

the ranking period and the holding period.[23] The returns are all measured in U.S. dollars. However, our findings are virtually identical if we measure returns in local currencies.

As in Jegadeesh and Titman (1993) we construct overlapping momentum portfolios, e.g., the winner portfolio formed in January is the equally weighted combination of those stocks with cumulative returns in the top one-third over the previous June-to-November period (the W portfolio in November), over the previous May-to-October period (the W portfolio in October) and so on up to the previous January-to-June period (the W portfolio in June). If a stock has a missing return during the holding period, we replace it with the corresponding value-weighted market return. If a stock is delisted, we rebalance the portfolio at the end of the delisting month.[24]

Panel A of Table III presents the average U.S. dollar monthly returns (%) of the winner portfolio, the loser portfolio, and the winner-minus-loser portfolio for each of the forty-one countries. The results in Table III indicate that all but four countries (Japan, Korea, Taiwan, and Turkey) exhibit positive momentum profits. The profits in 25 of the countries are statistically significant. The highest momentum profits are in Poland (1.764% per month), Bangladesh (1.677% per month), New Zealand (1.582% per month), and Canada (1.345% per month).[25]

[Insert Table III here]

To test whether the cross-country differences in momentum profits are persistent we divide the whole sample into two subsamples: the first half (February 1984 to June 1993) and the second half (July 1993 to June 2003). For the thirty-six countries that are in both subperiods, the Spearman rank correlation between their momentum profit ranks in these two subsamples is 0.33 (p-value = 0.05). For the 22 countries that have at least 60 monthly observations on momentum profits in each subsample the Spearman rank correlation increases to 0.50 (p-value = 0.02).

Panel B of Table III reports momentum profits from portfolio strategies that exploit the momentum strategy around the world. We refer to the first as the country-average momentum portfolio and the second as the composite momentum portfolio.[26] The country-average portfolio equally weights each country-specific momentum portfolio. The composite momentum portfolio is weighted more towards the countries with more stocks. More specifically, at the end of each month, all stocks in the 'W' portfolio in each country are assigned to the 'global W' portfolio and all stocks in the 'L' portfolio in each country are assigned to the 'global L' portfolio. The minimum number of countries in each portfolio in our sample at any point in time must be at least two and the sample period starts in February 1984 and ends in June 2003.[27]

The result in Panel B of Table III indicates that the average monthly return on the country-average portfolio over the period from February 1984 to June 2003 is 0.72% per month (*t*-statistic = 7.35). The average monthly momentum profit on the composite portfolio is 0.52% per month with a *t*-statistic of 3.49. The magnitude of these returns is similar to what we observe for U.S. momentum portfolios. However, the *t*-statistics are much larger because the international momentum portfolio is much more diversified.[28]

V. Individualism and the Profitability of Momentum Strategies: Portfolio Analysis

In this section, we investigate the relation between individualism and the profitability of momentum strategies across countries. We classify countries into three groups, from low (bottom 30%) to high (top 30%), based on their scores on the individualism index (*Indv*). Country-average and composite portfolios are formed in each *Indv*-sorted group of countries.

In Table IV we report the average monthly returns on *Indv*-sorted momentum portfolios. These results reveal that momentum profits monotonically increase with the score of the individualism index. The average return on the high-*Indv* country-average portfolio is 1.04% per

month with a *t*-statistic of 7.93, and the spread in the average returns between the high-*Indv* and the low-*Indv* country-average portfolios is 0.65% per month, which is highly significant with a *t*-statistic of 4.30. Similarly, the spread in average returns between the high-*Indv* and the low-*Indv* composite portfolios is 0.58% per month with a *t*-statistic of 2.61.

[Insert Table IV here]

We also compute the annual spread in average returns between the high-*Indv* and the low-*Indv* country-average portfolios by calendar year over the period from 1984 to 2002 and find positive annual spreads in fourteen out of nineteen years.[29] The average annual spread is 8.57% and it is significantly positive (*t*-statistic = 3.37). The median, minimum, and maximum annual spreads are 7.02%, -9.75%, and 26.56%, respectively.

VI. Other Determinants of Cross-Country Momentum: Regression Analysis

In this section, we examine other possible cross-country determinants of momentum. To do this, we regress momentum profits on the individualism index and other potential determinants:[30]

$$Mom_{jt} = \alpha_o + \beta_1 Indv_j + F_j\gamma_1 + A_{jy}\gamma_2 + M_{jt}\gamma_3 + \varepsilon_{jt}, \quad (4)$$

where Mom_{jt} is the return on the momentum portfolio in country j in month t and $Indv_j$ is the individualism index of country j. While F_j is a vector of explanatory variables that are constant across time, A_{jy} and M_{jt} are vectors of explanatory variables that are updated annually and monthly, respectively. Internet Appendix B provides more information about these explanatory variables. The ε_{jt} is an error term. We use the Fama-MacBeth procedure to estimate Equation (4). The *t*-statistics of the averages of the time-series estimates from these month-by-month, cross-sectional regressions are adjusted for heteroskedasticity and autocorrelation using the Newey and West (1987) method.

A. Firm Characteristics Suggested by Behavioral Research

A number of studies examine the extent to which U.S. stocks with different firm characteristics suggested by behavioral research exhibit more or less momentum. In this section we describe some of these cross-sectional determinants and examine the extent to which cross-country differences in the average values of these characteristics explain differences in momentum profits across countries.

The variables that we consider have previously been used to proxy for the speed of information flow and information uncertainty. These variables include turnover (examined in Lee and Swaminathan (2000) and Verardo (2008)), firm size (examined in Jegadeesh and Titman (1993), Daniel and Titman (1999), Hong Lim, and Stein (2000) and Zhang (2006)), analyst coverage (examined in Hong, Lim, and Stein (2000), Zhang (2006), and Verardo (2008)), cash flow volatility (examined in Zhang (2006)), dispersion in analyst forecasts, and return volatility (examined in Zhang (2006) and Verardo (2008)). Following this earlier work we include the following variables: market trading volume (*TN*), average dispersion in analyst forecasts in a country (*Disp*), the average volatility of the individual stocks in a market (*V*), the volatility of the growth of cash flows (*Cfvol*) computed from each country's cash flow component of the Datastream global index, the median firm size in a country (*SZ*), and the average number of analysts following each stock in a country (*Ana*).[31]

The results from the Fama-MacBeth regressions reported in Panel A of Table V reveal that the coefficient of *Indv* is positive and quite significant after controlling for these other potential determinants of momentum profits. Among the other explanatory variables, only the estimated coefficients on *LnSZ*, *LnDisp*, and *LnV* are significant. Consistent with Zhang (2006) and Hong, Lim, and Stein (2000), cross-country differences in momentum are positively related to dispersion in analyst forecasts (*LnDisp*), but are negatively related to firm size (*LnSZ*). In

contrast to Zhang (2006) and Verardo (2008), the estimated coefficient on stock market volatility (*LnV*) is negative. Based on joint *F-tests*, we conclude that the coefficients of this group of variables are reliably different than zero both with and without the individualism variable.[32]

[Insert Table V here]

B. Financial Market Development and Institutional Quality

The informational efficiency of a country's financial markets may be related to the development and the integrity of the financial markets. The idea is that better developed stock markets with greater integrity facilitate a freer flow of information and tend to have lower effective trading costs.

As suggested by Stulz and Williamson (2003), we use the ratio of total private credit to GDP (*Credit*) as a measure of financial market development. To measure the extent to which foreign institutions can invest in the market, we use an index on capital flow restrictions (*Control*, a higher value indicates more restrictions), the average common language dummy variable (*Lang*, a higher score indicates more common languages) used by Chan, Covrig, and Ng (2005), and following Bekaert, Harvey, and Lundblad (2007), the ratio of the market capitalization of the stocks comprising the S&P-IFC investable index to the market capitalization of the stocks comprising the S&P-IFC global index in each country as a measure of stock market openness (*Open*).

Our regression results from Panel B of Table V indicate that individualism is still significantly positive when these variables are included in the regression.[33] However, of the financial development variables included, only language (*Lang*) is statistically significant, and the *F-test* measuring the significance of the variables other than individualism fails to reject the null hypothesis that the coefficients of these variables are all equal to zero.

To measure market integrity we include the prevalence of insider trading (*Insider*, a higher score indicates that insider trading is less common), and investor protection (*Protection*, a higher score indicates a higher level of protection). These variables were considered previously by La Porta, Lopez-de-Silanes, and Shleifer (2006). We also include the corruption index (*Crp*, a higher score indicates a lower level of corruption) and the political risk index (*Political*, a higher scores indicates a lower risk level). These indexes, from the International Country Risk Guide (ICRG), have been shown to be related to liquidity across countries (Lesmond (2005) and Eleswarapu and Venkataraman (2006)). In addition, we include the estimate of transaction costs (*Tran*, a higher value indicates a higher trading cost) used by Chan, Covrig, and Ng (2005) as the measure for the cost of trading stocks in each country.

Panel C of Table V reports the results from the Fama-MacBeth regressions that contain these variables.[34] Again, we find that the estimated coefficient of *Indv* remains significantly positive after the inclusion of these variables. In addition, the coefficient of the natural logarithm of the transaction cost index (*LnTran*) is positive and significant, but the estimated coefficients of other integrity variables are insignificant and the *F-test* fails to reject the null hypothesis that the coefficients of the variables other than individualism are all equal to zero.

C. Rational Momentum Models

This section examines the extent to which the cross-country differences in momentum profits can be explained by variables suggested in the rational momentum literature. First, as discussed in Jegadeesh and Titman (1993) and Conrad and Kaul (1998), momentum profits can be partially attributed to the cross-sectional variations in expected stock returns. In addition, Johnson (2002) and Sagi and Seasholes (2007) suggest that momentum profits are higher for firms with better growth options.

To measure the variations in expected stock returns in each country, we use the standard deviation of beta estimates (*StdBeta)*. To measure the availability of growth options, we use the Bekaert, Harvey, Lundblad, and Siegel (2007) measure of the average local growth opportunities (*LGO*) of a country. We also investigate whether variations in momentum profits across countries are related to earnings growth volatility (*Eavol*) and dividend growth volatility (*Divvol*). We compute these volatilities from the earnings and the dividends of the Datastream global index of each country.

The results from the Fama-MacBeth regressions reported in Panel C of Table A5 in Internet Appendix suggest that when these variables are included in our regressions, the estimated coefficient on *Indv* remains significantly positive. However, the estimated coefficients on the rational momentum variables are insignificant. Indeed, the *F-test* fails to reject the null hypothesis that the coefficients of the variables other than individualism are all equal to zero at conventional significance levels.

D. A Comprehensive Model

It would be of interest to include all the variables in Equation (4) instead of estimating the coefficients in groups. However, since our cross-country sample has a relatively limited number of countries (41 at a maximum), we have limited degrees of freedom.

In this subsection we present regressions that include only those variables that are significant at the 10% level or better in Table V. These regressions include the common language dummy variable (*Lang*), the natural logarithm of the transaction cost index (*LnTran*), the natural logarithm median firm size (*LnSZ*), the natural logarithm of dispersion in analyst forecasts (*LnDisp*) and the natural logarithm of stock market volatility (*LnV*). The coefficient estimates

from this Fama-MacBeth regression, reported in Panel D of Table V, are all significant and have the same signs as those in previous regressions.[35]

VII. Robustness Checks

A. Additional Variables

The results in the previous section indicate that individualism is significantly related to momentum profits in various specifications that include a substantial number of variables that can conceivably explain the cross-country pattern of momentum profits. In tests reported in Table A5 of Internet Appendix, we consider additional explanatory variables that include the macroeconomic risk factors suggested by Chordia and Shivakumar (2002). We find that none of these variables are significant.[36] In short, we were unable to come up with plausible determinants of momentum profits that subsume the effect of individualism.

In addition, since the motivation of this study was partly due to our knowledge that momentum profits are weak in East Asian countries (Chui, Titman, and Wei (2003)), and that these countries have low scores on the individualism index, it is important to perform an out of sample test that does not include the East Asian countries. Specifically, we remove the ten East Asian countries from our sample and rank the remaining thirty-one countries, from low (bottom 30%) to high (top 30%), according to their scores on the individualism index. We construct three *Indv*-sorted country-average portfolios from this reduced sample. We find that the average monthly returns on the low-*Indv*, medium-*Indv*, and high-*Indv* country-average portfolios are 0.72%, 0.94%, and 1.14%, respectively.[37] The spread in average monthly returns between the high-*Indv* and the low-*Indv* portfolios is 0.42%, which is significant at the 5% level (*t*-statistic = 2.15). As an additional test, we include a dummy variable for East Asian countries (*EAsia*) in our comprehensive model as specified in Equation (4). As shown in Panel A of Table A7 in

Internet Appendix, the inclusion of *EAsia* has little effect on the regression (it reduces the *t*-statistic of the estimated coefficient on the individualism index (*Indv*) from 4.44 to 3.25), and its coefficient is negative but insignificant. These results suggest that the positive relation between individualism and momentum is not driven by East Asian countries.[38]

B. An Alternative Index for Individualism

To investigate the robustness of our results, we consider an alternative measure of individualism that comes from the GLOBE (Global Leadership and Organizational Behavior Effectiveness) project. We use the country scores from GLOBE's institutional collectivism index from House et al. (2004). We are able to find scores from GLOBE's institutional collectivism index for thirty-three of the countries in our sample. Using $Indv_{GLOBE}$ instead of Hofstede's individualism index (*Indv*), we re-estimate the Fama-MacBeth regressions specified in Equation (4). Consistent with our previous results, the results in Table A9 of Internet Appendix shows that the estimated coefficient on $Indv_{GLOBE}$ is positive and significant (*t*-statistic = 1.90).

C. Additional Cultural Variables

In addition to examining Hofstede's individualism index, we also consider Hofstede's other cultural indexes: masculinity (*MAS*), power distance (*PDI*), and uncertainty avoidance (*UAV*). Although the link between these cultural attributes and the behavioral biases described in the finance literature are somewhat tenuous, there are plausible links that can be explored. The results from Panel C of Table A4 and Panel D of Table A7 in the Internet Appendix indicate that including these additional cultural variables in our simple regression models or comprehensive model, however, does not change our findings.[39] While the estimated coefficient on the

individualism index (*Indv*) is significantly positive, the estimated coefficients on other cultural variables are insignificant.

D. Do Small Firms Affect our Results?

Since smaller stocks tend to generate greater momentum profits, it is possible that the positive relation between momentum and individualism is driven by a relation between average firm size and momentum. To investigate this possibility, we remove all stocks with market capitalizations less than US$100 million from our sample.[40] This requirement forces us to reduce the number of countries in our sample to thirty-seven and to change the sample starting period from February 1984 to February 1987. Based on this reduced sample, we find that the average monthly returns on the high-*Indv*, medium-*Indv*, and low-*Indv* country-average portfolios are 0.88%, 0.53%, and 0.29%, respectively. The spread in average returns between the high-*Indv* and the low-*Indv* country-average portfolios is 0.59% per month (*t*-statistic = 3.01), which is very close to the spread of 0.65% reported in Table IV. Similar findings are obtained using composite portfolios. Hence, the positive relationship between individualism and momentum does not seem to be driven by the small firms in our sample.

We also examine a sample that excludes the largest stocks in each market, since these stocks may be influenced by the trades of foreign institutions and may thus be less influenced by the cultures within the individual countries. Specifically, we remove all stocks with market capitalizations larger than the median of all the stocks within a given country in any month in our sample.[41] Using the monthly profits of the momentum portfolio constructed in each country with this smaller sample, we re-estimate the Fama-MacBeth regression specified in Equation (4) and find that the estimated coefficient on *Indv* is 0.016 with a *t*-statistic of 4.00. When the dummy variable for East Asia countries (*EAsia*) is included in the comprehensive model, the coefficient

on *Indv* is still significantly positive. The results from Fama-MacBeth regressions using the small stock sample with and without *EAsia* are reported in Table A10 of Internet Appendix.

E. Limiting our Sample to Developed Markets

There are a number of relatively undeveloped financial markets in our sample. The stocks in these countries have very low market capitalizations, they are often illiquid, and the data may be of lower quality. For this reason, we replicate our tests on a sample of twenty-six countries that are classified as advanced economies by the International Monetary Fund (IMF). These countries are mainly those countries in the EURO region, the U.K., the U.S., Japan, Hong Kong, Korea, Taiwan, and Singapore. Among these advanced economies, five are classified as low-*Indv*, nine are classified as medium-*Indv*, and twelve of them are classified as high-*Indv*. The spread in momentum profits between the high-*Indv* countries and the low-*Indv* countries in this smaller sample is 0.84% per month with a *t*-statistic of 4.98.

VIII. Post-Holding Period Returns

Behavioral momentum models suggest that, over longer horizons, the momentum effect is subsequently reversed. In this section, we examine the post-holding period returns of the momentum portfolios and test whether these returns are indeed more negative in countries with higher scores on the individualism index.

Table VI reports the average monthly returns for the *Indv*-sorted country-average and composite portfolios for the three years subsequent to the formation date. Consistent with our previous results, during the first year after formation, the average monthly profits on these momentum portfolios are positive and increase with the degree of individualism. However, in the 24 subsequent months, the momentum portfolios exhibit negative returns, which is consistent with the findings of Jegadeesh and Titman (2001) for U.S. firms.

[Insert Table VI here]

During the second year after portfolio formation, the magnitude of the return reversals is significantly higher in high individualism countries than in low individualism countries (difference = -0.32% per month with a *t*-statistic of -2.06) only for the composite momentum portfolio.[42] In contrast, during the third year after portfolio formation, the difference in the return reversals between high- and low-individualism countries is statistically significant at the 10% level for both country-average and composite momentum portfolios.

In Table A11 of Internet Appendix we show that the extent of the return reversals is stronger when we limit our analysis to a sample of smaller stocks with market capitalizations below the median of all the stocks within a given country in any month in our sample. Within this sample of smaller stocks we do in fact find that the extent of the long-term return reversals is significantly stronger in high individualism countries than in low individualism countries for both country-average and composite momentum portfolios.

IX. Conclusion

It is always interesting to compare the profitability of investment strategies across international markets. In addition to providing a robustness check on results generated from the excessively mined U.S. data, a cross-country study can potentially provide evidence on how cultural differences as well as institutional differences affect the efficiency of financial markets.

The Jegadeesh and Titman (1993) momentum effect provides a major challenge to the efficient market hypothesis. Looking just at U.S. data, one might conclude that the momentum effect is both too persistent (i.e., it generates positive returns in all post-war decades) and too strong (i.e., it generates implausibly high Sharpe ratios) to be explained by risk. As our analysis

demonstrates, the momentum strategies generated with global data provide even higher Sharpe ratios and thus provide an even greater challenge to traditional finance theories.

The cross-country differences in momentum profits, described in this paper, provide a challenge to behavioral as well as the traditional risk-based theories. Although the risk-based theorists must explain why momentum returns are risky in the U.S. and Europe but not in Japan and in most East Asian countries, the behavioral theorists must explain why individuals in some, but not all countries, are subject to the psychological biases that cause momentum.

The evidence in this paper indicates that culture can have an important effect on stock return patterns, which is consistent with the idea that investors in different cultures interpret information in different ways and are subject to different biases. One interpretation of our results on the relation between momentum profits and cultural differences is that in less individualistic cultures investors put less weight on information that they come up with on their own and more weight on the consensus of their peers. In other words, individuals in less individualistic cultures act less like the overconfident/self-attribution biased investors described by Daniel, Hirshleifer and Subrahmanyam (1998), and thus, tend not to make investment choices that generate momentum profits.

There are of course a number of competing theories of momentum and our evidence in support of a behavioral theory should be viewed more as circumstantial rather than definitive evidence. By identifying a cross-country relationship between momentum profits and individualism we hope that this study can help motivate future research on how cultural differences influence stock returns. For example, since Hong, Lee and Swaminathan (2003) find that earning momentum is stronger in Western countries than in East Asian countries, it might make sense to examine the cross-country relation between earnings momentum and

individualism. Another possibility worth considering is that investors in less individualistic cultures place too much credence on consensus opinions, and may thus exhibit herd-like overreaction to the conventional wisdom.[43]

Table I
Summary Statistics

Our sample consists of data on individual stocks from forty-one markets around the world. We require each country in our sample to have a score on Hofstede's individualism index. Except for U.S market data, all our data are collected from Datastream International. For the U.S. market, the data are obtained from the CRSP database. Within each country, we delete stocks whose market capitalization is below the fifth percentile of all stocks in each month. If a stock's return from Datastream is larger (smaller) than 100% (-95%), we set its return equal to 100% (-95%). Furthermore, we require each country to have at least 30 stocks with observations on market capitalization and returns in each month during our sample period and each country should have sufficient data to measure the returns on the momentum portfolios for at least five years. We only include common stocks (both domestic and foreign stocks) that are listed on the major exchange(s) in each country. A cross-listed stock is only included in its home country sample. This table reports the name of the major exchange(s) and the total market capitalization (in million U.S. dollars) in each country at three different times: the first month when we start to measure the returns on the momentum portfolios, December 1996, and June 2003. The first month varies across countries because data in each country available on Datastream starts from different dates. To match the data from Datastream, the first month for the U.S. market is set to February 1980. Also reported is Hofstede's individualism index (*Indv* index). The number of firms used to calculate the statistics is reported in square brackets.

Country (Stock Exchange)	*Indv* index	Period	Market cap (US$ million)	Start month	Dec. 1996	June 2003
Argentina	46	199409 – 200306	Market cap	42,360	44,179	76,242
(Buenos Aires)			# of firms	[61]	[57]	[58]
Australia	90	198103 – 200306	Market cap	35,151	254,124	401,366
(Australian)			# of firms	[127]	[757]	[1,017]
Austria	55	198602 – 200306	Market cap	2,746	29,116	36,647
(Vienna)			# of firms	[31]	[83]	[67]
Bangladesh	20	199302 – 200306	Market cap	205	3,443	2,062
(Dhaka)			# of firms	[60]	[111]	[197]
Belgium	75	198103 – 200306	Market cap	3,316	73,058	139,203
(Brussels)			# of firms	[43]	[114]	[150]
Brazil	38	199508 – 200306	Market cap	49,277	71,683	83,782
(Sao Paulo)			# of firms	[48]	[58]	[90]
Canada	80	198102 – 200306	Market cap	66,478	369,828	600,917
(Toronto)			# of firms	[260]	[789]	[847]
Chile	23	199008 – 200306	Market cap	7,779	50,281	52,473
(Santiago)			# of firms	[81]	[110]	[95]
China	20	199309 – 200306	Market cap	24,076	82,338	470,740
(Shanghai & Shenzhen)			# of firms	[63]	[318]	[1,096]
Denmark	74	198902 – 200306	Market cap	12,730	42,382	65,788
(Copenhagen)			# of firms	[72]	[155]	[120]
Finland	63	199108 – 200306	Market cap	10,161	45,501	125,125
(Helsinki)			# of firms	[38]	[75]	[118]
France	71	198103 – 200306	Market cap	33,382	580,130	1,063,890
(Paris)			# of firms	[129]	[497]	[634]
Germany	67	198103 – 200306	Market cap	57,201	499,297	745,812
(Frankfurt)			# of firms	[131]	[286]	[730]
Greece	35	198902 – 200306	Market cap	2,593	22,806	79,392
(Athens)			# of firms	[51]	[184]	[301]
Hong Kong	25	198103 – 200306	Market cap	31,590	407,691	457,134
(Hong Kong)			# of firms	[60]	[440]	[588]
India	48	199102 – 200306	Market cap	32,488	87,626	147,247
(Mumbai)			# of firms	[264]	[647]	[653]
Indonesia	14	199105 – 200306	Market cap	16,149	84,313	37,062
(Jakarta)			# of firms	[81]	[171]	[222]

Table I – Continued

Country (Stock Exchange)	*Indv* index	Period	Market cap (US$ million)	Start month	Dec. 1996	June 2003
Ireland	70	198705 – 200306	Market cap	6,318	27,708	58,531
(Dublin)			# of firms	[34]	[39]	[39]
Israel	54	199212 – 200306	Market cap	11,224	26,206	57,528
(Tel Aviv)			# of firms	[140]	[455]	[279]
Italy	76	198103 – 200306	Market cap	20,665	182,465	474,450
(Milan)			# of firms	[72]	[172]	[245]
Japan	46	198103 – 200306	Market cap	352,540	3,238,767	2,323,485
(Tokyo & JASDAQ)			# of firms	[792]	[2,374]	[2,760]
Korea	18	198508 – 200306	Market cap	5,933	118,586	257,263
(Korea & KOSDAQ)			# of firms	[237]	[653]	[1,356]
Malaysia	26	198702 – 200306	Market cap	18,511	258,879	126,960
(Kuala Lumpur & MESDAQ)			# of firms	[176]	[379]	[499]
Mexico	30	199204 – 200306	Market cap	32,759	37,407	31,140
(Mexico City)			# of firms	[37]	[47]	[39]
Netherlands	80	198103 – 200306	Market cap	26,214	400,694	423,026
(Amsterdam)			# of firms	[139]	[163]	[144]
New Zealand	79	198902 – 200306	Market cap	6,433	29,018	26,830
(New Zealand)			# of firms	[50]	[93]	[108]
Norway	69	198103 – 200306	Market cap	2,526	48,799	67,770
(Oslo)			# of firms	[35]	[127]	[133]
Pakistan	14	199308 – 200306	Market cap	4,516	7,438	11,617
(Karachi)			# of firms	[95]	[114]	[175]
Philippines	32	199101 – 200306	Market cap	4,417	68,088	17,429
(Manila)			# of firms	[41]	[152]	[105]
Poland	60	199801 – 200306	Market cap	7,438	n.a.	28,204
(Warsaw)			# of firms	[57]		[176]
Portugal	27	198902 – 200306	Market cap	2,506	23,464	35,397
(Lisbon)			# of firms	[45]	[84]	[51]
Singapore	20	198402 – 200306	Market cap	13,872	148,294	114,365
(Singapore)			# of firms	[86]	[230]	[398]
South Africa	65	198103 – 200306	Market cap	28,921	146,767	116,567
(Johannesburg)			# of firms	[54]	[336]	[279]
Spain	51	198804 – 200306	Market cap	50,631	183,272	410,845
(Madrid)			# of firms	[53]	[116]	[122]
Sweden	71	198302 – 200306	Market cap	80,117	154,090	158,003
(Stockholm)			# of firms	[39]	[199]	[293]
Switzerland	68	198103 – 200306	Market cap	15,767	82,593	43,872
(Zurich)			# of firms	[55]	[98]	[83]
Taiwan	17	198907 – 200306	Market cap	119,540	251,522	274,043
(Taiwan)			# of firms	[48]	[270]	[394]
Thailand	20	198802 – 200306	Market cap	7,281	87,776	56,806
(Thailand)			# of firms	[75]	[366]	[308]
Turkey	37	198902 – 200306	Market cap	989	25,656	37,821
(Istanbul)			# of firms	[38]	[179]	[263]
United Kingdom	89	198102 – 200306	Market cap	192,536	1,504,293	1,734,019
(London)			# of firms	[1,619]	[1,204]	[1,407]
United States	91	198102 – 200306	Market cap	1,265,854	7,689,812	11,391,074
(NYSE, AMEX & NASDAQ)			# of firms	[4,146]	[6,732]	[4,885]

Table II
Individualism, Stock Market Trading Volume, and Average Stock Volatility

Panel A reports the OLS estimates of the coefficients related to market trading volume. The market trading volume (*TN*) of country *j* in month *t* is measured as the market dollar trading volume of the Datastream Global Index of this country divided by this index's market capitalization in month *t*. The natural logarithm of monthly market trading volume (*LnTN*) is regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism), the insider index (*Insider*, a higher score indicates that insider trading is less prevalent), the political risk index (*Political*, a higher score indicates a lower risk), the volatility of the exchange rate (*Fxvol*), the total private credit expressed as a ratio of GDP (*Credit*), and the natural logarithm of market volatility (*LnV*). Panel B reports the OLS estimates of the coefficients related to average stock volatility. The monthly average stock volatility is computed as the average of the monthly squared stock returns. The natural logarithm of monthly average stock volatility (*LnV*) is regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism), the insider index (*Insider*, a higher score indicates that insider trading is less prevalent), the total private credit expressed as a ratio of GDP (*Credit*), the volatility of real GDP per capita growth rates (*Gwvol*88), the volatility of the exchange rate (*Fxvol*), the ratio between the monthly market value of the S&P-IFC market index and the monthly market value of the S&P-IFC investable index (*Open*), the debt ratio (*Debt*), and the market value expressed as a ratio of GDP (*MCap*). While *Indv*, *Insider*, and *Gwvol*88 are constant across time, all other variables are updated monthly or annually. The definitions of these variables are described in Internet Appendix B. The sample period is from January 1988 to June 2003. We use the Petersen (2009) procedure to compute the standard errors clustered by country and month. The robust *t*-statistics are in parentheses.

Panel A: Market Trading Volume		Panel B: Average Stock Volatility	
Intercept	-2.588	Intercept	5.378
	(-4.80)		(11.44)
Indv	**0.010**	**Indv**	**0.009**
	(2.13)		**(2.62)**
Insider	-0.351	Insider	-0.325
	(-2.30)		(-3.88)
Fxvol	0.017	Fxvol	0.015
	(2.17)		(5.18)
Credit	0.932	Credit	0.149
	(4.28)		(0.89)
Political	0.027	Gwvol88	0.125
	(3.09)		(2.83)
LnV	0.300	Open	-0.181
	(4.46)		(-0.56)
		Debt	1.016
			(1.68)
		MCap	0.002
			(2.84)
Min. # of countries	13		12
Max. # of countries	38		36
Median # of countries	34		31

Table III
Momentum Profits by Country

At the end of each month, all stocks in each country are ranked in ascending order based on the past six-month cumulative returns. Stocks in the bottom one-third are assigned to the 'L' portfolio and those in the top one-third to the 'W' portfolio. These equally weighted portfolios are held for six months. To increase the power of the tests, overlapping portfolios are constructed. The winner (loser) portfolio is an overlapping portfolio that consists of 'W' ('L') portfolios in the previous six ranking months. Returns on these portfolios are measured one month after ranking. Returns on these portfolios in month *t* are computed as (average cumulative returns of the stocks in these portfolios in month *t* divided by average cumulative returns of these stocks in month *t*-1) - 1. Returns on the winner and loser portfolios are the simple average of the returns on the six 'W' and the six 'L' portfolios, respectively. If a stock has a missing return during the holding period, it is replaced by the corresponding value-weighted market return. If a stock is delisted, we rebalance the portfolio at the end of the delisting month. The momentum portfolio (W-L) is a zero-cost, winner-minus-loser portfolio. Panel A reports the average monthly returns (%) on these portfolios in U.S. dollars for each country.

The country-average portfolio is a portfolio that puts equal weight on each country-specific momentum portfolio in this portfolio. The formation of the composite portfolio is similar to that of the momentum portfolio in each country. Specifically, at the end of each month, all stocks in each country are ranked in ascending order based on the past six-month cumulative returns. Stocks in the top one-third of past returns in each country are assigned to the 'W' portfolio and the bottom one-third stocks are assigned to the 'L' portfolio. The minimum number of countries in each portfolio in our sample at any point in time must be at least two. These equally weighted portfolios are held for six months. Similar to the country-specific momentum portfolio, the composite portfolio is an overlapping portfolio. The average monthly returns (%) on these country-average and composite portfolios in U.S. dollars are reported in Panel B. Corresponding *t*-statistics are in parentheses.

Panel A: By country

Country	Winner (W)	Loser (L)	**W minus L**
Argentina	0.559 (0.66)	0.483 (0.42)	0.076 (0.12)
Australia	1.639 (3.60)	0.564 (1.18)	1.075 (4.76)
Austria	1.126 (2.84)	0.501 (1.27)	0.625 (2.70)
Bangladesh	3.171 (2.81)	1.494 (1.57)	1.677 (2.75)
Belgium	1.723 (5.90)	0.830 (2.82)	0.893 (5.50)
Brazil	1.548 (1.43)	1.088 (0.84)	0.459 (0.96)
Canada	1.823 (5.10)	0.478 (1.18)	1.345 (6.29)
Chile	2.129 (3.76)	1.136 (2.00)	0.993 (3.60)
China	1.233 (0.98)	0.976 (0.80)	0.257 (0.92)
Denmark	1.235 (3.87)	0.273 (0.79)	0.962 (4.29)
Finland	1.457 (2.58)	0.480 (0.68)	0.977 (2.62)
France	1.819 (4.91)	0.877 (2.20)	0.942 (4.68)
Germany	1.218 (3.93)	0.225 (0.59)	0.993 (4.41)
Greece	2.352 (2.50)	1.767 (1.88)	0.585 (1.49)
Hong Kong	1.583 (2.65)	0.811 (1.24)	0.772 (3.18)
India	1.957 (2.18)	0.819 (0.84)	1.138 (2.91)
Indonesia	0.917 (0.76)	0.781 (0.54)	0.136 (0.30)
Ireland	1.342 (3.13)	0.458 (0.98)	0.884 (3.06)
Israel	0.851 (1.03)	0.531 (0.63)	0.320 (1.19)
Italy	1.309 (3.06)	0.405 (0.89)	0.904 (4.47)

Table III– Continued

Country	Winner (W)	Loser (L)	**W minus L**
Japan	0.883 (2.04)	0.922 (1.91)	-0.039 (-0.18)
Korea	1.257 (1.65)	1.594 (1.83)	-0.337 (-0.81)
Malaysia	1.427 (1.75)	1.329 (1.37)	0.098 (0.26)
Mexico	1.181 (1.67)	0.488 (0.62)	0.693 (2.00)
Netherlands	1.759 (5.56)	0.928 (2.63)	0.831 (4.40)
New Zealand	2.148 (4.52)	0.566 (1.05)	1.582 (5.01)
Norway	2.121 (4.90)	1.075 (2.27)	1.046 (3.77)
Pakistan	1.189 (1.38)	0.729 (0.72)	0.461 (1.05)
Philippines	0.823 (0.96)	0.450 (0.43)	0.372 (0.68)
Poland	1.141 (1.16)	-0.623 (-0.60)	1.764 (3.33)
Portugal	0.806 (1.94)	0.498 (1.00)	0.308 (0.93)
Singapore	1.064 (1.81)	0.921 (1.25)	0.143 (0.47)
South Africa	1.540 (3.15)	0.604 (1.15)	0.936 (3.29)
Spain	1.035 (2.44)	0.410 (0.80)	0.625 (2.24)
Sweden	1.499 (3.60)	0.787 (1.48)	0.711 (2.27)
Switzerland	1.285 (4.06)	0.465 (1.45)	0.819 (4.39)
Taiwan	0.347 (0.39)	0.549 (0.57)	-0.202 (-0.48)
Thailand	1.739 (2.19)	1.260 (1.36)	0.479 (1.10)
Turkey	3.044 (2.18)	3.458 (2.43)	-0.414 (-0.96)
United Kingdom	1.708 (4.92)	0.576 (1.56)	1.132 (7.08)
United States	1.523 (4.36)	0.735 (1.78)	0.788 (3.44)
Average	1.476 (16.38)	0.798 (8.58)	0.678 (8.54)

Panel B: All countries

Portfolio formed method	Period	Winner (W)	Loser (L)	**W minus L**
Country-average	1984:02-2003:06	1.680 (5.84)	0.955 (3.06)	**0.725 (7.35)**
Composite	1984:02-2003:06	1.371 (4.72)	0.851 (2.46)	**0.519 (3.49)**

Table IV
Momentum Profits and Individualism

This table reports average monthly momentum profits (%) in U.S. dollars for country-average portfolios (Panel A) and composite portfolios (Panel B) classified by Hofstede's individualism index (a lower score indicates a lower degree of individualism). The country-average portfolio is a portfolio that puts equal weight on each country-specific momentum portfolio in this portfolio. The formation of the composite portfolio is similar to that of the momentum portfolio in each country. See Table III for the detailed description of the constructions of the country-average and composite portfolios. At the end of each month, all countries in our sample are allocated into three groups, from low (bottom 30%) to high (top 30%) based on their scores on the individualism index. Country-average (or composite) portfolios are formed in each individualism-sorted group. The test period is from February 1984 to June 2003. The corresponding *t*-statistics are in parentheses.

Portfolio formed method	Index on individualism	Winner (W)	Loser (L)	W minus L
		Panel A: Country-average portfolios		
Country-average	Low	1.628	1.241	0.387
		(4.30)	(2.96)	(2.80)
	2	1.693	1.004	0.689
		(5.22)	(2.90)	(5.91)
	High	1.748	0.707	1.041
		(6.14)	(2.27)	(7.93)
	High minus Low	**0.120**	**-0.534**	**0.654**
		(0.39)	**(-1.53)**	**(4.30)**
		Panel B: Composite portfolios		
Composite	Low	1.465	1.343	0.122
		(3.60)	(2.89)	(0.74)
	2	1.266	1.028	0.238
		(3.61)	(2.69)	(1.58)
	High	1.538	0.837	0.701
		(4.90)	(2.12)	(3.29)
	High minus Low	**0.073**	**-0.507**	**0.579**
		(0.21)	**(-1.28)**	**(2.61)**

Table V
Determinants of Momentum Profits across Countries: Results from the Fama-MacBeth Regressions

Monthly returns on country-specific momentum portfolios are regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism) and different sets of explanatory variables. Panel A reports the results related to a set of variables that are suggested by behavioral momentum models. These variables include the natural logarithm of market trading volume (*LnTN*), the natural logarithm of analyst coverage (*LnAna*), the natural logarithm of the dispersion of analyst forecasts (*LnDisp*), the logarithm of stock market volatility (*LnV*), the cash flows growth rate volatility (*Cfvol*), and the logarithm of median firm size (*LnSZ*). Panel B shows the results related to a set of proxies for the financial market development. These proxies are the total private credit expressed as a ratio of GDP (*Credit*), the average common language dummy variable (*Lang*), the ratio between the monthly market value of the S&P-IFC market index and the monthly market value of the S&P-IFC investable index (*Open*), and an index on control of capital flows (*Control*). Panel C reports the results related to a set of variables related to institutional quality. This set of variables includes the insider index (*Insider*, a higher score indicates that insider trading is less prevalent), the ICRG corruption index (*Crp*, a higher value indicates a lower corruption level), the ICRG political risk index (*Political*, a higher value indicates a lower political risk), the natural logarithm of the transaction cost index (*LnTran*, a higher value indicates a higher transaction cost), and the investor protection index (*Protection*, a higher score indicates a higher investor protection level). Panel D reports the results from the comprehensive model. The descriptions of all the variables are listed in Internet Appendix B. The row '*Starting date*' shows the starting month for the test in each panel and all the tests end in June 2003. This table reports the time-series averages of cross-sectional OLS estimates of the coefficients. The *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. F_1 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients except the coefficient on *Indv* are jointly equal to zero. F_2 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients are jointly equal zero. The *p*-values are in parentheses.

	Panel A Behavioral models	Panel B Market development	Panel C Institutional quality	Panel D Comprehensive
Intercept	5.974 (4.95)	0.385 (1.41)	-1.891 (-1.96)	3.501 (2.90)
Indv	**0.015 (4.29)**	**0.014 (5.24)**	**0.019 (6.24)**	**0.015 (4.44)**
LnTN	-0.158 (-1.01)			
LnDisp	0.181 (1.64)			0.205 (1.94)
LnV	-0.839 (-4.60)			-0.651 (-3.97)
Cfvol	-0.005 (-0.52)			
LnSZ	-0.305 (-2.69)			-0.260 (-3.97)
LnAna	0.163 (1.22)			
Credit		-0.162 (-0.93)		
Lang		1.330 (1.92)		1.944 (2.65)
Open		-0.412 (-1.05)		
Control		-0.008 (-0.30)		
Insider			-0.099 (-0.54)	
Crp			0.066 (0.65)	
Political			0.003 (0.18)	
LnTran			0.405 (3.16)	0.295 (2.33)
Protection			-0.070 (-0.28)	
F_1	6.10 (0.00)	2.03 (0.09)	2.09 (0.07)	8.40 (0.00)
F_2	8.55 (0.00)	5.97 (0.00)	8.24 (0.00)	12.64 (0.00)
Min. # of countries	28	15	17	17
Max. # of countries	39	37	33	36
Med. # of countries	36	34	32	35
Starting date	January 1992	January 1987	January 1987	January 1987

Table VI
Individualism and Post-holding Period Returns on Momentum Portfolios

This table presents average monthly momentum profits (%) in U.S. dollars for country-average portfolios (Panel A) and composite portfolios (Panel B) classified by Hofstede's individualism index (a lower score indicates a lower degree of individualism). The construction of these portfolios is discussed in Table III. The average monthly momentum profits are calculated over different post-holding periods. There is a one-month gap between the portfolio formation period and the holding period. The test period is from February 1984 to June 2003. All *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics.

Individualism rank	Months 1-12	Months 13-24	Months 25-36	Months 13-36
Panel A: Country-average portfolios				
Indv-Low	0.065	-0.274	0.010	-0.145
	(0.42)	(-2.16)	(0.07)	(-1.29)
Indv-2	0.562	-0.021	-0.123	-0.090
	(4.59)	(-0.17)	(-1.18)	(-0.95)
Indv-High	0.740	-0.146	-0.296	-0.222
	(4.90)	(-1.35)	(-2.77)	(-2.60)
High minus Low	**0.675**	**0.128**	**-0.306**	**-0.078**
	(3.82)	**(0.88)**	**(-1.82)**	**(-0.61)**
Panel B: Composite portfolios				
Indv-Low	-0.122	-0.326	-0.232	-0.305
	(-0.78)	(-3.65)	(-2.60)	(-5.25)
Indv-2	0.119	-0.302	-0.269	-0.299
	(1.23)	(-3.05)	(-3.22)	(-4.46)
Indv-High	0.367	-0.646	-0.543	-0.604
	(2.80)	(-4.47)	(-3.78)	(-5.16)
High minus Low	**0.489**	**-0.320**	**-0.311**	**-0.299**
	(3.68)	**(-2.06)**	**(-1.79)**	**(-2.25)**

REFERENCES

Aaker, Jennifer L., and Patti Williams, "Empathy versus pride: the influence of emotional appeals across cultures," *Journal of Consumer Research* 25, 241-261.

Bae, Kee-Hong, Kalok Chan, and Angela Ng, 2004, "Investibility and return volatility," *Journal of Financial Economics* 71, 239-263.

Barberis, Nicholas, Andrei Shleifer, and Robert Vishny, 1998, "A model of investor sentiment," *Journal of Financial Economics* 49, 307-343.

Beck, Thorsten, and Ed Al-Hussainy, 2006, *Financial Structure Dataset*, The World Bank.

Bekaert, Geert, and Campbell R. Harvey, 1997, "Emerging equity market volatility," *Journal of Financial Economics* 43, 29-77.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, 2007, "Liquidity and expected returns: Lessons from emerging markets," *Review of Financial Studies* 20, 1783-1831.

Bekaert, Geert, Campbell R. Harvey, Christian Lundblad, and Stephan Siegel, 2007, "Global growth opportunities and market integration," *Journal of Finance* 62, 1081-1137.

Berk, Jonathan, Richard Green, and Vasant Naik, 1999, "Optimal investment, growth options, and security returns," *Journal of Finance* 54, 1553-1607.

Biais, Bruno, Denis Hilton, Karine Mazurier, and Sebastien Pouget, 2005, "Judgmental overconfidence, self-monitoring, and trading performance in an experimental financial market," *Review of Economic Studies* 72, 287-312.

Blume, Lawrence, David Easley and Maureen O'Hara, 1994, "Market statistics and technical analysis: The role of volume," *Journal of Finance* 49, 153-181.

Camerer, Colin, and Dan Lovallo, 1999, "Overconfidence and excess entry: An experimental approach," *American Economic Review* 89, 306-318.

Chan, Kalok, Vicentiu Covrig, and Lilian Ng, 2005, "What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide," *Journal of Finance* 60, 1495-1534.

Chordia, Tarun and Lakshmanan Shivakumar, 2002, "Momentum, business cycle, and time-varying expected returns," *Journal of Finance* 52, 985-1019.

Chordia, Tarun, Sahn-Wook Huh, Avanidhar Subrahmanyam, 2008, "Theory-based illiquidity and asset pricing," *Review of Financial Studies*, forthcoming.

Chui, C.W. Andy, Sheridan Titman, and K.C. John Wei, 2003, "Momentum, legal systems and ownership structure: An analysis of Asian stock markets," Working paper, University of Texas at Austin.

Church, A. Timothy, Marcia S. Katigbak, Alice M. Del Prado, Fernando A. Ortiz, Khairul A. Mastor, Yu Harumi, Junko Tanaka-Matsumi, Jose De Jesus Vargas-Flores, Joselina Ibanez-Reyes, Fiona A. White, Lilia G. Miramontes, Jose Alberto S. Reyes, and Helena F. Cabrera, 2006, "Implicit theories and self-perceptions of traitedness across cultures: Toward integration of cultural and trait psychology perspectives," *Journal of Cross-Cultural Psychology* 37, 694-716.

Conrad, Jennifer, and Gautam Kaul, 1998, "An anatomy of trading strategies," *Review of Financial Studies* 11, 489-519.

Daniel, Kent, David Hirshleifer, and Avanidhar Subrahmanyam, 1998, "Investor psychology and security market under- and overreactions," *Journal of Finance* 53, 1839-1886.

Daniel, Kent D., and Sheridan Titman, 1999, "Market efficiency in an irrational world," *Financial Analysts Journal*, November/December, 28-40.

Du, Julan, and Shang-Jin Wei, 2004, "Does insider trading raise market volatility?" *Economic Journal* 114, 916-942.

Eleswarapu, Venkat R. and Kumar Venkataraman, 2006, "The impact of legal and political institutions on equity trading costs: A cross-country analysis," *Review of Financial Studies* 19, 1081-1111.

Fama, Eugene F., and James MacBeth, 1973, "Risk, return and equilibrium: Empirical tests," *Journal of Political Economy* 81, 607-636.

Franke, Richard. H., Geert Hofstede, and Michael H. Bond, 1991, "Cultural roots of economic performance: A research note," *Strategic Management Journal* 12, 165-173.

Geletkanycz, Marta A., 1997, "The salience of 'culture's consequences': The effects of cultural values on top executive commitment to the status quo," *Strategic Management Journal* 18, 615-634.

Gelfand, Michele J., Marianne Higgins, Fumio Murakami, Susumu Yamaguchi, Lisa H. Nishii, Jana L. Raver, and Alexandria Dominguez, 2002, "Culture and egocentric perceptions of fairness in conflict and negotiation," *Journal of Applied Psychology* 87, 833-845.

Gervais, Simon, and Terrance Odean, 2001, "Learning to be overconfident," *Review of Financial Studies* 14, 1-27.

Glaser, Markus, and Martin Weber, 2008, "Which past returns affect trading volume?" *Journal of Financial Markets*, forthcoming.

Griffin, John M., Xiuqing Ji, and J. Spencer Martin, 2003, "Momentum investing and business cycle risk: evidence from pole to pole," *Journal of Finance* 58, 2515-2547.

Griffin, John M., Federico Nardari, Rene M. Stulz, 2007, "Do investors trade more when stocks have performed well? Evidence from 46 countries," *Review of Financial Studies* 20, 905-951.

Harris, Milton and Arthur Raviv, 1993, "Differences of opinion make a horse race," *Review of Financial Studies* 6, 473-506.

Heine, Steven J., Darrin R. Lehman, Hazel Rose Markus, and Shinobu Kitayama, 1999, "Is there a universal need for positive self-regard?" *Psychological Review* 106, 766-794.

Hofstede, Geert, 1980, *Culture's Consequences: International Differences in Work-related Values* (Sage Publication: Beverly Hills, CA).

Hofstede, Geert, 2001, *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*, 2nd edition (Sage Publication: Beverly Hills, CA).

Hong, Dong, Charles Lee, and Bhaskaran Swaminathan, 2003, "Earnings momentum in international markets," Working paper, Cornell University.

Hong, Harrison, Terence Lim, and Jeremy C. Stein, 2000, "Bad news travels slowly: Size, analyst coverage, and the profitability of momentum strategies," *Journal of Finance* 55, 265-295.

Hong, Harrison, and Jeremy C. Stein, 1999, "A unified theory of underreaction, momentum trading and overreaction in asset markets," *Journal of Finance* 54, 2143-2184.

House, Robert. J., Hanges, P. J., Javidan, M., Dorfman, P.W., and Gupta, V. (Eds.), 2004, *Culture, Leadership, and Organizations: The GLOBE study of 62 societies* (Sage Publication: Thousand Oaks, CA).

Ince, Ozgur and R. Burt Porter, 2006, "Individual equity return data from Thomson Datastream: handle with care", *Journal of Financial Research* 29, 463-479.

Jegadeesh, Narasimhan and Sheridan Titman, 1993, "Returns to buying winners and selling losers: Implications for stock market efficiency," *Journal of Finance* 48, 65-91.

Jegadeesh, Narasimhan and Sheridan Titman, 2001, "Profitability of momentum strategies: An evaluation of alternative explanations," *Journal of Finance* 56, 699-720.

Johnson, Timothy C., 2002, "Rational momentum effects," *Journal of Finance* 52, 585-607.

Kachelmeier, Steven J., and Mohamed Shehata, 1997, "Internal auditing and voluntary cooperation in firms: a cross-cultural experiment," *Accounting Review* 72, 407-431.

Kagitcibasi, Cigdem, 1997, "Individualism and collectivism," in Berry John W., Marshall H. Segall, and Cigdem Kagitcibasi, Eds.: *Handbook of Cross-cultural Psychology* (Allyn & Bacon).

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2006, "What works in securities laws," *Journal of Finance* 61, 1-32.

Lee, Charles M.C. and Bhaskaran Swaminathan, 2000, "Price momentum and trading volume," *Journal of Finance* 55, 2017-2069.

Lee, J-W., J.F. Yates, H. Shinotsuka, R. Singh, M.L.U. Onglatco, N.S. Yen, M. Gupta, and D. Bhatnagar, 1995, "Cross-national differences in overconfidence," *Asian Journal of Psychology* 1, 63-69.

Lesmond, David A., 2005, "Liquidity of emerging markets," *Journal of Financial Economics* 77, 411-452.

Markus, Hazel Rose, and Shinobu Kitayama, 1991, "Culture and the self: Implications for cognition, emotion, and motivation," *Psychological Review* 98, 224-253.

Moghaddam, Fathali M., 1998, *Social Psychology: Exploring universals across cultures* (W.H. Freeman and Company, New York).

Nakata, Cheryl and K. Sivakumar, 1996, "National culture and new product development: an integrative view," *Journal of Marketing* 60, 61-74.

Newey, Whitney K. and Kenneth D. West, 1994, "Automatic lag selection in covariance matrix estimation," *Review of Economic Studies* 61, 631-653.

Nurmi, Jari-Erik, 1992, "Cross-cultural differences in self-serving bias: responses to the attributional style questionnaire by American and Finnish students," *Journal of Social Psychology* 132, 69-76.

Odean, Terrance, 1998, "Volume, volatility, price, and profit when all traders are above average," *Journal of Finance* 53, 1887-1934.

Petersen, Mitchell A, 2009, "Estimating standard errors in finance panel data sets: Comparing approaches," *Review of Financial Studies* 22, 435-480.

Rouwenhorst, K. Geert, 1998, "International momentum strategies," *Journal of Finance* 53, 267-284.

Sagi, Jacob S., and Mark S. Seasholes, 2007, "Firm-specific attributes and the cross-section of momentum," *Journal of Financial Economics* 84, 389-434.

Scheinkman, Jose, and Wei Xiong, 2003, "Overconfidence and speculative bubbles," *Journal of Political Economy* 111, 1183-1219.

Schultz, Joseph J., Douglas A. Johnson, Deigan Morris, and Sverre Dyrnes, 1993, "An investigation of the reporting of questionable acts in an international setting," *Journal of Accounting Research* 31, 75-103.

Statman, Meir, Steven Thorley, and Keith Vorkink, 2006, "Investor overconfidence and trading volume," *Review of Financial Studies* 19, 1531-1565.

Steen, Eric Van Den, 2004, "Rational overoptimism (and other biases)," *American Economic Review* 94, 1141-1151.

Stulz, René M. and Rohan Williamson, 2003, "Culture, openness, and finance," *Journal of Financial Economics* 70, 313-349.

Tan, Bernard C.Y., Kwok Kee Wei, Richard T. Watson, Danial L. Clapper, and Ephraim R. McLean, 1998, "Computer-mediated communication and majority influence: assessing the impact in an individualistic and a collectivistic culture," *Management Science* 44, 1263-1278.

Verardo, Michela, 2008, "Heterogeneous beliefs and momentum profits," *Journal of Financial and Quantitative Analysis, forthcoming*.

Weber, Yaakov, Oded Shenkar, and Adi Raveh, 1996, "National and corporate cultural fit in mergers/acquisitions: an exploratory study," *Management Science*, 42, 1215-1227.

Yates, J. Frank, Ju-Whei Lee, and Hiromi Shinotsuka, 1996, "Beliefs about overconfidence, including its cross-national variation," *Organizational Behavior and Human Decision Processes* 65, pp.138-147.

Yates, J. Frank, Ju-Whei Lee, Winston R. Sieck, Incheol Choi, and Paul C. Price, 2002, "Probability judgment across cultures," in Gilovich Thomas, Dale Griffin, and Daniel Kahneman, Eds.: *Heuristics and Biases* (Cambridge University Press).

Yeh, Ryh Song and John J. Laerance, 1996, "Individualism and Confucian dynamism: a note on Hofstede's cultural root to economic growth," *Journal of International Business Studies* 26, 655-669.

Zhang, X. Frank, 2006, "Information uncertainty and stock returns," *Journal of Finance* 61, 105-137.

Zuckerman, Miron, 1979, "Attribution of success and failure revisited, or: The motivational bias is alive and well in attribution theory," *Journal of Personality* 47, 245-287.

[1] See Berk, Green, and Naik (1999), Johnson (2002), and Sagi and Seasholes (2007) for discussions of rational momentum models. While these models provide an explanation for why risk premiums can increase following positive stock return realizations, they cannot explain the magnitude of the momentum returns observed in this and other studies without assuming extreme levels of risk aversion.

[2] Hofstede (2001) classifies cultures into five dimensions: individualism, masculinity, power distance, uncertainty avoidance, and long-term orientation. In other words, cultures differ in their emphasis on these five dimensions. Among these five cultural dimensions, individualism is the most closely related to overconfidence and self-attribution bias. This index is regarded as the most comprehensive in terms of both the range of countries and the number of respondents involved (Kagitcibasi (1997)).

[3] For example, Schultz et al. (1993) and Kachelmeier and Shehata (1997) have applied Hofstede's measures of cultural values to accounting, Franke, Hofstede and Bond (1991), Yeh and Lawrence (1995), and Weber, Shenkar and Raveh (1996) to economics, Nakata and Sivakumar (1996) and Aaker and Williams (1998) to marketing, and Geletkanycz (1997) and Tan et al. (1998) to management.

[4] It should be noted that collective behavior is not the major concept that differentiates individualism from collectivism. As people in collectivistic cultures, people in individualistic cultures can also have collective behavior. For example, when people in individualistic cultures have overconfidence on their prior information about a firm, they can collectively underreact to this firm's recent earnings announcement. The difference between individualism and collectivism builds on their conceptions of self.

[5] As discussed in Odean (1998), both miscalibration and overoptimism (also known as unrealistic optimism) are manifestations of overconfidence. Odean (1998) suggests that when investors overweight their own information because they are overoptimistic, they will hold posterior beliefs that are too precise (miscalibration). Furthermore, Camerer and Lovallo (1999) find that entrant failure is related to overconfidence because overconfident decision makers are overoptimistic about their success rates.

[6] The italics are added to avoid confusion. After a review of the evidence from psychology, Moghaddam (1998, p. 197) concludes that "Evidence suggests that the pattern of self-serving biases found in societies more supportive of independent selves, such as the United States, is not always found in societies in which interdependent selves receive stronger encouragement, such as Japan."

[7] Ten more countries were added to this sample at a later stage. Hofstede (2001) discusses the statistical method used to make the data obtained from these ten new countries consistent with the data collected from the initial forty countries.

[8] The first factor is highly correlated with six out of the fourteen work-goal questions. Hofstede (2001) uses these six work-goal questions to illustrate the relationship between individualism and self-construal. These six work-goal questions are listed in Internet Appendix A. The value of the individualism index (*Indv*) for country *i* is calculated as: $Indv_i = 50 + 25 \times Factor\ Score_i$ from the first factor. This formula helps to make the value of the index to be between 0 and 100. The scores on the second factor are used to construct the index on masculinity.

[9] Before February 1980, we can only obtain limited data on selected stocks in some of the countries in our sample from Datastream International.

[10] We calculate the stock returns adjusted for dividends from the stock return index provided by Datastream International. On months when a stock is not traded, Datastream International carries forward its return index in the previous month to the current month. Therefore, a stock return of zero may be a result of no trading. To remedy this problem, we compute a stock's return in the current month only if the trading volume of this stock is positive in the current month as well as in the previous month. If monthly trading volume data are not available (for some countries in the early 1980s), we only calculate the return on a stock in the current month if the return index of this stock in the current month is not the same as that in the previous month. The monthly trading volume on individual stocks is also collected from Datastream International.

[11] If a stock has multiple share classes, we only include its primary class in our sample. For example, only the A-shares in the Chinese stock market and the bearer-shares in the Swiss stock market are included in our sample.

[12] We collect data on the stocks that are in the "Research" stocks list and the "Dead" stocks list. Both lists are provided by Datastream International. Including stocks from the "Dead" stocks list helps to alleviate the survival bias in our sample.

[13] As discussed by Ince and Porter (2006) and others, the data errors from Datastream International are mainly concentrated in small stocks and/or low-price stocks.

[14] We check our trimmed data from Datastream International against the data from PACAP and find that there is no material difference between these two data sources. In addition, we trim our data using two alternative screening processes. First, following Hong, Lee, and Swaminathan (2003), our sample includes stock returns with values

within the first percentile and the 99th percentile of the return distribution in each month for each country. Second, our sample excludes stocks with their market capitalization in the top or bottom 5% of the market capitalization distribution in each month for each country. Our findings do not change when we use these alternative filters. The returns on the momentum portfolios constructed from the samples using alternative screening processes are reported in Table A1 of Internet Appendix.

[15] The sample periods used to calculate values in Table I start 12 months after the actual sample periods, since we need to use twelve observations on returns to compute the returns for momentum portfolios.

[16] We have market turnover data for forty-eight countries that include the forty-six countries in the study by Griffin, Nardari, and Stulz (2007). The two additional countries are Bulgaria and Romania. The dollar trading volume in Germany is inflated by about 100% because of the trading mechanism in Germany. Therefore, we divide the turnover of the Datastream global index for Germany by two. However, our finding does not change even if Germany is excluded from our sample.

[17] We compute average stock volatility for fifty countries out of the fifty-five countries for which we have data on stock returns from Datastream.

[18] Liquidity costs include market depth, price impact, the number of no-trading days, and others.

[19] It is worth mentioning that trading volume also reflects investors' differences of opinion on a stock's intrinsic value as suggested by Harris and Raviv (1993), Blume, Easley, and O'Hara (1994) and Lee and Swaminathan (2000). That is, the higher the difference of opinion among investors, the greater the trading volume. However, including the dispersion of analyst forecasts (*Disp*) in the trading volume regression analysis does not change our results. More specifically, when *Disp* is included, the estimated coefficient on *Indv* is 0.009 with a *t*-statistic of 2.06 and the estimated coefficient on *Disp* is -0.079 with a *t*-statistic of -0.59.

[20] All Fama-MacBeth regression results in this paper report the time-series averages of cross-sectional OLS estimates of the coefficients. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute the *t*-statistics on these average coefficients. As suggested by Newey and West (1994), we select the lag-length (L) that equals to the integer portion of $12(T/100)^{2/9}$, where T is the number of observations. As a robustness check, we also determine the lag-length (L) from the autocorrelation functions of these estimates. The autocorrelation functions are computed over lag 1 to lag 24. We set $L = k$ when the autocorrelation

coefficient of lag *k* is significant at the 5% level and the autocorrelation coefficients of higher lags are insignificant. Our results do not change if we use the second method to determine the lag-length.

[21] Du and Wei (2004) use the natural logarithm of real GDP (*LnGdppc*) as a measure of financial market development. By replacing the ratio of total credit to GDP (*Credit*) with *LnGdppc* in our regression analysis of volatility, we find that the estimated coefficient on individualism (*Indv*) is still significantly positive (*t*-statistic = 2.36), while the estimated coefficient on *LnGdppc* is significantly negative.

[22] We equal-weight rather than value-weight portfolios to put more weight on the smaller stocks, because psychological biases are more important for individual domestic investors and small stocks are mainly traded by this type of investors.

[23] Quite a lot of stocks in our sample, in particular those from the emerging markets, are thinly traded. The illiquidity of these stocks may generate negative serial correlation in the returns that can swamp any underlying positive serial correlations in the returns. In addition, the data errors in stock prices occur in month *t* usually will be corrected in month *t*+1. This correction in data errors will also generate a negative serial correlation in the returns. Having a one-month gap between the portfolio formation period and the holding period helps remedy this problem.

[24] Returns on these W/L portfolios in month *t* are computed as [(the average cumulative returns of the stocks in these portfolios in month *t* divided by the average cumulative returns of these stocks in month *t*-1) – 1] times 100%. We effectively compute the buy-and-hold returns on these portfolios. The portfolios are rebalanced only at the end of the six-month holding period.

[25] However, the results for Poland are based on a return history of only five years.

[26] We also consider the momentum strategy that classifies winners and losers based on the past six-month returns on *all* stocks in our sample. This momentum strategy yields larger profits than the country-average or the composite portfolios. In particular, the average monthly return on this strategy over the period from February 1981 to June 2003 is 0.93% per month (*t*-statistic = 5.73). In contrast to our country-average and composite momentum portfolios, this portfolio is not country-neutral.

[27] To be consistent with the sample period of the individualism-sorted momentum portfolios, the sample periods for the country-average and composite portfolios start from February 1984. Over the period from February 1981 to June 2003, the average monthly return on the country-average portfolio is 0.68% per month (*t*-statistic = 7.67) and that on the composite portfolio is 0.51% per month (*t*-statistic=3.79).

[28] Our sample includes the 38 countries included in Griffin, Ji, and Martin (2003). The correlation between the average cross-country momentum profits in this study and in Griffin, Ji, and Martin (2003) is 0.67 (*p*-value = 0.00). The correlation between the average cross-country momentum profits in Griffin, Ji, and Martin (2003) and the individualism index is 0.49 (*p*-value = 0.00). However, our findings are not directly comparable since Griffin, Ji, and Martin (2003) classify the top (bottom) 20% of stock returns as winners (losers), while our study uses the top and bottom one-third designations. Furthermore, our sample ends in June 2003, while their sample ends in December 2000.

[29] There are eleven monthly spreads (February to December) in 1984. Since we only have six monthly spreads in 2003, we exclude 2003 in this analysis.

[30] When momentum profits are regressed on individualism (*Indv*) only, the estimated coefficient on *Indv* is significantly positive (*t*-statistic = 4.84).

[31] Daniel and Titman (1999) also find that book-to-market ratios and momentum profits are negatively related. In regressions reported in Panel A of Table A5 in Internet Appendix, we include the natural logarithm of the book-to-market ratio based on the Datastream global index. The estimated coefficient on *LnBM* is insignificant and none of the other coefficients change materially.

[32] We also regress momentum profits on *Indv* and each of the explanatory variables listed in Table V one at a time. In these bivariate regressions, only the estimated coefficients on the natural logarithm of market trading volume (*LnTN*), the natural logarithm of market volatility (*LnV*), the natural logarithm of firm size (*LnSZ*), the natural logarithm of the transaction cost index (*LnTran*), and the average common language dummy variable (*Lang*) are significant. The sign of these coefficients are the same as those reported in Table V. However, the estimated coefficient on *LnTN* becomes insignificant in Panel A of Table V. Moreover, this coefficient is insignificant when *LnTN* is the only explanatory variable in the regression (i.e., a univariate regression). On the other hand, the estimated coefficients on *Indv* are always significantly positive in all the bivariate regressions. These findings indicate that those insignificant estimated coefficients in Table V are unlikely due to multi-collinearity problems.

[33] To be consistent with the sample period of the comprehensive model, the sample periods for the tests related to financial market development and market integrity start from January 1987. The results from tests covering the sample period from February 1984 to June 2003 are quite similar and are reported in Table A4 of Internet Appendix.

[34] In tests reported in Panel B of Table A5 in Internet Appendix, we also include the concentration of ownership obtained from La Porta et al. (2006), the ICRG law and order index and a dummy variable for common law countries in the regressions. Similar to the reported findings, only the estimated coefficients on *Indv* and *LnTran* are significant and positive. In addition, replacing *LnTran* with *Tran* in our regressions does not change our findings.

[35] We also perform a bootstrap test to investigate the statistical significance of the cross-sectional relation between individualism and momentum profits. This test is carried out in a balanced sample with thirty-five countries over the period from January 1995 to June 2003. Specifically, we generate data by sequentially selecting the individualism score along with other variables in our comprehensive model and randomly assign them to one of the thirty-five countries in our sample without replacement. We generate 1,000 random assignments, and for each random assignment, we repeat the multivariate regression specified in Equation (4). The findings on *Indv, LnDisp, LnV, and LnSZ* are similar to those obtained from the Fama-MacBeth regressions and confirm that the positive relation between individualism and momentum profitability is not likely to be due to chance. This finding is reported in Table A6 of Internet Appendix.

[36] The macroeconomic variables we considered include the real per capita GDP growth rates (*Gdppcgw*), the change in exchange rates (*Cfx*), and the dividend yield (*DY*). The regression result related to macroeconomic factors is reported in Panel D of Table A5 in Internet Appendix.

[37] Since we require each country-average portfolio to have at least two countries, the average returns on these country-average portfolios are calculated from the period between February 1989 and June 2003.

[38] We also estimate our comprehensive model using the reduced sample of non-East Asia countries over the period from January 1987 to June 2003. The results from the Fama-MacBeth regression show that the estimated coefficient on *Indv* is 0.017 with a *t*-statistic of 2.43. For robustness checks, we also use the Petersen (2009) panel regression procedure clustered by country and month as well as the simple OLS regression model based on time-series means from 1995-2004 to re-estimate the comprehensive model with and without *EAsia*. The findings from these robustness tests are reported in Table A8 of Internet Appendix. We find that the results are similar to those reported in Table V.

[39] Since only eighteen countries in our sample have scores on the cultural value of long-term orientation, including this variable in our test reduces our sample size by 50%. Therefore, we exclude this variable from our analysis.

[40] Over the period from December 1983 to June 2003, the average (median) monthly 30th percentile NYSE/AMEX breakpoint of market capitalization was US$92 million (US$84 million). The maximum 20th percentile NYSE/AMEX breakpoint of market capitalization was US$91 million. Removing small firms from our sample can also help improve our data quality, since data errors for Datastream International are mainly concentrated in small firms.

[41] After we remove stocks with market capitalizations larger than the median of all the stocks within a given country in any month, the momentum profits for all *Indv*-sorted country groups become stronger. The momentum profits in the high-*Indv* group exceed those in the low-*Indv* group by about 0.66 % per month with a *t*-statistic of 3.67.

[42] The major reason for the difference in return reversals between the country-average and the composite momentum portfolios in the second year after portfolio formation is that the United States and Japan have a much greater weight in the composite portfolio. When we exclude the United States and Japan from our sample, we still find a positive relation between the magnitude of return reversals and individualism; however, the effect is no longer significant.

[43] To briefly follow up on this idea, we evaluate the returns of high and low book-to-market (*BM*) portfolios which are available for twenty-two countries from Ken French's website. These portfolio returns over the period from January 1984 to December 2003 are sorted into three groups, from low (bottom 30%) to high (top 30%), based on their scores on the Hofstede's individualism index (*Indv*). The average monthly *BM* effect for the low-*Indv*, the medium-*Indv*, and the high-*Indv* groups are 0.530%, 0.438%, and 0.099%, respectively. The difference in the *BM* effect between the low-*Indv* and the high-*Indv* groups is 0.431% per month with a *t*-statistic of 1.87.

Internet Appendix for "Individualism and Momentum around the World"

A. Sample Work-Goal Questions from Hofstede's Survey

Hofstede (2001) uses the following six work-goal questions to illustrate the relationship between individualism and self-construal. All questions begin with the words "How important is it to you to…" and the respondent has five choices: 1 of the utmost importance and 5 of no importance. The common feature of the three work-goals that are positively related to the individualism index is their emphasis on the individual's independence from the organization, an expression of *independent* self-construal. The three work-goals that are negatively related to the individualism index stress the individual's dependence on the organization, an expression of *interdependent* self-construal. Although the "challenge" work-goal has to be done within the company, this work-goal emphasizes personal involvement. The "use of skills" work-goal, however, has no bearing on personal accomplishment. Hofstede (2001) argues that it is the contrast between work-goals stressing independence and dependence that leads the scores on the first factor to be named the individualism index. Hence, the individualism index can form the basis for the comparison of independent self-construal across countries. This individualism index is also aimed to review "a value system shared especially by the majority in the middle classes in a society" (Hofstede (2001, p. 225)).

Work goal	*Question*
A. Work goal that is positively correlated with the individualism index (the first factor score)	
Personal time	Have a job which leaves you sufficient time for your personal or family life
Freedom	Have considerable freedom to adapt your own approach to the job
Challenge	Have challenging work to do: work from which you can get a personal sense of accomplishment
B. Work goal that is negatively correlated with the individualism index (the first factor score)	
Training	Have training opportunities (to improve your skills or learn new skills)
Physical conditions	Have good physical working conditions (good ventilation and lighting, adequate work space, etc.)
Use of skills	Fully use your skills and abilities on the job

Source: Hofstede (2001, p. 256)

B. Description of Variables

Variable	Type	Description
I. Cultural Values		
Individualism (*Indv*)	Cross-section	A higher score indicates a higher degree of individualism. Source: Hofstede (2001)
Masculinity (*MAS*)	Cross-section	A higher score indicates a higher degree of masculinity. Source: Hofstede (2001)
Power distance (*PDI*)	Cross-section	A higher score indicates a higher degree of power distance. Source: Hofstede (2001)
Uncertainty avoidance (*UAI*)	Cross-section	A higher score indicates a higher degree of uncertainty avoidance. Source: Hofstede (2001)
GLOBE's individualism ($Indv_{GLOBE}$)	Cross-section	$Indv_{GLOBE}$= (GLOBE's institutional collectivism index) multiplied by -1. A higher score indicates a higher degree of individualism. Source: House et al. (2004)
II. Variables Related to Behavioral Momentum Models		
Analyst coverage (*Ana*)	Cross-section & annual time-series	$Ana_{jt} = \frac{\sum_{i=1}^{n} Ncvg_{it} + 1}{n}$, where $Ncvg_{it}$ is the average number of analysts providing one-year ahead earnings forecasts of firm *i* in country *j* in year *y* and *n* is the number of firms. If a firm is not covered by I/B/E/S, then *Ncvg* of this firm is zero. Source: I/B/E/S
Dispersion of analyst forecasts (*Disp*)	Cross-section & annual time-series	$Disp_{jt} = \frac{\sum_{i=1}^{n} CV_{it}}{n}$, where CV_{it} is the absolute value of the coefficient of variation of one-year ahead earnings forecast of firm *i* in country *j* in year *y* and *n* is the number of observations. Each firm is required to have at least two earnings forecasts. Source: I/B/E/S
Volatility of cash flow growth rates (*Cfvol*)	Cross-section & annual time-series	*Cfvol* of country *j* in year *y* is the standard deviation of this country's monthly cash flow growth rate in the sixty-month period prior to year *y*. The cash flow (CF_{jt}) of country *j* in month *t* is the ratio between the price index of this country's global index and the price-to-cash flow index of the same global index. The growth rate in month *t* is computed as $[Ln(CF_{jt} / CF_{jt-12})] \times 100\%$. Source: Datastream

Variable	Type	Description
II. Variables Related to Behavioral Momentum Models (continued)		
Stock market volatility (*V*)	Cross-section & monthly time-series	Market volatility in month *t* is $V_t = \frac{1}{n}\sum_{i=1}^{n} R_{it}^2$, where R_{it}^2 is the squared return on stock *i* in month *t*. Source: Datastream
Market trading volume (*TN*)	Cross-section & monthly time-series	Market trading volume of country *j* in month *t* is measured as the market dollar trading volume of the Datastream Global index of this country divided by this index's market capitalization in month *t*. Source: Datastream
Median firm size (*SZ*)	Cross-section & annual time-series	*SZ* of country *j* in year *y* is the median of the average size of the firms in that country. The average size of a firm in year *y* is the average of the monthly market capitalization (in million USD) of this firm in year *y*. Source: Datastream
Book-to-market ratio (*BM*)	Cross-section & monthly time-series	*BM* is the book-to-market ratio of the Datastream global index of a country. Source: Datastream
III. Variables Related to Financial Market Development		
Total private credit (*Credit*)	Cross-section & annual time-series	Total private credit of country *j* in year *y* divided by this country's GDP in year *y*. Source: Beck and Al-Hussainy (2006)
Familiarity to foreign investors (*Lang*)	Cross-section	Average language dummy variable. This dummy variable takes the value of one if countries *i* and *j* share a major language and it is zero otherwise. Source: Chan, Covrig, and Ng (2005)
Index on capital flow restrictions (*Control*)	Cross-section	A higher value indicates more restrictions on capital flow. Source: Chan, Covrig, and Ng (2005)
Stock market openness (*Open*)	Cross-section & monthly time-series	The ratio of the market capitalization of the constituent firms comprising the Standard & Poor's/International Finance Corporation Investable index of country *j* to those comprising the Standard & Poor's/International Finance Corporation global index of this country. This ratio is one for developed markets. Source: Standard & Poor's Emerging Markets Database

Variable	Type	Description
IV. Variables Related to Institutional Quality		
Corruption index (*Crp*)	Cross-section & monthly time-series	A higher value indicates a lower corruption level. Source: International Country Risk Guide (ICRG)
Investor protection index (*Protection*)	Cross-section	A higher value indicates better investor protection. This index is the principal component of the indexes on disclosure, liability standards, and anti-director rights used by La Porta et al. (2006). Source: La Porta et al. (2006)
Insider (*Insider*)	Cross-section	A higher score indicates that insider trading is less prevalent. Source: La Porta et al. (2006)
Political risk index (*Political*)	Cross-section & monthly time-series	A higher value indicates a lower political risk. Source: International Country Risk Guide (ICRG)
Transaction costs of trading stocks (*Tran*)	Cross-section	A higher value indicates higher transaction costs. Source: Chan, Covrig, and Ng (2005)
Concentration of Ownership (*Own*)	Cross-section	A higher value indicates more concentration. Source: La Porta et al. (2006)
Law and Order index (*Law*)	Cross-section & monthly time-series	A higher value indicates a better law and order level. Source: International Country Risk Guide (ICRG)
V. Variables Related to Macroeconomic Risk Factors		
Real gross domestic product (GDP) per capita growth rate (*Gdppcgw*)	Cross-section & annual time-series	GDP per capita is in the constant 2000 U.S. dollars for all countries, except Taiwan. For Taiwan, the figures are in the constant 2001 U.S, dollars. *Gdppcgw* in year *y* in country *j* is measured as the average real GDP per capita growth rate of country *j* over the years from y-5 to y-1. Source: World Development Indicators and National Statistics (Taiwan)
Change of exchange rate (*Cfx*)	Cross-section & annual time-series	*Cfx* in year *y* in country *j* is the average change of the exchange rate (local currency against the U.S. dollar and is expressed in %) in the 60-month period before year *y*. To compute *Cfx*, we need to have at least twenty-four observations on the changes of exchange rate. The *Cfx* for the U.S. is zero. Source: Datastream
Dividend yield (*DY*)	Cross-section & monthly time-series	*DY* is the dividend yield of the Datastream global index of a country. Source: Datastream

Variable	Type	Description
VI. Variables Related to Rational Momentum Models		
Variation of betas (*StdBeta*)	Cross-section & annual time-series	*StdBeta* of country *j* in year *y* is the standard deviation of firm betas in year *y*. To adjust for thin trading, we estimate the Dimson beta for firm *i* in country *j* in year *y* from the following model over a sixty-month period prior to year y. $R_{ijt} = \alpha + \beta_1 R_{mjt} + \beta_2 R_{mjt-1} + \varepsilon$, where R_{ijt} is the stock return on firm i in country *j* in month *t*, the R_{mjt} is the value-weighted market return of country *j* in month *t*, and ε is the error term. The estimated beta for firm *i* in year *y* equals $\hat{\beta}_1 + \hat{\beta}_2$. To estimate beta, each stock should have at least twenty observations on returns in the estimation period. To compute *StdBeta*, each country is required to have at least thirty stocks in each year. Source: Datastream
Local growth opportunities (*LGO*)	Cross-section	*LGO* is the time-series mean of the log of a country's market price to earnings ratio. Source: Bekaert, Harvey, Lundblad, and Siegel (2007)
Volatility of earnings growth rates (*Eavol*)	Cross-section & annual time-series	*Eavol* of country *j* in year *y* is the standard deviation of this country's monthly earnings growth rate in the sixty-month period prior to year *y*. The earnings (E_{jt}) of country *j* in month *t* are the ratio between the price index of this country's global index and the price-to-earning index of the same global index. The growth rate in month *t* is computed as $[Ln(E_{jt} / E_{jt-12})] \times 100\%$. Source: Datastream
Volatility of dividends growth rates (*Divvol*)	Cross-section & annual time-series	*Divvol* of country *j* in year *y* is the standard deviation of this country's monthly dividend growth rate in the sixty-month period prior to year *y*. The dividend (Div_{jt}) of country *j* in month *t* is the ratio between the price index of this country's global index and the dividend yield of the same global index. The growth rate in month *t* is computed as $[Ln(Div_{jt} / Div_{jt-12})] \times 100\%$. Source: Datastream

Variable	Type	Description
VII. Additional Variables Related to Trading Volume and Volatility		
Volatility of exchange rates (*Fxvol*)	Cross-section & annual time-series	*Fxvol* in year *y* in country *j* is the coefficient of variation of country *j*'s currency against the U.S. dollars in the 60-month period before year *y*. To compute *Fxvol*, we need to have at least twenty-four observations on the exchange rate. The *Fxvol* for the U.S. is zero. Source: Datastream
Volatility of real GDP per capita growth rate (*Gwvol*)	Cross-section	*Gwvol88* and *Gwvol95* of country *j* are the standard deviation of this country's real GDP per capita growth rate over the period from 1988/1995 to 2003, respectively. Source: World Development Indicators and National Statistics (Taiwan)
Debt ratio (*Debt*)	Cross-section & annual time-series	The average leverage ratio of the firms in year *y* in country *j*. The leverage ratio of a firm is computed as total debt divided by total assets. Source: Datastream

C. The GLOBE cultural indexes

Given its wide use, Hofstede's cultural indexes have been reexamined by a number of scholars. Fernandex et al. (1997) reexamined Hofstede's country classification using recent data from nine countries and found that there have been shifts in the scores that Hofstede assigned to these countries. However, Fernandex et al. (1997) documented that only Mexico had a substantial change in its score on the individualism index. Whether or not the scores on Hofstede's cultural indexes have shifted during the past 20 plus years is still debatable. It is generally agreed that cultural beliefs have led to the development of societal structures and these structures, in turn, reinforce the cultural beliefs that led to their establishment (Greif (1994) and Hofstede (2001)). These societal structures, such as the legal system, are quite stable over time. In a more recent study involving 9,400 pilots in 19 countries, Merritt (2000) replicated the study of Hofstede's cultural indexes. Based on the data collected during the period of 1993-1997, Merritt (2000) found that the cultural indexes calculated from the pilot sample are highly correlated with the cultural indexes obtained from Hofstede's study.

To investigate the robustness of our results, we consider an alternative measure of individualism that comes from the GLOBE (Global Leadership and Organizational Behavior Effectiveness) project. In the early 1990s, the GLOBE project was started by a group of scholars in 61 countries who surveyed thousands of middle managers in various organizations in three industries including financial services (House, Javidan, Hanges, and Dorfman (2002)). The other two industries are food processing and telecommunications services. In terms of the institution collectivism dimension, close to fifty percent of the respondents come from the financial services industry. In this project, national cultures are classified into nine dimensions: performance orientation, future orientation, assertiveness, power distance, human orientation, institutional

collectivism, in-group collectivism, uncertainty avoidance, and gender egalitarianism. Among these dimensions, the institutional collectivism is intended to reflect the same construct as Hofstede's individualism (House et al. (2002)). Therefore, the index on institutional collectivism can be regarded as an updated index of Hofstede's individualism index.

We obtained country scores for thirty-three of the countries in our sample from GLOBE's institutional collectivism index from House et al. (2004). In contrast to Hofstede's measure, GLOBE's institutional collectivism index reflects the degree of collectivism in each country, i.e., the higher a country's score in this index, the higher its degree of collectivism. To be consistent with Hofstede's individualism index, we define a new variable, $Indv_{GLOBE}$, which is equal to GLOBE's institutional collectivism index multiplied by -1. Therefore, a higher value of $Indv_{GLOBE}$ of a country indicates that this country has a higher degree of individualism.

Using $Indv_{GLOBE}$ in place of Hofstede's individualism index (*Indv*), we re-estimate our comprehensive model as specified in Equation (4). Consistent with our previous results, our results show that the estimated coefficient on $Indv_{GLOBE}$ is positive and significant (*t*-statistic = 1.90). Because of data availability on $Indv_{GLOBE}$, the multivariate regression in this analysis consists of only thirty-three countries. To check whether our result is sensitive to the sample size, we replace $Indv_{GLOBE}$ with Hofstede's individualism index (*Indv*) and re-estimate the Fama-MacBeth regressions using these thirty-three countries. We find similar results as those reported earlier. This suggests that the significantly positive relation between individualism and momentum is not due to the measure of individualism or the sample size.

D. Additional Tables

Table A1: This table shows the average returns on *Indv*-sorted momentum portfolios constructed from the samples using different screening processes. Following Hong, Lee, and Swaminathan (2003), we trimmed data from Datastream by including stock returns only with values within the 1st and the 99th percentiles of the return distribution in each month for each country. These results are reported in Panel A. Panel B reports the results excluding stocks with their monthly market capitalization in the top or bottom 5% of the market capitalization distribution in each month for each country.

Table A2: This table shows the results of trading volume from the Fama-MacBeth regression (Panel A) and the OLS cross-sectional regression (Panel B).

Table A3: This table shows the results of average stock volatility from the Fama-MacBeth regression (Panel A) and the OLS cross-sectional regression (Panel B).

Table A4: Panel A (financial market development) and Panel B (institutional quality) of this table report the replicated results on Panel B and Panel C in Table V in the paper, while Panel C of this table reports the results related to Hofstede's other cultural indexes using a different starting data of February 1984.

Table A5: This table shows the additional Fama-MacBeth regression results related to the variables of behavioral momentum models (Panel A), institutional quality (Panel B), rational momentum models (Panel C), and macroeconomic factors (Panel D).

Table A6: This table shows the results from a bootstrap test of the comprehensive model. Model 1 does not include the EAsia dummy, while Model 2 includes the EAsia dummy

Table A7: This table shows additional results from the Fama-MacBeth regressions of the comprehensive models including a dummy variable for East Asia countries (Panels A and C), the interaction term between individualism and dispersion in analyst forecasts (Panels B and C), and other cultural variables (Panel D).

Table A8: This table reports the results from the estimation of the comprehensive model using alternative estimation methods. Panel A reports the OLS regression results clustered by country and month, while Panel B shows the findings from a simple time-series mean regression.

Table A9: This table shows the results of the Fama-MacBeth regressions from the comprehensive models using GLOBE's measure of individualism ($Indv_{GLOBE}$).

Table A10: This table shows the results of the Fama-MacBeth regressions from the comprehensive model using the small stock sample. Model 1 does not include the EAsia dummy, while Model 2 includes the EAsia dummy

Table A11: This table shows the post-holding period returns on *Indv*-sorted momentum portfolios constructed from the small stock sample. Panel A reports results from country-average portfolios and Panel B reports the results from composite portfolios.

Table A1
Momentum Profits and Individualism: Results from Alternative Screening Processes

This table reports average monthly momentum profits (%) in U.S. dollars for country-average portfolios and composite portfolios classified by Hofstede's individualism index (a lower score indicates a lower degree of individualism). See Table III in the paper for the detailed description of the constructions of these portfolios. At the end of each month, all countries in our sample are allocated into three groups, from low (bottom 30%) to high (top 30%) based on their scores on the individualism index. Country-average (or composite) portfolios are formed in each individualism-sorted group. The test period is from February 1984 to June 2003. Panel A reports the results from a sample that excludes stocks with their monthly returns in the bottom or top 1% of the return distribution in each month for each country. This filter is suggested by Hong, Lee, and Swaminathan (2003). Panel B shows the results from a sample that excludes stocks with their monthly capitalization in the bottom or top 5% of the market capitalization distribution in each month for each country. The other requirements for both samples are the same as those discussed in the paper. The corresponding *t*-statistics are in parentheses.

Panel A: Excluding stocks with their monthly returns in the bottom or top 1%

Portfolio formed method	Index on individualism	Winner (W)	Loser (L)	W minus L
Country-average	Low	1.470 (3.46)	1.211 (2.48)	0.259 (1.66)
	2	1.544 (4.82)	1.027 (2.93)	0.518 (4.49)
	High	1.574 (5.94)	0.679 (2.29)	0.896 (7.40)
	High minus Low	**0.104 (0.31)**	**-0.533 (-1.36)**	**0.636 (4.00)**
Composite	Low	1.430 (3.09)	1.261 (2.30)	0.169 (0.85)
	2	1.257 (3.74)	0.902 (2.42)	0.355 (2.56)
	High	1.558 (4.90)	0.796 (2.01)	0.761 (3.60)
	High minus Low	**0.127 (0.34)**	**-0.465 (-1.04)**	**0.592 (2.56)**

Panel B: Excluding stocks with their monthly capitalization in the bottom or top 5%

Portfolio formed method	Index on individualism	Winner (W)	Loser (L)	W minus L
Country-average	Low	1.648 (4.34)	1.253 (2.97)	0.395 (2.84)
	2	1.690 (5.25)	0.994 (2.87)	0.696 (5.98)
	High	1.766 (6.20)	0.702 (2.25)	1.064 (8.12)
	High minus Low	**0.118 (0.38)**	**-0.551 (-1.57)**	**0.669 (4.41)**
Composite	Low	1.541 (3.78)	1.249 (2.79)	0.292 (1.81)
	2	1.303 (3.77)	0.959 (2.57)	0.344 (2.34)
	High	1.609 (4.91)	0.621 (1.66)	0.988 (5.30)
	High minus Low	**0.068 (0.19)**	**-0.628 (-1.64)**	**0.696 (3.38)**

Table A2. Trading Volume Regressions: Alternative Estimation Methods

Panel A of this table reports the time-series averages of cross-sectional OLS estimates of the regression coefficients using the Fama-MacBeth approach. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. Panel B shows the findings from a simple time-series means regression. The descriptions of all the variables are listed in Section B of this Appendix. The *t*-statistics are in parentheses.

Model	Panel A: Fama-MacBeth regression	Panel B: Simple mean regression
Intercept	-2.887	-5.961
	(-8.47)	(-2.93)
Indv	**0.010**	**0.013**
	(7.08)	**(2.37)**
Insider	-0.282	-0.315
	(-3.78)	(-1.68)
Political	0.025	0.056
	(2.69)	(3.60)
Fxvol	0.018	0.035
	(4.03)	(3.58)
Credit	1.086	0.616
	(5.68)	(2.17)
LnV	0.291	0.485
	(3.93)	(1.94)
Min. # of countries	13	33
Max. # of countries	38	33
Median # of countries	34	33
Test period	January 1988- June 2003	January 1995 – June 2003

Table A3. Average Stock Volatility Regressions: Alternative Estimation Methods

Panel A of this table reports the time-series averages of cross-sectional OLS estimates of the regression coefficients using the Fama-MacBeth approach. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. Panel B shows the findings from a simple time-series means regression. The descriptions of all the variables are listed in Section B of this Appendix. The *t*-statistics are in parentheses.

Model	Panel A: Fama-MacBeth regression	Panel B: Simple mean regression
Intercept	5.551	5.988
	(21.96)	(8.88)
Indv	**0.010**	**0.008**
	(7.34)	**(1.79)**
Insider	-0.198	-0.145
	(-6.36)	(-0.96)
Credit	0.130	0.188
	(1.41)	(0.65)
Gwvol88/Gwvol95	0.115	0.091
	(10.32)	(2.19)
Fxvol	0.000	0.013
	(0.02)	(1.77)
Open	-0.499	-1.301
	(-3.34)	(-2.35)
Debt	0.207	0.430
	(0.52)	(0.34)
MCap	0.000	0.001
	(0.06)	(0.83)
Min. # of countries	12	29
Max. # of countries	36	29
Median # of countries	31	29
Test period	January 1988 – June 2003	January 1995 – June 2003

Table A4
Determinants of Momentum Profits across Countries:
Results from Fama-MacBeth Regressions with a Different Starting Date

Monthly returns on country-specific momentum portfolios are regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism) and different sets of explanatory variables. Panel A shows the results related to a set of proxies for the financial market development. These proxies are the total private credit expressed as a ratio of GDP (*Credit*), the average common language dummy variable (*Lang*), the ratio between the monthly market value of the S&P-IFC market index and the monthly market value of the S&P-IFC investable index (*Open*), and an index on control of capital flows (*Control*). Panel B reports the results related to a set of variables related to institutional quality. This set of variables includes the insider index (*Insider*, a higher score indicates that insider trading is less prevalent), the ICRG corruption index (*Crp*, a higher value indicates a lower corruption level), the ICRG political risk index (*Political*, a higher value indicates a lower political risk), the natural logarithm of the transaction cost index (*LnTran*, a higher value indicates a higher transaction cost), and the investor protection index (*Protection*, a higher score indicates a higher investor protection level). Panel C shows the results related to Hofstede's other cultural indexes. These indexes include masculinity (*MAS*), power distance (*PDI*), and uncertainty avoidance (*UAI*). The descriptions of all the variables are listed in Section B of this Internet Appendix. The row '*Starting date*' shows the starting month for the test in each panel and all the tests end in June 2003. This table reports the time-series averages of cross-sectional OLS estimates of the coefficients. The *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. F_1 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients except the coefficient on *Indv* are jointly equal to zero. F_2 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients are jointly equal zero. The *p*-values are in parentheses.

	Panel A: Financial development	Panel B: Institutional quality	Panel C: Other cultural indexes
Intercept	0.368 (1.50)	-1.391 (-1.48)	-0.047 (-0.13)
Indv	**0.014 (5.75)**	**0.018 (5.86)**	**0.014 (5.49)**
Credit	-0.147 (-0.99)		
Lang	1.121 (1.76)		
Open	-0.161 (-0.42)		
Control	-0.030 (-0.99)		
Insider		-0.140 (-1.17)	
Crp		0.057 (0.78)	
Political		0.004 (0.32)	
LnTran		0.343 (2.30)	
Protection		0.017 (0.08)	
MAS			-0.002 (-0.62)
PDI			0.004 (0.99)
UAI			-0.002 (-0.87)
F_1	1.96 (0.10)	1.80 (0.11)	0.71 (0.55)
F_2	5.67 (0.00)	7.18 (0.00)	6.05 (0.00)
Min. # of countries	13	15	16
Max. # of countries	37	33	41
Med. # of countries	34	32	38
Starting date	February 1984	February 1984	February 1984

Table A5
Determinants of Momentum Profits across Countries:
Additional Results from the Fama-MacBeth Regressions

Monthly returns on country-specific momentum portfolios are regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism) and different sets of explanatory variables. Panel A reports the results related to a set of variables that are suggested by behavioral momentum models. These variables include the natural logarithm of market trading volume (*LnTN*), the natural logarithm of analyst coverage (*LnAna*), the natural logarithm of the dispersion of analyst forecasts (*LnDisp*), the logarithm of stock market volatility (*LnV*), the cash flows growth rate volatility (*Cfvol*), the logarithm of median firm size (*LnSZ*), and the logarithm of book-to-market ratio (*LnBM*). Panel B reports the results related to a set of variables related to institutional quality. This set of variables includes the insider index (*Insider*, a higher score indicates that insider trading is less prevalent), the ICRG corruption index (*Crp*, a higher value indicates a lower corruption level), the ICRG political risk index (*Political*, a higher value indicates a lower political risk), the natural logarithm of the transaction cost index (*LnTran*, a higher value indicates a higher transaction cost), the investor protection index (*Protection*, a higher score indicates a higher investor protection level), the concentration of ownership (*Own,* obtained from La Porta et al. (2006)), the ICRG law and order index (*Law*), and a dummy variable for common law countries (*DL*). DL tales a value of one for common law countries and it is zero, otherwise. Panel C shows the results related to a set of variables motivated by rational momentum models. This set of variables includes the average local growth opportunities (*LGO*), the standard deviation of beta estimates (*StdBeta*), earnings growth volatility (*Eavol*), and dividend growth volatility (*Divvol*). Panel D reports the results related to a set of variables on macroeconomic risk factors. This set of variables includes the real per capita GDP growth rates (*Gdppcgw*), the change in exchange rates (*Cfx*), and the dividend yield (*DY*). The descriptions of all the variables are listed in Section B of this Appendix. The row '*Starting date*' shows the starting month for the test in each panel and all the tests end in June 2003. This table reports the time-series averages of cross-sectional OLS estimates of the coefficients. The *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. F_1 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients except the coefficient on *Indv* are jointly equal to zero. F_2 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients are jointly equal zero. The *p*-values are in parentheses.

Table A5 - Continued

	Panel A: Behavioral models	Panel B: Institutional quality	Panel C: Rational models	Panel D: Macroeconomic factors
Intercept	6.066 (5.00)	-1.868 (-1.69)	0.075 (0.08)	-0.234 (-0.82)
Indv	**0.015 (4.32)**	**0.018 (6.30)**	**0.014 (3.89)**	**0.014 (4.00)**
LnTN	-0.171 (-0.99)			
LnDisp	0.188 (1.88)			
LnV	-0.866 (-4.35)			
Cfvol	-0.006 (-0.68)			
LnSZ	-0.334 (-3.38)			
LnAna	0.193 (1.48)			
LnBM	-0.139 (-0.71)			
Insider		-0.106 (-0.68)		
Crp		0.085 (0.88)		
Political		0.005 (0.34)		
LnTran		0.297 (2.36)		
Protection		0.362 (0.91)		
Own		0.770 (1.44)		
Law		-0.039 (-0.49)		
DL		-0.136 (-0.65)		
LGO			-0.230 (-0.72)	
StdBeta			0.243 (1.00)	
Eavol			0.007 (0.91)	
Divvol			0.011 (0.76)	
Gdppcgw				0.020 (0.38)
Cfx				0.170 (1.32)
DY				0.055 (1.03)
F_1	5.36 (0.00)	1.51 (0.16)	1.30 (0.27)	2.50 (0.06)
F_2	7.68 (0.00)	4.87 (0.00)	4.08 (0.00)	7.90 (0.00)
Min. # of countries	28	15	13	16
Max. # of countries	38	35	36	40
Med. # of countries	36	34	32	36
Starting date	January 1992	February1984	February1984	February1984

Table A6
Fama-MacBeth Regressions of the Comprehensive Model: Results from Bootstrapping

This test is carried out in a balanced sample with thirty-five countries over the period from January 1995 to June 2003. The Fama-MacBeth regressions are used to estimate the comprehensive model using this balanced sample. This table reports the time-series averages of cross-sectional OLS estimates of the coefficients. To compute the *t*-statistics, we use the standard deviations estimated from a bootstrapping test. Specifically, we generate data by sequentially selecting the individualism score along with other variables in our comprehensive model and randomly assigning them to one of the thirty-five countries in our sample without replacement. We generate 1,000 random assignments, and for each random assignment, we repeat the Fama-MacBeth regressions to estimate the comprehensive model. We use the standard deviations of the time-series of the estimates from this bootstrapping test to compute the *t*-statistics. The descriptions of all the variables are listed in Section B of this Appendix. All *t*-statistics are in parentheses.

	January 1995 – June 2003	
	Model 1	Model 2
Indv	**0.019**	**0.019**
	(3.17)	**(2.38)**
LnDisp	0.330	0.277
	(1.67)	(1.28)
LnV	-0.999	-0.941
	(-6.20)	(-5.65)
LnSZ	-0.339	-0.338
	(-2.17)	(-2.20)
LnTran	0.106	0.106
	(0.34)	(0.25)
Lang	1.842	1.623
	(1.46)	(1.25)
EAsia		0.040
		(0.07)

Table A7
Individualism and Momentum Profits: Additional Results from the Comprehensive Model

Monthly returns on country-specific momentum portfolios are regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism), the natural logarithm of dispersion of analyst forecast (*LnDisp*), the natural logarithm of stock market volatility (*LnV*), the natural logarithm of median firm size (*LnSZ*), the average common language dummy variable (*Lang*), the natural logarithm transaction cost index (*LnTran*, a higher value indicates a higher transaction cost), and a dummy variable for countries in East Asia (*EAsia*). *Indv*LnDisp* is an interaction term that equals *Indv* times the logarithm of the dispersion of analyst forecasts (*LnDisp*). Panel A reports the time-series averages of cross-sectional OLS estimates of the coefficients. Panel D shows the results related to Hofstede's other cultural indexes. These indexes include masculinity (*MAS*), power distance (*PDI*), and uncertainty avoidance (*UAI*). The descriptions of all the variables are listed in Section B of this Internet Appendix. All *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics.

	January 1987 – June 2003			
	Panel A	Panel B	Panel C	Panel D
Intercept	2.988	3.446	2.543	3.301
	(2.22)	(2.72)	(1.72)	(2.51)
Indv	**0.016**	**0.010**	**0.014**	**0.014**
	(3.25)	**(2.67)**	**(2.61)**	**(3.46)**
LnDisp	0.221			0.225
	(1.94)			(2.02)
Indv * LnDisp		**0.011**	**0.013**	
		(2.07)	**(2.09)**	
LnV	-0.634	-0.661	-0.662	-0.628
	(-4.10)	(-3.96)	(-4.41)	(-3.71)
LnSZ	-0.231	-0.271	-0.234	-0.228
	(-3.49)	(-4.04)	(-3.20)	(-3.69)
LnTran	0.369	0.303	0.423	0.334
	(2.67)	(2.22)	(2.63)	(2.70)
Lang	1.899	1.794	1.753	2.595
	(2.53)	(2.22)	(2.11)	(3.54)
MAS				-0.005
				(-1.53)
PDI				-0.002
				(-0.24)
UAI				0.003
				(1.06)
EAsia	-0.003		0.160	
	(-0.01)		(0.60)	
F_1	7.14	8.94	7.75	6.39
	(0.00)	(0.00)	(0.00)	(0.00)
F_2	10.20	12.49	10.51	8.43
	(0.00)	(0.00)	(0.00)	(0.00)
Min. # of countries	17	17	17	17
Max. # of countries	36	36	36	36
Median # of countries	35	35	35	35

Table A8
Determinants of Momentum Profits: Robustness Checks Using Alternative Estimation Methods

Panel A reports findings from the regression using the Petersen (2009) procedure to compute the standard errors clustered by country and month. Panel B shows the findings from a simple time-series means regression from 1995-2003. The descriptions of all the variables are listed in Section B of this Appendix. The *t*-statistics are in parentheses.

	Panel A:		Panel B:	
Model	OLS clustered by country and month		Simple mean regression	
Test period	January 1987 – June 2003		January 1995 – June 2003	
Intercept	4.749	4.842	2.739	4.868
	(4.08)	(4.07)	(1.23)	(4.44)
Indv	**0.014**	**0.013**	**0.019**	**0.013**
	(3.77)	**(3.27)**	**(3.85)**	**(3.12)**
LnDisp	0.074	0.073	0.233	0.067
	(0.72)	(0.71)	(0.83)	(0.70)
LnV	-0.932	-0.930	-0.412	-0.951
	(-4.19)	(-4.18)	(-1.61)	(-6.99)
LnSZ	-0.297	-0.297	-0.217	-0.292
	(-3.71)	(-3.71)	(-1.47)	(-3.52)
LnTran	0.305	0.295	0.064	0.310
	(1.99)	(1.88)	(0.25)	(1.65)
Lang	2.032	2.062	1.021	2.067
	(2.31)	(2.37)	(1.01)	(2.50)
EAsia		-0.060		-0.059
		(-0.28)		(-0.34)
Min. # of countries	17	17	35	35
Max. # of countries	36	36	35	35
Median # of countries	35	35	35	35

Table A9
Determinants of Momentum Profits: Using the GLOBE Measure of Individualism

Panel A reports the Fama-MacBeth regressions results from the comprehensive model using GLOBE's individualism index ($Indv_{GLOBE}$), where $Indv_{GLOBE}$ = (GLOBE's institutional collectivism index) multiplied by -1. Panel B reports the findings from the Fama-MacBeth regressions of the comprehensive model using Hofstede's individualism index (*Indv*). The descriptions of all the variables are listed in Section B of this Appendix. All *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics.

Test period	January 1987 – June 2003	
Model	Panel A	Panel B
Intercept	7.705 (4.61)	3.904 (2.98)
$Indv_{GLOBE}$	**0.179** **(1.90)**	
Indv		**0.015** **(4.63)**
LnDisp	0.125 (1.06)	0.213 (1.93)
LnV	-0.709 (-4.24)	-0.713 (-4.42)
LnSZ	-0.370 (-5.37)	-0.250 (-3.82)
LnTran	-0.240 (-1.26)	0.238 (1.73)
Lang	3.017 (5.05)	2.392 (4.31)

Table A10
Momentum Profits and Individualism: Regression Results from the Small Stock Sample

A small stock is defined as a stock with their market capitalizations below the median of all the stocks within a given country in any month in our sample. This table shows the Fama-MacBeth regressions results from the comprehensive model for the small stock sample. Monthly returns on country-specific momentum portfolios are regressed on Hofstede's individualism index (*Indv*, a lower score indicates a lower degree of individualism), the natural logarithm of dispersion of analyst forecast (*LnDisp*), the natural logarithm of stock market volatility (*LnV*), the natural logarithm of median firm size (*LnSZ*), the average common language dummy variable (*Lang*), the natural logarithm transaction cost index (*LnTran*, a higher value indicates a higher transaction cost), and a dummy variable for countries in East Asia (*EAsia*). The descriptions of all the variables are listed in Section B of this Appendix. This table reports the time-series averages of cross-sectional OLS estimates of the coefficients. All robust *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute these *t*-statistics. F_1 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients except the coefficient on *Indv* are jointly equal to zero. F_2 (an *F*-statistic) is used to test the hypothesis that all the estimated slope coefficients are jointly equal zero. The *p*-values are in parentheses.

Test period	January 1987 – June 2003	
	Model 1	Model 2
Intercept	1.317	1.602
	(0.73)	(0.77)
Indv	**0.016**	**0.013**
	(4.00)	**(1.93)**
LnDisp	0.226	0.359
	(1.36)	(1.97)
LnV	-0.531	-0.514
	(-2.42)	(-2.26)
LnSZ	-0.196	-0.172
	(-1.72)	(-1.66)
LnTran	0.686	0.640
	(2.49)	(2.31)
Lang	1.534	1.384
	(0.72)	(0.89)
EAsia		-0.214
		(-0.56)
F_1	7.33	6.86
	(0.00)	(0.00)
F_2	10.15	9.64
	(0.00)	(0.00)
Min. # of countries	15	15
Max. # of countries	33	33
Median # of countries	31	31

Table A11
Return Reversals on Individualism-sorted Momentum Portfolios: Evidence from the Small Stock Sample

A small stock is defined as a stock with their market capitalizations below the median of all the stocks within a given country in any month in our sample. To be included in this table, each winner/loser portfolios is required to have at least 30 firms in each portfolio at formation month. There are twenty-two countries included in this test. Country-average and composite portfolios classified by individualism are formed from these twenty-two countries. This table presents average monthly momentum profits (%) in U.S. dollars for these country-average portfolios (Panel A) and composite portfolios (Panel B). The construction of these portfolios is discussed in Table III in the paper. The average monthly momentum profits are calculated over different post-holding periods. There is a one-month gap between the portfolio formation period and the holding period. The test period for Panel A and Panel B is from February 1989 to June 2003. All *t*-statistics are in parentheses. The Newey-West heteroskedasticity and autocorrelation consistent estimates of standard errors are used to compute those *t*-statistics.

Panel A: Country-average portfolios

Individualism rank	Months 1-12	Months 13-24	Months 25-36	Months 13-36
Indv-Low	-0.105	-0.192	-0.163	-0.212
	(-0.56)	(-1.23)	(-1.17)	(-2.16)
Indv-2	0.440	-0.056	-0.235	-0.166
	(4.37)	(-0.46)	(-2.39)	(-2.14)
Indv-High	0.780	-0.685	-0.272	-0.505
	(3.10)	(-3.34)	(-1.32)	(-3.31)
High minus Low	**0.885**	**-0.493**	**-0.110**	**-0.293**
	(4.21)	**(-2.07)**	**(-0.55)**	**(-1.80)**

Panel B: Composite portfolios

Individualism rank	Months 1-12	Months 13-24	Months 25-36	Months 13-36
Indv-Low	-0.152	-0.104	-0.194	-0.178
	(-0.78)	(-0.58)	(-1.66)	(-1.60)
Indv-2	0.319	0.018	-0.149	-0.087
	(3.13)	(0.11)	(-0.99)	(-0.75)
Indv-High	0.531	-1.075	-0.509	-0.822
	(1.94)	(-4.50)	(-1.80)	(-4.67)
High minus Low	**0.683**	**-0.971**	**-0.314**	**-0.644**
	(3.29)	**(-2.83)**	**(-1.27)**	**(-3.26)**

REFERENCES

Beck, Thorsten and Ed Al-Hussainy, 2006, *Financial Structure Dataset* (The World Bank).

Bekaert, Geert, Campbell R. Harvey, Christian Lundblad, and Stephan Siegel, 2007, "Global growth opportunities and market integration," *Journal of Finance* 62, 1081-1137.

Chan, Kalok, Vicentiu Covrig, and Lilian Ng, 2005, "What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide," *Journal of Finance* 60, 1495-1534.

Fernandex, Demise Rotondo, Dawn S. Carlson, Lee P. Stepina, and Joel D. Nicholson, 1997, "Hofstede's country classification 25 years later," *Journal of Social Psychology* 137, 43-53.

Greif, Avner, 1994, "Cultural beliefs and the organization of society: A historical and theoretical reflection on collectivist and individualist societies," *Journal of Political Economy* 102, 912-950.

Hofstede, Geert, 2001, *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*, 2nd edition (Sage Publication: Beverly Hills, CA).

Hong, Dong, Charles Lee, and Bhaskaran Swaminathan, 2003, "Earnings momentum in international markets," Working paper, Cornell University.

House, Robert, Mansour Javidan, Paul Hanges, and Peter Dorfman, 2002, "Understanding cultures and implicit leadership theories across the globe: an introduction to project GLOBE," *Journal of World Business* 37, 3-10.

House, Robert. J., Hanges, P. J., Javidan, M., Dorfman, P.W., and Gupta, V., 2004, eds.: *Culture, Leadership, and Organizations: The GLOBE study of 62 societies* (Sage Publication: Thousand Oaks, CA).

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2006, "What works in securities laws," *Journal of Finance* 61, 1-32.

Merritt, Ashleigh, 2000, "Culture in the cockpit: Do Hofstede's dimensions replicate?" *Journal of Cross-Cultural Psychology* 31, 283-301.

Petersen, Mitchell A, 2009, "Estimating standard errors in finance panel data sets: Comparing approaches," *Review of Financial Studies* 22, 435-480.