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Abstract

One of the challenges facing the prior literature when examining the link between macroeconomic risks and the size (SMB), value (HML) and momentum (WML) factors is the difficulty of obtaining direct measures of macroeconomic expectations. We re-examine these relations using direct measures of investor expectations across 20 developed markets. While local and global market returns are robustly related to measures of economic activity, unlike the prior literature we find only a weak relation between HML and changes in expectations about macroeconomic activity. SMB and WML are either unrelated to or act as hedges against macroeconomic risk. This is inconsistent with HML, SMB and WML being priced because they proxy for macroeconomic risks. These findings are not the result of low power tests but rather from the fact that the individual portfolios, which make up the factors, have economically and statistically similar sensitivity to the macroeconomic risks we examine.

> [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-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 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 technique can be problematic.[3] This technique regresses realized macroeconomic variables on a set of base assets, which are typically traded assets, and then uses the fitted value from this regression 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

[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] As done in Vassalou (2003), Aretz, Bartram and Pope (2010), and Kroencke, Schindler, Sebastian and Theissen (2013).

(those that are used to calculate the factor-mimicking portfolio) and the returns to the test assets (those with the returns to be explained). 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] Compounding the problems of using factor-mimicking portfolios, these papers also use realized macroeconomic measures as proxies for expectations in the creation of the factor-mimicking portfolios; hence they suffer from some of the same problems described above.

In this paper we circumvent these problems by directly measuring changes in macroeconomic expectations by using consensus macroeconomic forecasts from surveys of analysts and economists as a forward-looking measure of 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 we uncover are prevalent around the world; and 3) improve the power of our tests while controlling for

[4] One can think of the fitted value 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 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.

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.

We find that while excess market returns positively covary with changes in macroeconomic expectations in a manner consistent with the market proxying for these macroeconomic risks, our results tell a much different story for HML_{BTM}, HML_{CFP}, SMB and WML. HML_{CFP}, SMB and WML returns. They typically have covariances that are close to zero with changes in macroeconomic expectations, 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. Of these factors HML_{BTM} alone is positively and significantly associated with local GDP growth, but GDP growth explains only up to 4% of local HML returns. This stands in stark contrast to excess market returns, for which changes in macroeconomic expectations explain as much as 17% of the time-series and cross-country variation in excess market returns (15% of global excess market returns). In addition, local and global versions of HML_{BTM} have hedge-like associations with global production and inflation, which is inconsistent with a factor that is priced as a result of exposure to these risks. 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.

These finding 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-existent 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-, production-, consumption- and wage-growth expectations are all associated with increases in market return, while increases in expected inflation negatively impact market returns except, during expected recessions. Second, while most of the long-short portfolio returns that make up the HML_{BTM}, HML_{CFP}, SMB and WML do covary positively with macroeconomic risks similar to the market, the factors themselves 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 expectations.

The findings regarding the momentum factor deserve an extra note, because 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. WML returns are positively impacted by increases in inflation expectations, but, when significant, negatively related to GDP, consumption growth and, in our global models, production growth.

We also examine the news response coefficient: i.e., the reaction of event day returns to macroeconomic news surprise. This allows us to address the concern that our factor returns might be driving expectations, instead of expectations driving returns. We expand our analysis to include producer price inflation, purchasing managers' index (PMI), retail sales, unemployment, consumer confidence and the trade balance. We find results that are largely consistent with our prior tests. The responses of factor returns are generally weak, and when significant they usually suggest that the factor acts as a hedge, not a proxy for the macroeconomic risk. Once again this is notable because the portfolios that make up the factors often covary 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.

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 higher expected inflation, 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 evidences shows 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 correlation 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).[5] 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. The question is the choice of measures to proxy for economic conditions. 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). 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 straight forward but significant improvement in the measurement of macroeconomic expectations. Below we review the prior findings about the sources of risk that may be associated with HML, SMB and WML. Three strands of the literature have emerged with regards to explaining why common factors appear priced.

One strand of the literature argues that the size and value returns result from differences in firm characteristics. Fama and French (1998) provide evidence that HML returns are compensation for default risk, although Vassalou and Xing (2004) subsequently shows that default risk only provides a partial explanation of the HML returns. Black (2006) provides evidence that the default risk premium is related to both the value and size premium but Griffin and Lemon (2002) and

[5] The echoes Campbell and Diebold's (2005) comment that business conditions should be linked to excess returns, yet standard predictors are not macroeconomic, but financial.

Daniel and Titman (1997, 2012) find no such effects. Default risk is not the only firm characteristic that has been considered linked to the priced factors. For example, Garcia-Fejoo and Jorgensen (2010) argue that book-to-market captures the effects of operating leverage, which amplifies systematic risk.

A second 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 third 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 non-existent 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-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 macroeconomic expectations data 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 measure of investor expectations. The consensus forecasts are obtained from Consensus Economics and are available in a consistent format from October 1989 through March, 2012 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 many macroeconomic announcements are made in the first week of the month in many markets and they want to allow their respondents to incorporate the new information in their forecasts. Since macroeconomic forecasts for the contemporaneous year often are highly correlated with the forecast for the following year, we calculate and present a compounded measure (continuously compounded) of the change in the forecasts. To calculate the change in the forecast, we subtract the previous month's forecast from the new forecast. 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

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

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.

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 sample over time and across countries is a mere -0.05%, but the standard deviation of the forecast changes is 0.25%. Looking at the changes in consumer price forecasts, the mean is almost 0 (less than 0.01%), but the standard deviation is 0.19%. Notable about these summary statistics is that average changes in GDP, Industrial Production, Consumption and Wage forecasts are negative across most of the 20 markets, suggesting that analysts were on average revising their estimates downward.

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 April of 2013. We include a macroeconomic news item if there are at least 50 news events with both the forecast and actual 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.[7]

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 16,557 firms each year, with a minimum coverage of 6608 firms and a maximum coverage of 21,194 firms. Our largest market is, as expected, the United States with an average of 6,672 firms covered, and the smallest market covered in the sample (as judged by number of firms covered) is Ireland with an average of 47 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

[7] Because similar announcements do not have the same name as noted above, we develop a list of 53 categories in which we group the 730 different announcements Bloomberg tracks in our 20 markets. Then we check how many countries have announcements in this category. If 10 more countries have macroeconomic news announcements in the category, we keep the category, if fewer, we delete it. This leaves us with 9 categories with good coverage across all markets in our study.

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. If 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 $[((1+ R_t) \times (1+ R_{t-1}) -1) < 20\%]$, we set both R_t and R_{t-1} to missing. In addition, we set to missing any return that fall outside the .1% and 99.9% range in each country.

Market values, 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 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 starting from the end of June in the following calendar 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.[8] The formation period methodology follows closely that used by Fama and French (1992, 1993). HML is calculated as the return on the highest

[8] 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 starting from July 1997, mostly due to lack of book-to-market and cash-flow-to-price data.

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 (1993) six-month by six-month strategy, except that we use portfolio quintiles instead of deciles. In contrast to the SMB and HML, 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.[9] 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 one-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.

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 we know the precise timing of the returns relative to the surveys, we calculate portfolio returns (described below) 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

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[9] 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

with inflation, which will mean it is important to control for inflation when examining the impact of changes in wage growth on factor returns.

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. The highest correlation between changes in a macroeconomic series and factor returns is between consumption and WML, and it is a mere .08.

III. Associations Between Factor Returns and Macroeconomic Expectations

In this section we examine the relation between returns to the SMB, HML, and WML factor portfolios and macroeconomic 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.

Because the research of Bestelmeyer, Breunsbach, and Hess (2011) and others suggests that the impact of macroeconomic news varies across the business cycle, we create a dummy variable for expected recessions, which we interact with the macroeconomic variables in subsequent tests. This measure differs from the standard NBER recession measures, because our measure is forward looking based on low GDP forecasts, whereas NBER recession dates are decided after the fact by a committee. We believe our measure to be superior because it reflects when investors believe the economy will perform poorly. The same cannot be said for the NBER or other similar ex-post decided recession measures. We set our "expected recession" dummy equal to 1 if forecast GDP growth is in the bottom $1/7^{th}$ of GDP growth forecasts for a given country in our sample. We choose this fraction since in the US recessions are only 13.9% of the time – roughly $1/7^{th}$ of the time. For perspective, Figure 1 presents US market returns, the forecast level of GDP growth and inflation. Grey boxes shade the time periods we have flagged as expected recessions in the US using this methodology.

A. Panel Regressions

We now turn to regressions in order to examine whether changes in macroeconomic expectations 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 changes in the monthly revisions to the macroeconomic forecasts.

There is good economic motivation for including growth forecasts in addition to term spread, dividend yield and short rates. 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. Returns are expressed in U.S. dollar terms to make the returns comparable across markets. 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 induced by this survey method we include dummy variables for each month but January. In the tables we suppress these dummies to conserve space.[10]

Company analysts, such as those that report earnings forecasts to I/B/E/S are known to be slow to update their forecasts, meaning that their earnings forecasts are predictable based on past forecasts. We do not know if this is a problem for macroeconomic analyst forecasts. Nonetheless, 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.

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. Important to note is that this would bias us towards finding stronger results. Irrespective of the causal direction, these tests tell us about the relation between macroeconomic risk and factor returns. However, to more

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[10] 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 macro 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.

precisely identify the causal relation between changes in expectations and factor returns, in Section III.B we examine the impact of surprise macroeconomic news announcements on factor returns and their base portfolios.

We include an expected recession dummy, calculated as described in the introduction to Section III above. This expected recession dummy is interacted with the changes in the macroeconomic forecast measure to allow for a different impact of changes during expected recessions and expansions. We anticipate this to be particularly important for inflation, where high inflation might be viewed negatively during expansions but positively during recessions (see the discussion at the beginning of Section III).

While we include the expected recession dummy largely because we wish to allow for the possibility that the impact of macroeconomic risk varies through the business cycle, as noted earlier in the paper, we can learn something about exposure to GDP risk from looking at the expected recession (ER) dummy. However, it is important to note that the interpretation is different from the interpretation of the coefficients on changes in GDP expectations. The recession dummy variable reflects the difference in returns during periods, when GDP expectations have *already* become low; that is, the factors positively exposed to GDP risk have suffered low or negative returns in the recent past as the GDP forecasts were revised downwards. During such periods of low expected growth, if the factors are exposed to GDP risk, then we would expect significantly positive returns, reflecting that during these periods of low GDP expectations investors demand and on average receive higher expected returns.

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).

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

In Tables 4 and 5 we present the results of the local factor and portfolio returns regressed on changes in local GDP growth, inflation, production growth, consumption growth and wage growth forecasts. We begin 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 (3.1.2). In Table IV we run one macroeconomic forecast measure at a time so as to maximize the number of countries examined. In Table V 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 expectations. Overall, these tables provide evidence that market returns exhibit strong covariance with changes in macroeconomic expectations, while the relation between macroeconomic expectations and the other factors is ambiguous.

In Table IV, Panel A, we see that a one standard deviation change in GDP growth expectations is associated with a 1.13% increase in the monthly excess market return. The negative coefficient on the interaction between changes in expected GDP growth and the expected regression dummy suggests that the effect is weaker during recessions. The "Subset GDP pval" in the second-to-last row is the p-value for an F-test which tests if changes in GDP growth expectations have a significant impact on factor returns during expected recessions, and the p-value of 0.1443 tells us that the relation between GDP growth and market returns is insignificant during recessions.

Value stock portfolios formed on book-to-market are somewhat more sensitive to GDP growth than growth stock are; but these differences are only weakly significant at the 10-percent significance level. A one-standard-deviation change in GDP growth expectations translates to a nearly 34 basis point increase in the HML factor returns. Notable about this regression of HML_{BTM} on changes in GDP growth expectations is how little of HML_{BTM}'s return is explained by the model as seen in the adjusted R^2 of only two percent.

With regards to the individual portfolios that make up HML_{CFP}, SMB and WML, the findings are very similar. We see that a one standard deviation change in GDP growth expectations has a non-trivial impact on each of the factor sub-portfolios, but not on the factors themselves. Notable is that the sensitivity to changes in 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 relation between changes in GDP growth expectations and the cash-flow-to-price HML factor, or the SMB or WML factors, is not due to having low powered tests, but rather because there is not GDP growth risk exposure in the factor portfolios.

Moving on to the relations depicted in the other panels we see in panel B that changes in inflation expectations have no meaningful impact on portfolio returns, except with regards to the momentum portfolio, WML, which co-varies positively with inflation. A one standard deviation increase in expected inflation translates to a 22 basis point increase in WML returns. It would be tempting to interpret the positive covariance with inflation as WML providing a hedge, as high inflation would normally be considered bad. That said, we should be careful of how we interpret comovement with changes in expected inflation as Cochrane (2005) suggests that such a relation may be an artifact of the historical coincidence that high inflation tends to be associated with periods of high growth and vice versa. For this reason, below we will also examine regressions that include changes in inflation, GDP growth and production growth expectations together in one regression.

In Panels C, D, and E we see very similar patterns to what we saw with GDP growth, except that book-to-market-based HML returns are not significantly related to changes in industrial production, consumption or wage growth and cash-flow-to-price based HML acts as a hedge against consumption growth risk. Given that consumption should co-vary negatively with the marginal utility of wealth (similar to GDP), the negative relation implies that HML_{CFP} 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 HML_{CFP} is not priced because it proxies for consumption risk. The similarity of results to the GDP findings should not be too surprising as these macroeconomic measures are highly correlated (see Table III).

In Table V we regress the same local factor returns and portfolios on changes in inflation GDP growth and production growth expectations together. We exclude consumption and wage growth because they are available in only 10 of the 20 markets, and, as shown above, they appear to contain much of the same information. We find substantially similar results with some exceptions when comparing the results in Table V to the single-variable results in Table IV. The impact of changes in production growth expectations is weaker, presumably subsumed by GDP growth. The relation between HML_{BTM} and changes in GDP growth is stronger, both economically and statistically. A one standard deviation change in GDP growth expectations is associated with a 0.48% increase in the monthly HML_{BTM} returns. WML is negatively related to GDP growth shocks as seen in the negative coefficient, of -0.307, on changes in GDP growth expectations. This is inconsistent with a risk factor explanation that hinges on factors being priced due to their negative covariance with marginal utility. Several of the portfolios, most notably the market, are very weakly related to changes in local inflation expectations during recessions – but not significantly so.

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.

In summary, from Tables 4 and 5 we see that market returns co-move with changes in expectations about economic output and consumption in a manner consistent with market returns capturing this macroeconomic risk. The impact of changes in GDP growth expectation on HML_{BTM} returns suggest that HML_{BTM} reflects some GDP co-movement risk; however, it would be difficult to make the argument that HML_{BTM} is priced due to it's macroeconomic risk exposure, because changes in GDP expectations explain a relatively small fraction of HML_{BTM} returns. 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 Expectation Changes

In Table VI 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. The only consistent picture these results paint is of local excess market returns' sensitivity to macroeconomic risks. Regressing the other factor returns on global and local factors results in a very mixed message, which is inconsistent with HML_{BTM},HML_{CFP}, SMB and WML proxying for the macroeconomic risks we examine.

The most notable differences between Tables 6 and 5 are 1) the big increase in the explanatory power of the models in Table VI which include both local and global macroeconomic expectations and 2) the sensitivity of the factor portfolios to global inflation risk, even though the factors themselves are not sensitive. For example in Table V, the adjusted R^2 in the regression of the local market on changes in local macroeconomic expectations is 8%, but once global factors are added (Table VI), it jumps to 17%. Local market returns are very sensitive to global GDP growth, particularly during expansions, a one standard deviation increase in the global GDP growth expectations yields at 1.66% increase in excess market returns. In addition, when the economy is in an expected expansionary state, world-wide inflation imposes risk – a one standard deviation increase in inflation expectations translates to a -1.29% change in excess market returns. During contractions inflation has an opposite effect on market and portfolio returns.

The other factor returns tell a very inconsistent story, suggesting that they are not proxying for global macro economic risks. HML_{BTM} remains sensitive to local GDP growth, but it acts either as a hedge against or as a factor for production growth risk, depending on whether it is an expansionary or recessionary period. During expansions HML_{BTM} appears to act as a hedge against global industrial production growth, driven by a positive relation between growth-stock returns and production during expansions. By contrast, during recessions HML_{BTM} appears to act as a risk factor. HML_{CFP}, SMB and WML appear to act as hedges against global GDP growth risk – not as factors. SMB covaries positively with global inflation expectations, but as described above, we would be cautious to interpret this as a hedge. The opposite relation holds when recessions are expected. The adjusted R^2s are relatively low for the HML_{CFP} regression and SMB regressions, at 1% and 6% respectively. The changes in local and global macroeconomic expectations explain 10% of WML's return variation. 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 VII we examine whether changes in global forecasts affect global factor returns. The global factors and portfolios respond in similar ways to the changes in global expectations as the local factors do. As before, market returns are negatively impacted by average inflation during expansions: a one standard deviation increase in the value-weighted average worldwide (20-market wide) inflation translates to a 1.6% decrease in excess market returns during expected expansions. The impact of GDP growth on market returns is positive, yielding an additional 1.8% of return for every 1 standard deviation increase in expected GDP growth. As in Table VI, the global HML_{BTM} and WML factors take on characteristics of portfolios that hedge risk, rather than proxy for it. There is no relation between the macro risks and HML_{CFP} and SMB because the risk exposures cancel out.

B. Macroeconomic News Response Coefficients

Because the regressions in tables 5 through 7 use factor returns that are contemporaneous to the changes in macroeconomic expectations, one might be concerned that what we are measuring is the impact of returns on macroeconomic expectations and not the other way around. This could be an issue if the results showed a strong relation between the macroeconomic forecast changes and the factor portfolio returns. However, given the absence of such a strong link, the direction of causality should not impact inferences. However, 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 Table VIII we extend our analysis to include more potential factors: GDP growth, consumer prices, producer prices, 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 expectations and actual data are available from Bloomberg. Each column shows the results of regressions of the following form:

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

where $r_{p,t}$ is the one day return in percent on portfolio or factor p on day t, ER_Dum_t is the expected recession dummy, $Std\_Surprise_{n,t}$ is the difference between the actual and the mean forecast scaled by the standard deviation of the surprises in sample, $\beta_{p,n}$ is the sensitivity of portfolio or factor p to that standardized surprise, and $\gamma_{p,n}$ is the incremental sensitivity of the portfolio or factor returns to the standardized surprise during recessions. Each set of 5 rows represents one regression of either a factor or portfolio return on the standardized surprise listed in the column header. To conserve space we do not display the intercept, the expected recession dummy or the R^2.

Market returns respond to macroeconomic surprises in much the way one might expect. A surprise one standard deviation higher than the mean results in daily market returns which are 9 basis points higher for GDP shocks, 13 basis points higher for Industrial Production shocks, and 15 basis points higher for PMI shocks. Shocks to Producer Prices and Unemployment cause a decline in daily returns of 6 and 8 basis points respectively. Consumer price inflation has a positive impact during expected recessions, but none otherwise. Industrial production has a positive impact during expansions and a negative impact during recessions. Perhaps this is because during bad times an increase in industrial production forecasts suggests inventory buildup, rather than increased sales, which will result in further depressed future production. The portfolios that make up the factors respond similarly to the market for the most part, though the factor returns themselves largely do not, because, as before, sensitivities cancel out in the factors.

There are some exceptions. HML_{BTM} returns are weakly negatively related to unemployment, but only during recessions (as can be seen by the "Sub Surprise pval" of 0.003). Surprise unemployment that is one standard deviation higher than the mean yields decline in returns of nearly 10 basis points (-0.071 – 0.025 = -0.096). HML_{CFP} responds to Producer Price surprises, but only in expected recessions. SMB appears to act nothing like a macro risk factor as loadings run in the opposite direction of the market. WML acts as a hedge against improvements in the purchasing manager index and inflation risk during expected recessions. In both cases this appears to be because loser portfolios are much more sensitive than winners. Overall, market returns are much more sensitive to the macroeconomic measures we examine, as are many of the portfolios that make up the factor returns; but the factors themselves show, at best, weak associations with macroeconomic risks – and they often 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 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 expectations in ways consistent with the market providing a risk premium because of its exposure to macroeconomic risks. Changes in macroeconomic expectations help explain as much as 17% of changes in monthly excess market returns. For HML, SMB, and WML our evidence does not support a macroeconomic risk-base 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 expectations consistent with their being priced due to their covariance with the macroeconomy. 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 expectations, but the sensitivities are economically similar and statistically indistinguishable. WML appears to reflect the impact of recessions and inflation, 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 macroeconomic risk explain such a small fraction of HML_{BTM} returns, that it would be hard to make a credible argument that HML_{BTM} is a proxy for these macroeconomic risks.

Together these findings suggest little role for aggregate macroeconomic risks in explaining the returns to these successful factors. Recent work by Savor and Willson (2011, 2013) suggests that macroeconomic announcements may be periods when systematic risks are particularly focused – high systematic signal and low idiosyncratic noise – and factor models may be particularly successful; however, 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 market returns that consistently respond to changes in macroeconomic expectations. 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 “expected recessions,” that is, the 14.2% of months with the lowest forecast 2-year compound GDP growth.

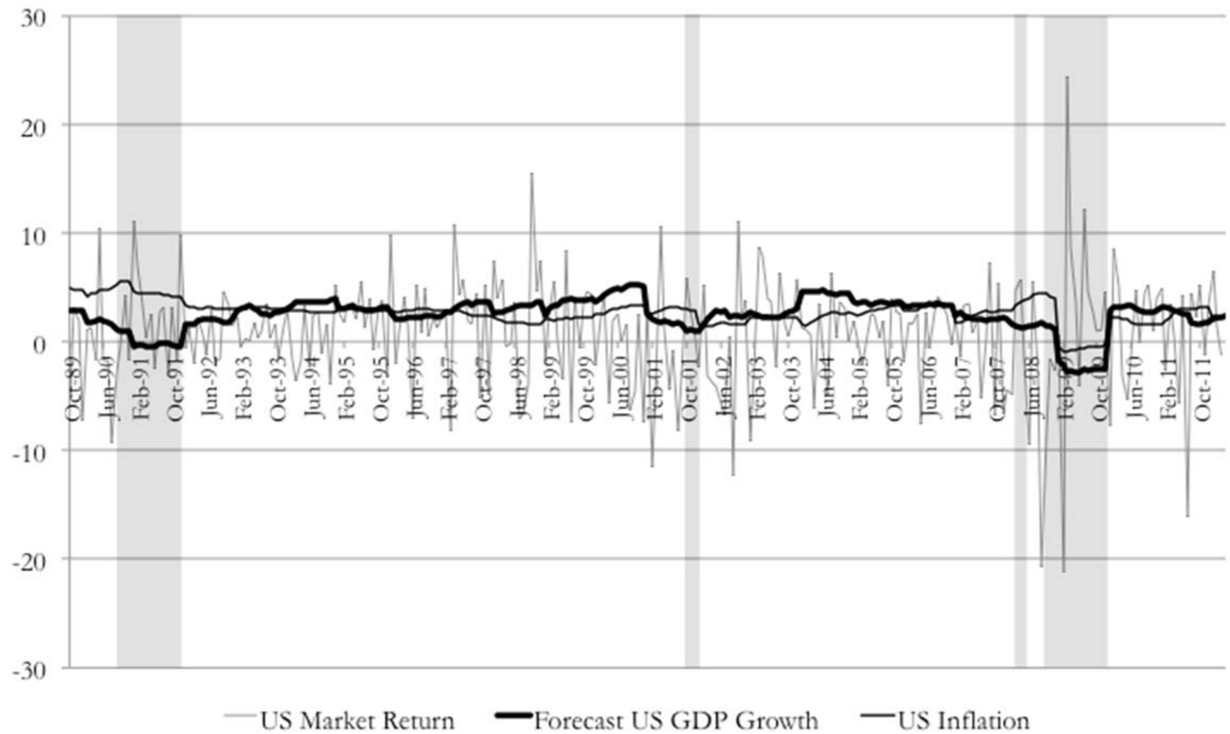

Table I. Macroeconomic Forecasts

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 March 2012 and covers 20 markets.

	ΔGDP				Δ Inflation				ΔProd			
	Mean	Std	Min	Max	Mean	Std	Min	Max	Mean	Std	Min	Max
Belgium	-0.07%	0.28%	-0.92%	0.87%	0.00%	0.22%	-0.69%	0.88%	-0.12%	0.64%	-2.46%	1.43%
Canada	-0.06%	0.28%	-1.37%	1.08%	-0.02%	0.20%	-1.18%	0.85%	-0.16%	0.67%	-3.19%	2.97%
Denmark	-0.05%	0.23%	-0.91%	0.78%	-0.03%	0.17%	-0.77%	1.07%	-0.14%	0.97%	-5.87%	3.37%
Finland	-0.08%	0.42%	-1.85%	1.36%	-0.05%	0.23%	-0.77%	0.78%	-0.25%	1.11%	-5.89%	3.59%
France	-0.07%	0.26%	-1.09%	1.36%	-0.01%	0.16%	-0.56%	0.77%	-0.16%	0.56%	-3.87%	1.54%
Germany	-0.06%	0.32%	-1.62%	1.43%	0.00%	0.15%	-0.69%	0.39%	-0.12%	0.69%	-5.44%	1.52%
Greece	-0.11%	0.43%	-2.75%	1.14%	0.01%	0.32%	-0.81%	1.86%	-0.31%	1.05%	-4.10%	3.37%
Ireland	-0.04%	0.54%	-3.36%	2.20%	-0.02%	0.33%	-2.23%	0.87%	-0.13%	1.40%	-7.40%	5.01%
Israel	-0.09%	0.54%	-3.50%	3.12%	-0.04%	0.52%	-1.81%	2.01%	-0.15%	0.99%	-4.52%	2.86%
Italy	-0.11%	0.24%	-1.19%	0.49%	0.02%	0.22%	-1.04%	1.52%	-0.23%	0.67%	-4.95%	1.41%
Japan	-0.07%	0.43%	-2.64%	1.38%	-0.02%	0.19%	-0.80%	0.60%	-0.26%	1.43%	-13.04%	4.93%
Netherlands	-0.07%	0.31%	-1.34%	1.06%	0.01%	0.18%	-0.79%	0.69%	-0.14%	0.59%	-3.77%	1.31%
Norway	0.01%	0.29%	-1.79%	0.77%	-0.04%	0.21%	-0.69%	0.78%	-0.13%	0.68%	-2.82%	1.91%
Portugal	-0.11%	0.31%	-1.46%	1.42%	0.01%	0.33%	-2.53%	2.43%	-0.22%	1.19%	-6.56%	5.44%
South Africa	-0.10%	0.42%	-2.30%	1.25%	-0.01%	0.54%	-1.69%	1.57%	-0.17%	1.33%	-8.36%	3.79%
Spain	-0.07%	0.25%	-1.37%	0.67%	0.02%	0.24%	-0.88%	1.05%	-0.24%	0.87%	-6.57%	1.62%
Sweden	-0.05%	0.32%	-1.25%	1.16%	-0.04%	0.31%	-1.21%	1.35%	-0.12%	0.82%	-3.51%	2.81%
Switzerland	-0.06%	0.25%	-1.09%	1.10%	-0.03%	0.22%	-0.99%	0.77%	-0.13%	0.93%	-3.56%	2.77%
UK	-0.06%	0.24%	-0.99%	0.88%	0.01%	0.30%	-2.44%	1.40%	-0.19%	0.48%	-2.43%	3.01%
USA	-0.03%	0.34%	-2.06%	1.07%	0.00%	0.23%	-1.28%	0.86%	-0.11%	0.57%	-2.71%	1.96%
Global	-0.05%	0.25%	-1.55%	0.76%	0.00%	0.19%	-1.04%	1.16%	-0.16%	0.54%	-3.66%	1.56%

Table I. Macroeconomic Forecasts (*Continued*)

	ΔCons				ΔWage			
	Mean	Std	Min	Max	Mean	Std	Min	Max
Belgium								
Canada	-0.01%	0.32%	-1.85%	1.66%	0.00%	0.34%	-0.98%	0.81%
Denmark								
Finland								
France	-0.04%	0.21%	-1.09%	0.49%	-0.01%	0.17%	-0.49%	0.76%
Germany	-0.07%	0.27%	-1.56%	1.07%	-0.02%	0.15%	-0.39%	0.77%
Greece								
Ireland								
Israel								
Italy	-0.09%	0.24%	-1.58%	0.50%	-0.01%	0.19%	-0.59%	0.57%
Japan	-0.05%	0.35%	-1.29%	1.10%	-0.09%	0.40%	-1.77%	1.41%
Netherlands	-0.08%	0.38%	-3.32%	0.81%	0.00%	0.16%	-0.58%	0.39%
Norway	0.01%	0.41%	-2.79%	1.14%	0.01%	0.21%	-0.67%	0.76%
Portugal								
South Africa								
Spain	-0.06%	0.32%	-1.87%	1.45%	0.00%	0.29%	-1.27%	2.09%
Sweden	-0.02%	0.29%	-0.99%	1.39%	-0.02%	0.19%	-0.74%	0.59%
Switzerland	0.00%	0.20%	-0.89%	0.67%				
UK	-0.01%	0.30%	-1.46%	2.44%	-0.06%	0.19%	-0.83%	0.48%
USA	0.01%	0.31%	-1.95%	0.69%				
Global	-0.02%	0.20%	-1.25%	0.47%	-0.06%	0.28%	-3.57%	0.49%

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 November 1989 to March 2012 and covers 20 markets.

	Number of Firms			Mkt. Prem.		SMB		HML_{BTM}		HML_{CFP}		WML	
	Mean	Min	Max	Mean	Std	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Belgium	141	122	163	0.62%	5.87%	-0.31%	5.46%	0.45%	5.60%	0.20%	5.28%	1.32%	5.28%
Canada	2128	1267	2429	0.71%	5.96%	0.60%	7.46%	0.30%	5.24%	0.54%	6.61%	-1.97%	7.78%
Denmark	190	151	232	0.73%	5.93%	-0.46%	4.89%	-0.13%	5.24%	0.83%	6.20%	1.24%	3.97%
Finland	99	33	141	0.91%	9.10%	-0.55%	8.32%	-0.47%	10.86%	0.72%	9.83%	0.74%	5.91%
France	783	272	915	0.51%	5.79%	-0.21%	5.25%	0.49%	6.24%	0.29%	5.27%	1.29%	4.59%
Germany	730	537	1002	0.44%	6.11%	-0.46%	5.34%	0.29%	6.08%	0.77%	7.00%	1.63%	4.50%
Greece	211	73	308	0.33%	10.57%	1.13%	12.50%	1.37%	8.43%	1.22%	7.76%	1.48%	12.95%
Ireland	47	30	71	0.78%	9.01%	-1.10%	8.53%	0.10%	15.35%	-0.63%	16.37%	1.32%	8.60%
Israel	398	127	532	0.44%	6.12%	0.09%	6.32%	0.04%	6.35%	1.37%	5.40%	0.15%	5.71%
Italy	223	180	262	0.32%	7.78%	-0.92%	5.32%	0.35%	6.88%	0.61%	6.13%	1.33%	4.69%
Japan	2990	1583	3710	-0.10%	7.28%	0.07%	4.81%	0.77%	4.09%	0.49%	4.29%	0.08%	5.29%
Netherlands	137	84	191	0.69%	5.78%	-0.55%	4.65%	0.14%	6.22%	0.61%	6.39%	1.68%	5.30%
Norway	146	78	230	0.88%	7.61%	-0.32%	6.05%	0.49%	6.63%	0.74%	7.64%	0.98%	6.01%
Portugal	86	48	136	0.14%	6.29%	-0.22%	6.41%	-0.44%	7.54%	1.69%	6.79%	0.67%	5.68%
South Africa	325	78	490	0.90%	8.37%	-0.43%	6.43%	1.03%	7.11%	0.94%	5.65%	2.03%	5.29%
Spain	144	82	171	0.53%	6.91%	-0.39%	5.43%	0.63%	5.03%	1.95%	6.65%	0.80%	5.38%
Sweden	253	127	398	0.84%	8.07%	-1.01%	7.35%	0.64%	7.66%	0.74%	8.04%	1.18%	6.15%
Switzerland	206	167	238	0.62%	5.44%	-0.32%	4.57%	0.81%	4.91%	0.16%	5.52%	1.01%	4.89%
UK	1468	1270	1844	0.56%	5.26%	-1.26%	4.50%	0.32%	5.42%	0.50%	6.27%	1.76%	3.71%
USA	6672	4685	9245	0.55%	5.11%	-1.58%	6.05%	0.35%	4.91%	0.41%	6.19%	1.12%	5.09%
Global	16557	6608	21194	0.46%	5.25%	-0.65%	5.55%	0.44%	4.62%	0.76%	4.93%	0.67%	5.36%

Table III. Correlation Coefficients

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

	Mkt. Return (r_m -r_f)	SMB	HML_{BTM}	HML_{CFP}	WML	GDP	Δ GDP	Inflation	Δ Inflation	Prod.	Δ Prod.	Con.	Δ Cons.	Wage	Δ Wage	Term Spread	Dividend Yield
Mkt. Return (r_m - r_f)	1.00																
SMB	-0.41	1.00															
HML_{BTM}	0.09	0.13	1.00														
HML_{CFP}	0.01	-0.06	0.31	1.00													
WML	-0.27	-0.03	-0.10	0.06	1.00												
GDP	-0.05	0.02	0.00	0.01	0.09	1.00											
Δ GDP	0.05	0.02	0.00	-0.01	0.06	0.32	1.00										
Inflation	-0.05	0.02	0.02	0.03	0.02	0.26	-0.06	1.00									
Δ Inflation	-0.06	0.01	0.03	0.01	0.07	0.09	0.12	0.09	1.00								
Prod.	-0.06	0.03	0.02	0.03	0.08	0.85	0.22	0.22	0.10	1.00							
Δ Prod	0.03	0.06	0.04	-0.04	0.00	0.20	0.65	-0.09	0.11	0.25	1.00						
Con.	-0.08	0.04	0.00	-0.01	0.12	0.83	0.27	0.21	0.10	0.54	0.16	1.00					
Δ Cons.	-0.01	0.03	-0.03	-0.04	0.08	0.20	0.54	-0.02	0.18	0.16	0.39	0.29	1.00				
Wage	-0.03	-0.04	0.01	0.03	0.08	0.34	-0.02	0.75	-0.01	0.42	0.01	0.16	-0.01	1.00			
Δ Wage	-0.04	0.02	0.00	0.02	0.06	0.17	0.28	0.06	0.26	0.13	0.20	0.16	0.25	0.11	1.00		
Term Spread	0.04	-0.03	-0.05	-0.03	0.01	-0.30	0.01	-0.46	0.01	-0.18	0.08	-0.19	0.00	-0.45	0.01	1.00	
Dividend Yield	0.03	-0.07	-0.02	0.01	-0.06	-0.31	-0.29	0.19	-0.04	-0.34	-0.22	-0.34	-0.24	0.27	-0.06	0.09	1.00
Short Rates	-0.04	0.03	0.03	0.03	0.01	0.21	-0.05	0.81	-0.01	0.23	-0.03	0.18	0.01	0.74	0.03	-0.63	0.09

Table IV. 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 July 1990 until December 2011. 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. (r_m - r_f)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.162	1.617	1.537	-0.080	0.087	0.439	0.351	2.382**	2.214*	-0.167	1.008	2.988**	1.980
	(0.12)	(1.44)	(0.85)	(0.06)	(0.13)	(0.27)	(0.22)	(3.23)	(1.93)	(0.12)	(1.15)	(2.21)	(1.15)
ER	1.278	-0.060	1.049	1.109*	-0.619	1.115	1.734*	-0.283	0.960*	1.243	-2.385**	0.986	3.371**
	(1.60)	(0.08)	(0.88)	(1.66)	(1.32)	(1.04)	(1.67)	(0.57)	(1.90)	(1.55)	(3.10)	(1.62)	(2.67)
Δ GDP	1.130**	0.337*	1.444**	1.107**	-0.114	1.346**	1.459**	-0.055	1.057**	1.112**	-0.160	1.240**	1.400**
	(4.28)	(1.69)	(5.23)	(4.31)	(0.53)	(4.93)	(4.24)	(0.31)	(4.72)	(4.19)	(1.06)	(4.62)	(4.14)
Δ GDP x ER	-0.195	-0.228	-0.435	-0.206	0.217	-0.404	-0.621	0.070	-0.156	-0.226	-0.393	-0.322	0.070
	(0.33)	(0.55)	(0.51)	(0.38)	(0.80)	(0.45)	(0.95)	(0.18)	(0.55)	(0.38)	(1.07)	(0.74)	(0.10)
Term Spread $_{t-1}$	0.036	-0.202	-0.069	0.133	-0.047	-0.006	0.041	-0.061	-0.013	0.048	0.066	-0.033	-0.099
	(0.27)	(1.61)	(0.40)	(0.92)	(0.35)	(0.03)	(0.27)	(0.80)	(0.16)	(0.40)	(0.70)	(0.31)	(0.68)
Dividend Yield $_{t-1}$	0.274	0.012	0.319	0.307	0.054	0.385	0.331	-0.217	0.061	0.278	-0.269	0.099	0.369
	(1.03)	(0.08)	(1.02)	(1.23)	(0.38)	(1.20)	(1.02)	(1.27)	(0.30)	(1.02)	(1.06)	(0.51)	(1.01)
Short Rates $_{t-1}$	-0.086	-0.011	-0.098	-0.087	0.042	-0.094	-0.136	0.003	-0.070	-0.073	0.038	-0.090	-0.129
	(0.94)	(0.18)	(0.89)	(1.01)	(0.77)	(0.85)	(1.21)	(0.05)	(1.16)	(0.80)	(0.47)	(1.16)	(1.16)
R^2	0.06	0.02	0.05	0.05	0.01	0.05	0.05	0.04	0.05	0.06	0.06	0.04	0.07
Adj. R^2	0.06	0.02	0.04	0.05	0.00	0.05	0.05	0.03	0.05	0.06	0.05	0.04	0.07
Subset GDP pval	0.1443	0.7706	0.2612	0.1286	0.5793	0.3327	0.2535	0.9711	0.0021	0.1749	0.1036	0.0351	0.0391
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

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

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

	Mkt. ($r_m - r_f$)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	0.390	1.660	1.803	0.142	0.073	0.686	0.612	2.377**	2.431**	0.055	0.942	3.239**	2.297
	(0.28)	(1.51)	(0.99)	(0.10)	(0.11)	(0.41)	(0.38)	(3.16)	(2.04)	(0.04)	(1.10)	(2.31)	(1.30)
ER	1.058	-0.026	0.851	0.877	-0.633	0.934	1.567	-0.303	0.732	1.035	-2.181**	0.755	2.936**
	(1.20)	(0.03)	(0.66)	(1.17)	(1.39)	(0.79)	(1.41)	(0.60)	(1.35)	(1.18)	(2.80)	(1.16)	(2.24)
Δ Inflation	-0.085	0.085	-0.037	-0.122	0.096	-0.032	-0.127	-0.040	-0.142	-0.102	0.224**	-0.105	-0.328
	(0.44)	(0.74)	(0.19)	(0.69)	(0.74)	(0.14)	(0.55)	(0.30)	(1.06)	(0.54)	(2.06)	(0.70)	(1.58)
Δ Inflation x ER	0.694	0.432	1.007	0.575	0.050	0.955	0.905	-0.068	0.620*	0.688	-0.081	0.565*	0.646
	(1.37)	(1.05)	(1.44)	(1.17)	(0.13)	(1.43)	(1.54)	(0.24)	(1.68)	(1.40)	(0.12)	(1.71)	(0.66)
Term Spread $_{t-1}$	0.051	-0.200*	-0.049	0.152	-0.053	0.013	0.066	-0.062	0.002	0.063	0.065	-0.013	-0.078
	(0.36)	(1.69)	(0.27)	(0.93)	(0.40)	(0.07)	(0.38)	(0.81)	(0.02)	(0.47)	(0.72)	(0.11)	(0.49)
Dividend Yield $_{t-1}$	0.170	-0.002	0.202	0.204	0.061	0.276	0.215	-0.217	-0.039	0.177	-0.231	-0.014	0.216
	(0.59)	(0.01)	(0.59)	(0.77)	(0.43)	(0.78)	(0.62)	(1.24)	(0.18)	(0.61)	(0.95)	(0.07)	(0.58)
Short Rates $_{t-1}$	-0.093	-0.012	-0.106	-0.093	0.041	-0.102	-0.143	0.003	-0.077	-0.080	0.042	-0.096	-0.139
	(0.19)	(0.21)	(0.95)	(1.03)	(0.75)	(0.91)	(1.23)	(0.05)	(1.25)	(0.84)	(0.53)	(1.21)	(1.25)
R^2	0.04	0.02	0.03	0.03	0.01	0.03	0.03	0.04	0.03	0.04	0.05	0.02	0.05
Adj. R^2	0.04	0.02	0.03	0.03	0.00	0.03	0.03	0.03	0.03	0.04	0.05	0.02	0.05
Subset Inf pval	0.2208	0.2177	0.1513	0.3269	0.6398	0.1516	0.1601	0.7265	0.1820	0.2293	0.8368	0.1411	0.7306
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

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

	Mkt. ($r_m - r_f$)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.692	1.690	0.713	-0.977	0.220	-0.313	-0.533	2.633**	1.560	-1.073	1.127	2.272	1.145
	(0.46)	(1.31)	(0.35)	(0.72)	(0.28)	(0.17)	(0.32)	(3.57)	(1.35)	(0.74)	(1.13)	(1.59)	(0.60)
ER	1.062	-0.432	0.674	1.106	-1.100**	0.732	1.832	-0.500	0.589	1.089	-2.360**	0.642	3.002**
	(1.09)	(0.51)	(0.47)	(1.38)	(2.25)	(0.57)	(1.47)	(0.88)	(0.97)	(1.14)	(2.66)	(0.88)	(2.04)
Δ Prod	0.947**	0.248	1.111**	0.862**	-0.334	0.942**	1.275**	-0.158	0.831**	0.989**	-0.146	1.153**	1.299**
	(3.33)	(1.24)	(3.34)	(3.25)	(1.48)	(2.48)	(3.95)	(0.94)	(5.09)	(3.92)	(0.94)	(3.54)	(4.47)
Δ Prod x ER	-0.717	-0.409	-0.910	-0.500	0.160	-0.658	-0.818	0.236	-0.429	-0.665	0.272	-0.654	-0.926
	(1.14)	(1.04)	(1.18)	(0.88)	(0.68)	(0.81)	(1.23)	(0.67)	(1.20)	(1.04)	(0.78)	(1.30)	(1.31)
Term Spread $_{t-1}$	0.086	-0.117	-0.017	0.100	-0.006	0.043	0.049	-0.099	-0.007	0.092	-0.015	-0.055	-0.040
	(0.45)	(0.94)	(0.08)	(0.62)	(0.03)	(0.18)	(0.27)	(1.01)	(0.06)	(0.55)	(0.15)	(0.34)	(0.20)
Dividend Yield $_{t-1}$	0.300	-0.043	0.302	0.345	0.038	0.388	0.350	-0.162	0.154	0.315	-0.289	0.164	0.454
	(1.07)	(0.27)	(0.93)	(1.34)	(0.23)	(1.14)	(0.99)	(0.92)	(0.68)	(1.10)	(1.07)	(0.75)	(1.18)
Short Rates $_{t-1}$	-0.112	-0.002	-0.120	-0.118	0.042	-0.113	-0.155	0.018	-0.082	-0.101	0.097	-0.071	-0.168
	(1.15)	(0.03)	(1.02)	(1.31)	(0.69)	(0.98)	(1.27)	(0.24)	(1.25)	(1.04)	(0.91)	(0.80)	(1.35)
R^2	0.05	0.02	0.04	0.05	0.01	0.04	0.05	0.04	0.03	0.06	0.07	0.03	0.06
Adj. R^2	0.05	0.02	0.03	0.05	0.01	0.04	0.04	0.04	0.03	0.05	0.06	0.03	0.06
Subset Prod pval	0.7155	0.5897	0.7878	0.5007	0.5238	0.7255	0.4750	0.8253	0.2290	0.6036	0.6992	0.1532	0.5760
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

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

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

	Mkt. ($r_m - r_f$)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-1.154	1.779	0.290	-1.489	-0.141	-1.064	-0.923	3.165**	1.788	-1.377	0.863	2.197	1.335
	(0.82)	(1.63)	(0.16)	(1.05)	(0.16)	(0.68)	(0.52)	(4.07)	(1.55)	(0.97)	(0.83)	(1.55)	(0.69)
ER	1.328	0.193	1.462	1.269	-0.884**	1.278	2.163*	-0.426	0.876	1.302	-2.918**	0.911	3.830**
	(1.44)	(0.28)	(1.17)	(1.61)	(1.96)	(1.17)	(1.70)	(0.79)	(1.31)	(1.40)	(3.30)	(1.28)	(2.69)
ΔCons	1.148**	0.054	1.162**	1.108**	-0.443**	1.156**	1.599**	-0.133	1.010**	1.143**	-0.270**	1.100**	1.369**
	(5.15)	(0.30)	(4.24)	(5.09)	(2.84)	(5.12)	(6.27)	(1.04)	(5.25)	(5.05)	(2.95)	(5.13)	(5.58)
Δ Cons x ER	-0.061	-0.178	-0.139	0.039	0.321	0.021	-0.300	0.119	0.042	-0.076	-0.128	0.134	0.262
	(0.11)	(0.61)	(0.21)	(0.09)	(1.15)	(0.03)	(0.50)	(0.38)	(0.12)	(0.13)	(0.40)	(0.32)	(0.39)
Term Spread $_{t-1}$	0.346	-0.152	0.299	0.451*	-0.086	0.339	0.425	-0.040	0.317	0.357	-0.274*	0.351	0.625*
	(1.51)	(1.09)	(1.20)	(1.83)	(0.60)	(1.51)	(1.40)	(0.26)	(1.40)	(1.55)	(1.70)	(1.49)	(1.84)
Dividend Yield $_{t-1}$	0.339	-0.194	0.224	0.418	0.000	0.289	0.289	-0.304	0.045	0.348	0.089	0.230	0.141
	(1.15)	(1.20)	(0.61)	(1.54)	(0.00)	(0.86)	(0.72)	(1.53)	(0.16)	(1.17)	(0.40)	(0.92)	(0.37)
Short Rates $_{t-1}$	-0.020	-0.052	-0.051	0.002	0.054	0.016	-0.037	0.012	0.006	-0.007	-0.072	-0.047	0.024
	(0.19)	(1.08)	(0.41)	(0.02)	(0.84)	(0.14)	(0.26)	(0.15)	(0.06)	(0.06)	(0.71)	(0.47)	(0.15)
R^2	0.09	0.02	0.06	0.08	0.02	0.07	0.08	0.06	0.07	0.09	0.08	0.08	0.09
Adj. R^2	0.08	0.01	0.05	0.07	0.01	0.06	0.07	0.06	0.07	0.08	0.07	0.08	0.09
Subset Cons pval	0.0444	0.6461	0.0997	0.0102	0.5889	0.0784	0.0347	0.9539	0.0029	0.0514	0.1643	0.0024	0.0125
# of countries	12	12	12	12	12	12	12	12	12	12	12	12	12

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

	Mkt. ($r_m - r_f$)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-1.376	1.942	0.089	-1.853	-0.403	-1.410	-1.007	3.556**	1.947	-1.608	0.688	1.751	1.063
	(0.93)	(1.44)	(0.04)	(1.25)	(0.47)	(0.86)	(0.56)	(5.42)	(1.60)	(1.08)	(0.66)	(1.16)	(0.56)
ER	1.811*	0.303	2.000	1.697*	-1.082*	1.563	2.645*	-0.487	1.308*	1.794*	-2.728**	1.285	4.014**
	(1.82)	(0.38)	(1.58)	(1.84)	(1.65)	(1.41)	(1.87)	(1.03)	(1.76)	(1.81)	(3.39)	(1.49)	(2.72)
Δ Wage	0.516**	0.021	0.471**	0.450*	-0.015	0.512**	0.527**	0.043	0.543**	0.500**	-0.027	0.539**	0.566*
	(2.43)	(0.10)	(2.24)	(1.92)	(0.11)	(2.34)	(2.17)	(0.69)	(2.70)	(2.34)	(0.16)	(2.96)	(1.82)
Δ Wage x ER	0.206	0.063	0.545	0.481	0.013	0.017	0.004	-0.033	0.188	0.220	0.037	0.296	0.258
	(0.37)	(0.15)	(0.78)	(0.97)	(0.04)	(0.02)	(0.01)	(0.13)	(0.45)	(0.39)	(0.08)	(0.81)	(0.33)
Term Spread $_{t-1}$	0.554*	-0.266*	0.433	0.699**	-0.166	0.507*	0.673*	-0.135	0.435	0.570**	-0.174	0.468*	0.642*
	(1.92)	(1.77)	(1.31)	(2.30)	(0.92)	(1.74)	(1.70)	(0.73)	(1.57)	(1.96)	(1.39)	(1.65)	(1.79)
Dividend Yield $_{t-1}$	0.169	-0.180	0.093	0.272	0.090	0.143	0.053	-0.385**	-0.210	0.175	0.092	0.105	0.012
	(0.51)	(1.01)	(0.22)	(0.90)	(0.49)	(0.38)	(0.12)	(2.62)	(0.79)	(0.53)	(0.40)	(0.37)	(0.03)
Short Rates $_{t-1}$	0.055	-0.044	0.030	0.074	0.034	0.075	0.041	-0.058	0.011	0.069	0.051	-0.014	-0.065
	(0.48)	(0.89)	(0.24)	(0.64)	(0.41)	(0.59)	(0.26)	(0.82)	(0.12)	(0.59)	(0.55)	(0.14)	(0.45)
R^2	0.07	0.02	0.05	0.06	0.02	0.05	0.06	0.06	0.05	0.07	0.08	0.06	0.08
Adj. R^2	0.06	0.01	0.04	0.05	0.01	0.04	0.05	0.05	0.05	0.06	0.07	0.05	0.07
Subset Wage pval	0.1577	0.8278	0.1051	0.0540	0.9962	0.4069	0.4652	0.9678	0.0456	0.1601	0.9781	0.0150	0.2039
# of countries	10	10	10	10	10	10	10	10	10	10	10	10	10

Table V. 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 July 1990 until December 2011. 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. Subset tests presents the p-values from partial F-tests where all terms including an explanatory variable are tested jointly to equal 0.

	Mkt. (r_m -r_f)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-0.951	1.582	0.391	-1.191	0.198	-0.614	-0.812	2.637**	1.319	-1.318	1.197	2.017	0.820
	(0.65)	(1.25)	(0.20)	(0.90)	(0.26)	(0.35)	(0.50)	(3.61)	(1.18)	(0.93)	(1.21)	(1.47)	(0.45)
ER	1.327	-0.332	0.984	1.316*	-1.019**	1.021	2.040*	-0.522	0.799	1.321	-2.498**	0.837	3.334**
	(1.51)	(0.39)	(0.74)	(1.83)	(1.98)	(0.87)	(1.72)	(0.96)	(1.43)	(1.52)	(2.89)	(1.24)	(2.36)
Δ Inflation	-0.212	0.029	-0.234	-0.263	0.260	-0.134	-0.394*	-0.011	-0.251	-0.240	0.232	-0.248*	-0.480**
	(1.03)	(0.17)	(1.02)	(1.35)	(1.45)	(0.54)	(1.66)	(0.06)	(1.58)	(1.21)	(1.44)	(1.73)	(2.07)
Δ Inflation x ER	0.874*	0.779	1.463*	0.684	-0.080	1.262*	1.342**	-0.071	0.771**	0.843*	-0.152	0.656**	0.808
	(1.72)	(1.46)	(1.89)	(1.32)	(0.18)	(1.82)	(2.16)	(0.25)	(2.32)	(1.77)	(0.20)	(2.12)	(0.82)
Δ GDP	1.377**	0.480**	1.646**	1.166**	0.044	1.556**	1.512**	0.021	1.352**	1.331**	-0.307*	1.510**	1.817**
	(5.22)	(2.52)	(6.78)	(4.32)	(0.15)	(5.91)	(4.42)	(0.09)	(5.87)	(4.96)	(1.94)	(7.66)	(6.33)
Δ GDP x ER	-0.335	-0.359	-0.629	-0.270	0.193	-0.616	-0.809	-0.079	-0.488	-0.409	-0.405	-0.643	-0.238
	(0.67)	(0.94)	(0.89)	(0.59)	(0.52)	(0.71)	(1.34)	(0.22)	(1.64)	(0.78)	(1.02)	(1.64)	(0.37)
Δ Prod	0.389	0.043	0.444*	0.401*	-0.385	0.299	0.685**	-0.165	0.289*	0.454**	-0.045	0.543*	0.587**
	(1.60)	(0.32)	(1.68)	(1.81)	(1.60)	(0.86)	(2.89)	(1.04)	(1.95)	(2.22)	(0.36)	(1.84)	(2.26)
Δ Prod x ER	-0.589	-0.330	-0.723	-0.392	0.109	-0.458	-0.567	0.273	-0.239	-0.512	0.411	-0.383	-0.794
	(1.12)	(0.92)	(1.30)	(0.82)	(0.46)	(0.69)	(1.03)	(0.97)	(0.69)	(0.95)	(1.49)	(0.85)	(1.27)
Term Spread $_{t-1}$	0.068	-0.133	-0.046	0.087	-0.004	0.017	0.021	-0.099	-0.024	0.075	-0.017	-0.072	-0.055
	(0.41)	(1.08)	(0.23)	(0.61)	(0.03)	(0.08)	(0.13)	(1.02)	(0.23)	(0.51)	(0.17)	(0.51)	(0.33)
Dividend Yield $_{t-1}$	0.410	0.003	0.437	0.434*	0.052	0.515	0.463	-0.164	0.253	0.418	-0.320	0.269	0.589
	(1.58)	(0.02)	(1.43)	(1.81)	(0.32)	(1.63)	(1.36)	(0.93)	(1.18)	(1.57)	(1.23)	(1.31)	(1.61)
Short Rates $_{t-1}$	-0.106	-0.005	-0.118	-0.113	0.044	-0.110	-0.154	0.018	-0.078	-0.096	0.091	-0.067	-0.158
	(1.15)	(0.07)	(1.01)	(1.31)	(0.73)	(0.97)	(1.28)	(0.24)	(1.20)	(1.04)	(0.88)	(0.75)	(1.29)
R^2	0.08	0.03	0.06	0.07	0.01	0.06	0.06	0.04	0.06	0.08	0.07	0.05	0.09
Adj. R^2	0.08	0.02	0.05	0.06	0.01	0.06	0.06	0.04	0.05	0.08	0.07	0.05	0.08
Subset Inf pval	0.1766	0.1322	0.1022	0.3634	0.6421	0.0899	0.0964	0.8021	0.1164	0.1853	0.9143	0.1646	0.7278
Subset GDP pval	0.0490	0.7491	0.1810	0.0767	0.3920	0.2815	0.2820	0.8784	0.0010	0.0932	0.0309	0.0358	0.0118
Subset Prod pval	0.6963	0.3255	0.5909	0.9836	0.4148	0.7924	0.8219	0.6692	0.8644	0.9078	0.1565	0.5592	0.6818
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

Table VI. 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 July 1990 until December 2011. 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. The "Subset" tests present the p-values from partial F-tests where all terms including an explanatory variable are tested jointly to equal 0.

	Mkt. (r_m -r_f)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-1.076	2.234*	0.771	-1.463	0.406	-0.396	-0.802	2.903**	1.419	-1.483	0.589	2.110	1.522
	(0.73)	(1.76)	(0.38)	(1.11)	(0.52)	(0.22)	(0.48)	(4.12)	(1.26)	(1.04)	(0.61)	(1.53)	(0.86)
ER	0.747	-0.554	0.210	0.765	-1.175**	0.122	1.297	0.089	0.779	0.689	-1.588**	0.639	2.227**
	(1.09)	(0.63)	(0.17)	(1.39)	(1.97)	(0.12)	(1.59)	(0.20)	(1.50)	(1.07)	(2.55)	(1.16)	(2.12)
Δ Inflation	-0.246	-0.006	-0.270	-0.264	0.233	-0.170	-0.403**	-0.055	-0.323**	-0.268	0.176	-0.236*	-0.412*
	(1.32)	(0.04)	(1.30)	(1.46)	(1.34)	(0.76)	(2.01)	(0.32)	(2.11)	(1.48)	(1.03)	(1.78)	(1.87)
Δ Inflation x ER	0.342	0.543	0.780	0.237	-0.166	0.559	0.726	0.034	0.356	0.322	0.094	0.247	0.153
	(0.72)	(1.04)	(1.04)	(0.48)	(0.34)	(0.77)	(1.46)	(0.12)	(1.30)	(0.74)	(0.13)	(0.90)	(0.17)
Δ GDP	0.654**	0.393**	0.875**	0.482*	0.150	0.767**	0.618*	0.297	0.908**	0.612**	-0.094	0.915**	1.008**
	(2.78)	(2.39)	(3.90)	(1.90)	(0.64)	(3.36)	(1.96)	(1.34)	(4.24)	(2.52)	(0.65)	(4.89)	(3.61)
Δ GDP x ER	-0.259	-0.511	-0.662	-0.152	0.011	-0.675	-0.686	-0.110	-0.441	-0.331	-0.265	-0.521	-0.256
	(0.57)	(1.53)	(1.06)	(0.36)	(0.03)	(0.85)	(1.20)	(0.34)	(1.42)	(0.69)	(0.66)	(1.45)	(0.41)
Δ Prod	0.112	0.011	0.146	0.135	-0.378	-0.013	0.366*	-0.099	0.086	0.185	0.024	0.319	0.295
	(0.44)	(0.12)	(0.54)	(0.60)	(1.40)	(0.03)	(1.68)	(0.62)	(0.59)	(0.88)	(0.19)	(1.18)	(1.16)
Δ Prod x ER	-0.492	-0.371	-0.654	-0.283	0.089	-0.380	-0.469	0.257	-0.163	-0.420	0.426*	-0.310	-0.736
	(1.06)	(1.12)	(1.36)	(0.68)	(0.37)	(0.63)	(0.98)	(0.98)	(0.53)	(0.88)	(1.70)	(0.75)	(1.29)
GL ER	0.866	0.153	1.038	0.886	0.397	1.429	1.032	-1.442*	-0.418	1.024	-1.796	-0.168	1.628
	(0.60)	(0.17)	(0.56)	(0.70)	(0.62)	(0.81)	(0.59)	(1.69)	(0.50)	(0.71)	(1.49)	(0.17)	(0.81)
Δ GL Inflation	-1.294**	0.359	-1.138*	-1.497**	0.356	-1.291**	-1.647**	0.891**	-0.458	-1.349**	0.487	-1.152**	-1.639**
	(2.39)	(1.31)	(1.79)	(2.95)	(1.27)	(2.13)	(2.55)	(3.19)	(1.17)	(2.49)	(1.35)	(2.34)	(2.35)
Δ GL Inflation x ER	5.594**	-0.709	4.810**	5.519**	-0.680	5.467**	6.147**	-2.374**	3.358**	5.732**	-0.493	3.444**	3.937*
	(2.84)	(1.01)	(2.17)	(3.00)	(0.71)	(2.48)	(2.73)	(2.25)	(2.99)	(2.89)	(0.40)	(2.66)	(1.78)
Δ GL GDP	1.658**	0.346	1.896**	1.550**	-1.119**	1.571*	2.690**	-0.930**	0.777	1.707**	-0.770*	1.936**	2.705**
	(2.09)	(0.76)	(1.97)	(2.00)	(2.86)	(1.77)	(2.89)	(1.96)	(1.27)	(2.13)	(1.83)	(2.50)	(2.92)
Δ GL GDP x ER	1.621	-1.085	0.565	1.650	1.074*	1.712	0.637	-1.211	0.509	1.721	1.176	-0.421	-1.597
	(0.69)	(1.20)	(0.22)	(0.75)	(1.93)	(0.70)	(0.24)	(1.07)	(0.34)	(0.72)	(0.81)	(0.25)	(0.56)
Δ GL Prod	0.759	-1.671**	-0.208	1.463	0.057	0.339	0.282	-0.475	0.234	0.709	0.194	0.124	-0.070
	(0.74)	(2.36)	(0.17)	(1.41)	(0.07)	(0.29)	(0.21)	(0.73)	(0.24)	(0.70)	(0.29)	(0.10)	(0.05)
Δ GL Prod x ER	-1.917	5.416**	2.169	-3.247	1.192	0.590	-0.602	2.315	0.137	-2.178	-3.977**	0.621	4.598
	(0.68)	(3.51)	(0.66)	(1.28)	(1.43)	(0.19)	(0.18)	(1.45)	(0.07)	(0.76)	(1.98)	(0.29)	(1.25)

(continued)

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

	Mkt. ($r_m - r_f$)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Term Spread $_{t-1}$	-0.094	-0.146	-0.214	-0.068	-0.003	-0.166	-0.163	-0.040	-0.128	-0.087	0.026	-0.188*	-0.214
	(0.71)	(1.15)	(1.20)	(0.76)	(0.02)	(0.84)	(1.33)	(0.50)	(1.53)	(0.87)	(0.25)	(1.71)	(1.60)
Dividend Yield $_{t-1}$	0.636**	0.012	0.653**	0.641**	0.011	0.733**	0.722**	-0.198	0.441**	0.639**	-0.281	0.463**	0.744**
	(2.92)	(0.08)	(2.52)	(3.02)	(0.06)	(2.86)	(2.43)	(1.19)	(2.19)	(2.85)	(1.18)	(2.31)	(2.28)
Short Rates $_{t-1}$	-0.134*	-0.003	-0.142	-0.139*	0.045	-0.138	-0.182*	0.022	-0.101	-0.124	0.080	-0.088	-0.168
	(1.67)	(0.04)	(1.34)	(1.92)	(0.74)	(1.44)	(1.75)	(0.33)	(1.55)	(1.58)	(0.86)	(0.94)	(1.47)
R^2	0.17	0.04	0.13	0.14	0.02	0.15	0.14	0.07	0.10	0.17	0.10	0.10	0.15
Adj. R^2	0.17	0.04	0.12	0.14	0.01	0.15	0.13	0.06	0.09	0.17	0.10	0.09	0.15
Subset Inf pval	0.8240	0.3079	0.4664	0.9484	0.8743	0.5569	0.4641	0.9448	0.8980	0.8905	0.6967	0.9615	0.7563
Subset GDP pval	0.3722	0.7340	0.7505	0.4341	0.5756	0.9106	0.8952	0.6400	0.0040	0.5451	0.2618	0.1942	0.1295
Subset Prod pval	0.4007	0.2468	0.2849	0.6719	0.4145	0.4779	0.8107	0.4795	0.7540	0.5813	0.0535	0.9706	0.3247
Subs G Inf pval	0.0187	0.5617	0.0703	0.0179	0.6970	0.0399	0.0311	0.1333	0.0047	0.0177	0.9961	0.0487	0.2631
Subs G GDP pval	0.1421	0.3791	0.3130	0.1251	0.9148	0.1535	0.1792	0.0368	0.3626	0.1309	0.7713	0.3189	0.6862
Subs G Prod pval	0.6592	0.0130	0.5298	0.4348	0.0679	0.7536	0.9139	0.1822	0.8121	0.5807	0.0386	0.6750	0.1804
# of countries	20	20	20	20	20	20	20	20	20	20	20	20	20

Table VII. Global 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 July 1990 until December 2011. 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. The "Subset" tests present the p-values from partial F-tests where all terms including an explanatory variable are tested jointly to equal 0.

	Mkt. (r_m - r_f)	HML (BTM)	Value (BTM)	Growth (BTM)	HML (CFP)	Value (CFP)	Growth (CFP)	SMB	Small	Big	WML	Winners	Losers
Intercept	-2.642	1.902	-0.637	-2.539	3.246	-1.532	-4.778	1.983	-0.750	-2.733	4.974**	1.661	-3.259
	(1.26)	(0.92)	(0.26)	(1.03)	(1.28)	(0.70)	(1.36)	(0.67)	(0.27)	(1.29)	(2.19)	(0.76)	(0.88)
ER	0.100	-0.056	0.044	0.099	0.692	0.437	-0.255	0.106	0.193	0.087	-2.502*	-0.126	2.352
	(0.09)	(0.05)	(0.03)	(0.09)	(0.70)	(0.33)	(0.14)	(0.08)	(0.21)	(0.08)	(1.81)	(0.14)	(1.21)
Δ Inflation	-1.644**	0.669*	-1.369**	-2.038**	0.604	-1.567**	-2.170**	0.795	-0.867**	-1.662**	0.167	-1.681**	-2.333**
	(2.86)	(1.72)	(2.47)	(3.21)	(0.96)	(3.25)	(2.28)	(1.26)	(2.07)	(2.88)	(0.31)	(3.32)	(2.85)
Δ Inflation x ER	3.806**	-2.507*	2.370	4.877**	-1.469	3.898*	5.367**	-0.318	3.587**	3.905**	-1.087	2.814**	4.350
	(2.20)	(1.67)	(1.06)	(2.74)	(1.09)	(1.96)	(2.01)	(0.14)	(2.66)	(2.23)	(0.51)	(2.52)	(1.57)
Δ GDP	1.814**	0.837	2.275**	1.438*	-0.949	1.986**	2.935**	0.200	1.979**	1.779**	-0.974*	2.542**	3.751**
	(2.69)	(1.36)	(2.80)	(1.88)	(1.58)	(2.78)	(3.04)	(0.29)	(2.65)	(2.63)	(1.71)	(3.26)	(3.68)
Δ GDP x ER	0.696	-1.351	-0.551	0.800	0.731	0.588	-0.143	-1.192	-0.460	0.733	2.200	-0.406	-2.792
	(0.31)	(0.92)	(0.18)	(0.38)	(0.67)	(0.24)	(0.05)	(0.67)	(0.28)	(0.33)	(1.16)	(0.22)	(0.82)
Δ Prod	0.755	-1.653*	-0.213	1.440	-0.029	0.092	0.121	-0.731	0.084	0.816	0.429	0.024	-0.400
	(0.89)	(1.90)	(0.21)	(1.39)	(0.03)	(0.10)	(0.09)	(0.74)	(0.08)	(0.95)	(0.49)	(0.02)	(0.25)
Δ Prod x ER	-0.225	4.991**	3.190	-1.801	-0.221	1.706	1.927	0.744	0.420	-0.323	-6.306**	1.117	7.350*
	(0.10)	(2.16)	(0.94)	(0.76)	(0.15)	(0.60)	(0.56)	(0.35)	(0.22)	(0.14)	(2.26)	(0.58)	(1.75)
Term Spread $_{t-1}$	-0.295	0.124	-0.282	-0.406	-0.402	-0.416	-0.015	0.709	0.405	-0.304	0.360	0.252	-0.172
	(0.66)	(0.32)	(0.55)	(0.84)	(0.95)	(0.87)	(0.02)	(1.41)	(0.92)	(0.68)	(0.81)	(0.55)	(0.25)
Dividend Yield $_{t-1}$	1.916**	-0.217	1.691	1.908**	-1.231	1.642	2.873*	-0.283	1.627*	1.910**	-3.636**	0.997	4.625**
	(2.05)	(0.27)	(1.39)	(1.99)	(1.36)	(1.49)	(1.82)	(0.23)	(1.72)	(2.02)	(2.97)	(1.23)	(2.69)
Short Rates $_{t-1}$	-0.227	0.088	-0.189	-0.277	0.074	-0.190	-0.265	0.348*	0.123	-0.225	0.076	-0.089	-0.173
	(1.20)	(0.46)	(0.91)	(1.21)	(0.35)	(1.00)	(0.87)	(1.68)	(0.83)	(1.17)	(0.43)	(0.56)	(0.66)
R^2	0.21	0.14	0.18	0.18	0.09	0.23	0.19	0.14	0.23	0.21	0.31	0.23	0.33
Adj. R^2	0.15	0.06	0.11	0.11	0.02	0.16	0.12	0.07	0.16	0.14	0.25	0.17	0.27
Subset Inf pval	0.1805	0.2043	0.6438	0.0845	0.4588	0.2204	0.1924	0.8244	0.0329	0.1699	0.6498	0.2554	0.4408
Subset GDP pval	0.2386	0.7017	0.5530	0.2565	0.8093	0.2773	0.3344	0.5407	0.2864	0.2380	0.4985	0.1976	0.7683
Subset Prod pval	0.8098	0.1230	0.3591	0.8643	0.8350	0.5017	0.5111	0.9950	0.7623	0.8236	0.0249	0.4912	0.0755

Table VIII. Macroeconomic Surprises and Factor Returns

This table shows results of regressing daily factor and portfolio returns in percent on macroeconomic announcement surprises. 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 April 2013. Standard Errors are clustered on both market and time (year/month). Stars denote 10% (*) and 5% (**) significance respectively. "Sub Surprise pval" presents the p-values from partial F-tests examining whether the coefficient on "Surprise" and "ER x Surprise" sum to zero. Expected Recessions dummies are suppressed for brevity.

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
Mkt (rm -rf)	Intercept	0.074*	0.035	0.106**	-0.015	0.047	0.110**	0.057	0.049	0.046
	Surprise	0.091**	-0.008	-0.062**	0.131**	0.152**	0.034	-0.078**	0.038	-0.004
	ER x Surprise	-0.012	0.143**	0.015	-0.325**	0.222	0.183	-0.025	0.071	0.192*
	R^2	0.005	0.002	0.002	0.012	0.018	0.007	0.005	0.001	0.003
	Sub Surprise pval	0.390	0.020	0.696	0.034	0.030	0.139	0.021	0.447	0.085
HML_{BTM}	Intercept	0.027	0.021	0.029	0.029	-0.011	-0.020	-0.007	0.058**	0.012
	Surprise	-0.028	0.014	-0.045	-0.018	0.011	0.011	-0.025	-0.011	-0.008
	ER x Surprise	-0.012	-0.047	0.131	-0.063	0.144	0.031	-0.071*	0.051	0.174
	R^2	0.003	0.001	0.003	0.001	0.007	0.002	0.005	0.000	0.002
	Sub Surprise pval	0.561	0.711	0.282	0.376	0.120	0.663	0.003	0.474	0.232
ValueBTM	Intercept	0.079	0.044	0.106**	0.014	0.031	0.113**	0.069*	0.092	0.063
	Surprise	0.074*	0.007	-0.095**	0.117**	0.167**	0.049	-0.099**	0.028	0.005
	ER x Surprise	-0.047	0.085	0.120	-0.373**	0.319	0.200	-0.083	0.110	0.314**
	R^2	0.003	0.001	0.003	0.009	0.019	0.006	0.009	0.001	0.005
	Sub Surprise pval	0.672	0.187	0.837	0.063	0.041	0.189	0.001	0.354	0.015
$Growth_{BTM}$	Intercept	0.052	0.023	0.077*	-0.015	0.042	0.133**	0.077*	0.034	0.051
	Surprise	0.102**	-0.007	-0.050	0.135**	0.156**	0.038	-0.074**	0.039	0.013
	ER x Surprise	-0.035	0.131*	-0.011	-0.310**	0.174	0.168	-0.012	0.059	0.140
	R^2	0.005	0.002	0.001	0.010	0.016	0.007	0.003	0.001	0.002
	Sub Surprise pval	0.406	0.118	0.590	0.048	0.022	0.118	0.025	0.472	0.240
HML_{CFP}	Intercept	-0.027	0.018	0.095**	0.014	0.046**	-0.011	-0.011	0.045	0.056**
	Surprise	-0.019	0.005	-0.013	0.045	-0.043	-0.007	-0.026	-0.013	0.015
	ER x Surprise	-0.029	0.050	0.105*	0.064	0.006	0.051	0.009	-0.132	-0.126
	R^2	0.001	0.001	0.003	0.003	0.001	0.001	0.001	0.003	0.001
	Sub Surprise pval	0.564	0.549	0.097	0.173	0.547	0.657	0.841	0.049	0.260
$Value_{CFP}$	Intercept	0.050	0.040	0.144**	-0.023	0.047	0.100**	0.036	0.071	0.063
	Surprise	0.085*	-0.016	-0.057	0.130**	0.146**	0.046	-0.101**	0.036	0.003
	ER x Surprise	0.005	0.180**	0.084	-0.338**	0.235	0.212	-0.046	0.018	0.183
	R^2	0.004	0.002	0.002	0.009	0.014	0.007	0.008	0.001	0.003
	Sub Surprise pval	0.427	0.004	0.850	0.040	0.059	0.151	0.013	0.714	0.194
$Growth_{CFP}$	Intercept	0.077	0.022	0.049	-0.038	0.000	0.111**	0.047	0.026	0.007
	Surprise	0.104	-0.021	-0.044	0.085**	0.189**	0.054	-0.075**	0.049	-0.012
	ER x Surprise	0.034	0.130	-0.020	-0.402**	0.229	0.161	-0.055	0.150	0.308**
	R^2	0.006	0.002	0.001	0.012	0.017	0.004	0.007	0.002	0.004
	Sub Surprise pval	0.236	0.295	0.608	0.019	0.030	0.328	0.080	0.243	0.035

Table VIII. Macroeconomic Surprises and Factor Returns (*Continued*)

		GDP	Consumer Prices	Producer Prices	Industrial Production	PMI	Retail Sales	Unemployment	Consumer Confidence	Trade Balance
SMB	Intercept	-0.081*	-0.075**	-0.054	-0.015	-0.103**	-0.118**	0.002	-0.049	-0.062
	Surprise	-0.069*	0.015	0.035	-0.087**	-0.053*	0.016	0.037*	-0.042	-0.013
	ER x Surprise	-0.010	-0.092	-0.021	0.310**	-0.105	-0.183**	-0.013	0.026	-0.086**
	R^2	0.004	0.001	0.001	0.012	0.004	0.010	0.006	0.001	0.003
	Sub Surprise pval	0.377	0.283	0.870	0.051	0.141	0.056	0.483	0.848	0.036
Small	Intercept	-0.007	-0.038	0.053	-0.031	-0.051**	-0.007	0.059	-0.001	-0.013
	Surprise	0.025	0.005	-0.030	0.049	0.098**	0.048	-0.042**	-0.004	-0.018
	ER x Surprise	-0.024	0.060	-0.010	-0.024	0.125*	0.000	-0.036	0.095	0.104
	R^2	0.001	0.001	0.002	0.003	0.016	0.003	0.004	0.002	0.001
	Sub Surprise pval	0.983	0.369	0.616	0.583	0.008	0.599	0.006	0.281	0.347
Large	Intercept	0.074*	0.036	0.107**	-0.017	0.052	0.111**	0.057	0.048	0.049
	Surprise	0.094**	-0.011	-0.065**	0.135**	0.152**	0.032	-0.079**	0.038	-0.004
	ER x Surprise	-0.014	0.152**	0.012	-0.334**	0.230	0.183	-0.023	0.070	0.190*
	R^2	0.005	0.002	0.002	0.012	0.018	0.007	0.005	0.001	0.003
	Sub Surprise pval	0.396	0.020	0.667	0.037	0.030	0.138	0.026	0.462	0.095
WML	Intercept	0.117**	0.100**	0.097**	0.096**	0.080**	0.083**	0.055*	0.130**	0.103**
	Surprise	0.005	-0.006	0.004	-0.006	-0.002	-0.011	-0.013	0.006	0.001
	ER x Surprise	-0.020	-0.086*	0.072	0.009	-0.151**	0.035	0.020	-0.081	-0.035
	R^2	0.008	0.008	0.022	0.007	0.022	0.001	0.003	0.025	0.015
	Sub Surprise pval	0.706	0.063	0.175	0.957	0.005	0.661	0.825	0.328	0.212
Winners	Intercept	0.104*	0.028	0.137**	0.038	0.049	0.118**	0.123**	0.104**	0.070
	Surprise	0.069*	0.002	-0.035**	0.077*	0.132**	0.049	-0.054**	0.019	0.014
	ER x Surprise	-0.027	0.045	0.035	-0.168**	0.083	0.088	-0.041	0.091	0.158*
	R^2	0.004	0.001	0.002	0.006	0.017	0.004	0.004	0.002	0.002
	Sub Surprise pval	0.503	0.240	0.994	0.067	0.041	0.239	0.006	0.196	0.060
Losers	Intercept	-0.013	-0.072*	0.041	-0.058	-0.031	0.035	0.068	-0.025	-0.032
	Surprise	0.065*	0.009	-0.040*	0.083	0.134**	0.061	-0.040**	0.012	0.013
	ER x Surprise	-0.007	0.131*	-0.037	-0.177*	0.234*	0.053	-0.061	0.172	0.193*
	R^2	0.008	0.006	0.003	0.010	0.030	0.004	0.005	0.008	0.007
	Sub Surprise pval	0.539	0.019	0.518	0.136	0.015	0.461	0.040	0.184	0.056