Macroeconomic Expectations and the Size, Value and Momentum Factors

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Abstract

One challenge when examining the links between macroeconomic risks and the size (SMB), value (HML) and momentum (WML) factors is the difficulty of obtaining direct measures of macroeconomic expectations. We examine these relations using changes in macroeconomic forecasts and surprises to proxy for changes in expectations across 20 markets. The sensitivity of cash-flow-to-price based HML, SMB and WML is often insignificant and close to zero, or the factors hedge macroeconomic risk. Only book-to-market based HML is related to changes in GDP growth forecasts, but these findings are not robust when we examine the reaction to macroeconomic news announcements. Importantly, the weak relation between factors and risks is not the result of low power tests, but is due to the long and short portfolios having economically and statistically similar sensitivity to macroeconomic risks. Together these findings are inconsistent with HML, SMB and WML being priced as compensation for macroeconomic risks.

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Abstract

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One challenge when examining the links between macroeconomic risks and the size (SMB), value (HML) and momentum (WML) factors is the difficulty of obtaining direct measures of macroeconomic expectations. We examine these relations using changes in macroeconomic forecasts and surprises to proxy for changes in expectations across 20 markets. The sensitivity of cash-flow-to-price based HML, SMB and WML is often insignificant and close to zero, or the factors hedge macroeconomic risk. Only book-to-market based HML is related to changes in GDP growth forecasts, but these findings are not robust when we examine the reaction to macroeconomic news announcements. Importantly, the weak relation between factors and risks is not the result of low power tests, but is due to the long and short portfolios having economically and statistically similar sensitivity to macroeconomic risks. Together these findings are inconsistent with HML, SMB and WML being priced as compensation for macroeconomic risks.

> [The] Fama-French three-factor model… [is] widely used both by academics and in industry. [He chuckles.] I'm laughing because the theoretical basis for the model is quite shaky. Basically, we saw these patterns in returns and our motivation was to try to explain them. (Eugene Fama as quoted in Sommer, 2013)

One of the ways researchers have tried to explain the empirical success of the Fama and French (1993) three-factor model, and its Carhart (1997) four-factor companion, is to attempt to link the size (SMB), value (HML) and momentum (WML) factors to sources of macroeconomic risk. Empirically demonstrating this relation is a more challenging task then it might seem at first, because readily available measures of macroeconomic risks are backward looking, reflecting how the macroeconomy actually evolved. In efficient markets prices should adjust as expectations change, not merely as new, often expected, data are released. Elton (1999) points

out that using realizations to proxy for expectations can lead to bias even in relatively long samples. This is because macroeconomic cycles play out over many decades, so that even relatively long samples of 50 or 80 years of monthly data might not be enough for errors to cancel out and make realizations an unbiased proxy for expectations.[1] Despite these problems, realizations of macroeconomic measures are often used to proxy for innovations in expectations in the prior literature.[2]

One solution presented in existing literature is to model macroeconomic expectations through the use of factor-mimicking portfolios, but even this can be problematic.[3] The technique regresses realized macroeconomic variables on a set of (typically traded) base assets plus controls and then uses the fitted value from the regression (excluding controls) as a proxy for the macroeconomic risk in asset-pricing tests. Even though factor-mimicking portfolios are theoretically sound, problems can arise if there is an omitted factor which affects both the returns to the base assets (those that are used to calculate the factor-mimicking portfolio) and the returns to the test assets (those with the returns to be explained). If one does not control for the omitted factor when creating the mimicking portfolio, then the mimicking portfolio may reflect exposure to the omitted factor. In such a case, even if the test assets are orthogonal to the macroeconomic risk, asset-pricing tests might well suggest that the macroeconomic factor is priced, even when it is not, because the test assets are responsive to the omitted factor.[4]

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[1] This bias has the possibility of substantially altering conclusions. For example, Brav, Lehavy and Michaely (2005) show that while realized HML returns are priced, expected HML returns are not.

[2] This strategy is used in Liew and Vassalou (2000), Nguyen, Faff and Gharghori (2009), Kroencke, Schindler, Sebastian and Theissen (2013), and Ansotegui and Hanhardt (2008) as well as Chordia and Shivakumar (2002), which only looks at momentum returns.

[3] Examples of papers using macroeconomic factor-mimicking portfolios include, Vassalou (2003), Aretz, Bartram and Pope (2010), and Kroencke, Schindler, Sebastian and Theissen (2013).

[4] One can think of the mimicking portfolio as acting as an instrument for the macroeconomic risk. As with any instrumental variable, the instrument must be uncorrelated with the returns being explained except

Kleibergen and Zhan (2014) points out an additional problem, which can occur even if one controls for omitted variables. Many macroeconomic measures have low correlations with asset returns, making mimicking portfolios created from such series almost indistinguishable from mimicking portfolios created from useless or nearly useless factors. This is a problem, because Kleibergen and Zhan (2014) shows that mimicking portfolios created based on useless or nearly useless factors can have as much significance in asset pricing tests as mimicking portfolios created on useful factors. The reason is that while the betas on useless factors may be small, the betas of the mimicking portfolio can be spuriously large simply due to noise.

In this paper we circumvent these problems by using changes in consensus macroeconomic forecasts from surveys of analysts and economists as proxies for changes in macroeconomic risk expectations. We use the forecast data to re-examine whether the size, value and momentum factor returns covary with changes in macroeconomic expectations consistent with the factors acting as proxies for undiversifiable sources of macroeconomic risk. In addition, we collect macroeconomic news announcement dates and the forecasts immediately prior to these announcements to examine how daily factor returns, and the returns to the portfolios that make up the factors, respond to macroeconomic news surprises.

Our sample consists of 20, mostly developed, markets and we take advantage of the new international extensions of the four-factor asset-pricing models developed by Hou, Karolyi and Kho (2011) and Fama and French (2012) to further improve on prior research. This allows us to: 1) examine both local and global versions of these factors; 2) test whether the relations

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through its association with the instrumented macroeconomic risk. Aretz, Bartram and Pope (2010) minimize the concern regarding omitted variables in two ways. First, this paper uses base assets that are less likely to share common factors with the test assets. Second, when creating the factor mimicking portfolios, the regressions include a large number of control variables to hopefully reduce the influence of omitted factors.

we uncover are prevalent around the world; and 3) improve the power of our tests while controlling for dependencies across markets and time. We examine both the Hou et al. (2011) cash-flow-to-price value factor (HML_{CFP}) and the Fama and French (2012) book-to-market value factor (HML_{BTM}), as well as the size (SMB) and momentum (WML) factors. While our main results focus on joint tests using our 20-market sample, for comparability to prior research we also separately examine the U.S.

We study the relation between macroeconomic risk and the factors in two ways. First, we regress monthly factor and excess portfolio returns on innovations in macroeconomic expectations as proxied by changes in mean consensus forecasts. Second, we examine the impact of macroeconomic news surprise on daily factor and excess portfolio returns. The latter test also allows us to address the concern that our factor returns might be driving expectations, instead of expectations driving returns.

Our findings are easily summarized. While excess returns to the market and to the portfolios that comprise the factors generally covary positively with changes in macroeconomic forecasts and respond to macroeconomic surprises in a manner consistent with the returns reflecting these risks, the returns to the value, size and momentum factors do not. The exception is returns to HML_{BTM}, for which the results are mixed.

Specifically we find that HML_{CFP}, SMB and WML returns typically have covariances that are close to zero with changes in macroeconomic forecasts, and when non-zero, the covariances often suggest they hedge that risk, which is inconsistent with the hypothesis that macroeconomic risk can explain why these factors are priced. These results are consistent for both the U.S. subsample and for the full 20-market sample. Of the factors we investigate, HML_{BTM} alone is positively and significantly associated with local GDP growth, but GDP growth explains only up to 5% of local HML_{BTM} returns in the U.S. and 1.5% in the full 20-market sample. This

stands in stark contrast to excess market returns, for which changes in macroeconomic forecasts explain as much as 11% of the variation in excess market returns. While monthly HML_{BTM} returns positively covary with monthly changes in GDP forecasts, daily HML_{BTM} returns are unresponsive to GDP announcement surprises.

These findings are notable for two reasons. First, the market returns do covary positively with macroeconomic risks. This is our first bit of evidence that the weak or non-insignificant relations between macroeconomic risks and HML_{BTM}, HML_{CFP}, SMB and WML are not a function of our testing methodology. We see that increases in GDP-, consumption- and wage-growth forecasts are all associated with increases in market return. Second, while most of the long-short portfolio returns that make up HML_{BTM}, HML_{CFP}, SMB and WML do covary positively with macroeconomic risks in a manner similar to the market, the factors, with the exception of HML_{BTM}, do not. Hence, these findings are not due to the use of low powered tests. High and low cash-flow-to-price portfolios, small and large size portfolios, and winner and loser portfolios are all sensitive to innovations in economic activity, much like the market is, but the sensitivities are for the most part economically similar and statistically indistinguishable; and, when distinguishable, in most cases the factor returns act like hedges against risk, negatively covarying with changes in forecasts.

The findings regarding the momentum factor deserve an extra note, because they are in contrast to prior literature, most notably Liu and Zhang (2008), which finds that realized industrial production growth helps explain momentum returns. We find that, to the extent WML reflects innovations in macroeconomic expectations, it acts more as a hedge than as a proxy for risk.[5] WML returns are negatively related to GDP and consumption growth in the U.S. In our 20-

[5] In unreported tests, we find that differences between our findings and those in Liu and Zhang (2008) appear to be largely driven by differences in the sensitivity of momentum to industrial production in different sub-samples.

market pooled sample WML is sometimes weakly negatively associated with changes in local GDP growth forecasts, and global production forecasts, depending on the exact specification.

When we examine the news response coefficient we expand our analysis to include producer price inflation, purchasing managers' index (PMI), retail sales, unemployment, consumer confidence and the trade balance. Compared to the prior results, the biggest difference is that HML_{BTM} is no longer significantly related to GDP growth surprises. In the pooled sample, the return response to GDP growth surprises on the value and growth portfolios are not merely statistically indistinguishable, but the economic magnitudes are nearly identical. For the remaining factors, HML_{CFP}, SMB and WML, we find results that are generally consistent with our prior tests: the responses of factor returns to GDP growth, inflation, and production surprises are weak or insignificant. Once again this is notable because the portfolios that make up the factors often respond in a manner similar to the market, but, as with our panel regression results described above, the effects cancel out when creating the long-short portfolios that make up these factors. In the extended results including PMI, retail sales, unemployment, consumer confidence and trade balance, there is no consistent pattern across the U.S. and full, 20-market sample. Taken together these findings provide compelling evidence that the macroeconomic risks we have examined are not the sources of risk that explain the pricing of the size, value/growth factors and momentum factors.

Our paper contributes to the literature in at least three ways. Our first contribution is to provide more powerful tests of the relation between commonly used factors and the macro economy by using international data, and analyzing the reaction to changes in macroeconomic forecasts, thereby circumventing problems that arise from relying on noisy realizations as proxies for expectations.

The second contribution is that this paper is the first to examine the sources of macroeconomic risk associated with international versions of the Fama-French three-factor and Carhart four-factor models proposed by Hou et al. (2011) and Fama and French (2012). In doing so, we are also providing out-of-sample tests for prior studies that examine the sources of macroeconomic risk associated with the U.S. versions of the Fama-French and Carhart models.

Our third major contribution is to the literature examining whether momentum returns are anomalous or due to risk exposure. Liu and Zhang (2008) show that realized measures of industrial production growth help explain momentum returns. Our evidence provides support for the notion that WML is correlated with macroeconomic risk measures; however, WML appears to act more as a hedge against lower expected GDP and consumption growth, rather than acting as a factor mimicking portfolio. In contrast to Liu and Zhang (2008), which uses realized industrial production growth to proxy for changes in expectations, our evidence suggests that WML does not capture changes in industrial production growth expectations.

The paper outline is as follows. Section I provides a literature review. Section II describes our data and choice of methodology. Section III presents evidence about the association between the Fama-French and Carhart factors with macroeconomic risk. We use sorts, panel regressions and event studies for these analyses. Section IV concludes.

I. Literature Review

Theory suggests that economic/business conditions should be linked to excess returns (Campbell and Diebold, 2005, Fama and French, 1989, Chen, Roll, Ross, 1986 and Barro, 1990). As Cochrane (2005) points out, "the program of understanding the real, macroeconomic risks that drive asset prices (or the proof that they do not do so at all) is not some weird branch of

finance; it is the trunk of the tree. As frustratingly slow as progress is, this is the only way to answer the central questions of financial economics, and a crucial and unavoidable set of uncomfortable measurements and predictions for macroeconomics" (Cochrane, 2005, page 6). Naturally, if HML, SMB and WML are factors, their excess returns should also be linked to economic/business conditions. By linking these factors to macroeconomic risk, we can arrive at an understanding of which factors are stable (i.e., provide a consistent reward for risk) and which are merely due to mispricing or coincidence as a result of small sample size (or data mining).

The contribution of the current paper is not in the sources of risk that we examine to explain the returns to HML, SMB, and WML. What is novel is the straightforward but significant improvement in the measurement of macroeconomic expectations through the use of consensus forecasts. Below we review the prior findings about the sources of risk that may be associated with HML, SMB and WML. Two strands of the literature have emerged with regards to explaining why common factors are priced.

One strand of the literature posits that the size, value and momentum factors proxy for predictive measures, which forecast the distribution of returns in the spirit of the ICAPM, such as short rates, default spread, term spread and dividend yields. Petkova and Zhang (2005) provide evidence that value stocks have higher systematic risk than growth stocks in certain periods which can be forecasted using predictive measures, and that HML captures those changes in the beta. Kang, Kim, Lee and Min (2011) and Kalaycioglu (2004) find that those periods often correspond to economic downturns. Petkova (2006) and Hahn and Lee (2006) show that innovations in the default premium, term spread, aggregate dividend yields and short rates actually explain the cross-section of returns better than HML and SMB. Chen, Petkova and Zhang (2008) instruments expected HML returns with the term spread (TERM), default

premium (DEF), dividend yield (DY) and short rates (SR) and shows that E[HML] returns are higher during recessions and when default spreads are high, but lower when consumption and investment growth are high. Both findings are consistent with investors demanding extra compensation when marginal utility is high.

The second strand of the literature, and the one most closely related to the current paper, relates the factors to measures of macroeconomic risk. Most often the macroeconomic risk measures considered are GDP growth and inflation, but they sometimes include other measures, such as industrial production, non-farm payroll, money supply growth and others (Liew and Vassalou, 2000, Vassalou, 2003; Aretz, Bartram, and Pope (2010), Cenesizoglu, 2011). The central paper examining the sources of macroeconomic risk associated with the Fama and French factors is Liew and Vassalou (2000). This paper shows that SMB and HML are able to predict nominal GDP growth in several countries. However, as Davis (2001) notes, Liew and Vassalou's (2000) findings are weak in a number of markets and Davis (2001) finds that in the US, where a longer time series is available, the relation is insignificant from 1957 to 1998. Nguyen, Faff and Gharghori (2009) show similar findings for Australia, where neither HML nor SMB are associated with innovations in future GDP growth.

This is not to say that stock returns are unrelated to the macroeconomy. Ansotegui and Hanhardt (2008) show that the market, SMB and WML forecast future economic activity in the Euro Zone, but HML does not. Zhang, Hoptkins, Satchell and Schwob (2009) finds that small stocks outperform large during economic expansions and that both small and value stocks outperform large and growth stocks respectively when T-Bill rates are low and term spreads are high. Flipping this relationship around, Fuerst (2006) shows that shocks to HML and SMB, but especially to SMB, impact the real economy. Fuerst (2006) shows that the risk premium, estimated using the Fama and MacBeth (1973) technique, for small stocks varies much more

over the business cycle than does the risk premium to large stocks, consistent with a flight to quality. One concern in the literature is that these findings may not be as clear as one would hope because it is difficult to accurately measure investors' macroeconomic expectations.

The literature examining the relation between macroeconomic risk and momentum has been surprisingly distinct. Chordia and Shivakumar (2002) provide evidence that momentum is explained by macroeconomic measures. Griffin, Ji, and Martin (2003) counters that it doesn't, noting that there is much more volatility in momentum returns than in macroeconomic measures. Liu and Zhang (2008) provide evidence that WML in part reflects changes in industrial production.

Finally, because we also use macroeconomic news announcements to examine the relation between factor returns and macroeconomic risk, our paper also relates to a handful of papers that examine the response of market and factor returns to macroeconomic news surprises. Savor and Wilson (2013) documents the importance of macroeconomic news-announcement days as the periods when 60% of annual excess market return are earned – suggesting that macro-news days are particularly important to the market for the resolution of uncertainty and/or risk. As Savor and Wilson (2014) shows, macroeconomic announcement days are important for asset pricing in the sense that CAPM beta is highly correlated with returns on these days, but not on non-announcement days. There is reason to think that SMB and HML may reflect a response to macroeconomic announcements: Using U.S. data, Cenesizoglu (2011) shows that the stock returns of large and growth firms respond significantly differently to several types of announcements, in particular non-farm payroll and housing starts, than small and value stock; however these same announcements do not significantly affect the size and value factors themselves. In the second part of our paper, we build on

Cenesizoglu (2011), not only by extending our examination across more markets, but also by examining whether HML, SMB and WML returns reflect these macroeconomic risks.

II. Data and Methodology

For this study we collect mean consensus forecasts to proxy for macroeconomic expectations. These data are from two sources. The first is Consensus Economics, which surveys the forecasts of economists and economic analysts on a monthly basis. The second source is Bloomberg newswire, which provides the date of macroeconomic news announcements, mean macroeconomic forecasts, and the macroeconomic realization. We collect return and accounting data from Datastream.

A. Macroeconomic Forecasts from Consensus Economics (Independent Variables)

We use mean economic forecasts as our proxy for investor expectations. The consensus forecasts are obtained from Consensus Economics and are available in a consistent format from October 1989 through December, 2014 for 20 markets around the world: Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Netherlands, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, UK, and the USA. We include macroeconomic forecast measures in our study if they are available for at least 10 of the markets. GDP growth, inflation, and production (industrial and/or manufacturing) forecasts are available for all 20 markets. Consumption growth forecasts are available for 12 markets and wage growth for 10.

Consensus Economics surveys professional economists every month regarding their macroeconomic forecast for the current year as well as the following year.[6] Surveys are typically due by the close of business on the second Monday of the month. They wait until the second Monday because in many markets several macroeconomic announcements are made in the first week of the month and they want to allow their respondents time to incorporate the new information in their forecasts. Because macroeconomic forecasts for the current year often are highly correlated with the forecast for the following year, we calculate and present a continuously compounded forecast measure. In our tests main tests we use changes in forecasts, because in efficient markets prices should already incorporate information contained in past forecasts. When calculating global versions of our macroeconomic measures, we weight each forecast by the country's previous year-end market value.

Because Consensus Economics' forecasts are always on a calendar year basis, the change in forecast reflects a shorter horizon as the year progresses. For example, the forecast change from January to February reflects expectations about the next 23 months (February in the current year to December in the following year), while the forecast change between November and December reflects the next 13 months (December in the current year until December in the following year). This survey methodology causes the forecast change between December and January to be for the shortest possible window, since the only prior forecast available to use is for the period ending in December of this year (reflecting a window of 12 months). Because stock prices should already incorporate current expectations about the future economy, we focus on changes in forecasts as our proxy for changes in investor expectations. Table I shows the summary statistics for our changes in Consensus Economics forecasts for each market.

[6] Timmerman (2007) shows that World Economic Outlook (WEO) and Consensus Economics forecasts are similarly successful.

As is evidenced in Table I, the changes in macroeconomic forecasts are volatile, and there is ample dispersion both between and within markets for them to possibly explain a non-trivial fraction of a volatile series like monthly stock returns. The mean change in GDP forecasts for the global series (value weighted forecasts based on prior year's market valued) is a mere -0.05%, but the standard deviation of the forecast changes is 0.23%. Looking at the changes in consumer price forecasts, the mean is -0.01%, but the standard deviation is 0.17%. Notable about these summary statistics is that average changes in GDP, Inflation, Industrial Production, Consumption and Wage forecasts are negative across most of the 20 markets, suggesting that analysts were revising their estimates downward on average.

Because forecasters may be motivated to bias their forecasts away from their true expectations, one may be reasonably concerned about the impact of bias on our findings. This bias would mean that we measure expectations with error, which will tend to bias the coefficient estimates on the long portfolios toward zero. However, unless there is reason to believe that forecast bias has a different effect on the value stock portfolios as opposed to growth, or small as opposed to big, or winner as opposed to loser, the impact on HML, SMB and WML will be netted out because these are long-short portfolios. As such, bias should have little to no impact on the central conclusions of the paper about the association between factor returns and macroeconomic risks.

While we believe that forecast bias is not likely to overstate our findings, we have taken steps to mitigate both constant and time-varying bias. First, if there is a component of bias that is constant, then the fact that we use changes in forecasts will eliminate the effect of any constant bias in the forecast levels. Second, in order to correct for time-varying bias, we must be able to correctly identify the function of the time varying bias.

Capistran and Timmerman (2009) document that bias in U.S. inflation forecasts from the Survey of Professional Investors is a function of the conditional volatility of inflation. If the same holds true for the macroeconomic measures in our sample, then the bias in our sample may also be a time-varying function of the conditional volatility of realized macroeconomic measures. The fact that each monthly forecast is for the current or next calendar year, means that we can only calculate conditional volatility annually, despite the fact that our forecast data are monthly. If, however, we can assume that conditional volatility is persistent on a monthly basis, then taking changes in forecasts should reduce the effect of the bias. So, although we cannot explicitly control for the time-varying bias documented by Capistran and Timmerman (2009), we do not believe that the effect of the bias would have a material impact on our results.

If forecasters are slow to update their forecasts, this will lead to autocorrelation in the forecast changes. To reduce this effect, we follow Choi, Kalay and Sadka (2011). For each macroeconomic series we regress the change in forecast on one lag of itself. We use the residual from this regression in our tests. In addition, if bias is slowly changing over time, then this method will also reduce the impact of such time-varying bias.[7]

B. Bloomberg

From Bloomberg newswires we download every macroeconomic news announcement available for the 20 markets in our study. These are the same 20 markets for which we have Consensus Economics data. The time period is somewhat shorter, as Bloomberg macroeconomic news announcements begin in November 1996 and end in June of 2015. We include a

[7] In unreported tests all results were reexamined using changes in raw forecast changes instead of residuals. The results are qualitatively similar.

macroeconomic news item if there are at least 50 news events with both the forecast and actual figures for the macroeconomic measure. Across markets there are many similar macroeconomic news announcements but with slightly different names. For example, Sweden provides "Retail Sales s.a. (MoM)", but the Netherlands provides "Retail Sales (YoY)". For comparability we group the announcements into nine categories, each with at least 10 countries represented in the grouping: GDP, Consumer Prices, Producer Prices, Industrial Production, PMI, Retail Sales, Unemployment, Consumer Confidence and Trade Balance.[8,9]

C. Portfolio Returns – Dependent Variables

Stock data are from Thomson Financial's Datastream. We restrict our analysis to common stock that trade in the local currency. In order to eliminate non-common equity, we follow the detailed methodology laid out in Griffin, Kelly and Nardari (2010). We eliminate securities that represent cross listings, duplicates, hedge funds, mutual funds, unit trusts, ETFs, certificates, notes, rights, preferred stock, and other non-common equity.

Table II shows our market coverage in terms of firms per market and month. On average, our sample covers 17,126 firms each year, with a minimum coverage of 7441 firms and a maximum coverage of 22,152 firms. Our largest market is, as expected, the United States with

[8] Within countries the names of macroeconomic series often change when a country changes methodology for measuring the same macroeconomic risk. When this occurs we merge the two series. Because similar announcements do not have the same name across countries, as noted above, we develop a list of 63 categories in which we group the 1007 different announcements with forecasts that Bloomberg tracks in our 20 markets. We then check how many countries have announcements in each category with forecasts and actuals. If 10 or more countries have macroeconomic news announcements in a given category, we keep the category. This leaves us with 9 categories with good coverage across the markets in our study.

[9] For countries that have manufacturing production, but not industrial production, we use manufacturing production instead.

an average of 6,818 firms covered, and the smallest market covered in the sample (as judged by number of firms covered) is Ireland with an average of 43 firms covered.

In much of the literature, stocks with a price below $1 are often excluded to avoid microstructure noise. We do not require a minimum stock price, as many firms in some markets have low stock prices but high market values, and excluding those firms would bias our sample. Instead, we exclude firms with a return index below 10, as we cannot precisely calculate returns for those firms as Datastream reports return indices rounded to two decimal points. If the end of June return index is below 10, we set returns to missing for the following year (starting July). We apply filters as suggested by Ince and Porter (2006), but modify the filters for use with daily data. Returns that are reversed within one day are set to missing. Specifically, if the return on day t, R_t, or day t-1, R_{t-1}, is greater than 100%, and [((1+ R_t) x (1+ R_{t-1}) -1) < 20%], we set both R_t and R_{t-1} to missing. In addition, we trim the return data at the 0.1 percentile and the 99.9 percentile in each country.

Book values and cash flows per share come from Worldscope through Datastream. We do not use Worldscope's calculations of book-to-market or cash-flow-to-price because there appear to be consistent errors around reporting changes. Worldscope backfills its accounting data. As a result the December-end data that Datastream\Worldscope reports is not necessarily that which was known to the market. Instead we use fiscal-year-end accounting data, and, in the same manner as Fama and French (1993), we only use the data for fiscal years ending in year t-1 for creating portfolios starting from the end of June in the following calendar year (t). Market Values are from Datastream as reported in December of the prior year.

We calculate factor-mimicking portfolio returns for SMB and HML as in Hou, Karolyi, and Kho (2011). We rank firms on the characteristic of interest and form quintile portfolios at the end of June in each year. The value-weighted returns of those quintile portfolios are

subsequently calculated from July of the year of formation (t) until June in the following year (t+1). To reduce the impact of idiosyncratic returns on our factors, we require at least five stocks in each of the extreme quintile portfolios in order to calculate the factor returns.[10] The formation period methodology follows closely that used by Fama and French (1992, 1993). HML is calculated as the return on the highest of either book-to-market or cash-flow-to-price quintile portfolio minus that of the lowest quintile portfolio, while SMB is calculated as the return on the lowest quintile portfolio less the return of the highest quintile portfolio. WML is calculated as in Jegadeesh and Titman's (1993) six-month by six-month strategy, except that we use portfolio quintiles instead of deciles. In contrast to the SMB and HML portfolios, the WML portfolios are updated monthly. The returns are calculated based on a strategy of buying the winners and selling the losers from the previous month.[11] Each of the portfolios formed this way are held for six months. We calculate both a country version, as well as a global version of the factor-mimicking portfolios. In the global version, the ranking is employed universally across all the stocks in all the markets in our sample. Market returns are calculated as the value-weighted average return over all stocks in the market. Because our central tests will pool returns across markets, we convert local currency returns to U.S. dollars returns, so as to make the returns comparable across markets. Before using market or single portfolio returns we subtract the three-month short-term U.S. Treasury yield. The factor returns in U.S. dollars for the country and world factors are presented in Table II.

[10] For Israel, due to limited availability of firms with necessary data on the characteristics used to form the factor mimicking portfolios, the time series is shortened in several of the tests to start from July 1997 instead of October 1989. This is mostly due to lack of book-to-market and cash-flow-to-price data.

[11] In order to mitigate the impact of bid-ask bounce, the winners (losers) from month t are purchased (short sold) in month t+2, so one month is skipped between ranking and holding

Because the surveys are done on the second Monday of the month, they can be as early as the 8th and as late as the 16th of the month. To make sure that returns match the precise timing of the surveys, we calculate portfolio returns from the evening of the survey date to the evening of the next survey date. This procedure means that some months will have a few days more than other months. As long as there is no systematic pattern, these differences should cancel out in our tests.

In Table III we present correlations among all our measures. Most notable is that GDP growth and changes in GDP growth are highly correlated with production and private consumption. As such, inferences coming from these variables are likely be similar. Wage growth is highly correlated with inflation, which also suggests that inferences will be similar.

From the correlations, it does not appear that any of the macroeconomic series (or more importantly, the changes in those series) are highly correlated with the factor returns other than the market. The highest correlation between changes in a macroeconomic series and factor returns is between changes in production and WML, as well as inflation and WML, and it is a mere .07.

III. Associations Between Factor Returns and Macroeconomic Forecasts

In this section we examine the relation between returns to the market and the SMB, HML, and WML factor portfolios and macroeconomic forecasts as a proxy for investor expectations. For parsimony we focus exclusively on local and global versions of size, value and momentum factors as in Hou, et al. (2011), as opposed to the Fama and French (2012) version, which uses regional and global factors. While we consider the impact of macroeconomic risk on

both local and global factors, we focus primarily on local factors, because Hou, Karolyi and Kho (2011) and Fama and French (2012) findings indicate that most of the models' success in pricing the international cross-section and time-series of stock returns comes from the local factors, though global factors do contribute at the margin. This suggests that, if these four factors are indeed successful because they proxy for risk, it is likely that the risk is more local than global in nature.

We start the analysis by focusing solely on the United States. We do this for two reasons. First, most prior work has been focused on the US, so starting with the domestic setting provides comparability to prior work. Second, by starting with the US, the pooled international tests, which follow, provide us international validation for the US results.

A. Macroeconomic Risk and Returns in the U.S. and 20 Markets

We now turn to regressions in order to examine whether changes in macroeconomic expectations, as proxied by changes in forecasts, impact factor returns. We regress excess market returns, the two value factor returns, size and momentum returns, as well as the excess returns to the long and short portfolios that comprise the factors, on residual changes in the monthly revisions to the macroeconomic forecasts (see section II.A for a description of the residual changes and the benefits of using them).

In each specification we include the lagged term spread, dividend yield and short rates for a couple of reasons. Campbell and Diebold (2005, 2009) show that term spread, dividend yield, short rates and default spread provide information about long horizons in addition to short-horizon information, whereas growth forecasts predominantly contain information which is relevant for the medium and short horizon. In addition these predictive variables have been

shown to help explain the returns to these factors (Petkova, 2006). For this reason, we run specifications with and without the term spread, dividend yield and short rates, but the results are nearly the same, so we only report those with dividend yield, term spread and short rates included. The default spread is unavailable for all countries, but the U.S., and so it is excluded from our tests. Returns are expressed in U.S. dollar terms to make the returns comparable across markets. Except when we report results for the U.S. alone, we choose pooled regressions with two-way clustering by time and by country over simple country-by-country regressions, because pooled regressions allow us to control for common co-movement across countries and within markets, while at the same time allowing us to exploit cross-country differences to improve the power of our tests. As explained in Section II.A, Consensus Economics forecasts are always for a full calendar year. To control for possible seasonality in returns, as well as seasonality induced by this survey method, we include dummy variables for each month but January. In the tables we suppress these dummies to conserve space.[12]

As discussed in Section II.A, following Choi, Kalay and Sadka (2011), we regress the change in the macroeconomic forecast for each series on one lag of the series and use the residuals in the regressions to avoid any problems that predictability might cause. Once this is done we standardize the residuals by dividing by the standard deviation, so that each macroeconomic shock has a mean of zero and a standard deviation of one.

[12] For robustness, we used several methods to adjust for the fact that the forecast period changes over time. For instance, we scaled forecast changes by (a) the standard deviation of the forecast given and (b) by the average standard deviation for all forecasts made in a month respectively. In additional tests, we interacted the forecast changes by the month to allow macroeconomic forecast changes to have a different impact on portfolio returns in different months. All these methods yielded qualitatively similar results, so we decided to stay with the most straightforward method to control for the seasonality, so as to minimize concern that our adjustment techniques were spuriously driving our findings.

Returns are calculated from time *t*-1 to time *t*, as are the changes in forecasts. We do this because we want to capture how changes in investors' macroeconomic expectations impact factor returns. If markets are efficient, prices and returns should reflect the changes in expectations, as they occur, not after (or before). The drawback of measuring macroeconomic forecast changes and returns at the same time is that the results could reflect reverse causality, biasing the tests toward finding stronger results. Irrespective of the causal direction, these tests tell us about the relation between macroeconomic risk and factor returns. However, to more precisely identify the causal relation between changes in forecasts and factor returns, in Section III.B we examine the impact of surprise macroeconomic news announcements on factor returns and their base portfolios.

We expect that if HML_{BTM}, HML_{CFP}, SMB and WML reflect a given risk, then the factor returns will covary *positively* with the risk, delivering *higher* returns precisely when the marginal utility is low; for example, high factor returns as economic expectations improve. This would be consistent with the factors being priced because of their relation to macroeconomic risk. If we see the opposite (i.e., a negative covariance), it suggests that the factors act as a hedge, which, much like insurance, provides return when it is the most useful. Though it is possible for a factor to act as a hedge for macroeconomic risk, this would be inconsistent with the theory which considers the factor priced because it proxies for macroeconomic risk, as we would expect to observe a lower return for assets that commove negatively with the macroeconomy (Cochrane, 2005; Maio and Santa-Clara, 2012).[13]

[13] One might expect HML to have a negative relation with changes in GDP growth because growth stocks are similar to high duration bonds, which have a larger fraction of value coming from cash flows in the more distant future. By contrast, value stocks are akin to low (or lower) duration bonds. As such, the price of growth stocks should be more sensitive to changes in discount rates and, potentially, to change in future growth implied by changes in GDP growth. We thank the referee for pointing out this alternate hypothesis. See Lettau and Wachter (2011) for a discussion.

A.1 Regressions of Local Factors on Local Macroeconomic Forecast Changes

In this section we regress local factor and portfolio returns on changes in local GDP growth, inflation, production growth, consumption growth and wage growth forecasts. We start with regressions of local factor and portfolio returns on changes in local macroeconomic risks, because 1) Hou, Karolyi and Kho's (2011) findings suggest that local factors are relatively more important than global and 2) local factors and portfolio returns are likely to be more sensitive to local risks than global. We will consider global risks in the next subsection (III.A.2).

We start by running one macroeconomic forecast measure at a time so as to maximize the number of countries examined in Tables IV and V. In Table VI we look at multiple macroeconomic forecast measures at a time, but only for the measures available in all 20 countries: changes in inflation, GDP growth and production growth forecasts. For comparability to prior research we begin by separately examining the response of U.S. factors to changes in U.S. macroeconomic forecasts in Table IV. Overall, these tables provide evidence that market returns exhibit strong covariance with changes in macroeconomic forecasts, while the relation between changes in macroeconomic forecasts and the other factors, except HML_{BTM}, is ambiguous.

In Table IV we examine the relation between U.S. factor and excess portfolio returns, one macroeconomic risk at a time. We see that a one standard deviation change in forecast U.S. GDP growth is associated with a 1.467% increase in monthly excess market return in Panel A. The response of returns on the portfolios that make up HML_{BTM}, HML_{CFP}, SMB and WML to forecast GDP growth changes ranges from 1.265% to 2.547% per month.

U.S. HML_{BTM} has a statistically significant relation with U.S. GDP growth forecasts (Panel A) and Consumption forecasts (Panel D). A one standard deviation change in GDP forecasts is associated with an 85.2 basis point increase in HML_{BTM} returns, consistent with HML_{BTM} proxying, at least in part, for GDP growth related risk in the U.S. Noteworthy is that the adjusted R^2 in this equation is only 4.8% (3.4% in the regression with changes in forecasted consumption) and the coefficient is substantially lower than the coefficient on the individual portfolios that make up HML_{BTM}.

Looking at the HML_{CFP} and SMB factors in Panel A, the sensitivity to changes in forecast GDP growth are roughly the same for the long and the short portfolio, so that the effect cancels out in the factor returns. This is important, because it means that the reason we find no significant relation between changes in GDP growth forecasts and the cash-flow-to-price HML factor, or the SMB factor, is not due to having low powered tests, but rather because there is not GDP growth risk exposure in the factor portfolios. The same holds true for changes in the other macroeconomics variables we investigate in Panels B through D.

WML factor returns are negatively related to GDP (Panel A) and consumption (Panel D) growth. Given that growth and consumption should co-vary negatively with the marginal utility of wealth, the negative relation implies that WML provides insurance-like high returns when the marginal utility of wealth is high, consumption is low and the economy is performing poorly. Hence, our results strongly imply that WML is not priced because it proxies for GDP or consumption risk.

In Panel B we see no evidence of any relation between inflation and portfolio or factor returns. One might be concerned that this is due to a different impact of inflation on returns during recessions and expansions, but in unreported tests we include interactions with both ex-ante (forecast) recessions and ex-post observed recessions and the findings are similar.

In Table V, we examine whether the findings for the U.S. are typical or whether the U.S. is an outlier. We do this by extending our sample to the full set of 20-markets using pooled regressions with two-way clustering by time and by country to control for common co-movement across countries and within markets as noted above. Due to data availability, we now add changes in forecast wage growth (available for 10 markets) to the macroeconomic risks considered. Comparing Tables IV and V, the results are largely similar with a few exceptions. Most notably, across markets, WML no longer acts as a hedge against GDP or consumption risk and HML_{CFP} is now negatively correlated with changes in consumption forecasts consistent with HML_{CFP} acting as a hedge against this risk.

The relation between HML_{BTM} and GDP growth is smaller economically; the coefficient drops from 0.852 for the U.S. alone to 0.302 in the pooled sample with an adjusted R^2 of only 1.5%. In addition, HML_{BTM} is not significantly related to changes in forecast consumption (Panel D).[14]

In Table VI we regress the same U.S. and local factor returns and portfolios on changes in inflation, GDP growth and production growth forecasts together. We exclude consumption and wage growth because they are available in only 10 and 12 of the 20 markets, respectively. Panel A presents the results for the U.S. alone, while Panel B presents the results for all 20-markets as in Table V. We find substantially similar results when comparing the results in Table VI to the single-variable results in Tables IV and V. Once again, the relation between changes in GDP growth forecasts and HML_{BTM}, shown in Table VI, Panels A and B, is similar to what we saw in Tables IV and V. WML is negatively related to GDP growth shocks, but it is no longer

[14] The fact that the results are weaker in the 20-market sample as compared to the U.S. sample, suggests that perhaps the results are driven by the U.S. returns. In unreported tests, we exclude the US from the sample and rerun Table 5. Although the t-stat decreases, it remains significant at the 10% level (with a p-value of 0.08).

significant in the U.S. although it now is significant at the 10% level in the pooled model. The weaker relation could result from what Cochrane (2005) notes is a historic, perhaps coincidental, correlation between high inflation and GDP growth. Nonetheless, this negative relation is inconsistent with a risk factor explanation that hinges on factors being priced due to their negative covariance with marginal utility. A major difference between table VI and the prior tables is that GDP now subsumes much of the effect of Industrial Production. In addition, inflation is positively related to HML_{CFP} in the U.S. and HML_{BTM} in the pooled sample, as one might expect of a factor that hedges inflation risk.

Because we are using U.S. dollar returns, one might be concerned that the relations we find are the result of an impact of GDP and inflation on exchange rates and not on the local factor returns, since Andersen, Bollerslev, Diebold, Vega (2003) have shown that macroeconomic news surprises impact exchange rates. However, if exchange rates impact the long portfolios and short portfolios in the factors equally, these exchange rate effects will cancel out.

Ideally, we would like to include forecasts of the term spread and default spread, since the factors, HML in particular, may reflect differences in the duration of cash-flows (see Lettau and Wachter, 2011, for a discussion) and default risk (see Fama and French, 1998, Vassalou and Xing, 2004, and Black, 2006). While forecasts of default risk are unavailable for all markets, Consensus Economic does provide forecasts of the future long and short yields for 12 markets. Using these forecasts yields we form a forecast of the term spread and include changes in this measure in our central tests similar to those reported in Tables IV, V and VI. Those results are qualitatively the same and, as such, we do not report them.

In summary, from Tables IV, V and VI we see that market returns co-move with changes in forecasts about economic output and consumption in a manner consistent with market

returns capturing this macroeconomic risk. The impact of changes in GDP growth forecasts on HML_{BTM} returns suggest that HML_{BTM} reflects some GDP co-movement risk; however, changes in GDP forecasts explain a very small fraction of HML_{BTM} returns, only 4.8 percent in the U.S. sample and 1.5 percent in the 20-country sample. In addition, the coefficient on changes of GDP is small (0.852 in the U.S. and 0.302 in the pooled model) compared to those of the market (1.467 in the U.S. and 0.922 in the pooled model), suggesting that the market is 1.7 times (US) to 3 times (pooled) more sensitive to GDP risk than the HML_{BTM} factor. Hence, we are reluctant to interpret these evidence as HML_{BTM} being priced because it proxies for GDP growth risk. HML_{CFP}, SMB and WML show no consistent patterns. Notably this is not because of the low power of the tests, but because the risk exposures cancel out.

A.2 Regressions of Local Factors on Local and Global Macroeconomic Forecast Changes

In Table VII we examine the incremental impact of global macroeconomic risks on local factors. Consensus Economics does not provide global forecasts, so instead we create a global forecast by using the market-capitalization-weighted forecast averaged over all 20 markets. Due to the market value weighting, the global forecasts are highly correlated with the U.S. forecasts. Therefore, we do not present results for the U.S. by itself. Instead, we turn directly to the pooled models. In general, the results for local macroeconomic measures are similar to those in Table VI, except that HML_{CFP} gains and WML loses marginal significance to local GDP forecast changes. Generally, the relation between factor returns and global macroeconomic forecasts changes are weak, though in a couple of instances, for HML_{CFP} and WML, the negative coefficients suggest that the factors hedge global risks. The message is largely the same and the results are inconsistent with HML_{BTM}, HML_{CFP}, SMB and WML proxying for the macroeconomic risks we

examine. In summary, while the market behaves much as a proxy for macroeconomic risks should, HML_{BTM}, HML_{CFP}, SMB and WML do not consistently do so.

A.3 Global Factor Sensitivity to Macroeconomic Risks

In Table VIII we examine whether changes in global forecasts affect global factor returns. We examine global factors because while the evidence in Hou, Karolyi and Kho (2011) and Fama and French (2012) suggest that local factors explain more of asset returns, global factors are at least somewhat important. Changes in global GDP growth forecasts have a substantial impact on global portfolios, but not on the global factors, much like the results in Tables V, VI and VII with local factors and local and global macroeconomic measures. The big difference is that high average inflation around the world is negatively associated with portfolio, but not factor returns. Changes in global production have impact on only a few portfolios and none of the factors. In short, global macro risks do not help explain the returns to global HML, SMB and WML factors.

B. Macroeconomic News Response Coefficients

Because the regressions in tables IV through VIII use factor returns that are contemporaneous to the changes in our macroeconomic expectations proxy, one might be concerned that what we are measuring is the impact of returns on macroeconomic expectations and not the other way around. However, given the absence of such a strong link between the macroeconomic forecast changes and the factor portfolio returns, the direction of causality should not impact inferences. Nonetheless, in order to address this concern, in this section we examine the return response to

macroeconomic surprises. In this way we can be certain that it is the return that is responding to the news and not the other way around.

In Tables IX and X we extend our analysis to include more potential factors: GDP growth, consumer prices (CPI), producer prices (PPI), industrial and manufacturing production, purchasing manager indices (PMI), retail sales, unemployment, consumer confidence and trade balance. We include these additional series simply because 1) we are agnostic about which sources of macroeconomic risks the factors proxy for and 2) the forecast and actual data are available from Bloomberg. Each column shows the results of regressions of the following form:

$$r_{p,t} = \alpha + \beta_{p,n} Std\_Surprise_{n,t} + \varepsilon_{p,t}, \quad (1)$$

where $r_{p,t}$ is the one day return in percent on portfolio or factor p on day t, $Std\_Surprise_{n,t}$ is the difference between the actual and the mean forecast scaled by the standard deviation of the surprises in sample, and $\beta_{p,n}$ is the sensitivity of portfolio or factor p to that standardized surprise. Each set of 3 rows represents one regression of either a factor or portfolio return on the standardized surprise listed in the column header. In table IX we present results for the U.S. and in Table X for our full 20-country sample.

Compared to the earlier findings, the results for the U.S., presented in Table IX, are superficially quite different. While GDP growth surprises are not significantly associated with any of the portfolios, PMI, retail sales and unemployment generally are. These findings are consistent with Gilbert, Scotti, Strasser and Vega (2015) who find that bond prices in the U.S. do not respond to most GDP growth announcements, but they do respond to announcements which "nowcast" GDP growth, inflation, and changes in the Fed Funds rate, such as PMI, retail sales and non-farm payrolls. In this light, the findings are quite consistent with our prior results in Section III.A as the market and each portfolio are generally significantly responsive to PMI, retail sales and unemployment surprises, but the factors, for the most part, are not. Importantly, this

includes HML_{BTM}. Once again this is due to the fact that the coefficients on the long and short portfolios are of similar magnitude. The exceptions are HML_{CFP}, which appears to hedge inflation and PMI surprises. WML is negatively associated with consumer price inflation (daily WML returns are 7.4 basis points lower in response to a 1 standard deviation inflation surprise), and, weakly, to industrial production and unemployment. The U.S. results do not make a strong case for any of the factors proxying for macroeconomic risk factors.

In the 20-market pooled sample, the results for GDP, CPI, PPI and production are remarkably similar to the results for local factors and local macroeconomic risks in Table V. GDP surprises positively impact market and portfolio return, but not the returns of the factors themselves. A one standard deviation GDP surprise translates to daily excess returns on the market which are 10.3 basis points higher. The response of other portfolios is similar, ranging from 5.8 to 11.6 basis points when significant, while the response of the factors themselves are largely insignificant. The results for PMI and unemployment are similar except that HML_{BTM} is negatively associated with unemployment and weakly positively associated with PMI (acting as proxies for these risks), although not GDP growth itself. SMB acts as a hedge against these risks (opposite relation to HML_{BTM}). Overall, market returns are much more sensitive to the macroeconomic measures we examine, as are many of the portfolios that make up the factors; but the factors themselves show, generally weak associations with macroeconomic risks – and they sometimes even act as hedges against that risk.

IV. Conclusion

In this paper we examine whether the empirical success of the size, value and momentum factors is because they act as proxies for undiversifiable sources of macroeconomic risk. This is the first paper to test for the macroeconomic risks that may be associated with

international versions of the three-factor and four-factor models developed by Hou, Karolyi and Kho (2011) and Fama and French (2012). In addition, we improve on prior research by using consensus forecasts as a direct measure of investors' expectations, thereby circumventing problems associated with using realized measures as expectations.

In short, we find evidence that, within and across 20 developed markets, market-excess returns do respond to changes in macroeconomic forecasts in ways consistent with the market providing a risk premium because of its exposure to macroeconomic risks. Changes in macroeconomic forecasts help explain as much as 11% of changes in monthly excess market returns. For HML, SMB, and WML our evidence does not support a macroeconomic-risk-based explanation for the success of these factors. SMB, WML, and HML formed on cash-flow-to-price as in Hou et al. (2011) (HML_{CFP}) show no statistically or economically significant relation to changes in macroeconomic forecasts consistent with these factors being priced due to their covariance with the macroeconomic risks studied. Notably these findings are not due to the use of low powered tests. High and low cash-flow-to-price and small and large-size portfolios are sensitive to innovations in real GDP growth and inflation forecasts, but the sensitivities are economically similar and statistically indistinguishable. In some specifications WML appears to reflect GDP growth (and consumption growth in the U.S.), but it acts more as a hedge than as a proxy for risk. We do find some evidence that when HML is formed on book to market as in Fama and French (2012) (HML_{BTM}), it is correlated with macroeconomic risks in a manner consistent with a proxy for these risks; however, changes in GDP forecasts explain a very small portion of the variation in the return of the HML portfolio. Perhaps more importantly, the relation between changes in macroeconomic measures and HML_{BTM} does not hold for the tests using macroeconomic announcement surprises.

Together these findings suggest little role for aggregate macroeconomic risks in explaining the returns to these successful factors. Recent work by Savor and Wilson (2013, 2014) suggests that the days around macroeconomic announcements may be periods when systematic risks are particularly focused – that is, the signal to noise ratio is particularly high – and factor models may be particularly successful. Our results suggest that this is likely to be true only for systematic risk related to the market, because we show that it is only excess market returns that consistently respond to changes in macroeconomic forecasts. Our results leave open the possibility that these factors, HML, SMB and WML, proxy for other sources of risk that are not well captured by macroeconomic measures or possibly even persistent mispricing. We leave such studies for future research.

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Figure 1. U.S. Market Return, Forecast US GDP Growth, Inflation and NBER Recessions

This figure plots the U.S. value weighted market return, along with forecast GDP growth and forecast inflation. Returns are from Datastream and forecasts are from Consensus Economics. The grey regions indicate recessions, as recorded by NBER.

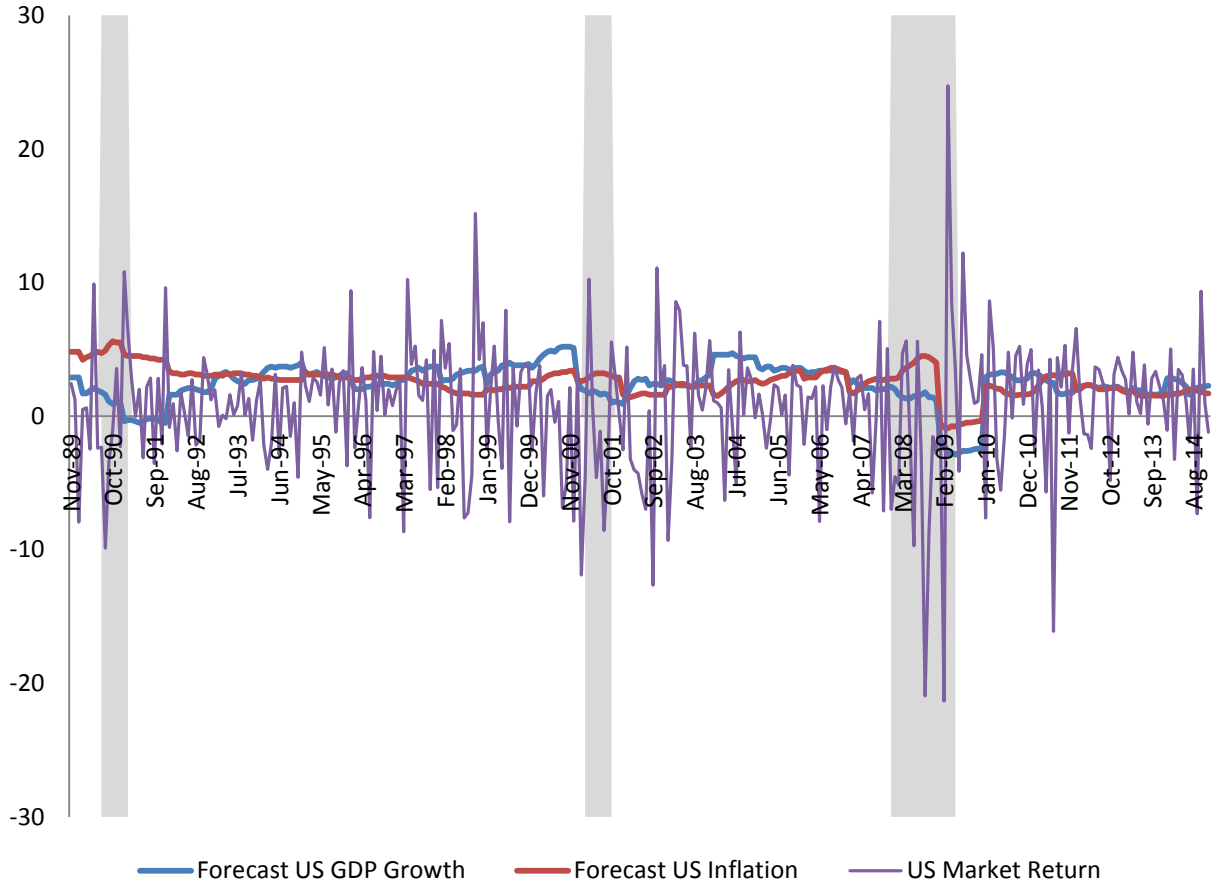

Table I. Macroeconomic Forecasts

This table shows the average change in macroeconomic growth forecast for real GDP (GDP), Consumer Prices (Inflation), Production (Prod), Consumption (Cons) and Wages (Wage) for each market in our sample. The forecasts are obtained monthly from Consensus Economics. The sample extends from November 1989 to December 2014 and covers 20 markets.

	ΔGDP				Δ Inflation				ΔProd			
	Mea	Std	Min	Max	Mea	Std	Min	Max	Mea	Std	Min	Max
Belgium	-	0.27	-	0.87	-	0.22	-	0.88	-	0.81	-	4.60
Canada	-	0.27	-	1.08	-	0.19	-	0.85	-	0.65	-	2.97
Denmar	-	0.22	-	0.78	-	0.17	-	1.07	-	0.92	-	3.37
Finland	-	0.41	-	1.36	-	0.23	-	0.78	-	1.07	-	3.59
France	-	0.25	-	1.36	-	0.15	-	0.77	-	0.55	-	1.54
German	-	0.30	-	1.43	-	0.15	-	0.39	-	0.67	-	1.52
Greece	-	0.45	-	1.14	0.00	0.37	-	1.86	-	1.10	-	3.37
Ireland	-	0.53	-	2.20	-	0.31	-	0.87	-	1.43	-	5.17
Israel	-	0.50	-	3.12	-	0.49	-	2.01	-	0.97	-	2.86
Italy	-	0.23	-	0.49	0.00	0.22	-	1.52	-	0.66	-	1.41
Japan	-	0.42	-	1.38	-	0.19	-	0.60	-	1.37	-	4.93
Netherl	-	0.30	-	1.06	0.01	0.18	-	0.69	-	0.58	-	1.31
Norway	0.01	0.28	-	0.77	-	0.20	-	0.78	-	0.68	-	2.05
Portuga	-	0.31	-	1.42	0.00	0.32	-	2.43	-	1.19	-	5.44
South	-	0.40	-	1.25	-	0.51	-	1.57	-	1.26	-	3.79
Spain	-	0.25	-	0.67	0.01	0.24	-	1.05	-	0.88	-	2.05
Sweden	-	0.30	-	1.16	-	0.30	-	1.35	-	0.80	-	2.81
Switzerl	-	0.25	-	1.10	-	0.21	-	0.77	-	0.88	-	2.77
UK	-	0.24	-	0.88	0.01	0.29	-	1.40	-	0.47	-	3.01
USA	-	0.33	-	1.07	-	0.23	-	0.86	-	0.55	-	1.96
Global	-	0.23	-	0.79	-	0.17	-	0.91	-	0.51	-	1.58

Table I. Macroeconomic Forecasts (*Continued*)

	ΔCons				ΔWage			
	Mean	Std	Min	Max	Mean	Std	Min	Max
Belgium								
Canada	-	0.30%	-	1.66%	-0.01%	0.33%	-	0.81%
Denmark								
Finland								
France	-	0.20%	-	0.49%	-0.01%	0.16%	-	0.76%
Germany	-	0.26%	-	1.07%	-0.02%	0.15%	-	0.77%
Greece								
Ireland								
Israel								
Italy	-	0.24%	-	0.50%	-0.01%	0.18%	-	0.57%
Japan	-	0.34%	-	1.10%	-0.08%	0.39%	-	1.41%
Netherland	-	0.37%	-	0.81%	0.00%	0.16%	-	0.39%
Norway	0.00%	0.40%	-	1.14%	0.00%	0.21%	-	0.76%
Portugal								
South								
Spain	-	0.32%	-	1.45%	-0.01%	0.29%	-	2.09%
Sweden	-	0.27%	-	1.39%	-0.02%	0.18%	-	0.59%
Switzerlan	0.01%	0.20%	-	0.67%				
UK	-	0.29%	-	2.44%	-0.06%	0.19%	-	0.48%
USA	0.01%	0.30%	-	0.69%				
Global	-	0.19%	-	0.40%	-0.05%	0.23%	-	0.44%

Table II. Portfolio Returns

This table shows the sample coverage as well as the average USD portfolio return for each market in our sample. The data is obtained from Thompson Reuters Datastream. We calculate market returns as well as factor-mimicking returns for SMB, HML_{BTM}, HML_{CFP}, and WML. The factor-mimicking returns are calculated as the difference between the return on firms in the highest and lowest quintiles of book-to-market (HML_{BTM}), cash-flow-to-price ($HML_{CFP)}$, and past returns (WML). SMB is calculated as the difference between the returns on the smallest quintile of firms minus the return on the largest quintile of firms. The sample extends from December 1989 to December 2014 and covers 20 markets.

	Number of Firms			Mkt. Prem		SMB		HML_{BTM}		HML_{CFP}		WML	
	Mea	Min	Max	Mean	Std	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Belgiu	159	105	228	0.58	5.09	-	5.08	0.48	5.69	0.28	5.19	1.38	4.99
Canada	2,1	1,3	2,5	0.69	5.69	0.55	7.61	0.39	5.21	0.55	5.98	-	7.53
Denma	207	134	276	0.80	5.82	-	4.90	-	4.99	0.57	5.70	1.44	3.88
Finland	119	54	164	1.00	8.66	-	7.77	-	10.0	0.28	9.25	0.85	5.46
France	792	292	923	0.51	5.66	-	5.12	0.58	6.44	0.35	5.51	1.35	4.47
Germa	827	669	1,0	0.39	5.71	-	5.23	0.24	5.79	0.68	6.66	1.78	4.35
Greece	208	76	308	0.29	11.1	1.21	12.3	1.47	8.65	1.22	8.48	1.52	12.8
Ireland	43	24	70	0.70	9.84	-	10.7	0.30	13.2	0.01	14.3	1.62	8.91
Israel	395	128	541	0.49	5.91	-	6.02	-	6.46	0.93	5.64	0.46	5.50
Italy	240	205	273	0.36	7.66	-	4.99	0.35	7.03	0.62	5.60	1.46	4.63
Japan	3,0	1,6	3,7	-	6.98	0.04	4.65	0.68	3.88	0.45	4.05	0.16	5.10
Netherl	141	78	216	0.62	5.35	-	4.36	0.09	5.92	0.40	6.08	2.99	12.7
Norwa	161	97	234	0.72	7.37	-	5.85	0.31	6.30	0.57	7.26	0.97	5.70
Portug	88	42	153	0.11	6.40	-	6.93	0.21	7.93	2.41	7.75	0.54	5.89
South	335	86	541	0.79	8.04	-	5.95	0.98	7.13	0.72	5.54	1.97	4.98
Spain	144	86	176	0.58	6.91	-	5.76	0.37	5.76	1.82	6.50	1.04	5.45
Swede	324	207	429	0.86	7.27	-	6.85	0.69	6.88	0.72	7.66	1.34	5.42
Switzer	261	209	366	0.61	4.96	-	4.32	0.73	4.76	0.00	5.29	1.11	4.52
UK	1,5	1,1	1,8	0.57	5.09	-	4.35	0.33	5.54	0.29	6.18	1.97	3.65
USA	6,8	5,0	9,6	0.64	4.95	-	5.89	0.36	4.73	0.29	5.85	1.16	4.85
Global	17,	7,4	22,	0.54	5.05	-	5.22	0.34	4.51	0.59	4.65	0.85	5.15

Table III. Correlation Coefficients

This table shows Pearson correlation coefficients between the variables in our sample. The data have been pooled across all markets before calculating the correlation coefficients.

	(rm -rf)	SMB	HMLBTM	HMLCFP	WML	GDP	Δ GDP	Inflation	Δ Inflation	Prod.	Δ Prod.	Con.	Δ Cons.	Wage	Δ Wage	Term Spread	Dividend Yield
Mkt.	1.00																
SMB	-0.45	1.00															
HMLBTM	0.12	0.05	1.00														
HMLCFP	0.03	-0.13	0.30	1.00													
WML	-0.25	0.01	-0.10	0.05	1.00												
GDP	-0.06	0.03	0.00	0.02	0.06	1.00											
Δ GDP	0.03	0.03	0.01	0.00	0.06	0.29	1.00										
Inflation	-0.04	0.02	0.02	0.03	0.01	0.29	-0.07	1.00									
Δ	-0.06	0.01	0.03	0.05	0.07	0.09	0.10	0.10	1.00								
Prod.	-0.09	0.05	0.00	0.01	0.09	0.83	0.26	0.22	0.10	1.00							
Δ Prod	-0.01	0.03	-0.01	-0.01	0.07	0.17	0.51	-0.02	0.16	0.28	1.00						
Con.	-0.07	0.03	0.02	0.03	-0.01	0.87	0.20	0.21	0.09	0.56	0.15	1.00					
Δ Cons.	0.03	0.06	0.03	-0.04	0.00	0.20	0.65	-0.10	0.09	0.16	0.38	0.24	1.00				
Wage	-0.03	-0.03	0.02	0.03	0.02	0.39	-0.03	0.72	0.00	0.19	-0.01	0.47	0.00	1.00			
Δ Wage	-0.04	0.02	0.00	0.02	0.04	0.15	0.27	0.05	0.24	0.15	0.23	0.11	0.19	0.11	1.00		
Term	0.04	-0.02	-0.02	0.00	0.01	-0.38	0.00	-0.43	0.01	-0.26	0.00	-0.25	0.06	-0.46	0.01	1.00	
Dividend	0.03	-0.07	-0.02	0.01	-0.04	-0.29	-0.28	0.17	-0.03	-0.34	-0.22	-0.35	-0.20	0.21	-0.06	0.09	1.00
Short	-0.04	0.04	0.02	0.02	-0.02	0.26	-0.05	0.79	0.01	0.20	0.00	0.28	-0.04	0.74	0.03	-0.59	0.05

Table IV. Regressions of US Factors and Portfolio Returns on Changes in Forecasts

This table shows regression of the factors portfolio, including their individual components on changes in GDP forecast (Panel A), Inflation forecasts (Panel B), Production forecasts (Panel C), and Consumption forecasts (Panel D). Value, growth, small, big, winner and loser portfolios returns are all in excess of U.S. Three-Month Treasury yield. The sample refers to monthly data on macroeconomic forecasts and USD returns for 20 markets from December 1989 until December 2014. Month dummies are included in all specification models. T-Statistics are presented underneath each coefficients and are based on robust standard errors. Stars denote 10% (*) and 5% (**) significance respectively.

PANEL A: US portfolio returns regressed on changes in US GDP growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.337	1.066	0.988	-0.078	-0.756	0.766	1.521	-0.311	-0.051	0.260	2.016	3.017	1.001
	(0.242)	(0.775)	(0.482)	(-0.051)	(-0.395)	(0.473)	(0.594)	(-0.135)	(-0.023)	(0.187)	(1.611)	(1.632)	(0.419)
Δ GDP	1.467**	0.852**	2.117**	1.265**	-0.221	1.868**	2.089**	-0.130	1.304**	1.434**	-0.673**	1.875**	2.547**
	(3.334)	(2.546)	(3.248)	(2.938)	(-0.783)	(3.550)	(3.535)	(-0.379)	(4.101)	(3.259)	(-2.506)	(4.371)	(4.408)
Term Spread t-1	-0.461	0.415	-0.190	-0.605*	0.161	-0.367	-0.528	0.666	0.195	-0.471	0.438	0.211	-0.226
	(-1.334)	(1.242)	(-0.374)	(-1.700)	(0.417)	(-0.849)	(-0.959)	(1.563)	(0.493)	(-1.367)	(1.217)	(0.533)	(-0.386)
Dividend Yield t-1	1.121*	-0.823	0.584	1.407**	-0.753	0.803	1.556	0.557	1.680**	1.122*	-2.441**	0.411	2.851**
	(1.8	(-1.37	(0.6	(2.2	(-0.92	(1.0	(1.6	(0.6	(2.1	(1.8	(-3.16	(0.5	(2.3

	56)	7)	50)	45)	1)	03)	11)	87)	30)	57)	6)	60)	52)
Short Rates t-1	-0.303	0.078	-0.242	-0.320*	0.117	-0.256	-0.373	0.173	-0.126	-0.298	0.438**	-0.055	-0.493
	(-1.622)	(0.439)	(-0.884)	(-1.703)	(0.493)	(-1.024)	(-1.277)	(0.666)	(-0.540)	(-1.598)	(1.989)	(-0.263)	(-1.460)
Adj. R^2	0.091	0.048	0.086	0.066	0.028	0.103	0.074	0.059	0.126	0.089	0.154	0.113	0.160

PANEL B: US portfolio returns regressed on changes in US inflation growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.295	1.042	0.928	-0.114	-0.751	0.713	1.464	-0.307	-0.088	0.220	2.036	2.965*	0.928
	(0.228)	(0.790)	(0.494)	(-0.078)	(-0.394)	(0.487)	(0.618)	(-0.133)	(-0.041)	(0.169)	(1.650)	(1.677)	(0.403)
Δ Inflation	0.208	-0.017	0.212	0.229	0.686	0.340	-0.346	-0.177	0.044	0.221	-0.468	-0.007	0.461
	(0.371)	(-0.045)	(0.271)	(0.408)	(1.602)	(0.508)	(-0.414)	(-0.376)	(0.084)	(0.398)	(-1.160)	(-0.012)	(0.552)
Term Spread t-1	-0.258	0.521	0.096	-0.425	0.191	-0.102	-0.293	0.634	0.364	-0.271	0.313	0.448	0.135
	(-0.723)	(1.556)	(0.187)	(-1.166)	(0.499)	(-0.230)	(-0.521)	(1.443)	(0.878)	(-0.761)	(0.863)	(1.079)	(0.226)
Dividend Yield t-1	0.797	-1.011*	0.116	1.128*	-0.700	0.392	1.092	0.585	1.391*	0.806	-2.294**	-0.004	2.290*
	(1.224)	(-1.722)	(0.126)	(1.697)	(-0.851)	(0.462)	(1.062)	(0.713)	(1.691)	(1.239)	(-2.977)	(-0.005)	(1.811)
Short Rates	-	0.12	-	-	0.11	-	-	0.16	-	-	0.39	0.05	-

t-1	0.215	6	0.117	0.243	5	0.143	0.259	2	0.050	0.212	2*	3	0.339
	(-1.079)	(0.699)	(-0.404)	(-1.240)	(0.491)	(-0.541)	(-0.839)	(0.615)	(-0.206)	(-1.066)	(1.782)	(0.232)	(-0.964)
Adj. R^2	0.003	0.015	-0.008	0.006	0.034	0.002	0.010	0.059	0.075	0.004	0.140	0.014	0.072

Table IV. Regressions of US Factors and Portfolio Returns on Changes in Forecasts (*Continued*)

PANEL C: US portfolio returns regressed on changes in US production growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.438	1.096	1.119	0.023	-0.754	0.873	1.627	-0.349	0.013	0.362	1.991	3.113*	1.122
	(0.341)	(0.842)	(0.608)	(0.016)	(-0.396)	(0.589)	(0.688)	(-0.149)	(0.006)	(0.280)	(1.611)	(1.805)	(0.506)
Δ Prod	2.262**	0.848	3.026**	2.179**	-0.074	2.532**	2.606**	-0.666	1.587**	2.254**	-0.695	2.355**	3.050**
	(3.444)	(1.325)	(2.969)	(3.358)	(-0.133)	(3.008)	(2.584)	(-1.132)	(2.627)	(3.446)	(-0.937)	(3.418)	(2.547)
Term Spread t-1	-0.411	0.472	-0.103	-0.575	0.137	-0.282	-0.420	0.689	0.265	-0.424	0.394	0.307	-0.087
	(-1.190)	(1.429)	(-0.205)	(-1.620)	(0.357)	(-0.656)	(-0.767)	(1.624)	(0.673)	(-1.234)	(1.158)	(0.766)	(-0.150)
Dividend Yield t-1	0.962	-0.949	0.337	1.287**	-0.709	0.575	1.285	0.537	1.508*	0.970	-2.343**	0.169	2.512**
	(1.5	(-1.59	(0.3	(2.0	(-0.86	(0.6	(1.2	(0.6	(1.8	(1.5	(-3.09	(0.2	(2.0

	52)	9)	70)	22)	4)	99)	85)	67)	75)	67)	3)	20)	14)
Short Rates t-1	-0.285	0.102	-0.208	-0.310*	0.106	-0.223	-0.329	0.184	-0.097	-0.281	0.420*	-0.016	-0.435
	(-1.507)	(0.567)	(-0.746)	(-1.653)	(0.449)	(-0.875)	(-1.097)	(0.715)	(-0.415)	(-1.494)	(1.951)	(-0.073)	(-1.260)
Adj. R^2	0.079	0.027	0.062	0.071	0.027	0.069	0.046	0.063	0.103	0.080	0.142	0.071	0.117

PANEL D: US portfolio returns regressed on changes in US consumption growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.260	1.019	0.876	-0.143	-0.742	0.665	1.407	-0.311	-0.125	0.185	2.053	2.912	0.859
	(0.199)	(0.765)	(0.459)	(-0.096)	(-0.389)	(0.448)	(0.579)	(-0.135)	(-0.058)	(0.142)	(1.635)	(1.639)	(0.370)
Δ Cons	1.014**	0.656*	1.481**	0.825*	-0.200	1.386**	1.587**	0.091	1.082**	0.991**	-0.512*	1.494**	2.006**
	(2.254)	(1.774)	(2.144)	(1.886)	(-0.656)	(2.519)	(2.651)	(0.261)	(3.317)	(2.214)	(-1.764)	(3.265)	(3.251)
Term Spread t-1	-0.393	0.447	-0.093	-0.540	0.156	-0.291	-0.447	0.639	0.235	-0.404	0.412	0.276	-0.135
	(-1.093)	(1.320)	(-0.176)	(-1.483)	(0.399)	(-0.638)	(-0.799)	(1.467)	(0.593)	(-1.127)	(1.117)	(0.684)	(-0.227)
Dividend Yield t-1	1.069	-0.835	0.514	1.349**	-0.758	0.763	1.521	0.611	1.682**	1.072*	-2.430**	0.398	2.828**
	(1.649)	(-1.40	(0.543)	(2.039)	(-0.91	(0.886)	(1.516)	(0.738)	(2.120)	(1.651)	(-3.07	(0.524)	(2.284)

		4)			2)						7)		
Short Rates t-1	-0.278	0.088	-0.207	-0.295	0.116	-0.230	-0.345	0.160	-0.114	-0.274	0.429*	-0.034	-0.464
	(-1.396)	(0.498)	(-0.717)	(-1.504)	(0.483)	(-0.859)	(-1.146)	(0.605)	(-0.487)	(-1.374)	(1.916)	(-0.160)	(-1.344)
Adj. R^2	0.042	0.034	0.035	0.030	0.028	0.054	0.045	0.059	0.108	0.041	0.146	0.074	0.123

Table V. Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local Forecasts

This table shows regression of the factors portfolio, including their individual components on changes in GDP forecast (Panel A), Inflation forecasts (Panel B), Production forecasts (Panel C), Consumption forecasts (Panel D) and Wage forecasts (Panel E). Value, growth, small, big, winner and loser portfolios returns are all in excess of U.S. Three-Month Treasury yield. The sample refers to monthly data on macroeconomic forecasts and USD returns for 20 markets from December 1989 until December 2014. Standard Errors are clustered on both market and time (year/month). Month dummies are included in all specification models. T-Statistics are presented underneath each coefficients and stars denote 10% (*) and 5% (**) significance respectively.

PANEL A: Pooled regressions: local portfolio returns regressed on changes in local GDP growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.151	1.336	1.094	-0.244	-0.047	0.156	0.202	2.076**	1.793	-0.283	1.626	2.691**	1.065
	(-0.116)	(1.272)	(0.646)	(-0.194)	(-0.078)	(0.100)	(0.134)	(2.624)	(1.640)	(-0.213)	(1.637)	(2.179)	(0.640)
Δ GDP	0.922**	0.302**	1.142**	0.822**	0.202	1.047**	0.844*	-0.03	0.875**	0.905**	-0.13	1.043**	1.173**

	(2.987)	(2.048)	(3.337)	(2.596)	(1.093)	(2.720)	(1.923)	0 (-0.137)	(4.652)	(2.871)	0 (-0.870)	(4.447)	(3.329)
Term Spread t-1	0.068	-0.045	0.043	0.090	0.036	0.060	0.024	-0.023	0.055	0.078	-0.063	-0.004	0.059
	(0.752)	(-0.434)	(0.353)	(0.904)	(0.339)	(0.476)	(0.229)	(-0.338)	(0.902)	(0.821)	(-0.636)	(-0.050)	(0.536)
Dividend Yield t-1	0.336	-0.014	0.298	0.311	-0.008	0.443	0.450	-0.249	0.088	0.337	-0.316	0.185	0.501
	(1.249)	(-0.092)	(0.952)	(1.236)	(-0.061)	(1.355)	(1.265)	(-1.476)	(0.488)	(1.231)	(-1.118)	(0.938)	(1.267)
Short Rates t-1	-0.073	-0.016	-0.054	-0.069	-0.054	-0.075	-0.129	-0.032	-0.032	-0.064	-0.065	-0.101	-0.036
	(-1.209)	(0.306)	(-0.687)	(-1.173)	(1.358)	(-1.036)	(-1.631)	(0.679)	(-0.678)	(-1.042)	(-0.795)	(-1.342)	(-0.407)
Adj. R^2	0.044	0.015	0.035	0.035	0.004	0.037	0.031	0.023	0.043	0.042	0.023	0.035	0.051
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

PANEL B: Pooled regressions: local portfolio returns regressed on changes in local inflation growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.131	1.421	1.437	0.010	0.013	0.475	0.462	2.068**	2.063*	-0.006	1.581	3.012**	1.431
	(0.097)	(1.372)	(0.838)	(0.008)	(0.022)	(0.299)	(0.299)	(2.566)	(1.823)	(-0.004)	(1.595)	(2.356)	(0.840)
Δ Inflation	0.08	0.29	0.26	-0.01	0.11	0.18	0.07	-0.07	0.02	0.09	0.20	0.02	-0.18

	8	0*	7	5	5	8	3	4	3	7	7	5	2
	(0.454)	(1.743)	(1.093)	(-0.094)	(1.267)	(0.784)	(0.331)	(-0.486)	(0.175)	(0.477)	(1.033)	(0.181)	(-0.730)
Term Spread t-1	0.080	-0.041	0.059	0.101	0.039	0.074	0.035	-0.023	0.066	0.089	-0.065	0.009	0.074
	(0.807)	(-0.408)	(0.493)	(0.934)	(0.366)	(0.558)	(0.318)	(-0.342)	(0.957)	(0.870)	(-0.661)	(0.106)	(0.641)
Dividend Yield t-1	0.216	-0.044	0.156	0.201	-0.031	0.310	0.341	-0.247	-0.028	0.219	-0.292	0.046	0.339
	(0.742)	(-0.296)	(0.463)	(0.747)	(-0.244)	(0.871)	(0.897)	(-1.385)	(-0.148)	(0.742)	(-1.035)	(0.217)	(0.830)
Short Rates t-1	-0.081	0.012	-0.064	-0.076	0.052	-0.085	-0.137*	0.033	-0.039	0.072	-0.065	-0.110	-0.046
	(-1.299)	(0.249)	(-0.822)	(-1.246)	(1.293)	(-1.144)	(-1.718)	(0.689)	(-0.839)	(-1.133)	(-0.800)	(-1.461)	(-0.537)
Adj. R^2	0.026	0.015	0.020	0.022	0.004	0.023	0.022	0.023	0.026	0.025	0.023	0.018	0.036
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

Table V. Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local Forecasts (*Continued*)

PANEL C: Pooled regressions: local portfolio returns regressed on changes in local production growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.71	1.476	0.419	-1.06	0.145	-0.43	-0.58	2.111**	1.271	-0.84	1.764	2.134*	0.370

	3			3		8	2			0		
	(-0.498)	(1.249)	(0.224)	(-0.819)	(0.198)	(-0.254)	(-0.352)	(2.545)	(1.151)	(-0.578)	(1.569)	(1.652)	(0.202)
Δ Prod	0.484	0.039	0.587	0.528*	-0.054	0.583	0.638	0.099	0.558**	0.459	0.044	0.743**	0.699**
	(1.393)	(0.265)	(1.567)	(1.840)	(-0.385)	(1.383)	(1.576)	(0.405)	(3.556)	(1.276)	(0.269)	(3.505)	(2.062)
Term Spread t-1	0.106	-0.007	0.106	0.114	0.054	0.111	0.057	-0.041	0.072	0.113	-0.141	-0.009	0.132
	(0.891)	(-0.078)	(0.756)	(1.182)	(0.425)	(0.697)	(0.444)	(-0.482)	(0.928)	(0.912)	(-1.431)	(-0.089)	(1.015)
Dividend Yield t-1	0.347	-0.133	0.253	0.386	-0.107	0.422	0.529	-0.208	0.142	0.350	-0.358	0.218	0.576
	(1.182)	(-0.866)	(0.740)	(1.447)	(-0.722)	(1.189)	(1.347)	(-1.167)	(0.716)	(1.175)	(-1.172)	(0.991)	(1.340)
Short Rates t-1	-0.114*	-0.046	-0.071	-0.116*	-0.074*	-0.100	-0.174*	-0.070	-0.037	-0.107	-0.013	-0.095	-0.082
	(-1.683)	(-0.798)	(-0.848)	(-1.805)	(-1.803)	(-1.302)	(-1.927)	(-1.143)	(-0.703)	(-1.559)	(-0.129)	(-1.042)	(-0.797)
Adj. R^2	0.034	0.014	0.023	0.036	0.003	0.029	0.029	0.026	0.031	0.033	0.026	0.024	0.042
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

PANEL D: Pooled regressions: local portfolio returns regressed on changes in local consumption growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers

Intercept	-1.292	1.630	0.036	-1.594	-0.420	-1.082	-0.661	3.116**	1.616	-1.500	1.176	2.029	0.853
	(-1.014)	(1.556)	(0.021)	(-1.257)	(-0.543)	(-0.747)	(-0.403)	(4.142)	(1.488)	(-1.169)	(0.970)	(1.591)	(0.471)
Δ Cons	0.985**	0.026	0.977**	0.951**	-0.367**	1.014**	1.381**	-0.078	0.901**	0.979**	-0.170	1.061**	1.231**
	(4.595)	(0.175)	(3.872)	(4.548)	(-3.224)	(4.449)	(5.381)	(-0.785)	(5.347)	(4.535)	(-1.569)	(6.119)	(5.061)
Term Spread t-1	0.292	-0.098	0.274	0.371*	0.032	0.305*	0.273	0.044	0.340*	0.296	-0.288	0.270	0.558*
	(1.609)	(-0.734)	(1.217)	(1.895)	(0.239)	(1.717)	(1.057)	(0.358)	(1.811)	(1.622)	(-1.428)	(1.234)	(1.781)
Dividend Yield t-1	0.421	-0.220	0.278	0.498*	-0.077	0.356	0.433	-0.368**	0.063	0.431	0.014	0.353	0.339
	(1.397)	(-1.211)	(0.702)	(1.788)	(-0.407)	(1.044)	(1.024)	(-1.971)	(0.250)	(1.423)	(0.051)	(1.252)	(0.786)
Short Rates t-1	-0.044	-0.015	-0.050	-0.035	0.094*	-0.002	-0.096	0.053	0.019	-0.034	-0.128	-0.105	0.023
	(-0.552)	(-0.339)	(-0.537)	(-0.438)	(1.741)	(-0.020)	(-0.908)	(0.746)	(0.239)	(-0.417)	(-1.045)	(-0.859)	(0.152)
Adj. R^2	0.067	0.015	0.041	0.060	0.011	0.050	0.057	0.054	0.064	0.066	0.024	0.052	0.065
# of countries	12	12	12	12	12	12	12	12	12	12	12	12	12

Table V. Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local Forecasts (*Continued*)

PANEL E: Pooled regressions: local portfolio returns regressed on changes in local wage growth forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-1.492	1.721	-0.174	-1.895	0.682	-1.355	0.673	3.567**	1.858*	-1.709	1.187	1.818	0.631
	(-1.111)	(1.373)	(-0.094)	(-1.411)	(-0.871)	(-0.887)	(-0.404)	(5.688)	(1.665)	(-1.265)	(0.831)	(1.297)	(0.345)
Δ Wage	0.470**	0.061	0.514**	0.453**	0.063	0.443**	0.380	0.050	0.511**	0.461**	0.080	0.539**	0.459**
	(2.823)	(0.358)	(3.109)	(2.400)	(0.577)	(2.762)	(1.619)	(0.590)	(4.398)	(2.736)	(0.681)	(3.798)	(2.530)
Term Spread t-1	0.409*	-0.179	0.334	0.514**	0.002	0.402*	0.401	-0.005	0.410*	0.414*	-0.205	0.309	0.514
	(1.798)	(-1.280)	(1.184)	(2.108)	(0.010)	(1.808)	(1.235)	(-0.034)	(1.865)	(1.814)	(-0.986)	(1.203)	(1.609)
Dividend Yield t-1	0.331	-0.195	0.232	0.427	-0.017	0.265	0.282	-0.460**	-0.121	0.338	0.029	0.275	0.247
	(0.984)	(-1.017)	(0.540)	(1.365)	(-0.091)	(0.706)	(0.610)	(-3.018)	(-0.464)	(1.003)	(0.096)	(0.862)	(0.544)
Short Rates t-1	-0.004	-0.003	-0.007	-0.003	0.103	0.029	-0.073	0.006	0.012	0.005	-0.052	-0.128	-0.076
	(-0.048)	(-0.068)	(-0.067)	(-0.036)	(1.449)	(0.305)	(-0.623)	(0.109)	(0.163)	(0.059)	(-0.371)	(-0.898)	(-0.607)
Adj. R^2	0.046	0.017	0.026	0.042	0.007	0.033	0.032	0.055	0.047	0.046	0.017	0.029	0.046
# of countries	10	10	10	10	10	10	10	10	10	10	10	10	10

Table VI. Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local GDP, Inflation, and Production Forecasts

This table shows regression of the factors portfolio, including their individual components on changes in GDP, inflation, and production forecasts. Value, growth, small, big, winner and loser portfolios returns are all in excess of U.S. Three-Month Treasury yield. The sample refers to monthly data on macroeconomic forecasts and USD returns for 20 markets from December 1989 until December 2014. In Panel A, U.S. only results are presented and t-stats are based on robust standard errors. In Panel B, the entire sample is pooled and standard errors are clustered on both market and time (year/month). Month dummies are included in all specification models. T-Statistics are presented underneath each coefficients and stars denote 10% (*) and 5% (**) significance respectively.

Panel A: US Regressions of US Factors and Portfolio Returns on Changes in US GDP, Inflation, and Production Forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.409	1.067	1.071	0.004	-0.763	0.822	1.584	-0.357	-0.023	0.334	2.027	3.066*	1.039
	(0.301)	(0.777)	(0.539)	(0.003)	(-0.395)	(0.515)	(0.625)	(-0.152)	(-0.011)	(0.246)	(1.630)	(1.678)	(0.439)
Δ Inflation	-0.316	-0.187	-0.476	-0.289	0.754*	-0.208	-0.962	0.001	-0.301	-0.303	-0.376	-0.534	-0.158
	(-0.705)	(-0.513)	(-0.743)	(-0.626)	(1.769)	(-0.383)	(-1.386)	(0.003)	(-0.634)	(-0.682)	(-1.016)	(-1.100)	(-0.234)
Δ GDP	0.986**	0.869**	1.574**	0.705	-0.277	1.489**	1.766**	0.206	1.145**	0.939*	-0.700	1.593**	2.293**
	(2.047)	(2.082)	(2.215)	(1.481)	(-0.640)	(2.577)	(2.341)	(0.479)	(2.668)	(1.952)	(-1.498)	(3.050)	(2.888)
Δ Prod	1.346**	0.007	1.554	1.547**	-0.058	1.051	1.110	-0.883	0.500	1.383**	0.173	0.884	0.711

	(2.021)	(0.009)	(1.475)	(2.241)	(-0.070)	(1.228)	(0.917)	(-1.110)	(0.614)	(2.087)	(0.156)	(1.125)	(0.446)
Term Spread t-1	-0.508	0.396	-0.254	-0.651*	0.235	-0.399	-0.635	0.676	0.160	-0.516	0.399	0.149	-0.250
	(-1.497)	(1.218)	(-0.519)	(-1.839)	(0.623)	(-0.963)	(-1.176)	(1.557)	(0.393)	(-1.529)	(1.139)	(0.375)	(-0.434)
Dividend Yield t-1	1.112*	-0.820	0.575	1.395**	-0.765	0.795	1.560	0.567	1.679**	1.112*	-2.436**	0.410	2.846**
	(1.815)	(-1.370)	(0.630)	(2.200)	(-0.938)	(0.978)	(1.611)	(0.697)	(2.116)	(1.815)	(-3.128)	(0.558)	(2.318)
Short Rates t-1	-0.320*	0.073	-0.264	-0.337*	0.134	-0.268	-0.402	0.179	-0.136	-0.315*	0.428**	-0.073	-0.502
	(-1.734)	(0.417)	(-0.975)	(-1.811)	(0.574)	(-1.093)	(-1.385)	(0.688)	(-0.581)	(-1.711)	(1.984)	(-0.350)	(-1.492)
Adj. R^2	0.100	0.042	0.091	0.078	0.030	0.104	0.076	0.058	0.122	0.098	0.151	0.113	0.156

Panel B: Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local GDP, Inflation, and Production Forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.948	1.383	0.111	-1.274	0.074	-0.707	-0.781	2.135**	1.061	-1.073	1.810	1.888	0.078
	(-0.679)	(1.178)	(0.061)	(-1.005)	(0.104)	(-0.418)	(-0.480)	(2.613)	(0.984)	(-0.757)	(1.611)	(1.511)	(0.043)
Δ Inflation	0.070	0.370*	0.287	-0.080	0.169	0.224	0.055	-0.097	-0.015	0.082	0.203	-0.035	-0.238
	(0.316)	(1.690)	(1.003)	(-0.487)	(1.314)	(0.804)	(0.215)	(-0.476)	(-0.100)	(0.349)	(0.813)	(-0.263)	(-0.826)

Δ GDP	1.106**	0.365**	1.401**	1.022**	0.303	1.239**	0.936**	-0.094	1.001**	1.095**	-0.255*	1.179**	1.434**
	(3.856)	(2.168)	(4.364)	(3.642)	(1.196)	(3.610)	(2.165)	(-0.435)	(5.590)	(3.731)	(-1.827)	(5.519)	(4.712)
Δ Prod	0.059	-0.139	0.027	0.152	-0.187	0.092	0.279	0.145	0.182	0.037	0.118	0.302*	0.184
	(0.207)	(-0.933)	(0.083)	(0.664)	(-1.099)	(0.273)	(0.945)	(0.694)	(1.492)	(0.123)	(0.905)	(1.792)	(0.746)
Term Spread t-1	0.104	-0.007	0.104	0.112	0.053	0.109	0.056	-0.041	0.070	0.111	-0.140	-0.011	0.128
	(0.916)	(-0.076)	(0.732)	(1.247)	(0.426)	(0.714)	(0.445)	(-0.482)	(0.976)	(0.933)	(-1.392)	(-0.128)	(1.029)
Dividend Yield t-1	0.446	-0.088	0.385	0.472*	-0.075	0.538	0.612	-0.219	0.228	0.448	-0.374	0.319	0.692
	(1.609)	(-0.550)	(1.173)	(1.862)	(-0.511)	(1.599)	(1.615)	(-1.269)	(1.181)	(1.595)	(-1.231)	(1.528)	(1.643)
Short Rates t-1	-0.106	0.046	-0.062	-0.107*	0.075*	-0.092	-0.167*	0.070	-0.029	-0.099	-0.017	-0.085	-0.068
	(-1.640)	(0.804)	(-0.765)	(-1.744)	(1.831)	(-1.240)	(-1.874)	(1.165)	(-0.541)	(-1.512)	(-0.170)	(-0.926)	(-0.654)
Adj. R^2	0.053	0.018	0.042	0.051	0.005	0.046	0.037	0.026	0.047	0.051	0.027	0.039	0.059
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

Table VII. Pooled Regressions of Local Factors and Portfolio Returns on Changes in Local and Global GDP, Inflation, and Production Forecasts

This table shows regression of the factors portfolio, including their individual components on changes in local and global GDP, inflation, and production forecasts. Value, growth, small, big, winner and loser portfolios returns are all in excess of U.S. Three-Month Treasury yield. The sample refers to monthly data on macroeconomic forecasts and USD returns for 20 markets from December 1989 until December 2014. The global macroeconomic changes refer to changes in value weighted global forecasts, calculated from individual economic forecasts. Standard Errors are clustered on both market and time (year/month). Month dummies are included in all specification models. T-Statistics are presented underneath each coefficients and stars denote 10% (*) and 5% (**) significance respectively.

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.840	1.422	0.221	-1.197	0.130	-0.578	-0.708	2.146**	1.179	-0.966	1.730	1.945	0.214
	(-0.592)	(1.184)	(0.115)	(-0.945)	(0.177)	(-0.328)	(-0.429)	(2.614)	(1.087)	(-0.669)	(1.558)	(1.530)	(0.118)
Δ Inflation	-0.077	0.328	0.143	-0.185	0.173	0.071	-0.102	-0.108	-0.172	-0.064	0.259	-0.138	-0.397
	(-0.406)	(1.492)	(0.534)	(-1.380)	(1.506)	(0.296)	(-0.476)	(-0.551)	(-1.277)	(-0.315)	(1.053)	(-1.362)	(-1.550)
Δ GDP	0.541**	0.266*	0.801**	0.521**	0.417*	0.618*	0.201	0.136	0.664**	0.528*	-0.004	0.730**	0.734**
	(2.051)	(1.747)	(2.595)	(2.008)	(1.859)	(1.766)	(0.512)	(0.540)	(5.239)	(1.934)	(-0.035)	(4.151)	(2.919)
Δ Prod	-0.130	-0.177	-0.185	-0.017	-0.172	-0.124	0.049	0.222	0.069	-0.153	0.219*	0.159	-0.060
	(-0.451)	(-1.189)	(-0.563)	(-0.078)	(-0.994)	(-0.356)	(0.172)	(1.001)	(0.594)	(-0.505)	(1.722)	(1.020)	(-0.255)
Δ GL Inflation	-0.016	0.127	-0.112	-0.226	0.131	-0.109	-0.241	0.585*	0.558	-0.026	0.137	-0.102	-0.239

	(-0.025)	(0.434)	(-0.162)	(-0.390)	(0.462)	(-0.162)	(-0.303)	(1.827)	(1.221)	(-0.042)	(0.356)	(-0.196)	(-0.324)
Δ GL GDP	1.647*	0.186	1.688	1.493	-0.916**	1.671*	2.588**	-0.800*	0.852	1.652*	-0.381	1.504*	1.885*
	(1.733)	(0.463)	(1.615)	(1.614)	(-2.696)	(1.674)	(2.365)	(-1.709)	(1.275)	(1.719)	(-0.826)	(1.945)	(1.786)
Δ GL Prod	1.874*	0.456	2.152*	1.707	0.658	2.375*	1.717	-0.798	1.090	1.888*	-1.556**	1.171	2.727*
	(1.680)	(0.596)	(1.676)	(1.621)	(1.082)	(1.831)	(1.300)	(-1.101)	(1.285)	(1.663)	(-1.969)	(1.174)	(1.824)
Term Spread t-1	0.048	-0.017	0.043	0.061	0.060	0.045	-0.015	-0.016	0.038	0.054	-0.111	-0.055	0.056
	(0.477)	(-0.180)	(0.318)	(0.808)	(0.475)	(0.322)	(-0.132)	(-0.200)	(0.598)	(0.514)	(-1.090)	(-0.703)	(0.488)
Dividend Yield t-1	0.514**	-0.075	0.457	0.530**	-0.093	0.610**	0.703**	-0.240	0.276	0.516**	-0.398	0.374*	0.772*
	(2.017)	(-0.471)	(1.488)	(2.247)	(-0.633)	(1.974)	(1.985)	(-1.409)	(1.545)	(1.994)	(-1.338)	(1.920)	(1.941)
Short Rates t-1	-0.087	0.049	-0.042	-0.090	0.073*	-0.071	-0.144*	0.063	-0.018	-0.080	-0.026	-0.071	-0.045
	(-1.393)	(0.865)	(-0.512)	(-1.528)	(1.796)	(-1.001)	(-1.692)	(1.062)	(-0.331)	(-1.266)	(-0.264)	(-0.758)	(-0.431)
Adj. R^2	0.107	0.020	0.078	0.091	0.008	0.089	0.087	0.037	0.069	0.102	0.040	0.061	0.101
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

Table VIII. Regressions of Global Factors and Portfolio Returns on Changes in Global GDP, Inflation, and Production Forecasts

This table shows regression of the factors portfolio, including their individual components on changes in global GDP, inflation, and production forecasts. Value, growth, small, big, winner and loser portfolios returns are all in excess of U.S. Three-Month Treasury yield. The sample refers to value weighted global forecasts, calculated from individual economic forecasts and returns for 20 markets from December 1989 until December 2014. Standard Errors are robust. Month dummies are included in all specification models. T-Statistics are presented underneath each coefficients and stars denote 10% (*) and 5% (**) significance respectively.

Global Regressions of Global Factors and Portfolio Returns on Changes in Global GDP, Inflation, and Production Forecasts

	Mkt. (rm - rf)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-2.316	1.127	-0.765	-1.892	2.765	-1.422	-4.187	1.426	-0.935	-2.361	7.751**	1.477	-6.168
	(-1.061)	(0.583)	(-0.291)	(-0.799)	(1.241)	(-0.563)	(-1.188)	(0.508)	(-0.403)	(-1.071)	(2.697)	(0.735)	(-1.514)
Δ GL Inflation	-0.979*	0.333	-0.930	-1.263**	0.506	-0.959*	-1.465*	0.821	-0.160	-0.982*	-0.251	-1.086**	-1.062
	(-1.891)	(0.770)	(-1.630)	(-2.146)	(0.919)	(-1.814)	(-1.688)	(1.527)	(-0.335)	(-1.896)	(-0.477)	(-2.225)	(-1.287)
Δ GL GDP	1.566**	0.691	1.894*	1.203	-0.727	1.783**	2.510**	0.152	1.686**	1.534*	-0.422	2.138**	2.672**
	(1.991)	(1.322)	(1.954)	(1.482)	(-1.512)	(2.100)	(2.366)	(0.246)	(2.541)	(1.944)	(-0.731)	(2.884)	(2.385)
Δ GL Prod	1.645*	-0.512	1.393	1.906**	-0.043	1.725*	1.768	-1.092	0.602	1.694**	-1.337	0.898	2.220

	(1.955)	(-0.508)	(1.200)	(2.024)	(-0.055)	(1.780)	(1.344)	(-1.307)	(0.665)	(2.009)	(-1.354)	(0.995)	(1.398)
Term Spread t-1	0.053	-0.188	-0.158	0.029	-0.489	-0.102	0.386	0.634	0.683	0.049	-0.356	0.500	0.858
	(0.122)	(-0.481)	(-0.301)	(0.062)	(-1.290)	(-0.218)	(0.592)	(1.562)	(1.582)	(0.112)	(-0.947)	(1.057)	(1.312)
Dividend Yield t-1	1.344	0.094	1.300	1.206	-0.829	1.120	1.949	-0.133	1.191*	1.323	-3.604**	0.623	4.171**
	(1.576)	(0.133)	(1.221)	(1.414)	(-1.199)	(1.068)	(1.431)	(-0.126)	(1.678)	(1.531)	(-2.862)	(0.963)	(2.534)
Short Rates t-1	-0.108	0.050	-0.107	-0.157	0.021	-0.082	-0.103	0.324**	0.217*	-0.107	-0.239*	0.039	0.282
	(-0.703)	(0.307)	(-0.628)	(-0.827)	(0.121)	(-0.535)	(-0.426)	(2.122)	(1.722)	(-0.690)	(-1.848)	(0.278)	(1.358)
Adj. R^2	0.108	0.044	0.081	0.081	0.030	0.106	0.089	0.079	0.155	0.104	0.156	0.148	0.201

Table IX. U.S. Macroeconomic Surprises and Factor Returns

This table shows results of regressing U.S. daily factor and portfolio returns in excess of the risk-free rate in percent on U.S. macroeconomic announcement surprises. We require a minimum of 50 announcements to be included. Though this table only presents U.S. surprises and returns, to conform with Table X, the same type of announcement must occur in at least 10 countries to be included. The sample refers to daily data on U.S. macroeconomic forecasts and USD returns for 20 markets from November 1996 until June 2015. Standard errors are robust. Stars denote 10% (*) and 5% (**) significance respectively.

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
	Surprise	0.039	-0.073	0.011	-0.067	0.114**	0.227**	-0.085**	-0.011	0.159*
Mkt (rm -rf)	Intercept	0.064	0.073	0.087**	0.067	0.074**	0.064	0.088**	0.062	0.066
	Adj-R^2	-0.002	0.002	-0.001	-0.001	0.007	0.033	0.002	-0.001	0.011
	Surprise	0.093	0.071	0.001	-0.058	0.008	0.049	-0.039	0.051	0.003
HML_{BTM}	Intercept	0.201**	0.076**	-0.052*	-0.069	0.009	-0.054	0.026	0.064*	-0.002
	Adj-R^2	0.005	0.003	-0.001	-0.001	-0.001	0.001	0.001	0.001	-0.005
	Surprise	0.104	-0.011	-0.010	-0.107	0.125**	0.268**	-0.109**	0.045	0.189
$Value_{BTM}$	Intercept	0.225**	0.149**	0.043	0.034	0.083*	0.022	0.078*	0.097*	0.051
	Adj-R^2	0.001	-0.001	-0.001	0.001	0.005	0.033	0.004	0.000	0.013
	Surprise	0.012	-0.082	-0.012	-0.048	0.117**	0.219**	-0.070**	-0.006	0.186*
$Growth_{BTM}$	Intercept	0.024	0.072*	0.095**	0.103	0.075**	0.076	0.053*	0.033	0.053
	Adj-R^2	-0.004	0.003	-0.001	-0.003	0.007	0.029	0.003	-0.001	0.014
	Surprise	0.043	0.107**	0.090**	0.035	-0.055**	0.013	-0.025	-0.036	-0.034
HML_{CFP}	Intercept	-0.062	-0.008	0.071**	0.139*	0.014	-0.009	-0.013	0.043	0.073
	Adj-R^2	-0.002	0.012	0.008	-0.004	0.002	-0.002	0.000	0.000	-0.004
$Value_{CFP}$	Surprise	0.041	0.008	0.051	-0.081	0.107**	0.277**	-0.118**	0.009	0.194

	Intercept	0.136*	0.090*	0.072	0.069	0.074*	0.030	0.047	0.074	0.086
	Adj-R^2	-0.003	-0.001	0.000	-0.001	0.004	0.043	0.006	-0.001	0.015
	Surprise	-0.002	-0.099	-0.039	-0.116	0.162**	0.264**	-0.093**	0.045	0.228**
$Growth_{CFP}$	Intercept	0.198**	0.098	0.002	-0.070	0.060	0.039	0.060	0.031	0.013
	Adj-R^2	-0.004	0.002	0.000	0.000	0.008	0.024	0.002	0.000	0.016

Table IX. U.S. Macroeconomic Surprises and Factor Returns (*Continued*)

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
	Surprise	-0.053	0.032	0.015	0.203	-0.042	-0.200**	0.039	0.026	-0.145
SMB	Intercept	-0.060	-0.155**	-0.174**	-0.256**	-0.123**	-0.105*	-0.046	-0.044	-0.202**
	Adj-R^2	-0.002	-0.001	-0.001	0.017	0.000	0.021	0.000	-0.001	0.005
	Surprise	-0.015	-0.041	0.026	0.139**	0.072**	0.025	-0.042**	0.024	0.024
Small	Intercept	-0.003	-0.081**	-0.088**	-0.182**	-0.048*	-0.041	0.011	-0.006	-0.136**
	Adj-R^2	-0.003	0.001	0.000	0.009	0.006	-0.001	0.002	0.000	-0.004
	Surprise	0.038	-0.073	0.011	-0.064	0.113**	0.226**	-0.082**	-0.002	0.169*
Big	Intercept	0.057	0.074*	0.085**	0.074	0.075**	0.064	0.057*	0.039	0.065
	Adj-R^2	-0.003	0.002	-0.001	-0.002	0.007	0.033	0.004	-0.001	0.012
	Surprise	0.009	-0.074**	0.012	-0.141*	-0.002	0.024	-0.030*	0.005	0.037
WML	Intercept	0.098**	0.101**	0.029	0.142**	0.047**	0.061**	0.000	0.021	0.099*
	Adj-R^2	-0.004	0.010	-0.001	0.011	-0.001	-0.001	0.002	-0.001	-0.002

	Surprise	0.043	-0.082	0.008	-0.084	0.120**	0.143**	-0.063**	0.033	0.115*
Winners	Intercept	0.177**	0.015	0.080**	-0.045	0.091**	0.086**	0.085**	0.078**	0.057
	Adj-R^2	-0.002	0.004	-0.001	0.000	0.013	0.020	0.003	0.000	0.010
	Surprise	0.033	-0.008	-0.004	0.057	0.122**	0.119**	-0.033	0.028	0.078
Losers	Intercept	0.079	-0.086**	0.051*	-0.187**	0.043	0.025	0.086**	0.056	-0.042
	Adj-R^2	-0.002	-0.001	-0.001	-0.003	0.010	0.012	0.000	0.000	0.001

Table X. Pooled Macroeconomic Surprises and Factor Returns for 20 Countries

This table shows results of regressing daily factor and portfolio returns in excess of the risk-free rate in percent on macroeconomic announcement surprises in the full 20-market sample. We require a minimum of 50 announcements for a given announcement from a market to be included. The same type of announcement must occur in at least 10 countries to be included. The sample refers to daily data on macroeconomic forecasts and USD returns for 20 markets from November 1996 until June 2015. Standard errors are clustered on the market level. Stars denote 10% (*) and 5% (**) significance respectively.

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
	Surprise	0.103**	0.020	-0.037	0.048*	0.179**	0.067	-0.073**	0.042	-0.002
Mkt (rm -rf)	Intercept	0.060**	0.035	0.081**	0.016	0.036	0.072**	0.083**	0.056	0.051
	Adj-R^2	0.006	0.000	0.001	0.001	0.013	0.002	0.002	0.000	0.000
	Surprise	-0.003	0.011	-0.025	-0.010	0.045*	0.013	-0.039**	0.021	-0.014
HML_{BTM}	Intercept	0.018	-0.015	0.009	0.046	0.026	0.009	0.023	0.042	0.026
	Adj-R^2	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000
	Surprise	0.096**	0.035	-0.056	0.042	0.215**	0.083	-0.108**	0.066**	0.002
$Value_{BTM}$	Intercept	0.067	0.027	0.065**	0.045	0.064	0.094**	0.099**	0.078	0.070*
	Adj-R^2	0.004	0.000	0.001	0.000	0.012	0.002	0.004	0.001	0.000
	Surprise	0.099**	0.024	-0.032	0.052*	0.170**	0.070	-0.069**	0.045	0.017
$Growth_{BTM}$	Intercept	0.049	0.042	0.055*	0.000	0.038	0.084**	0.076**	0.036	0.043
	Adj-R^2	0.005	0.000	0.000	0.001	0.012	0.002	0.002	0.000	0.000
	Surprise	-0.013	0.001	0.018	0.040*	-0.011	0.002	-0.028	-0.018	-0.010
HML_{CFP}	Intercept	-0.011	-0.007	0.038**	-0.002	0.024	-0.007	-0.024	0.048**	0.073*
	Adj-R^2	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
$Value_{CFP}$	Surprise	0.103**	0.014	-0.027	0.047	0.188**	0.083	-0.102**	0.048	-0.009

	Intercept	0.057	0.038	0.098**	0.009	0.046	0.081**	0.065*	0.074*	0.079**
	Adj-R^2	0.004	0.000	0.000	0.000	0.011	0.003	0.004	0.000	0.000
	Surprise	0.116**	0.013	-0.045	0.007	0.199**	0.081	-0.075**	0.067	0.001
$Growth_{CFP}$	Intercept	0.067	0.046	0.059	0.011	0.022	0.088**	0.089**	0.026	0.006
	Adj-R^2	0.005	0.000	0.000	0.000	0.012	0.002	0.002	0.001	0.000

Table X. Pooled Macroeconomic Surprises and Factor Returns for 20 Countries (*Continued*)

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
	Surprise	-0.045	0.001	0.027	0.003	-0.073**	-0.031	0.034**	-0.030	-0.016
SMB	Intercept	-0.068	-0.051*	-0.073**	-0.040	-0.085*	-0.078**	-0.037	-0.047	-0.101**
	Adj-R^2	0.001	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.000
	Surprise	0.058**	0.021	-0.013	0.053**	0.109**	0.034	-0.042**	0.017	-0.016
Small	Intercept	-0.011	-0.015	0.007	-0.027	-0.040**	-0.007	0.036	-0.001	-0.041
	Adj-R^2	0.003	0.000	0.000	0.002	0.011	0.001	0.002	0.000	0.000
	Surprise	0.104**	0.021	-0.039	0.050*	0.182**	0.065	-0.076**	0.047	-0.001
Big	Intercept	0.057*	0.036	0.080**	0.014	0.045	0.071**	0.073**	0.047	0.060
	Adj-R^2	0.006	0.000	0.001	0.001	0.013	0.002	0.003	0.001	0.000
	Surprise	0.012	-0.014	0.019	-0.008	-0.037	0.001	-0.001	-0.006	-0.001
WML	Intercept	0.096**	0.074**	0.069**	0.079**	0.068**	0.083**	0.051*	0.073**	0.074**

	Adj-R^2	0.000	0.000	0.001	0.000	0.002	0.000	0.000	0.000	0.000
	Surprise	0.090**	0.016	-0.019	0.041	0.138**	0.068	-0.055**	0.037	0.008
Winners	Intercept	0.102**	0.044	0.102**	0.054	0.057**	0.106**	0.120**	0.079**	0.052
	Adj-R^2	0.007	0.000	0.000	0.001	0.015	0.003	0.003	0.001	0.000
	Surprise	0.079**	0.030	-0.038	0.048	0.175**	0.067	-0.054**	0.043	0.009
Losers	Intercept	0.007	-0.030	0.033	-0.026	-0.011	0.023	0.069	0.006	-0.023
	Adj-R^2	0.004	0.000	0.001	0.001	0.017	0.003	0.002	0.001	0.000