What Are the Sources of Country and Industry Diversification?

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Keywords: Return Decomposition, Time-varying Risk Premiums, and Market Integration

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Abstract

In this paper, we develop a new framework in which one can analyze industry and country effects by examining their underlying return components. We find that the global cash flow factor explains on average 48% of the variation of industry cash flows and the global discount rates explain 43% of the variation of industry discount rates. These are more than double the explanatory power of the two factors over country cash flow and discount rate variations, which are 23% and 13% respectively. This suggests that global factors are much less important for return components at country level than at industry level. The larger benefits of diversification across countries than across industries are thus driven more by better diversification of expected returns, although better diversification of cash flows also drives the result. Moreover, emerging markets tend to have much smaller co-movements of both dividends and equity risk premiums with those of the world, suggesting a lower degree of integration with the world goods and financial markets. This appears to be the basis for emerging market diversification.

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What Are the Sources of Country and Industry Diversification?

Heston and Rouwenhorst (1994) and Griffin and Karolyi (1998) find that country factors are more important than industry factors in explaining the benefits of international diversification.[2] However, Heston and Rouwenhorst (1994) note that their findings "do not identify the origin of these strong independent country movements…but merely shift the focus to the driving source behind these country effects". The greater diversification benefits for countries could be the result of independent variation of country specific discount rates, resulting from segmented capital markets. Alternatively, this could result from a lack of integration in trade flows or industry specialization, leading to country specific innovations in expected cash flows. We analyze the underlying drivers of these country and industry effects to determine whether the benefits of international diversification are being driven by the degree of integration in goods or financial markets.

Independent movements in expected cash flows and expected returns drive the importance of country and industry factors for international diversification. The movements depend on whether cash flows or discount rates are important drivers of return variation and whether the two components of return are highly correlated with its corresponding global cash flow and discount rate factors. For example, the country specific effect for a German bank could be larger than the industry effect because the Germany specific expected return innovation dominates the innovation specific to the expected return of the banking industry. Alternatively, the Germany specific innovation to expected cash flows could be larger than the innovation to expected cash flows specific to the global banking industry.

In this paper, we develop a new framework in which one can analyze industry and country effects by examining their return components, using an excess return version of the Campbell (1991) approximate present value relation to decompose the innovation in stock returns as news about future dividends, interest rates, equity risk premiums and exchange rates. We examine the underlying drivers of the importance of country versus industry effects in an effort to shed light on why country effects have been found to be larger on average than industry effects. While the framework is similar in spirit to that of Ammer and Mei (1996), our focus here is the study of industry effects rather than world economic integration for countries.[3] Our study here also includes emerging markets rather

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[2] Heckman, Narayanan and Patel (1998) find that industry effects have been at least as important as country effects following the EMU for European countries, but do not determine whether these changes are the result of greater integration in trade or financial markets. Grinold, Ruud and Stefek (1989) also conclude that the most important industries are more important than the least important countries.

[3] Karolyi and Stulz (1995) have also used the framework to study the comovement of US and Japanese stocks. However, they are only interested in what macroeconomic factors affect the co-movement of stock returns across countries.

than just developed markets. Moreover, we provide a new approach to examine the importance of currency shocks to industry-country diversification. We also study the dynamics of industry-country correlation over time and the underlying factors that determine this dynamics. In contrast to Heston and Rouwenhorst (1994) and Griffin and Karolyi (1998), our emphasis here is the underlying return components that determine the benefits of industry- country diversification, while they emphasize on the magnitude of industry-country effects.

Our paper is organized as follows: In the next section, we present an approximate present value model in which we decompose excess returns into four different components: innovations (or news) about dividend growth, interest rates, exchange rates, and future expected returns. The second section discusses an application to Financial Times (FT) Actuaries/Goldman Sachs indexes from January 1987 to December 1998. The third section examines the importance of currency shocks to industry-country diversification. The final section summarizes our conclusions.

I. Decomposing Country and Industry Stock Returns

We first use an excess return version of the Campbell (1991) approximate present value relation to characterize the innovation in the domestic stock return as news about future dividends, interest rates, and equity risk premiums:[4]

$$\tilde{e}_{t+1} = (E_{t+1} - E_t)\ \{\sum_{j=0}^{\infty} \rho^j \Delta d_{t+1+j} - \sum_{j=0}^{\infty} \rho^j r_{t+1+j} - \sum_{j=1}^{\infty} \rho^j e_{t+1+j}\} \qquad \textbf{(1)}$$

where r is the one-period treasury bill return, e is the excess return on equity (over the treasury bill), and d is the dividend paid. All variables are measured in real terms and in logs, a tilde (~) superscript represents an innovation in a variable, and a delta (Δ) designates a first difference. Thus $\tilde{e}$ is the equity excess return innovation, and Δd is the log change in real dividends. We use E_t to denote expectations formed at the end of period t, while $(E_{t+1} - E_t)$ is the revision in expectations given new information arrived during period t+1. The parameter ρ is a constant of linearization that

[4] An approximate intertemporal identity is derived by taking a first-order Taylor expansion of an accounting identity for the log one-period return, computing the forward solution of the resulting difference equation in the log of the dividend-price ratio, and applying expectations operators. The only assumption we make here is to impose a consistency condition on expectations that is somewhat weaker than rational expectations. For details, see Campbell (1991) or Campbell and Ammer (1993).

is slightly less than one.[5] For convenience, we define simpler notation to refer to the three news components above:

$$\tilde{e} = \tilde{e}_d - \tilde{e}_r - \tilde{e}_e \quad \textbf{(2)}$$

Each term in (2) corresponds to one of the summations in (1). Equation (2) says that, ceteris paribus, news that dividends will grow more rapidly in the future would have a positive impact on today's stock return. On the other hand, an upward revision to expected future excess returns on stocks, accompanied with no information about future dividends or interest rates, means that the current stock price will have to drop, so that higher future returns can be generated from the same cash flow. In other words, an unexpected increase in the equity risk premium generates an immediate capital loss. Similarly, positive revisions to future interest rate expectations reduce the current return on equity. A foreign version of the stock equation (1) is

$$\tilde{e}^*_{t+1} = (E_{t+1} - E_t) \{ \sum_{j=0}^{\infty} (\rho^*)^j \Delta d^*_{t+1+j} - \sum_{j=0}^{\infty} (\rho^*)^j r^*_{t+1+j} - \sum_{j=1}^{\infty} (\rho^*)^j e^*_{t+1+j} \} \quad \textbf{(3)}$$

where the asterisk (*) superscripts denote foreign variables. It is easy to see from equation (1) and (3) that, if we replace real dividend and real interest rates with nominal dividends and nominal rates, equation (1) and (3) still hold, since the inflation terms will cancel out. To facilitate comparison of our results with early exchange rate literature, we will use nominal exchange rates in this paper.[6] Following Ammer and Mei (1996), we will work with the excess of the foreign stock return (expressed in dollars) over the domestic treasury bill return, given by

$$f_{t+1} = e^*_{t+1} - \Delta q_{t+1} + r^*_{t+1} - r_{t+1} \quad \textbf{(4)}$$

where f is the foreign excess return, and q denotes the exchange value of the domestic currency. Substituting (4) into (3), the innovation in the foreign stock excess return can be written

[5] ρ in equation (1) is computed as 1 / (1 + exp(ϕ)), where ϕ is the sample mean of the log dividend-price ratio. We compute a ρ of .997 in the following section. As discussed in Campbell and Mei (1993), the results are fairly robust with respect to the choice of ρ.

[6] See for example, Bodnar and Gentry (1993), Heston and Rouwenhorst (1994), Ferson and Harvey (1993), He and Ng (1998), Jorian (1990), and Korajczyk and Viallet (1992), who examined the impact of changes in nominal exchange rates on stock returns.

$$\tilde{f}_{t+1} = (E_{t+1} - E_t)\ \{\sum_{j=0}^{\infty} (\rho^*)^j \Delta d^*_{t+1+j} - \sum_{j=0}^{\infty} (\rho^*)^j r_{t+1+j} - \sum_{j=0}^{\infty} (\rho^*)^j \Delta q_{t+1+j} - \sum_{j=1}^{\infty} (\rho^*)^j f_{t+1+j}\} \tag{5}$$

Defining appropriate notation for the four terms on the right, equation (5) can be rewritten as

$$\tilde{f} = \tilde{f}_d - \tilde{f}_r - \tilde{f}_q - \tilde{f}_f \tag{6}$$

The intuition for the signs on $\tilde{f}_d,\ \tilde{f}_r,\ and\ \tilde{f}_f$ is the same as that given above for the signs on the corresponding components in equation (2). Also, the sign on the exchange rate component is negative for the same reason as the one for the excess return -- ceteris paribus, news that the dollar will appreciate sometime in the future must reduce dollar returns on foreign assets at some point in time. With no revision in expected future excess returns on foreign stocks, the loss occurs today.

In this paper, we examine the determinants of industry-country dollar returns by studying their dividend components, e_d, and f_d. In addition, we will analyze their discount rate components, e_e, and f_f. We will also examine the impact of innovations in exchange rates, f_q, on the return components. We will use monthly industry and country total returns and dividend yields from the Financial Times (FT) Actuaries/Goldman Sachs from January 1987 through December 1998. We choose the FT indexes because industry return and dividend yield data for MSCI are only available since January 1993. We replicate our country analysis with MSCI data to test the robustness of our results. The emerging market returns and dividend yields are from the International Finance Corporation (IFC). In contrast to Heston and Rouwenhorst (1994) and Griffin and Karolyi (1998), who use a much shorter sample time span but large number of securities and disaggregate sub-industry indices, our study uses aggregate industry and country indices only but covers a much longer sample period.[7]

[7] The assumption underlying Heston and Rouwenhorst (1994) and Griffin and Karolyi (1998) is that individual security has unit loadings to the global factor, country factor, and industry factor. Our assumption here is that the VAR process determining expected returns will be stable over the sample period.

II. The Determinants of Diversification across Countries and Industries

Following Roll (1992), and Heston and Rouwenhorst (1994), we begin by examining the correlations of returns across industries and across countries. The result is reported in Table I. We can see that the disparity of returns across countries is larger than across industries.[8] While monthly standard deviations across countries range from 9.5% in Latin America to 4.4% in the U.S., the range for industries only varies from 5.8% for FIRE (Finance and Real Estate) to 3.8% for utilities. Emerging markets tend to have lowest correlation with other markets. We can also identify regional blocks, such as Europe, North America, and Japan. We can clearly see that the correlations are much smaller across countries than across industries, with the average pair-wise correlation between industries at 75%, nearly double the 40% average between countries. This suggests that it is more fruitful to diversify across countries than across industries. The objective of this paper is to understand the underlying mechanism that determine this result.

Next, we apply equation (2) to a three-part decomposition of industry returns, emerging market regional index returns, and U.S. stock returns. We then use equation (6) to break G-6 country stock returns into four components. In order to proceed, we need some means by which to compute expectations of the variables in equations (1) and (5). Rather than rely on a specific theoretical model, we assume expectations are generated by a vector autoregression (VAR). Previous studies have found that dividend yields and the default spread have significant forecasting power for stock returns.[9] Accordingly, our VAR specification includes excess returns and dividend yields for each industry, excess returns and dividend yields for the world market index, r, and default spread. Our US and Emerging market regional index also use the same specification, since their returns were provided in US dollars. For G-6 countries, our VAR specification includes excess returns and dividend yields for each country, excess returns and dividend yields for the world market index, r, q, and default spread. We will estimate these industry and country specification one at a time.

Forecasts for e, f, q and r from the VAR are used to calculate both the excess return innovations and the components of these innovations that are associated with exchange rates, interest rates, and excess returns, as defined in equations (1) and (5). The dividend growth components can

[8] Here we are making a distinction between industry returns and industry effects. Thus, we may somewhat overstate country diversification benefits due to difference in industry composition. As shown in Heston and Rouwenhorst (1994), the correlation between country returns and country effects (which is "pure" country factor after adjusting for industry composition) exceeds 0.80. This, our results can be viewed as a first cut towards analyzing the dynamics of industry-country diversification.

[9] See, for example, Ferson and Harvey (1991), Fama and French (1989), and Campbell and Ammer (1993).

then be inferred from (2) and (6) by rearranging the equations as

$$\tilde{e}_d = \tilde{e} + \tilde{e}_r + \tilde{e}_e \tag{7}$$

and

$$\tilde{f}_d = \tilde{f} + \tilde{f}_r + \tilde{f}_q + \tilde{f}_f \tag{8}$$

By leaving monthly dividend growth out of our time series model, we avoid confronting the apparent seasonal variation in dividends.[10]

The generalized method of moments (GMM) of Hansen is used to jointly estimate the VAR coefficients and the elements of the variance-covariance matrix of VAR innovations.[11] To calculate the standard errors associated with estimation error for any statistic, we first let g and V represent the whole set of parameters and their variance-covariance matrix respectively. Next, we write any statistic, such as the covariance between news about future dividend growths and news about future expected returns, as a nonlinear function f(g) of the parameter vector g. The standard error for the statistic is then estimated as

$$\sqrt[2]{f_g{}' V f_g} \tag{9}$$

where f_g is the gradient of the statistic with respect to the parameters (g).

Our first empirical exercise is a variance decomposition of the domestic stock return. From equation (2) it is clear that the variance of the excess return innovation can be written as the sum of six terms:

$$\begin{aligned} Var(\tilde{e}) = Var(\tilde{e}_d) - 2Cov(\tilde{e}_d, \tilde{e}_r) + Var(\tilde{e}_r) - 2Cov(\tilde{e}_d, \tilde{e}_e) \\ + Var(\tilde{e}_e) + 2Cov(\tilde{e}_r, \tilde{e}_e) \end{aligned} \tag{10}$$

[10]Using quarterly dividends, Campbell and Mei (1993) demonstrated that one get the same results if one estimate the dividend growth process directly. Thus the results is robust to how dividend growth is estimated.

[11]For details on the estimation procedure, see Ammer and Mei (1996). Also see appendix.

The results of such a variance decomposition are reported in Table II.[12] The six components are scaled by the total variance so that they sum to one. Like Campbell and Ammer (1993) and Ammer and Mei (1996), we find in most cases that variation in the equity risk premium accounts for a large proportion of the aggregate volatility of industry returns, with equity risk premium accounting for 54% of its aggregate volatility for Basic Industries and 84% for the Transportation and Storage industry.

Comparing to Campbell and Ammer (1993) who find that variation in expected returns account for a much larger proportion of the variation in returns than changes in expected cash flows, Tables II and III find that variation in expected cash flows accounts for a larger percentage of the variation in returns for the world index, accounting for 60% of return variation versus 17% for discount rates and less than 5% for interest rates.[13] Cash flows also account for over half the aggregate volatility for Utilities, Capital Goods and Basic Industries.

Table III reports the outcomes of analogous variance decompositions for the various country and two emerging market portfolios. Again, news about future excess returns accounts for a large proportion of variation in current returns. We found that the discount rates for Italy, Japan, Emerging Asia and Latin America to be the most volatile, contributing a significant portion to the volatility of these markets. Among the developed markets, cash flows are most important for the United States. In contrast the result of Ammer and Mei (1996), we found that exchange rate news components here contribute more significantly to equity market variance, sometimes as much as 51% in the case of UK, where a dramatic devaluation happened in 1993. Note that, unlike their study, we here use nominal rather real exchange rates.

Next we examine interactions of different return components across industries and across countries. Tables IV & V report simple correlations of the return components. A comparison of the correlations among e_d and f_d in Panel A of the two tables suggests that dividend innovations in industries and developed countries move quite closely. The only exception is emerging markets, where the co-movement of its dividend innovation with that of the world market is low. As Ammer and Mei (1996) point out, co-movement of dividend innovation across different markets may proxy

[12] The Akaike Information Criterion was used as a guide in choosing lag lengths. For the 1987 to 1999 period, a 1-lag specification had a higher score than a 2-lag specification. The results reported are based on the 1-lag estimation. We did not try longer lags length due to limit of data.

[13] The reason that discount rates become less important in the return components is due to the fact that the booming stock market in the 1990s makes future expected returns much harder to predict using dividend yields, which have dropped to historical lows in many countries.

for long-term product market integration. Thus, our results may suggest that emerging market has not fully integrated into the world economy. Not surprisingly, our results indicated that the non-traded industries, such as utilities, tend to have smaller correlation with other industries. Our results also shown a close economic relationship between emerging Asia and Japan.

In contrast to results reported in panel A, panel B indicates that discount rate innovations in industries move quite differently comparing to those of countries. A comparison of the correlations among e_e and f_f in Panel B of the two tables suggests that the innovations across industries move quite closely, while those of countries tend to move in different directions. While the correlations among industries are highly positive, they are quite small for countries and even negative in some cases! This points us to a major source of diversification benefits: difference in the movements of equity risk premiums in different developed countries provides much of the diversification benefits. Moreover, differences in the movements of both dividends and equity risk premiums provide the basis for emerging market diversification.[14]

The result of relatively high co-movement of cash flows indicates that industry and country cash flows are driven largely by a common world factor while the low co-movement of discount rates across countries indicates that the global discount factor plays a small role in determining country discount rates. To formally test the above hypothesis, we regress industry-country cash flows against world market cash flows and we also regress industry-country discount rates against world discount rates. The results are reported in Table VI and VII. We find that traded industries, such as finance and capital goods have the greatest correlation with both global cash flow and expected return innovations.[15] This is consistent with Griffin and Karolyi (1998), who found that the importance of industry specific factors to vary across industries. They pointed out that industries less open to trade should provide better diversification of cash flows than globalized industries

Moreover, the global cash flow factor explains little of the cash flow variation in the

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[14] See also Divecha, Drach and Stefek (1992) and Wolf (1996), who find that country factors are more important for emerging markets than developed markets. This is consistent with the story that emerging capital markets are segmented from the global market, allowing domestic monetary and fiscal policies to drive independent movements in discount rates. In addition, these countries may be less integrated in trade or may be highly concentrated in one industry, such as copper or oil. We would expect the benefits of country diversification to come from countries with less integrated capital markets and less open to trade flows.

[15] One may view the slope coefficients in Table VI and VII as the sensitivities of cash flows and discount rates towards global cash flows and discount rates for different industries and countries. In other words, they are the cash flow betas and discount rate betas with respect to global cash flows and discount rates computed based on the framework developed by Campbell and Mei (1993).

emerging markets and the discount global factor explains little variation in the discount rates of many countries. This is consistent with the results of Harvey (1995), who discover that a conditional CAPM (single factor) does not explain cross-country expected returns.[16] On average, we find that the explanatory power of the global cash flow and expected return factors for industries is more than double that for countries, with an average R-squares of 48% for the cash flow component and 43% for the discount rate component vs. an average R-squares of 23% and 13% respectively for countries. Therefore, the larger benefits of diversification across countries than across industries are driven by both better diversification of cash flows and expected returns. Table VII also shows that the both the cash flow and discount rate components of developed market excess returns are more highly correlated with their global counterparts than for emerging markets, with the R-squares for emerging Asia and Latin America to be below 10% for both components, less than half the explanatory power for developed markets. Since discount rates and cash flows are equally important for returns in emerging markets, the greater diversification benefits of investing in emerging markets are driven by both less integration in capital and good markets.

In Ammer and Mei (1996), co-movements of long-term equity risk premiums in different countries were used as a measure of world financial market integration. They pointed out that common shocks that persistently impact the two markets' long-run risk premiums but with different lags could be an important signs of financial integration. However, one may not be able to see this impact from the one-period contemporaneous correlations between equity returns due to the time lags. By examining the co-movement of innovations on future excess returns, one may be able to discover important evidence of long-term financial integration. Following this argument, it is then striking to see from Table VII that global cash flow factor explains more variation in country cash flows than global discount factor does to variation in country long-term expected returns. This implies that, measured in US dollars, there seems to be a greater integration in the world goods market than in the financial market. The result remains the same even if we exclude emerging markets![17] This suggests that, despite a flurry of global mergers and acquisitions in the financial markets in the 1990s, global trade and product market integration appears to have had a greater impact on stock prices than the global common pricing of risk during the sample period.

Because the reliability of the empirical results is dependent on how accurately our VAR model measures expectations, robustness to specification changes is an important issue. As a

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[16] Similar results for countries were reported in Ammer and Mei (1996), but they did not study industry returns.

[17] One can also see this point by directly comparing correlations in Table V, where long-term cash flow correlations tend to be higher than those of expected returns.

robustness check, we have estimated our model under various alternative specifications, such as using various different VAR lags and including a TERM spread (the difference in yields between 10 year US government bond and the 1-month bill) in our VAR process. We have also tried to include a price-earnings ratio on the world market portfolio in the VAR process. We find the results are quite robust to these alternative specifications. Goetzman and Jorion (1993) pointed out that the predictive power of the dividend yield may be spurious due to the fact that dividend yield is essentially a lagged dependent variable. To guard against the possibility that the dividend yield may also affect our future excess return forecast, we have re-estimated our model by using dividend yield at t-1 instead of t for the forecast of excess returns during t+1. We find our results remain unchanged. These results are available upon request.

To examine how our results will be affected by the use of nominal vs. real values, we have also estimate our model using real exchange rates and real interest rates as in Ammer and Mei (1996). Our results are essentially unchanged. This should not be too surprising, since most countries had fairly low inflation during the sample period. In addition, we have also performed our study based on a much longer time series using the MSCI industry-country indices. The sample covers the time period from 1971:1-1998:12. We have conducted our estimation using different lags and variable specifications. Our main results remain unchanged with this different data set. The major drawback of the MSCI indices is that their dividend yields for industries are unavailable until 1993. (Thus they are not included in the VAR.) These results are available upon request.

III. How Does Currency News affect Stock Returns?

There is mixed evidence on the relationship between exchange rate fluctuations and returns on industry-country portfolios. For the U.S. for 1971 to 1987, Jorion (1991) finds that returns for only 5 out of 20 industry portfolios (textiles and apparel, chemicals, machinery, department stores, other retail) are sensitive to changes in the value of the dollar.[18] Griffin and Stulz (2000) shows that the importance of exchange rate shocks increases slightly for longer horizons, but the importance of exchange rate shocks is economically small for industry pairs, while Allayannis (1997) argues that the lack of evidence of exchange rate exposure is due to the fact that exposure is time-varying. Jorion (1991) also finds no evidence of an unconditional risk premium for exchange rate risk in the U.S. stock market. However, recent studies, such as Ferson and Harvey (1993), De Santis and Gerard (1998), Giovannini and Jorion (1989**)** and Korajczyk and Viallet (1992), do find exchange rate as a priced factor and have impact on conditional risk premiums.

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[18] The evidence on individual firms were mixed, too. See Jorion (1990), Bodnar and Gentry (1993), He and Ng (1998) and Bartov and Bodnar (1994).

This paper proposes a new way of examining the impact of currency movements on industry and country returns. Rather than study the impact of contemporaneous currency movement on stock returns, we will analyze how future currency news (f_q in equation (6)) may affect the cash flow and discount rates of industries and countries. The advantage of this approach is that, by examining the co-movement of future return news and currency news aggregated *over a long horizon* instead of the co-movement of *one-period* returns and currency movements, our study could detect small but persistent co-movements in expected returns, and more accurately measure the impact of currency shocks. To formally examine the impact of currency news on the two return components, we regress industry-country cash flows against currency news and we also regress industry-country discount rates against currency news. We have dropped news on the Franc and Lira since they are highly correlated with German Mark and move in lock steps after EMU. The result is reported in Table VIII and IX.[19]

First of all, we found that news on the long-term depreciation of most country's currency with respect to the US dollar is negatively correlated with future cash flows for most industry portfolios. This is not surprising, since industry returns are measured in US dollars. The only exception is Japanese Yen, where the evidence suggests that a long-term depreciation of Japanese Yen may have enhanced future cash flows to the capital goods and utilities industries during the sample period. It is interesting that most industries have the same negative exposure to currency shocks (with the exception to Japanese Yen), suggesting few diversification possibilities. On average, currency shocks explains about 53% of cash flow innovations for industries.

Second, news on the long-term depreciation of most country's currency with respect to the US dollar is negatively correlated with discount rate news for most industry portfolios. The only exception again is the Japanese Yen, where a long-term depreciation of Japanese Yen may have reduced future discount rates during the sample period. On average, currency shocks explains about 46% of discount innovations for industries.

Third, news on the long-term depreciation of British pounds is negatively correlated with cash flow news from all countries. This is also true for Canadian dollars. For the world portfolio, the long-term depreciation of most country's currencies are negatively related to its future cash flows, with the only exception of Japan. On the contrary, the evidence suggests that a long-term

[19] Just like Table VI and VII, one may view the slope coefficients in Table VIII and IX as the sensitivities of cash flows and discount rates towards exchange rates for different industries and countries. In other words, they are the cash flow betas and discount rate betas with respect to exchange rates computed based on the framework developed by Campbell and Mei (1993).

depreciation of Japanese Yen seem to have enhanced future cash flows to the world market portfolio during the sample period.

Fourth, news on the long-term depreciation of most country's currency with respect to the US dollar are negatively correlated with discount rate news. For the world portfolio, the long-term depreciation of most country's currencies tends to raise discount rates.[20] The only exception is Japanese Yen, where the evidence suggests that a long-term depreciation of Japanese Yen may have reduced future discount rates for the world market portfolio during the sample period. In comparison, currency shocks explains much less of cash flow and discount innovations for countries, with adjusted R-squares being 35% and 31% respectively. This is consistent with our results in Table VI and VII, which indicate that common factors play much less important role in country returns. This is consistent with the view that country-specific shocks are possibly driving most of their returns, thus providing better opportunity for diversification.

While our evidence of a strong relationship between currency shocks and time-varying expected returns is consistent with those of He and Ng (1998) and Bailey and Chung (1995), some may question the magnitude found in the paper (46% of discount innovations for industries and 31% for countries). We like to point out that this is largely due to the fact that we are using currency news aggregated *over a long horizon* (f_q) instead of the *one-period* currency movements (Δq) as our explanatory variable. As a result, we can pick up small but persistent innovation in currency rates that affect expected returns. As a preliminary test of this hypothesis, Table X & XI provides regressions of industry and country excess dollar returns against currency news (f_q) and *one-period* currency movements (Δq). We can see clearly that the R-squares using f_q are more than twice as big as those using Δq. Some critics may argue that our results may suffer from an error-in-variables problem, i.e., our independent variables here are derived from VAR estimates thus carry estimation errors. While this being true, it is worth noting that our industry cash flows and discounts are estimated separately from currency news. Moreover, our country return and exchange rate components are estimated one country at a time. Thus, we believe that, while the estimation error may have contaminated the results of some countries, they should have minor impact on industry results.

[20] These results are consistent with earlier studies such as He and Ng (1998) and Bailey and Chung (1995), who find some evidence of time-varying equity premiums for exchange rate risk in Japanese and Mexican stock market.

IV: The Dynamics of Country and Industry Diversification

Changes in the degree of capital and goods market integration will impact of the dyanamics of country and industry diversification. Bekaert and Harvey (1995) find evidence of time-varying capital market integration using a conditional regime switching model and conclude that the perception of greater capital market integration is not always the case. Recently, Heckman, Singanallur and Patel (1998) argued that, due to increasing global market integration and the rising importance of the high-tech industry, return correlations across countries are increasing while, at the same time, return correlations across industries are declining. This suggests that, in forming a well balanced portfolio, one should pay more attention to cross industry diversification and less to cross country diversification. Nevertheless, Rouwenhorst (1999) finds that country effects were still larger than industry effects for the countries of the European Monetary Union from 1993 to 1998.

While the previous analysis has focused on one period expected returns, our methodology allows us to analyze the dynamics of return correlations by examining the co-movement of future return news aggregated over a long horizon, instead of one period expected returns. We also provide evidence on the dynamics of cash flow as well. To examine the issue, Figure 1 & 2 plot the sixty-month rolling average correlations with world market index across industries and across countries. The return correlations are computed by correlating industry and country excess returns with those of world market index. The cash flow correlations are computed by correlating industry and country cash flows with cash flows of the world market index. The discount correlations are computed by correlating industry and country discounts with those of the world market index. We then take an average of these correlations across industries and countries.

We can see from the figures that, first, average country return correlations have always been smaller than average industry correlations. Second, while there is some evidence of increasing country correlations since 1997, possibly reflecting greater trade and capital market integration following European union, industry correlations have been quite steady over the sample period, moving around 0.85-0.91. The increasing country return correlations for the late 1990s appear to be the result of increasing real and financial integration across countries, since both cash flow and discount correlations were rising at the same time. Third, both cash flow and discount correlations are higher for industries than for countries.

The above results imply that, while there is some evidence of increasing country correlation, country diversification is still more important than industry diversification. While one may argue that large cap international stocks, such as Sony and Nokia, have become global stocks thus offer little diversification for US investors, one should still not dismiss the role of international stocks, especially the small cap stocks.[21] By and large, the evidence suggests that one can still derive benefits of diversification across countries, since there is still a lot of room for improving real and financial integration across countries.

V. Conclusion

In this paper, we develop a new framework in which one can analyze industry and country effects by examining their return components. There are several distinctive advantages of our approach. First, by decomposing returns into cash flow, discount rates, and currency components, we can better understand the underlying drivers of industry and country diversification. Second, by examining the movement of future currency news aggregated over a long horizon instead of the one period shock, our study could detect small but persistent movements in exchange rates that impact returns with lags. In addition to making a methodological contribution, this paper has several interesting empirical findings. First, difference in the movements of equity risk premiums in different developed countries provides much of the diversification benefits. Second, much smaller co-movements of both dividends and equity risk premiums with those of the world provide the basis for emerging market diversification. This seems to be based on a lower degree of integration of emerging markets to the world goods and financial markets. Third, measured in US dollars, we find that there appears to be a greater integration in the world goods market than in the financial market.

One of the main drawbacks of our approach is that it does not distinguish between industry returns and industry effects. Thus, we may somewhat overstate country diversification benefits due to difference in industry composition. Thus, a natural next step would be to apply the Heston and Rouwenhorst (1994) and Griffin and Karolyi (1998) country-industry effects decomposition to the cash flow and risk premium terms derived in the paper and obtain a more accurate account of the importance of country vs. industry effects. However, a much longer time series is needed for the job, since the first-step return decomposition will introduce error in variables problem for the second step country-industry decomposition. We also need to obtain return and dividend yield information at the security level (or at least at sub-industry level) in order to separate country performance from industry performance. We leave this for future research.

[21] See for example, Ken Brown (2000).

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Table I

Country and Industry Mean Returns, Standard Deviations and Correlations

Panel A provides the mean and standard deviations of monthly national stock market returns and correlations among these markets from January 1997 to December 1998. Panel B summarizes the mean and standard deviation of global industry returns and correlations among these industries.

Panel A: Country Returns

	Canada	France	Germany	Italy	Japan	U.K.	U.S.	Em Asia	Em Latam	World
Mean	0.400	0.800	0.600	0.400	-0.100	1.000	1.000	0.300	1.200	0.600
Std.	5.000	5.800	5.800	7.400	7.500	5.200	4.400	7.800	9.500	4.400

	Canada	France	Germany	Italy	Japan	U.K.	U.S.	Em Asia	Em Latam	World
Canada	1.000									
France	0.495	1.000								
Germany	0.430	0.736	1.000							
Italy	0.366	0.458	0.498	1.000						
Japan	0.319	0.421	0.287	0.341	1.000					
U.K.	0.582	0.587	0.544	0.341	0.460	1.000				
U.S.	0.770	0.543	0.459	0.295	0.301	0.640	1.000			
Em Asia	0.427	0.292	0.276	0.193	0.280	0.314	0.360	1.000		
Em Latam	0.391	0.249	0.267	0.157	0.171	0.254	0.430	0.430	1.000	
World	0.710	0.698	0.601	0.490	0.759	0.784	0.787	0.421	0.400	1.000

Panel B: Global Industry Returns

	Energy	Basic Ind.	Capital Goods	Consumer Goods	Transp. and Storage	Utilities	FIRE	World
Mean	0.700	0.200	0.700	0.800	0.200	0.700	0.600	0.600
Std.	4.600	5.200	5.000	4.100	5.400	3.800	5.800	4.400

	Energy	Basic Ind.	Capital Goods	Consumer Goods	Transp. and Storage	Utilities	FIRE	World
Energy	1.000							
Basic Ind.	0.678	1.000						
Capital Goods	0.646	0.863	1.000					
Consumer Goods	0.679	0.834	0.900	1.000				
Transp. and Storage	0.580	0.879	0.785	0.786	1.000			
Utilities	0.541	0.656	0.686	0.757	0.744	1.000		
FIRE	0.610	0.825	0.798	0.808	0.821	0.781	1.000	
World	0.723	0.907	0.928	0.954	0.859	0.817	0.924	1.000

Table II

Variance Decomposition for Industry Excess Returns

This table provides the results of a variance decomposition of excess industry stock returns using a vector autoregression (VAR) from January 1997 to December 1998. The VAR is the excess return on the world market, excess return on each global industry, world interest rates, world dividend yield and each global industry dividend yield. Excess returns are measured in dollars relative to the one-month U.S. Treasury bill rate. Hansen's generalized method of moments (GMM) is used to jointly estimate the VAR coefficients and the element of the variance-covariance matrix of VAR innovations. Forecasts of these variables are then used to calculate excess return innovations and the components of the innovations associated with dividend growths, interest rates, and excess returns. The variance of the excess returns is then decomposed based on equation (2), $e = e_d - e_r - e_e$, where e_d is the news about future industry dividends, e_r is news about future interest rates, e_e is news about future excess industry returns, and e is the innovation in excess industry returns. The components are divided by Var (e) so that they sum to one. Each column represents the value of Var (e) and the proportion of Var (e) associated with each component. The standard error for each statistic appears in parentheses. All variables are measured in logs.

	Energy	Basic Ind.	Capital Goods	Consumer Goods	Transp. and Storage	Utilities	FIRE	World
Var (e)	19.49	25.01	24.23	16.68	25.64	13.96	29.89	18.29
st. error	(3.30)	(4.10)	(4.69)	(3.48)	(3.66)	(1.69)	(4.51)	(3.47)
Component				**Proportion of Var(e)**				
Var(ed)	0.31	0.62	0.65	0.34	0.27	0.81	0.28	0.60
	(0.23)	(0.71)	(0.83)	(0.35)	(0.16)	(1.77)	(0.18)	(0.51)
-2 Cov (ed, er)	-0.10	-0.12	-0.10	-0.06	-0.07	-0.12	-0.03	-0.06
	(0.10)	(0.14)	(0.18)	(0.11)	(0.08)	(0.32)	(0.06)	(0.12)
-2 Cov (ed, ee)	0.32	-0.04	0.32	0.32	0.01	0.20	0.39	0.37
	(0.26)	(1.47)	(0.64)	(0.30)	(0.39)	(1.54)	(0.15)	(0.27)
Var (er)	0.02	0.01	0.02	0.02	0.01	0.03	0.01	0.02
	(0.02)	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)
-2 Cov (er, ee)	-0.05	-0.01	-0.11	0.03	-0.07	-0.10	-0.07	-0.10
	(0.09)	(0.14)	(0.09)	(0.15)	(0.09)	(0.16)	(0.09)	(0.11)
Var (ee)	0.50	0.54	0.23	0.34	0.84	0.19	0.42	0.17
	(0.32)	(0.82)	(0.28)	(0.51)	(0.31)	(0.35)	(0.31)	(0.29)

Table III
Variance Decomposition for Country Excess Stock Returns

This table provides the results of a variance decomposition of country excess stock returns using a vector autoregression (VAR) from January 1997 to December 1998. The VAR is the excess return on the world market, excess return on each country, world rates, the exchange rates, world dividend yield, and the country dividend yield. Excess returns are measured in dollars relative to the one-month U.S. Treasury bill rate. Dividend yields are computed as the sum of dividends over the last twelve months divided by the current price. Hansen's generalized method of moments (GMM) is used to jointly estimate the VAR coefficients and the element of the variance-covariance matrix of VAR innovations. Forecasts of these variables are then used to calculated excess return innovations and the components of the innovations associated with dividend growths, interest rates, and excess returns. The variance of the excess returns is then decomposed based on equation (6), $f = f_d - fr - f_q - f_f$, where f_d is the news about future country dividends, f_r is news about future interest rates, fq is news about future exchange rates, f_f is news about future country excess returns, and f is innovation in excess returns on each country. The components are divided by Var (f) so that they sum to one. Each column represents the value of Var (f) and the proportion of Var (f) associated with each component. The standard error for each statistic appears in parentheses. All variables are measured in logs.

	Canada	**France**	**Germany**	**Italy**	**Japan**	**U.K.**	**U.S.**	**Em Asia**	**Em Latam**	**World**
Var (e)	23.36	31.03	32.34	50.84	51.56	25.16	17.98	55.01	83.67	18.29
st. error	(5.13)	(4.33)	(5.09)	(5.84)	(6.33)	(3.87)	(4.10)	(8.83)	(14.22)	(3.47)
Component					**Proportion of Var(f)**					
Var(ed)	0.43	0.39	0.35	0.83	0.16	0.32	0.98	1.78	0.95	0.60
	(0.55)	(0.28)	(0.29)	(0.73)	(0.24)	(0.26)	(3.07)	(1.54)	(0.45)	(0.51)
-2 Cov (ed, er)	-0.03	-0.08	-0.03	-0.05	-0.06	-0.12	0.18	-0.09	-0.04	-0.06
	(0.12)	(0.09)	(0.06)	(0.08)	(0.11)	(0.12)	(0.80)	(0.19)	(0.06)	(0.12)
-2 Cov (ed, eq)	0.10	-0.26	0.08	0.38	0.00	0.05				
	(0.42)	(0.42)	(0.27)	(0.63)	(0.47)	(0.44)				
-2 Cov (ed, ef)	0.32	-0.12	-0.14	-0.94	0.21	-0.14	-0.30	-1.86	-0.48	0.37
	(0.38)	(0.46)	(0.54)	(1.56)	(0.55)	(0.47)	(4.14)	(2.36)	(0.80)	(0.27)
Var(er)	0.02	0.01	0.01	0.01	0.01	0.02	0.04	0.01	0.00	0.02
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.09)	(0.01)	(0.00)	(0.02)
2 Cov (er, eq)	-0.11	0.02	0.01	-0.02	0.02	-0.01				
	(0.13)	(0.08)	(0.06)	(0.04)	(0.10)	(0.11)				
2 Cov (er, ef)	0.03	0.02	0.00	0.00	-0.08	0.06	-0.15	0.01	0.01	-0.10
	(0.14)	(0.08)	(0.10)	(0.09)	(0.14)	(0.13)	(0.59)	(0.16)	(0.06)	(0.11)
Var(eq)	0.23	0.34	0.28	0.29	0.41	0.54				
	(0.22)	(0.15)	(0.11)	(0.20)	(0.32)	(0.38)				
2 Cov (eq, ef)	-0.14	0.27	0.14	-0.20	-0.74	0.09				
	(0.50)	(0.26)	(0.24)	(0.67)	(0.71)	(0.38)				
Var(ef)	0.15	0.41	0.30	0.69	1.07	0.20	0.25	1.16	0.56	0.17
	(0.47)	(0.26)	(0.30)	(0.86)	(0.84)	(0.28)	(0.97)	(0.94)	(0.47)	(0.29)

Table IV

Correlation of Future Dividend News and Excess Return News for Industries

This table provides the results of the correlations of future dividend news and future excess return news for the seven global industries from January 1997 to December 1998. Excess returns are measured in dollars relative to the one-month U.S. Treasury bill rate. Dividend yields are computed as the sum over the dividends of the last twelve months divided by the current price. Panel A reports the correlations of the future dividend news and Panel B reports the correlation of innovations in future excess returns.

Panel A: Correlations of Future Dividend News

	Energy	Basic Ind.	Capital Goods	Consumer Goods	Transp. and Storage	Utilities	FIRE	World
Energy	1.00							
Basic Ind.	0.66	1.00						
Capital Goods	0.55	0.50	1.00					
Consumer Goods	0.76	0.63	0.75	1.00				
Transp. and Storage	0.59	0.72	0.21	0.56	1.00			
Utilities	0.45	0.21	0.51	0.54	0.22	1.00		
FIRE	0.60	0.53	0.64	0.73	0.44	0.61	1.00	
World	0.63	0.61	0.89	0.76	0.33	0.68	0.79	1.00

Panel B: Correlations of Future Excess Return News

	Energy	Basic Ind.	Capital Goods	Consumer Goods	Transp. and Storage	Utilities	FIRE	World
Energy	1.00							
Basic Ind.	0.48	1.00						
Capital Goods	0.34	0.27	1.00					
Consumer Goods	0.56	0.56	0.64	1.00				
Transp. and Storage	0.42	0.81	0.49	0.63	1.00			
Utilities	0.20	0.09	0.56	0.49	0.39	1.00		
FIRE	0.37	0.54	0.60	0.67	0.76	0.70	1.00	
World	0.38	0.55	0.75	0.66	0.66	0.76	0.75	1.00

Table V
Correlation of Future Dividend News and Excess Return News for Countries

This table provides the results of the correlations of future dividend news and future excess return news for the G-7, emerging Asia and emerging Latin America from January 1997 to December 1998. Excess returns are measured in dollars relative to the one-month U.S. Treasury bill rate. Dividend yields are computed as the sum over the dividends of the last twelve months divided by the current price. Panel A reports the correlations of the future dividend news and Panel B reports the correlation of innovations in future excess returns.

Panel A: Correlations of Future Dividend News

	Canada	France	Germany	Italy	Japan	U.K.	U.S.	Em Asia	Em Latam	World
Canada	1.00									
France	0.32	1.00								
Germany	0.58	0.44	1.00							
Italy	0.58	0.49	0.69	1.00						
Japan	0.07	0.48	0.09	0.20	1.00					
U.K.	0.44	0.57	0.41	0.40	0.55	1.00				
U.S.	0.62	0.28	0.48	0.38	0.10	0.42	1.00			
Em Asia	0.08	0.27	-0.23	-0.04	0.52	0.40	-0.05	1.00		
Em Latam	0.40	0.39	0.20	0.25	0.18	0.40	0.32	0.27	1.00	
World	0.65	0.40	0.56	0.61	0.42	0.38	0.58	0.14	0.29	1.00

Panel B: Correlations of Future Excess Return News

	Canada	France	Germany	Italy	Japan	U.K.	U.S.	Em Asia	Em Latam	World
Canada	1.00									
France	0.30	1.00								
Germany	0.02	0.46	1.00							
Italy	-0.31	-0.05	0.41	1.00						
Japan	0.29	0.22	-0.21	-0.58	1.00					
U.K.	0.43	0.20	0.01	-0.05	0.04	1.00				
U.S.	-0.19	0.12	0.00	-0.27	0.49	-0.31	1.00			
Em Asia	0.41	0.15	-0.33	-0.51	0.55	0.29	-0.17	1.00		
Em Latam	0.18	-0.01	-0.19	-0.22	0.28	0.08	-0.15	0.39	1.00	
World	0.18	0.31	0.10	-0.47	0.64	-0.22	0.51	0.22	0.19	1.00

Table VI
Regression of Industry and World Excess Return Components

This table provides the results of regressions of innovations in future global industry dividends ed against innovations in future world dividends and regressions of innovations in future global industry excess returns ee and future world excess returns. The T-statistic for the parameter estimates appears in parentheses.

	Dividend News		Excess Return News	
	Coefficient	**R-squared**	**Coefficient**	**R-squared**
Energy	0.47 (9.68)	0.40	0.69 (4.89)	0.15
Basic Ind.	0.72 (9.10)	0.37	1.17 (7.86)	0.31
Capital Goods	1.07 (23.60)	0.80	1.02 (13.36)	0.56
Consumer Goods	0.55 (13.96)	0.58	0.91 (10.52)	0.44
Transp. and Storage	0.26 (4.15)	0.11	1.76 (10.41)	0.44
Utilities	0.69 (11.06)	0.47	0.71 (13.74)	0.57
FIRE	0.69 (15.28)	0.63	1.53 (13.60)	0.57
Average	0.64 (12.40)	0.48	1.11 (10.62)	0.43

Table VII
Regression of Country and World Excess Return Components

This table provides the results of regressions of innovations in future country dividends fd against innovations in future world dividends and regressions of innovations in future country excess returns ff and future world excess returns. The T-statistic for the parameter estimates appears in parentheses.

	Dividend News		Excess Return News	
	Coefficient	**R-squared**	**Coefficient**	**R-squared**
Canada	0.62	0.42	0.19	0.03
	(10.09)		(2.11)	
France	0.42	0.16	0.63	0.09
	(5.12)		(3.80)	
Germany	0.57	0.32	0.18	0.01
	(8.04)		(1.20)	
Italy	1.19	0.37	(1.60)	0.22
	(9.05)		6.32	
Japan	0.36	0.17	2.72	0.41
	(5.41)		(9.79)	
U.K.	0.32	0.14	(0.28)	0.05
	(4.85)		2.65	
U.S.	0.74	0.34	0.62	0.26
	(8.48)		(7.03)	
Em Asia	0.43	0.02	1.01	0.05
	(1.71)		(2.68)	
Em Latam	0.79	0.09	0.76	0.04
	(3.64)		(2.33)	
Average	(0.61)	0.23	(0.47)	0.13
	(6.27)		(2.22)	

Table VIII
Regression of Cash Flow and Excess Return News against Currency News for Industries

This table provides the results of regressions of innovations in future industry dividends fd against innovations in future exchange rates and regressions of innovations in future industry excess returns ff and future exchange rates. The T-statistic for the parameter estimates appears in parentheses.

	Future Dividend News					Future Excess Return News				
	C$	**DM**	**Yen**	**BP**	**R-Squared**	**C$**	**DM**	**Yen**	**BP**	**R-Squared**
Energy	-0.57	-0.15	0.04	-0.29	0.64	0.05	-0.01	-0.21	0.30	0.20
	(10.30)	(2.74)	(1.46)	(6.44)		(0.52)	(0.14)	(4.06)	(3.55)	
Basic Industries	-1.04	0.02	-0.20	-0.39	0.61	-0.35	0.19	-0.45	0.40	0.59
	(11.30)	(0.18)	(4.35)	(5.28)		(3.99)	(2.17)	(10.30)	(5.75)	
Capital Goods	-0.14	0.06	0.18	-0.68	0.42	0.61	0.18	-0.14	0.04	0.46
	(1.22)	(0.52)	(3.26)	(7.52)		(9.43)	(2.75)	(4.23)	(0.83)	
Consumer Goods	-0.38	-0.02	0.02	-0.42	0.62	0.21	0.06	-0.23	0.22	0.38
	(6.93)	(0.44)	(0.66)	(9.53)		(2.96)	(0.94)	(6.54)	(3.85)	
Transp. And Storage	-0.59	-0.04	-0.26	-0.24	0.65	0.16	0.18	-0.43	0.51	0.41
	(10.10)	(0.64)	(8.80)	(5.19)		(1.23)	(1.34)	(6.49)	(4.72)	
Utilities	-0.16	-0.19	0.15	-0.37	0.32	0.48	-0.12	-0.04	0.18	0.64
	(1.59)	(1.82)	(3.00)	(4.50)		(13.20)	(3.38)	(1.97)	(6.19)	
FIRE	-0.19	-0.17	0.00	-0.43	0.49	0.56	-0.02	-0.24	0.37	0.38
	(2.42)	(2.26)	(0.09)	(7.02)		(5.37)	(0.22)	(4.60)	(4.44)	
World	-0.24	-0.08	0.12	-0.55	0.50	0.41	0.05	-0.16	0.16	0.65
	(2.72)	(0.91)	(2.73)	(7.76)		(10.60)	(1.31)	(8.29)	(5.00)	

Table IX
Regression of Cash Flow and Excess Return News against Currency News for Countries

This table provides the results of regressions of innovations in future country dividends fd against innovations in future exchange rates and regressions of innovations in future country excess returns ff and future exchange rates. The T-statistic for the parameter estimates appears in parentheses.

	Future Dividend News					Future Excess Return News				
	C$	DM	Yen	BP	R-Squared	C$	DM	Yen	BP	R-Squared
Canada	-0.19	0.01	0.28	-0.27	0.28	-0.32	0.06	-0.14	0.10	0.31
	(1.89)	(0.07)	(5.63)	(3.32)		(5.65)	(1.07)	(4.81)	(2.08)	
France	-0.70	0.28	0.17	-0.24	0.33	0.06	0.33	-0.19	0.00	0.09
	(6.63)	(2.66)	(3.17)	(2.85)		(0.47)	(2.60)	(2.92)	(0.00)	
Germany	-0.10	0.04	0.35	-0.33	0.35	0.49	0.47	-0.03	-0.27	0.20
	(1.01)	(0.39)	(6.84)	(4.11)		(4.78)	(4.61)	(0.61)	(3.28)	
Italy	-0.22	0.15	0.64	-0.82	0.40	0.40	0.00	0.45	-0.72	0.32
	(1.18)	(0.80)	(6.83)	(5.42)		(2.19)	(0.01)	(4.94)	(4.93)	
Japan	-0.84	0.08	0.01	-0.15	0.49	0.00	0.03	-0.89	0.94	0.52
	(10.90)	(1.00)	(0.20)	(2.46)		0.00	(0.18)	(9.26)	(6.07)	
U.K.	-0.84	-0.04	0.14	0.05	0.48	-0.46	-0.08	-0.05	0.16	0.23
	(11.40)	(0.59)	(3.68)	(0.81)		(6.24)	(1.05)	(1.37)	(2.66)	
U.S.	-0.33	-0.27	0.38	-0.09	0.23	0.26	-0.22	-0.02	0.28	0.25
	(2.44)	(1.97)	(5.59)	(0.81)		3.88	(3.20)	(0.68)	(5.06)	
Emerging	-2.14	0.77	-0.46	-0.03	0.32	-1.26	0.91	-0.89	0.09	0.47
Asia	(7.02)	(2.55)	(3.03)	(0.12)		(5.82)	(4.24)	(8.18)	(0.52)	
Emerging	-1.02	0.45	0.38	-0.29	0.11	-0.25	0.50	-0.40	0.05	0.09
Latin America	(3.26)	(1.44)	(2.43)	(1.15)		(1.05)	(2.06)	(3.28)	(0.24)	
World	-0.24	-0.08	0.12	-0.55	0.50	0.41	0.05	-0.16	0.16	0.65
	(2.72)	(0.91)	(2.73)	(7.76)		(10.60)	(1.31)	(8.29)	(5.00)	

Table X
Regression of Industry Returns against Currency News and Movements

This table provides the results of regressions of industry excess dollar returns against currency news (fq) and one-period currency movements (Δq).The T-statistic for the parameter estimates appears in parentheses.

	FX					FX News				
	C$	DM	Yen	BP	R-Squared	C$	DM	Yen	BP	R-Squared
Energy	-1.41 (5.22)	0.08 (0.46)	-0.15 (1.30)	-0.17 (1.06)	0.17	-0.43 (3.23)	-0.18 (1.37)	0.24 (3.57)	-0.53 (5.04)	0.38
Basic Industries	-1.15 (3.87)	0.47 (2.40)	-0.52 (4.13)	-0.38 (2.14)	0.21	-0.49 (3.67)	-0.14 (1.07)	0.23 (3.48)	-0.79 (7.39)	0.51
Capital Goods	-0.9 (2.97)	0.47 (2.37)	-0.43 (3.30)	-0.25 (1.39)	0.12	-0.56 (4.13)	-0.13 (0.93)	0.28 (4.16)	-0.68 (6.23)	0.46
Consumer Goods	-0.75 (2.94)	0.36 (2.14)	-0.28 (2.61)	-0.29 (1.91)	0.11	-0.41 (4.06)	-0.08 (0.80)	0.27 (5.26)	-0.65 (7.91)	0.55
Transp. And Stor.	-0.78 (2.53)	0.44 (2.18)	-0.63 (4.74)	-0.39 (2.07)	0.2	-0.54 (3.80)	-0.08 (0.60)	0.14 (1.99)	-0.82 (7.19)	0.47
Utilities	-0.69 (2.96)	0.2 (1.35)	-0.26 (2.61)	-0.25 (1.77)	0.12	-0.44 (4.20)	-0.04 (0.42)	0.16 (3.04)	-0.54 (6.37)	0.44
FIRE	-1.06 (3.07)	0.4 (1.77)	-0.57 (3.85)	-0.31 (1.50)	0.15	-0.52 (3.32)	-0.05 (0.35)	0.2 (2.60)	-0.85 (6.73)	0.43
World	-0.91 (3.50)	0.37 (2.20)	-0.36 (3.28)	-0.3 (1.95)	0.15	-0.44 (4.24)	-0.1 (0.96)	0.26 (4.97)	-0.7 (8.34)	0.57

Table XI
Regression of Country Returns against Currency News and Movements

This table provides the results of regressions of country excess dollar returns against currency news (fq) and one-period currency movements (Δq).The T-statistic for the parameter estimates appears in parentheses.

	FX					FX News				
	C$	DM	Yen	BP	R-Squared	C$	DM	Yen	BP	R-Squared
Canada	-2.1	0.43	-0.22	-0.03	0.32	-0.62	-0.04	0.38	-0.38	0.3
	(7.90)	(2.49)	(1.97)	(0.17)		(4.05)	(0.24)	(4.98)	(3.09)	
France	-0.64	-0.16	-0.16	-0.06	0.03	-0.46	-0.96	0.32	-0.22	0.41
	(1.74)	(0.68)	(1.02)	(0.28)		(2.81)	(5.91)	(3.88)	(1.69)	
Germany	-0.39	-0.33	0.12	-0.17	0.04	-0.5	-1.5	0.4	-0.01	0.67
	(1.04)	(1.37)	(0.74)	(0.78)		(3.97)	(12.06)	(6.41)	(0.11)	
Italy	-0.67	0.38	-0.02	-0.39	0	-0.57	-0.4	0.4	-0.39	0.17
	(1.40)	(1.21)	(0.10)	(1.34)		(2.25)	(1.59)	(3.14)	(1.91)	
Japan	-0.61	0.64	-1.16	-0.55	0.3	-0.59	0.15	-0.14	-1.16	0.34
	(1.48)	(2.41)	(6.65)	(2.24)		(2.61)	(0.67)	(1.25)	(6.43)	
U.K.	-0.58	0.49	-0.22	-0.78	0.16	-0.11	0.06	0.19	-1.14	0.67
	(1.85)	(2.39)	(1.67)	(4.18)		(1.03)	(0.58)	(3.38)	(12.95)	
U.S.	-1.11	0.22	-0.09	0.1	0.11	-0.42	-0.07	0.43	-0.34	0.37
	(4.15)	(1.27)	(0.75)	0.62		(3.33)	(0.55)	(6.88)	(3.41)	
Emerging	-1.3	0.63	-0.24	0.13	0.08	-0.65	-0.08	0.41	-0.12	0.07
Asia	(2.70)	(1.99)	(1.19)	(0.46)		(2.34)	(0.28)	(2.92)	(0.56)	
Emerging	-1.54	1.12	-0.13	-0.18	0.11	-0.7	0.05	0.74	-0.31	0.15
Latin America	(2.66)	(2.96)	(0.53)	(0.51)		(2.17)	(0.14)	(4.57)	(1.20)	
World	-0.91	0.37	-0.36	-0.3	0.15	-0.44	-0.1	0.26	-0.7	0.57
	(3.50)	(2.20)	(3.28)	(1.95)		(4.24)	(0.96)	(4.97)	(8.34)	

Figure 1: Five Year Rolling Average Correlations with World Market Index Across Industries

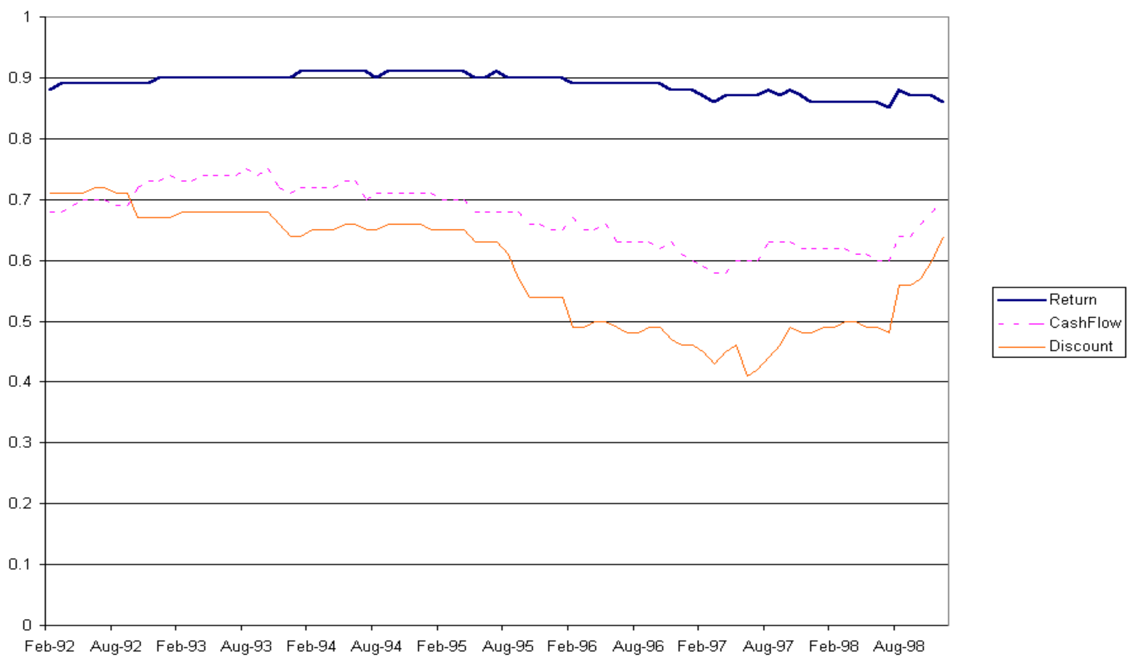
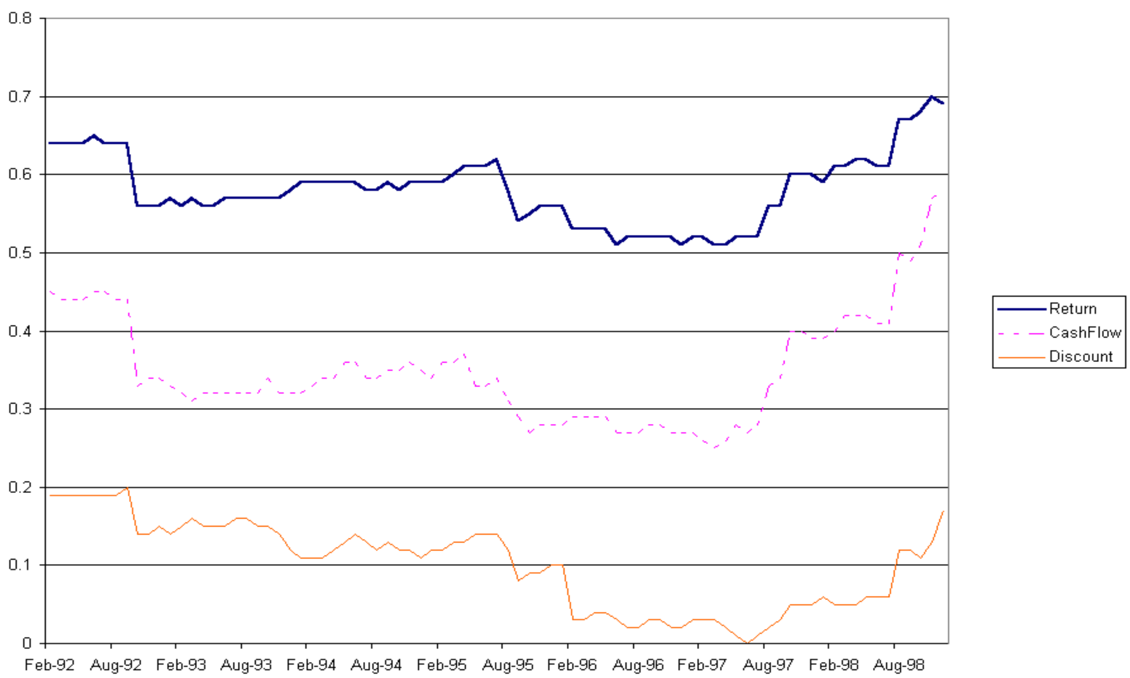


Figure 2: Five Year Rolling Average Correlations with World Market Index Across Countries



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