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Country Risk in Global Financial Management

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Foreword

If you were an investor based in the United States in 1969, your portfolio probably did not contain any foreign securities. According to Brinson Partners, in that year, the worldwide investable capital market totaled the equivalent of US$2.3 trillion, about two-thirds of which rested in U.S. stocks and bonds. Therefore, as a U.S.-based investor, your failure to diversify internationally may well have been justified by the fact that you were already selecting from a reasonably complete set of securities. Furthermore, by remaining invested exclusively in dollar-denominated equities issued by companies whose products and services you knew, you might have convinced yourself that you were avoiding the myriad risks that attend offshore endeavors.

If you were an investor based in the United States in 1995, however, this sort of myopia was difficult to rationalize. By that year, the portion of the US$44.0 trillion global capital market invested in U.S. stocks and bonds had shrunk to barely 40 percent, despite a quarter century of remarkable prosperity in your country. By maintaining a strictly domestic portfolio, you failed to take advantage of almost 60 percent of the securities available to you.

What the preceding statistics underscore, of course, is that the world's economy has become increasingly diverse. Although the ascent of Japanese securities accounted for a large part of the decline in U.S. prominence, another factor was the dramatic increase in this period of investments in emerging market countries.

One important by-product of this diversity is the pressure on investors in all countries to expand their portfolios into positions that they may not be comfortable holding. What, for example, does the typical U.S. investor know about the special risks and opportunities of investing in Sweden? Perhaps little, but because Goldman, Sachs & Company reports that in the 1986–94 period, the Swedish equity market topped the world's local currency performance rankings—and finished third on a dollar-adjusted basis—it might be worthwhile for that investor to find out. Moreover, the Swedish and U.S. equity markets had a correlation coefficient of only 0.39 during this era, which suggests that substantial risk reduction was possible through adding Swedish equity to a portfolio confined to U.S. stocks. As the globalization of capital markets continues, the opportunity cost of ignorance about what is going on in the rest of the world will increase substantially.

Most investors, I suspect, have not thought a great deal about how to define and measure country risk. Fortunately for those of us who have not, Claude Erb, Campbell Harvey, and Tadas Viskanta certainly have. In this monograph, they summarize and extend what they have learned and written about the topic during the better part of the past 10 years. In particular, they make a strong case for country risk as the preeminent influence on investment performance, dominating even currency risk, on a worldwide basis. Interestingly, however, they also note that economic theory is largely silent on how to incorporate country risk in asset-pricing models, which means that it may well be an omitted factor in most formal explanations of that type.

Erb, Harvey, and Viskanta also discuss the way country risk is usually defined and ask the fundamental question: Does greater risk, to the extent that it is systematic in nature, lead to greater expected return for the investor? Using several different specifications of the risk–return relationship (including Barro's [1996a] macroeconomic growth model), they conclude that theory does appear to be useful; the most common country risk measures are significantly correlated with that country's economic growth rate and its expected security returns. The authors also examine several commonly used measures of country risk and demonstrate how these statistics can be used in the estimation of expected returns, volatilities, and correlations in more than 100 countries. They conclude with several practical suggestions for how money managers can use this analysis to advantage as they incorporate foreign investments into their asset mix.

Although not long, this monograph is densely packed with timely, and sometimes surprising, information about country risk in global financial management—a subject that is certain to become more important with each passing year. Indeed, the data and interpretations contained in this monograph would justify a publication of many more pages than what you now hold in your hands. I think that you will find the succinctness of their arguments and exposition to be refreshing, if not always simple. They have produced an excellent synopsis of a topic that is poorly understood in both the academic and practitioner communities, and the Research Foundation is proud to have helped in that effort.

Keith C. Brown, CFA
Research Director
The Research Foundation of the
Institute of Chartered Financial Analysts

Preface

In the course of examining the information in country credit ratings, we were trying to compare credit ratings with other measures of country risk. We quickly realized that no generally accepted measures of country risk exist. When a U.S. company's risk is estimated by use of the capital asset pricing model, a multifactor asset-pricing model, or a fundamentals-based model, each method generally provides risk and expected return projections within a fairly narrow range. In an international context, the problem of assigning risk is enormously complex: What model should be used, what are the risk factors, what are the rewards to risk?

Our focus is on the implications of current measures of country risk for asset pricing and investment management. Our intention is to bring together into a single volume a number of insights about the relationship of country risk to asset pricing in the global arena. The reader will find details of the work that led up to this monograph listed under one, two, or all of our names in the list of references; for ease of reading, we have avoided giving specific citations in the text.

This monograph is not a step-by-step guide to measuring country risk in practice. We provide some insight into how various risk-rating providers evaluate risk, and we point out sources of risk that might be pursued in further research. We have not answered all of the questions raised, but we have made headway.

We would like to thank Doug Breeden, Peter Bernstein, and W. Van Harlow III, CFA, for their support of our previous research on country risk and Rob Feldman for his valuable research assistance. We very much appreciate the detailed comments and suggestions of Keith C. Brown, CFA, and we would like to thank the Research Foundation for its support of our preparation of this material.

Claude B. Erb, CFA
Campbell R. Harvey
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Executive Summary

The investment world is fraught with risk, but the growth in the popularity of overseas portfolio investment has dramatically increased the types of risk encountered by investors. The goal of this monograph is to introduce and explain the primary risk of overseas investment—country risk.

Country risk has become important to investors because of the increase in the number of foreign countries and companies that U.S. investors can invest in. As investors take advantage of these opportunities, differential country performance becomes the primary driver of returns. Investors then face the problem that standard asset-pricing models fail to explain expected returns in the broad cross-section of countries. Part of this failure is explained by variation in the degrees to which countries are integrated in the world economy. Therefore, instead of relying on asset-pricing models, we take the approach of assigning country risk on the basis of investor perceptions of country risk, which are available from the credit-rating services. We find that these measures are valuable in explaining expected returns.

Taking a macroeconomic perspective, we also find that the concept of country risk is linked to conditional economic convergence, economic growth, and asset pricing. Many of the variables that help explain economic growth (such as political and economic freedom, trade openness, and fiscal and monetary policy) also affect expected returns in the financial markets.

In the world of fixed-income analysis, expected return is clearly related to risk (indicated by credit rating) over the long term. Exploring how macroeconomic factors such as inflation and gross domestic product per capita affect the cross-section of risk ratings, we find that risk ratings help explain phenomena observable in the financial markets, such as sovereign debt yields, and we formalize these relationships into models.

Models that use country ratings help explain the cross-section of expected security returns, volatilities, and world market correlations. Our empirical findings for the equity and fixed-income markets fit our intuition: Lower ratings, or higher country risk, lead to higher expected returns, higher volatility, and lower correlations with the world market. These results are most important for the emerging markets, so they can also help investors identify countries that may emerge in the future.

A credible relationship between country ratings and expected returns leads to an examination of other economic links. We find that ratings can help explain cross-country differences in inflation, demographics, valuations, and market size. Both the level and subsequent change in country ratings are important for expected market returns. Moreover, changes in country ratings are quickly impounded in asset prices. In short, a global investor needs to factor country risk explicitly into any tactical portfolio process. An understanding of the role of country risk can help investors understand strategic portfolio decisions such as currency hedging and the efficient amount of emerging market exposure.

Country risk ratings are important in explaining the cross-section of expected equity and fixed-income returns. Investors face two challenges in this regard: The first is to understand the factors that drive country risk; the second is to forecast changes in country risk. Successfully meeting these challenges will add value to global portfolios.

Introduction

Investment professionals currently face an explosion of investment opportunities around the world. This phenomenon presents both an opportunity and a challenge. To some extent, the investment professional can transport his or her knowledge and models of investment markets to nondomestic arenas, but the models may not apply in all markets. Indeed, estimating risk and expected returns for many different countries involves myriad complexities. Black (1995) clearly stated these difficulties:

> Because risk and expected return are related in so many different ways, we need not see a positive correlation between risk and expected return across countries or over time. Because actual return differs greatly from expected return, we especially need not see a significant correlation between actual return and risk. (p. 46)

So, the challenge of analyzing country risk globally is a daunting one.

Before we can examine the implications of risk and expected return in the global financial markets, we need to present some background information. We will focus on the following issues: why global portfolio management is important, why country selection is paramount, and what the current state of theoretical models reveals about country risk.

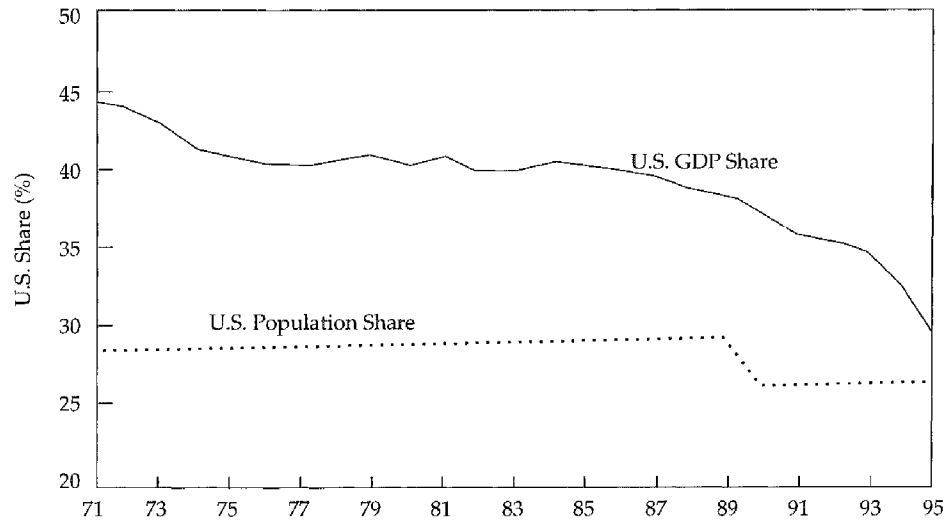
Global Investment Opportunities

International investment, which was once an unproven and exotic concept to U.S. managers and investors, is now an accepted practice in portfolio management. This development is not surprising given the continued growth in the size and importance of non-U.S. equity and fixed-income markets. The United States is a smaller part of the investment world than it was just 10 years ago. Some of the causes are continued economic growth in the developed foreign countries, a faster rate of growth in the developing countries than in the United States, and the continued equitization of economies, in part through government privatizations. The growth in importance of non-U.S. markets is evidenced by increased ratios of market capitalization to gross domestic product (GDP, the common measure of a country's economic output) around the world. In 1976, the average ratio of equity market capitalization to GDP was 12.9 percent for the 18 Morgan Stanley Capital International (MSCI) countries we studied in 1991. By 1986, this ratio had

grown to 22.9 percent. In 1995, the ratio was 38.5 percent.

The U.S. share of world economic activity has fallen in the past two decades. From 1971 to 1995, as Figure 1 shows, the U.S. share of GDP of the developed countries, as proxied by the Organization for Economic Cooperation and Development (OECD), decreased from 44 percent to 30 percent. The decline occurred even though U.S. population as a percentage of OECD population remained stable in this period.

Figure 1. U.S. GDP Share of OECD GDP and U.S. Population Share of OECD Population, 1971–95

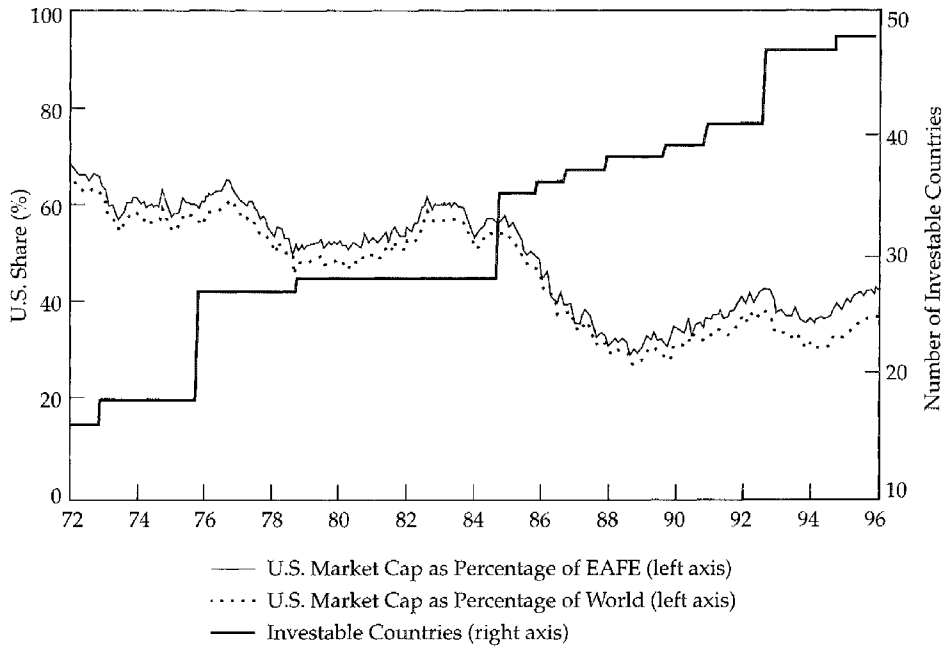


Note: Annual data from MSCI and the OECD.

In the long term, a distinct relationship exists between financial market opportunities and the level of economic activity, and the equity markets mirror the declining U.S. share of world output. Figure 2 shows that for the 1972–95 period, U.S. market capitalization as a percentage of the MSCI Europe/Australia/Far East (EAFE) Index, which covers non-North American developed countries, fell from 70 percent to 42 percent and as a percentage of world market capitalization, declined from 66 percent to 38 percent. The World Bank reports that the United States in 1995 represented only 21.3 percent of world economic output, based on 1995 purchasing power parity prices.[1] Moreover, the U.S. share of world output should continue to shrink as non-U.S. countries

[1] The World Bank's measure of economic output, purchasing power parity prices, adjusts for different costs of living among countries.

Figure 2. U.S. Market Cap Share of World and EAFE Market Cap and Rise in Investable Countries, 1972–Mid-1996



Notes: Monthly data from MSCI and the IFC. Number of countries includes MSCI developed countries and IFC Global Index countries.

experience higher population and economic growth than the United States.

Figure 2 also shows an increase simply in the number of investable countries around the world. The International Finance Corporation (IFC), an affiliate of the World Bank, reports that the number of emerging markets will have increased from 30 in 1985 to 60 by the end of 1996. Combined emerging market capitalization increased from US$171 billion in 1985 to US$1.9 trillion in 1995. Much of this development is the result of a broadening of investment opportunities within the emerging markets. (The internal nature of this growth is suggested by the fact that local investors control an average of 90 percent of the emerging markets' capitalizations.) During 1996, the IFC identified the 17 markets shown in Exhibit 1 to add to its indexes. In September 1996, the IFC began coverage of three markets (Egypt, Morocco, and Russia) that were subsequently added to the IFC Global Index. The IFC also began coverage of 14 other "frontier" markets. With the number of investable countries increasing year by year, determining which countries to invest in becomes ever more important.

Exhibit 1. Countries Added to IFC Indexes as of September 1996

	Frontier Markets			
Added to IFC Global Composite	Eastern Europe	Africa	Asia	Latin America/ Caribbean
Egypt	Bulgaria	Botswana	Bangladesh	Ecuador
Morocco	Lithuania	Côte d'Ivoire		Jamaica
Russia	Slovakia	Ghana		Trinidad and Tobago
	Slovenia	Kenya		
		Mauritius		
		Tunisia		

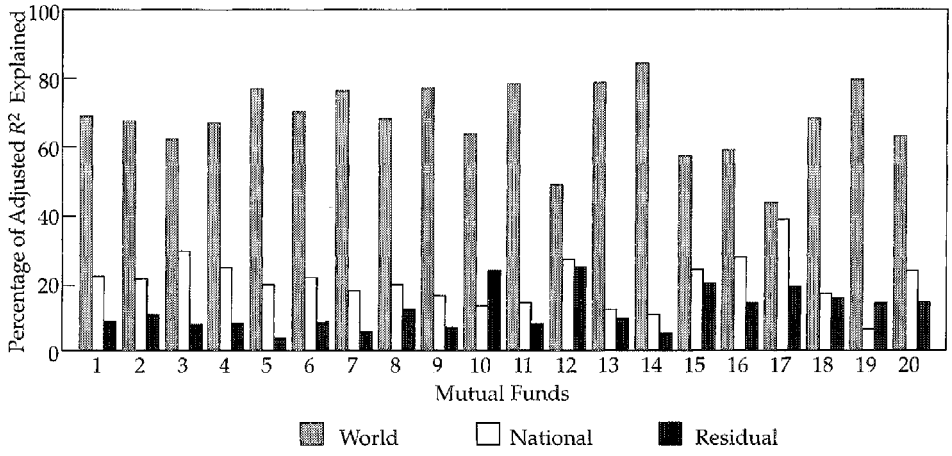
Country Weightings and Portfolio Returns

In a global investment context, strategic and tactical country selection is intuitively an important influence on portfolio returns. And research supports this intuition. For example, one can explain the returns of diversified international equity mutual funds using "style" analysis similar to that proposed by Sharpe (1992).[2] Style analysis decomposes a portfolio's returns into two components: returns attributable to passively investing in an asset class and active returns attributable to investment skill and acumen.

Consider the 20 largest global (U.S. domestic and nondomestic) or international (nondomestic only) equity mutual funds ranked by Morningstar as of June 1996. Figure 3 shows the portion of these funds' return performance from June 1991 to June 1996 attributed to global and country influences. We used the 18 developed countries tracked by MSCI since 1970, the MSCI World Index, and the IFC Composite Index as dependent variables. Each country's return was calculated so that it was independent of, orthogonal to, the world market portfolio. The first bar in Figure 3 shows the amount of fund returns explained by the world equity market alone. Global market influences explain, on average, approximately 67 percent of returns for the 20 funds; that is, the average fund in the study behaved as if 67 percent of the fund was invested in a global index fund. Active investment management decisions explained, on average, the other 33 percent of fund return variability. The second bar indicates the influence of country-specific variation by active managers, or the importance of country selection. On average, the country-specific influences accounted for 20 percent of the return variation. (Note that this example is only illustrative because other factors, including industry, play a role; all other

[2] Sharpe used an asset-class factor model to explain domestic equity performance, and this methodology can be extended to global equity performance. To determine the country influence, regress each country's return on the MSCI World Index return and capture the residuals.

Figure 3. Market-Adjusted Returns Explained by World, National, and Other Effects: 20 Mutual Funds, June 1991–June 1996



Notes: Dependent variables are 18 MSCI developed countries, the MSCI World Index, and the IFC Composite Index. National returns orthoganalized on MSCI World Index. Residual = 1 – (World + National).

effects accounted for an average of 13 percent.) The key finding is that strategic country selection, the active decision to overweight or underweight certain national markets, drove more than 60 percent (20 percent divided by 33 percent) of active returns for the 20 funds studied.

Other researchers have examined the explanatory power of country selection in conjunction with such influences as global and industry factors and found that national influences play an important role in explaining equity returns. Beckers, Connor, and Curds (1996) found that in a cross-section of worldwide equities, global and national influences are roughly equal in magnitude. Their "best" model included a global market factor, country factors, and nation-specific industry factors. Heston and Rouwenhorst (1994, 1995) concluded that portfolio managers should pay more attention to geographical than to industry composition because country effects in international stock returns are larger than industry effects. They also concluded that geographical diversification is the key to benefiting from international diversification.

The research on attribution has increased practitioners' understanding of the interactions between global, national, and industry factors, but our knowledge is obviously still incomplete. One important unresolved issue is whether correlations between world equity markets are or are not increasing. Bekaert and Harvey (1995, 1997) found that, although global economic integration has

increased in the past 30 years, the evidence that cross-country correlations have increased is slight. Solnik, Boucrelle, and Le Fur (1996) also found little evidence for increasing correlations. Their findings highlight the continued importance of national effects in global markets.

Risk Measures Implied by Asset-Pricing Theory

Asset-pricing theory posits that an asset's sensitivity to common world factors drives its returns. For example, an international version of the capital asset pricing model (CAPM) would state that a country's beta with respect to a diversified world market portfolio determines the expected returns for that country. In such a model, country risk would be simply beta.

The implication of this theory is that investors should hold diversified world portfolios. That is, country-specific influences can be diversified away. For example, an investor holding a portfolio that consists of only one country will not be rewarded (in expected returns) for the volatility of that portfolio because part of that volatility can easily be diversified away. The investor will be rewarded only for the part of volatility that is linked to the well-diversified world portfolio. The rewarded volatility, beta, is measured by the regression slope of the asset return on the world market portfolio.

Many complications arise, however, when one is using this model with international data. For example: Should returns be measured in U.S. dollars or in local currency terms? What is the risk-free asset? What role do local factors play? How is the world market portfolio to be defined?

In addition, other, more general concerns exist: Are some risk factors being omitted? What if the returns are not normally distributed? How should the dynamic risks and risk premiums (rewards for risk) be modeled? And is the designated market portfolio the correct benchmark portfolio?

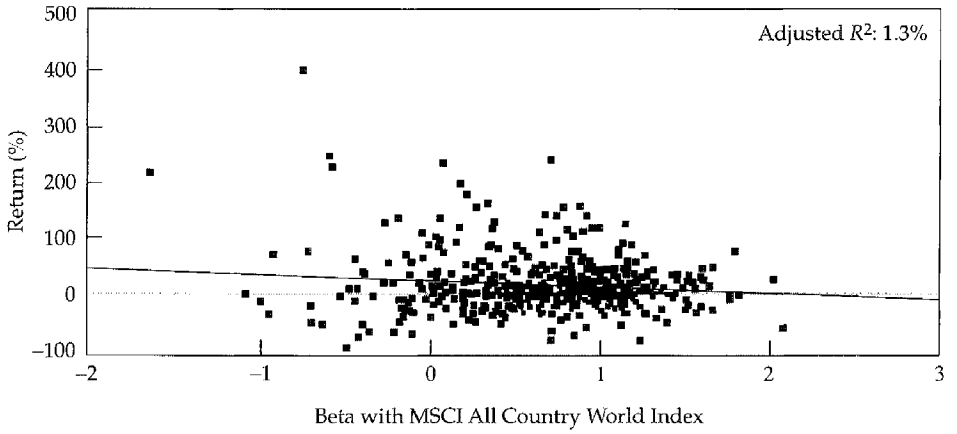
One of the most fundamental problems is the assessment of a country's integration into world capital markets. Markets are completely integrated if assets with the same risk but located in different countries have identical expected returns. In this instance, "risk" refers to exposure to some common world factor, such as the world market portfolio, world inflation, or world industrial production. If a market is segmented from the rest of the world, its exposure to a common world factor may have little or no ability to explain its expected return. For convenience, studies of country risk are commonly grouped into three broad categories: those that assume markets are integrated, those that assume markets are segmented, and those that assume markets are partially segmented.

The first category of asset-pricing studies contains those models that

assume world capital markets are perfectly integrated.[3] In all of these models, a country's risk is measured by its beta in relation to common world factors. Only weak evidence supports this type of model, however, and researchers have generally found the CAPM-based model to be inadequate for explaining a broad cross-section of developed and emerging market expected returns. Figure 4 makes clear that there is no significant relationship between average realized returns and the world beta in a broad cross-section of countries.

In the category of asset-pricing studies that assume segmented markets, one group "tests" a model such as the CAPM using only one country's data.[4] In these studies, the segmented market's risk is measured by its volatility. Any particular asset within the market has a risk equal to its beta in relation

Figure 4. Statistical Risk Measures in the Global Context: Beta, March 1980–March 1996



Notes: Three-year trailing beta; annual observations; unhedged U.S. dollar returns in excess of U.S. Treasury bill return. Data from MSCI and the IFC; first three annual IFC observations eliminated.

[3] Studies of a world CAPM (Harvey 1991 and the references in it), a world CAPM with exchange risk (Dumas and Solnik 1995 and Dumas 1994), a world consumption-based model (Wheatley 1988), world arbitrage pricing theory (Solnik 1983 and Cho, Eun, and Senbet 1986), world multibeta models (Ferson and Harvey 1993, 1994b, 1997), and world latent-factor models (Campbell and Hamao 1992, Bekaert and Hodrick 1992, and Harvey, Solnik, and Zhou 1995).

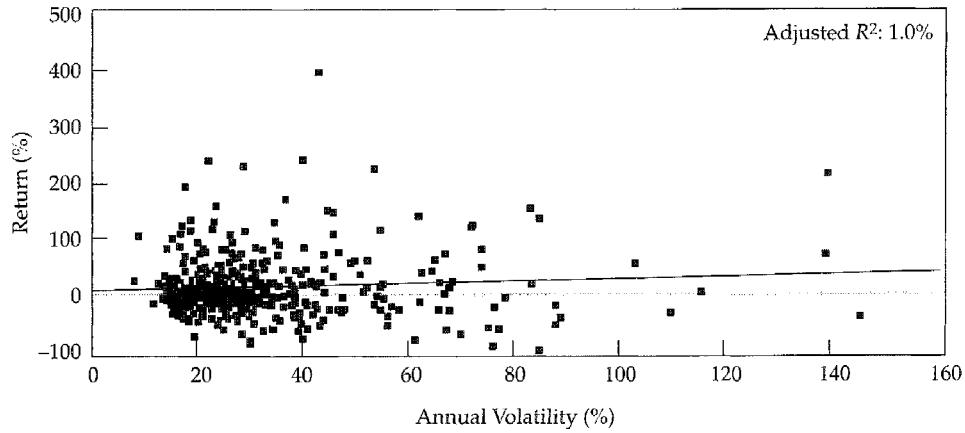
[4] Indeed, all of the seminal U.S. asset-pricing studies assume that the United States is a completely segmented market—or that the U.S. market proxy represents a broader world market return. Although this assumption might have been a reasonable working assumption through the 1970s, with the fall of the U.S. share of world equity capitalization to below 50 percent in the 1980s, the assumption is questionable.

to the local market index return.

This type of model also enjoys little support. Research has found no significant relationship between average realized returns and volatility for a universe of developed and emerging equity markets. Based on annual observations for a universe of developed and emerging equity markets, Figure 5 shows no significant relationship between average realized returns and volatility. One must be careful, however, in interpreting this graph. Expected returns should equal the level of risk multiplied by a risk premium. In integrated world capital markets, common risk premiums are associated with exposures to common factors. In explaining the cross-section of expected returns, the risk premiums are not important because they are common to all integrated countries. In segmented markets, however, the rewards to risk may not be the same because the sources of risk are different. These differences could result in an insignificant relationship between volatility and expected return when measurements are made among different countries.

The final category is the literature that falls between assuming segmentation and assuming integration—such as the so-called mild segmentation model of Errunza, Losq, and Padmanabhan (1992). The advantage of these sorts of models is that they do not assume the polar extremes. The disadvantage of these models is that they fix the degree of segmentation through time, which runs counter to the intuition (as do the polar cases) that some markets have become more integrated through time. Nevertheless, these models are

Figure 5. Statistical Risk Measures in the Global Context: Volatility, March 1980–March 1996



Notes: Three-year trailing volatility; annual observations; unhedged U.S. dollar returns in excess of U.S. Treasury bill return. Data from MSCI and the IFC; first three annual IFC observations eliminated.

more realistic than the extreme models because country risk in them is a combination of exposure to world factors and exposure to local factors.

Bekaert and Harvey (1995, 1997) proposed a methodology that allows for the degree of market integration to change through time. In their model, as a market becomes more integrated with world capital markets, the risk measured by exposure to global factors becomes more important. Their approach thus has the appeal of nesting, as special cases, the complete segmentation and complete integration approaches to international asset pricing. The Bekaert and Harvey model is also dynamic, in that expected returns, volatility, and covariance are all allowed to change, together with the integration measure, through time.

Bekaert and Harvey have applied their model only in a one-factor setting—that is, within the context of a world and local CAPM. In addition, the model can be applied only to a market with at least five years of historical data. Therefore, one cannot use this model to estimate the country risk of, say, Egypt, Morocco, or Russia, the data for which did not begin appearing in IFC publications until September 1996. Furthermore, the majority of the countries in the world do not have equity markets, so how can the risk of those countries be assessed? Our approach will be to use risk ratings, based on country risk measures, that are available for more than 130 countries.

Introduction to Country Risk Measurement

Foreign investment has been a fact of life for centuries and is certainly not alien to U.S. investors.[5] The systematic analysis and measurement of country risk, however, has been a hot topic for only the past two decades. The vast increase in global capital flows, and subsequent high-profile debt and currency crises, has precipitated greater concentration on country risk than in the past.

The appendix describes in detail the risk ratings used throughout the monograph. For an introduction to assessing country risk, this section takes a brief look at a commonly used source of country risk assessments, namely, *Institutional Investor*'s semiannual survey of bankers, which is called Country Credit Ratings (CCR). *Institutional Investor* has published this survey in its March and September issues every year since 1979. The survey reports the responses of 75–100 bankers. Respondents rate each country on a scale of 0 to 100, with 100 representing the smallest risk of default. According to Shapiro (1996), *Institutional Investor* weighs the responses by its perceptions of each bank's level of global prominence and sophistication in credit analysis.

An examination of the *Institutional Investor* ratings through time for

[5] See Chernow (1990) for an excellent history of foreign lending.

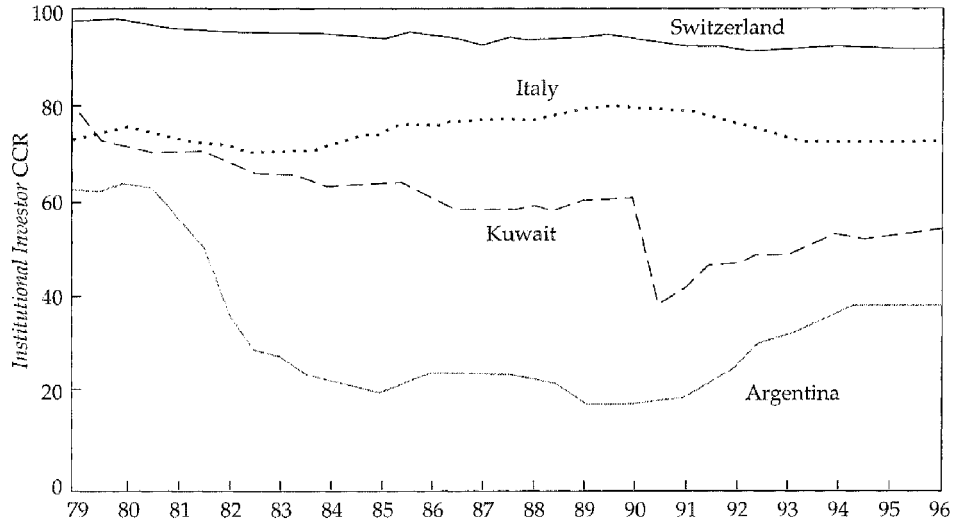
Argentina, Italy, Kuwait, and Switzerland, given in Figure 6, reveals the diversity of this measure of country risk.[6] The least "risky" country in the sample over this time period is Switzerland; its rating is high but drifts down somewhat during the period. At the bottom of the graph is Argentina—considered to be riskier than the other three countries both in absolute terms and in the degree to which the bankers' perceptions changed through time. An example of the effect of significant hardship on a country's ratings is Kuwait, which became much riskier in bankers' eyes after the Iraqi invasion. Argentina and Kuwait contrast well with Italy, which despite governmental instability, has remained relatively stable in bankers' eyes.

Preview of the Financial Evidence

Our thesis is that if measures such as those used by *Institutional Investor* capture perceptions of relative risk accurately, then investors should be able to use this information to create investment portfolios. Put differently, such measures make sense as "risk" measures only if they can distinguish between countries with high expected returns and those with low expected returns.

For our analysis, we formed three portfolios based on each country's

Figure 6. Risk through Time: Selected Country Risk Ratings, September 1979–September 1996



Source: Data from *Institutional Investor*.

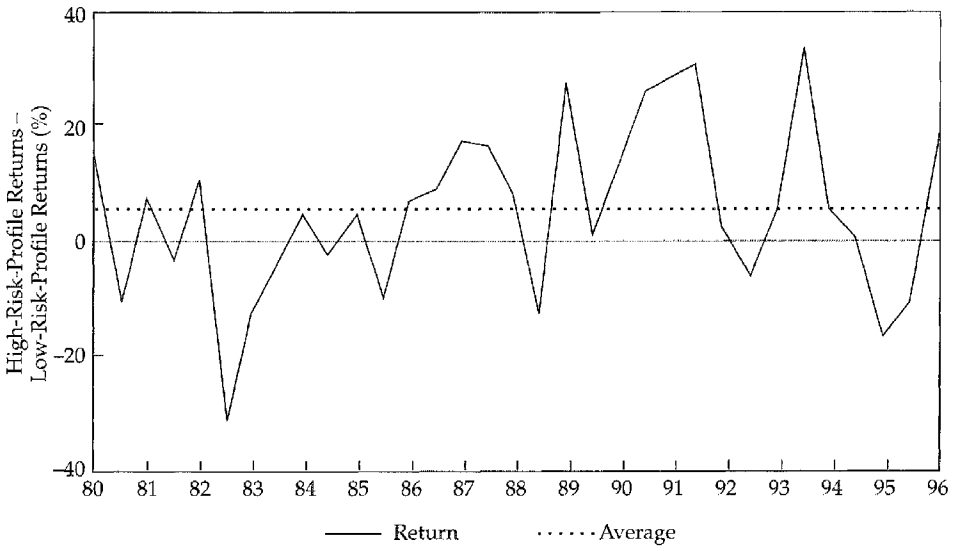
[6] Keep in mind that high country risk is associated with low country rating.

Institutional Investor risk level. Our interest was the difference in returns between the highest-country-risk portfolio and the lowest-country-risk portfolio. The unhedged U.S. dollar portfolio returns were calculated semiannually (in conjunction with the release of the country risk data) and equally weighted across countries within each portfolio.

Figure 7 shows the spread in returns between the high-risk portfolio and the low-risk portfolio and illustrates that a positive relationship exists between the level of country risk and subsequent equity market returns. The high-risk tritile outperformed the low-risk tritile by about 10.6 percent a year.

The payoff to risk was highly variable, however, in this time period. To understand the results, we need to examine the factors that go into measures of country risk and their relationship to expected asset returns.

Figure 7. Positive Payoff to Country Risk



Notes: Risk tritiles based on *Institutional Investor* CCR. Returns in excess of U.S. Treasury bill; U.S. dollar returns, semi-annual.

Country Risk

Country risk can be defined and calculated in remarkably diverse ways. We concentrate on "systematic" (nondiversifiable) risk—the risk for which, according to financial theory, investors should be rewarded.

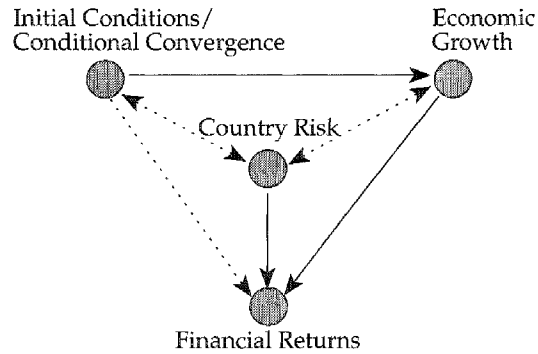
Higher systematic risk should be linked to higher expected returns, but how should systematic risk be measured? Our approach rests on a global framework for understanding how expected return is driven by perceptions of risk and by economic growth.

Country Risk and Economic Theory

Our framework is designed to clarify the integral role country risk plays in the pricing of global financial assets. Figure 8 sketches the relationships discussed in the rest of this section. The solid lines represent established theoretical or empirical relationships in the financial economics literature; the dotted lines represent hypothesized relationships. In this section, we highlight the literature on conditional convergence and economic growth, areas that may not be as familiar to investment practitioners as the literature on financial returns.

Risk and Expected Returns. The foundational theory in finance posits that risk and expected return are related. Although analysts may disagree about the measurement of risk, they generally agree that most investors are risk averse and demand higher expected returns for riskier investments.

Figure 8. Growth, Return, and Risk: A Macroeconomic Framework



Given that commonly used measures of country risk are related to subsequent investment performance, higher country risk leads investors to demand higher financial returns, as shown in Figure 8.

Growth and Expected Returns: A Financial Perspective. Finance literature provides many models that link the growth in a company's earnings to its expected value. We take the view that a country's economic growth, represented on the right side of Figure 8, is analogous to the growth in a company's earnings. We view a country and its financial markets as single entities; a country is considered to be a portfolio of its companies, each of which has revenues and profits.

In the context of economic valuation, the relationship between growth and value is easily established; the broad class of present value models rests on a positive relationship between growth and value. For example, the simplest exposition is the dividend discount model of Williams (1938) and Gordon (1962), in which, with other factors held constant, increased growth leads to higher value:

$$V_t = \frac{d_{t+1}}{k-g},$$

where V is the present value (at time t) of the security, d is the expected dividend rate, k is the discount rate, and g is the perpetual growth rate of dividends.

To expect that growth is related to the discount rate is also reasonable. That is, investments with higher expected growth rates have higher risk. Indeed, holding the initial payout ratio constant in the basic dividend discount model implies a positive relationship between growth and discount rates.[7]

Growth and Returns: A Macroeconomic Perspective.[8] Macroeconomic models of optimal growth can aid understanding of the relationship between economic growth and expected returns. One can derive from standard models of economic growth a relationship called the "modified golden rule" of capital accumulation. The modified golden rule implies that in long-run equilibrium, the real growth rate of the economy (the marginal product of capital) equals the real interest rate (which, in turn, equals the sum of the rate of time preference and the growth rate of the population). If the level of time preference is assumed to be a function of wealth, then the discount rate should be higher, on average, in poor countries than in rich

[7] The dividend discount model can be transformed to show that: $g = (k - d_{t+1})/V_t$.
[8] This discussion is based largely on Blanchard and Fischer (1989).

countries. Indeed, as the reader will shortly see, poorer countries do have, on average, higher rates of economic growth and higher rates of return.

Blanchard and Fischer (1989) showed that in an economy with productivity growth, the "golden rule level of capital is such that the rate of interest must be equal to the growth of the economy" (p. 104). Economies can be inefficient, in that they are not near the optimal, or golden rule, levels of capital utilization, but this possibility does not detract from the general proposition that growth and expected returns (directly related to the rate of return on capital) should be positively related.

Conditional Convergence and Economic Growth. The third important relationship is between theories of economic growth and conditional convergence, as indicated on the left side of Figure 8.

Convergence implies that economies with relatively lower per capita GDP will grow faster, on average, than countries with relatively higher per capita GDP. Conditional convergence adds the assumption that levels of economic activity among countries should converge only if other conditions (such as worker skills and education, resource endowments, and government policies) are equal. Numerous refinements to the theory of economic growth have been advanced in the past 10 years, but findings of conditional convergence remain a common theme.

Barro (1996a) described three main stages in the development of growth theory. The first stage was the creation of the neoclassical model, which implies that if all economies were in all ways the same except for their stages of development, convergence to a steady-state level of GDP would occur. Given that economies differ in many respects, including their government policies and the skills of workers, convergence can happen only in a conditional sense. The model implies that, because of diminishing returns to capital, economies that have less capital per worker tend to earn higher returns and, therefore, experience higher growth.

The neoclassical model depends on the availability of a number of factors, including the growth rate of the population, the propensity to save, and government policies. Extensions noted by Barro would include factors that measure human capital, such as education levels and fertility rates.

The neoclassical model's reliance on diminishing returns to capital means that it cannot explain long-run economic growth, because in the long run, economic growth converges to zero. The neoclassical framework treats technological advances (the sources of real long-run per capita economic growth) and population growth as exogenous factors. Hence, this framework is not likely to explain long-term growth.

Models of endogenous growth are the second main stage in growth

theory. These models add a theory of technical development that has the ability to explain long-term growth. Some basic conflicts exist, however, between this stream of theory and the assumptions of the neoclassical model. For example, the endogenous growth models assume increasing returns to research and development (R&D), which is inconsistent with the theory of perfect competition.

The final class of models described by Barro combines technological change theories and traditional growth theories. In these new growth theory models, initially proposed by Romer (1986), R&D can be a profitable activity driven, in part, by some form of monopoly power, which helps explain why growth rates can be positive in the long run. In these models, the government plays an important role by helping to create an overall framework in which economic activity takes place; distortions of the marketplace can adversely affect economic growth. Conditional convergence can still hold in this model because laggard countries piggyback on the research of leading countries. Therefore, the system of countries can continue to show long-term growth as the laggard countries approach the leading countries through imitation. This model intuitively matches the developmental experiences of a number of countries, especially those in East Asia, since the 1950s.

Barro notes that even with the extension of the neoclassical models to include endogenous growth, the empirical predictions of the original models still hold. These lines of research have been successful in explaining the growth of a broad cross-section of countries over a long period of time.

Growth. Empirical tests of conditional convergence have shown that a common set of variables explains a high proportion of cross-country economic growth. Barro (1996a) placed these variables in two main categories: state variables and choice (or environmental) variables. State variables are resource endowments, such as real GDP per capita and human capital. Choice variables try to capture the policy choices countries make; they include the level of government consumption, the rule of law and political rights, inflation, and changes in a country's terms of trade.

Cross-sectional regressions of real per capita GDP growth on state variables and choice variables show that growth is generally higher for those countries with lower levels of initial GDP per capita, higher levels of human capital, lower fertility, lower government consumption, greater respect for the rule of law, lower inflation, and positive changes in the terms of trade. Other geographical variables and fixed country effects can enhance regression R^2s, but they are not necessarily useful in identifying the fundamental factors that influence growth.

None of these results should be surprising. Countries that start from a

relatively low base can grow rapidly if the environment is conducive to growth. A country that starts from a low economic base and has an educated populace, sustainable population growth, a relatively small government sector, respect for economic and political freedom, and a stable monetary environment should experience relatively strong growth. The literature supporting this notion is extensive; the following subsections highlight relevant findings.

Fiscal and monetary policy. One of the main findings in the economic growth literature is that fiscal and monetary policy can have a significant impact on growth. Higher government consumption implies higher taxes and greater market dislocations. Higher inflation implies a government that is either unwilling or unable to control the value of its currency. Fischer (1993) found that characteristics related to a stable macroeconomic environment are conducive to growth. High inflation and large budget deficits reduce growth by reducing investment and growth in productivity. Alesina and Summers (1993) found that central bank independence is negatively correlated with low inflation. Thus, an interaction is clear between political activities, such as how a country conducts its monetary policy, and purely economic factors, such as inflation.

Some researchers have found that government can play a positive role in providing infrastructure. Easterly and Rebelo (1993) found that certain investments can aid growth in a cross-section of countries. They found public investment in transportation and communications to be correlated with growth, although other public investments seem to have little effect. They also found evidence that a government's budget surplus is positively correlated with growth and private investment.

Private investment is a key component in any economy's development. De Long and Summers (1993) found that developing economies benefit greatly from investment in equipment. Therefore, those countries that have the means (savings) and ability (relative prices and trade openness[9]) to purchase equipment can enjoy such development. That an economy can advance only by becoming familiar with various kinds of production technology makes sense. Easterly (1993) also found that countries that use taxes and tariffs to distort the relative prices of capital goods experience lower economic growth.[10]

Trade. Trade plays an important role in economic growth. Frankel and Romer (1996) found evidence that increased trade has a large impact on income. Although these effects are difficult to measure, they found that trade openness appears to influence per capita income positively. This finding is interesting in

[9] "Trade openness" is defined in the literature as (Exports + Imports)/GDP.

[10] Also see Obstfeld (1994), Sachs and Warner (1995), Bekaert and Harvey (1996), and Rajan and Zingales (1996).

light of the findings of De Long and Summers that equipment accumulation is important for economic growth. A prerequisite of equipment purchases is simply the ability to import capital equipment. This connection highlights one of the many channels through which government policy, specifically trade policy, can affect growth.

Much of the research on trade and growth focuses on a country's ability to accumulate certain factors of production. Romer (1993), using the analogy of hardware and software, points out that other, nonphysical factors also play a role in development. Factor accumulation represents hardware; certain technologies and processes represent software. Hardware and software have a unique interconnectedness that is crucial to their operation. Romer emphasizes that the software-like factors, although difficult to measure, are important in developmental economics.

Economic and political freedom. A particularly interesting finding of the growth research is that economic and political freedoms affect growth. Barro (1996a) found that measures of economic freedom are unambiguously related to economic growth. Purely political factors show mixed results. Barro acknowledged that researchers have not developed theoretical models of the effect of democracy on economic prosperity. Although the empirical evidence is that democracy is generally associated with higher levels of prosperity, some nonlinearities show up. For example, at high levels of political freedom, a negative relationship seems to be at work between growth and democracy. One explanation may be that democratic rights are in some sense a luxury good that already wealthy countries indulge in despite the deleterious effects of such rights on growth. Barro expanded this idea to a formal model in which cross-sectional estimates of democracy are derived from standard conditional growth variables.

Gwartney, Lawson, and Block (1996) measured economic freedom for a broad cross-section of countries beginning in 1979. They found that level of economic freedom is highly correlated with level of real economic growth. All measures of country risk introduce overlaps between economic, trade, and political measures. Their index of economic freedom, for example, contains two items (of many), the level and volatility of inflation and trade openness, that are also macroeconomic measures.[11]

Knack and Keefer (1995) found that indexes designed to proxy for property rights, based on political variables from Business Environmental Risk Intelligence and Political Risk Services' *International Country Risk Guide*

[11] Another source of indexes of economic freedom is the *1997 Index of Economic Freedom* (see Holmes, Johnson, and Kirkpatrick 1997).

(ICRG), are good indicators of subsequent investment and growth. They tend to outperform other proxies of property rights, such as Gastil's indexes and measures of political unrest. Economic rights tend to enhance findings of convergence in growth regressions.

The body of evidence shows a significant relationship between measures of economic freedom and measures of growth, but the interaction between political freedom and economic growth is less clear. Although democracy seems to be positively related to levels of economic development, the direction of the causality needs to be explored. Possibly, the distinction between economic and political rights is a false one. Friedman (1962) argues that economic and political rights are inextricably linked.

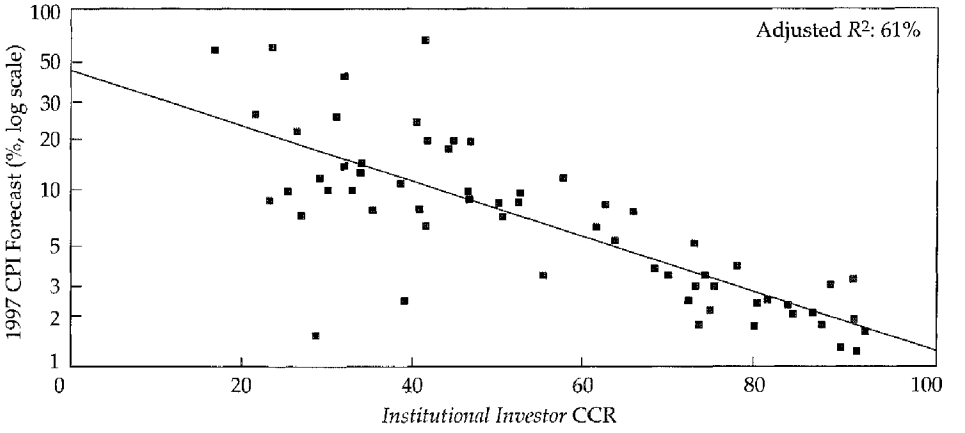
Inflation and real GDP per capita. The factors that determine country risk are integrated with the theoretical and empirical research on the determinants of cross-sectional economic growth. Variables such as real GDP per capita and inflation play an important role in measuring country risk. They are also key factors, as state and choice variables, respectively, in measuring conditional convergence.

Inflation should play a role in country risk because it not only involves the economy directly but also reflects other factors, such as political risk. For example, high inflation is often associated with political instability, as seen in the Weimar Republic in Germany, the past few decades in Brazil, and more recently, Bulgaria. Inflation affects both the local population and current and potential foreign investors. Although Barro (1996a) found that only the highest levels of inflation harm growth, as inflation rises, it injects increasing amounts of noise into economic decision making. Therefore, inflation at any level reflects a quantifiable measure of macroeconomic management. Figure 9 shows clearly that high inflation (proxied by the consumer price index, CPI) is often associated with high levels of perceived country risk. *Institutional Investor*'s measure of country risk captures 61 percent of the cross-country variation in 1997 consensus inflation forecasts for 62 countries.

Figure 10 illustrates the strong relationship between real GDP per capita and country risk for a universe of 74 developed, developing, and emerging markets. Our analysis shows that 82 percent of the variation in the real GDP per capita in 74 countries can be explained with the *Institutional Investor* measure of country risk. The graph in Figure 10 also shows important deviations, however, from predicted levels. Thus, the country risk measure proxies for a richer set of information than per capita GDP.

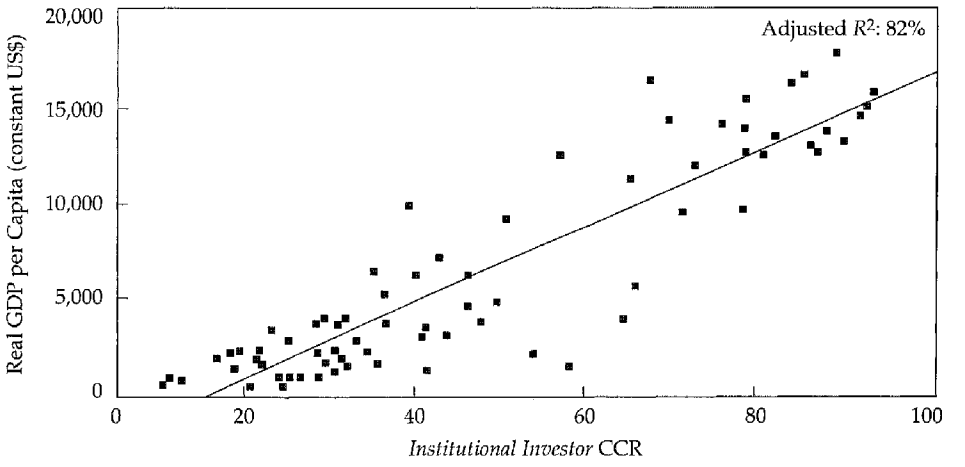
Linking Risk, Growth, and Returns. Following the cross-sectional economic growth literature, we examined 61 countries for which we had a complete set of data. We regressed real per capita economic growth between

Figure 9. Inflation and Risk Ratings



Notes: Observations: 62. Inflation data from Consensus Economics (1996); risk data from *Institutional Investor* (September 1996).

Figure 10. Country Risk Ratings versus Real GDP per Capita, September 1992



Notes: Observations: 74. Real GDP per capita data from Summers and Heston (1994).

1980 and 1992 on (1) real GDP per capita in 1979, (2) the natural log of *Institutional Investor*'s Country Credit Ratings, and (3) the realized change in the rating from 1979 to 1992. This regression, reported in Table 1, explained almost 60 percent of the cross-sectional variation in economic growth.

Note that the rating variables enter the regression with positive coefficients that are more than 4 standard errors from zero. The regression shows

Table 1. Regression Testing of Conditional Convergence: Growth in Real GDP per Capita, 1980–92

Independent Variables	Coefficient	Standard Error	*t*-Statistic
Constant	0.40	0.24	1.69
Log(real GDP per capita 1979)	–0.17	0.03	–5.67
Log(CCR 9/79)	0.33	0.07	4.44
Log(change in CCR 9/79–9/92)	0.55	0.08	7.03

Notes:	
Observations	61
R^2	0.61
Adjusted R^2	0.59
Standard error of regression	0.17
f-statistic	29.67
Probability (*f*-statistic)	0.00

Standard errors use a heteroscedasticity-consistent (White 1980) covariance matrix. Real GDP per capita from Summers and Heston (1994).

that real economic growth was highest for countries with below-average per capita GDP, for countries with below-average perceived country risk, and for countries that experienced a reduction in perceived country risk during the 1980–92 period.

The same independent variables can be used to explain equity market returns from 1980 through 1992. Table 2 shows that they do a credible job of explaining returns. In this case, the initial conditions represented by real per capita GDP and *Institutional Investor*'s Country Credit Ratings both have statistically significant coefficients and the realized change in the rating has the correct sign of 1.5 standard errors from zero.

Numerous approaches to measuring country risk are used in practice, but many of the underlying concepts overlap, and the various methods often lead to the same conclusions. Macroeconomic variables such as real per capita GDP and inflation play a role in risk measurement, and the importance of these factors provides some confidence that country risk measurement is integrated with economic theories of the cost of capital and the conditional convergence of economies, and with many empirically observed growth factors. If the links between these influences, depicted in Figure 8, are valid, then all these factors play a role in the pricing of financial assets.

Beta Pricing Models for Country Risk

The finance literature has a well-developed tradition of risk measurement: The vast majority of approaches use a factor model to describe the systematic influences that affect expected returns.

Table 2. Regression Testing of Equity Market Returns: Compound U.S. Dollar Equity Market Returns (Unhedged), 1980–92

Independent Variables	Coefficient	Standard Error	*t*-Statistic
Constant	–1.78	1.51	–1.18
Log(real GDP per capita 1979)	–0.61	0.19	–3.26
Log(CCR 9/79)	2.06	0.53	3.89
Log(change in CCR 9/79–9/92)	0.39	0.26	1.52
Notes:			
Observations	28		
R^2	0.35		
Adjusted R^2	0.27		
Standard error of regression	0.52		
f-statistic	4.32		
Probability (*f*-statistic)	0.01		

Standard errors use a heteroscedasticity-consistent (White 1980) covariance matrix. Unhedged equity market returns—MSCI; IFC Global Index. Real GDP per capita from Summers and Heston (1994).

The World CAPM as a Model of Country Risk. A simple and well-known approach to systematic risk uses the beta of the CAPM.[12] This model was initially presented and applied to U.S. data, but Solnik (1974a, 1974b, 1977) applied the CAPM to an international setting. In this setting, the systematic risk factor is no longer based on the U.S. market portfolio but on the world market portfolio (usually defined as a capitalization-weighted index of investable countries).

Use of a beta factor as a country risk measure in an international context has yielded mixed results. The early studies found it difficult to reject a model relating average beta risk to average returns. When more-general versions of the CAPM were examined, however, the evidence against the model became stronger. But the beta approach apparently has some merit when applied in developed markets. For example, Ferson and Harvey, working with 21 developed markets, showed how to introduce economic variables, fundamental measures, and both local and worldwide information into dynamic risk functions. In developed markets, beta, whether measured against a single factor or against multiple world sources of risk, appears to have some ability to discriminate between expected returns.

Application of this systematic risk approach to emerging markets would at

[12] For early forms of the CAPM, see Sharpe (1964), Lintner (1965), and Black (1972). For empirical studies of the CAPM applied to U.S. data, see Fama and MacBeth (1973), Gibbons (1982), and Stambaugh (1982).

first glance seem to be useful, but our study of developing market equity returns suggests that no relationship exists between expected emerging market returns and betas measured with respect to the world market portfolio. A regression of average returns on average betas produced an R^2 of zero. We have documented that the country variance does a better job than beta measured in a world CAPM of explaining the cross-sectional variation in expected returns. Indeed, in Harvey's 1995a study, for the 1985–92 period, the pricing errors were positive for every country in the IFC Emerging Markets Data Base (EMDB). The implication is that the world CAPM is predicting too low a level of expected return in each country; in other words, the risk exposure as measured by the world model is too low to be consistent with the average returns.

One of the problems in such a CAPM application to individual stocks is that when a company's return (measured in U.S. dollars) is compared with the benchmark return (either a U.S. portfolio or the world portfolio), the beta is either indistinguishable from zero or negative. Given that the correlations between many of the emerging markets and the developed markets are low and the finding of no relationship between expected emerging market returns and betas, it is no surprise that the regression coefficients (betas) are small. The implication of the world CAPM is that the cost of capital for many companies in emerging markets is the U.S. risk-free rate or lower, which is, of course, problematic. An important point is that the fitted cost of capital is contingent on the market being completely integrated into world capital markets. If it is not, then the fitted cost of capital from the CAPM and the country risk measure (beta) may be incorrect.

The Country Spread Model. The country spread model was developed to deal with the problems of using the world CAPM in emerging markets and has become a popular modification of the world CAPM that is used by a number of investment banks and consulting firms. They regress individual stock returns on the S&P 500 Index return and then multiply the beta by the expected premium on the S&P 500. Finally, they add an additional "factor," sometimes called the "country spread," which is the spread between the country's government bond yield denominated in U.S. dollars and the U.S. Treasury bond yield. The bond spread serves to increase an "unreasonably low" cost of capital into a number more palatable to investment managers. Mariscal and Lee (1993) provide a detailed example of this procedure.

Although an appealing measure of country risk, the country spread models do have some problems. First, the "additional factor" is the same for every security. Second, and perhaps most seriously, the factor is available only for countries whose governments issue bonds in U.S. dollars. So, whether

adding the country spread is an adequate solution to the problem of establishing a cost of capital in an emerging market is not clear.

The Ibbotson Model. The Ibbotson model, described in Clarke et al. (1994), is a hybrid world CAPM in which a security's return minus the risk-free rate is regressed on the world market portfolio return minus the risk-free rate. The beta is then multiplied by the expected world risk premium. Like country spread models, the Ibbotson model also includes an additional factor—one-half the value of the intercept in the regression.

This factor plays a role that is similar to the role played by yield spreads in the country spread model. That role is to "fix" the outcome—because beta times the expected risk premium is "too low" to be credible. Adding the adjusted intercept increases the fitted cost of capital to a more "reasonable" level. The evidence in our previous work suggests that the intercept is almost always positive for those countries in the IFC EMDB since 1985.

The advantage of this model is that it can be applied to a wide number of countries. Moreover, the intercept could be proxying for some omitted risk factor. But no theory supports the approach, and there is no formal justification for including half the intercept. (Why not 100 percent or 25 percent?) Consequently, the model is difficult to interpret.

The Erb–Harvey–Viskanta Model. We argue that country credit ratings and country risk measures provide valuable information about expected equity returns. These measures are external (provided by a third party) and are usually *ex ante* (i.e., they measure future risk). In our study, we required a candidate risk measure to be available for a broad cross-section of countries and in a timely fashion. Such a requirement eliminates risk measures based solely on the equity market and measures based on macroeconomic data that are subject to irregular releases and (often dramatic) revisions. We used the Country Credit Ratings produced by *Institutional Investor*. The idea in our 1995b work was to fit a model using the equity data in 47 countries and the associated credit ratings. Using the measure of estimated reward to credit risk, we forecasted, "out-of-sample," the expected rates of return in the 88 countries that do not have equity markets.

Our primary reason for using the *Institutional Investor* survey ratings was that lenders are concerned with future risk. In contrast to traditional measurement methodologies that look back in history, a credit rating is forward looking. In addition, the survey-based credit ratings may proxy for the relevant fundamental risks, and the importance of each of the fundamental components may vary through time. The next section describes this approach to measuring country risk in detail.

Determining Country Risk in Practice

Many U.S. investors and lenders familiar with the U.S. domestic credit-rating process extend that rating process to foreign sovereign credit. Sovereign ratings are important because they influence the accessibility of credit markets for national governments and agencies. Ratings also affect the credit rating of companies domiciled or operating in the rated countries; historically, rating agencies have been unwilling to rate a corporate credit higher than that of the sovereign borrower.

Country Risk and Bond Ratings

The empirical research on country risk has focused on two elements of the rating process: a country's *ability* to pay its obligations and a country's *willingness* to pay its obligations. The first is most familiar to domestic corporate investors, but both aspects are important in sovereign credit rating and measuring country risk. One provider of country risk measures, Political Risk Services, forms its ICRG composite risk measure by equally weighting these two elements.

Ability to Pay. The focus of the domestic credit rating industry is on measuring a company's ability to meet its short- and long-term obligations. Debt levels, cash flow coverage, earnings variability, size, and the company's position within its industry—all play a role in the debt rating the company is assigned. Some of these variables have analogs in the world of sovereign credit ratings.

A country is not very different from a company, and a number of macroeconomic variables measure a country's ability to pay its obligations. A country produces certain goods and services (signified by GDP level and growth), it has certain obligations it must pay to outsiders (external debt), it has certain resources it can fall back on (international reserves), and it has either good or bad financial management (signified by its inflation rate).

A number of researchers have examined macroeconomic variables in relation to published country ratings. Feder and Uy (1985) and Lee (1993a) examined *Institutional Investor*'s CCR, and Cantor and Packer (1996) examined the Standard & Poor's Corporation (S&P) and Moody's Investors Service

long-term foreign currency sovereign credit ratings. These investigators found a significant role for macroeconomic factors in explaining cross-country risk.

However, although macroeconomic factors can explain the broad differences between credit ratings, other, subjective factors are at work. So, differences in the predicted risk ratings of similar countries can be ascribed to these factors, the primary one of which is a country's attitude towards its international obligations.

Willingness to Pay. In the U.S. corporate world, the criterion for predicting default on debt is relatively clear: When the value of a company's equity falls below zero, the company has an incentive to default on its fixed payments. Moreover, in the United States, parties work within the well-established financial and legal constraints of the U.S. bankruptcy process.

The situation is more complicated for sovereign debt. Defaults usually arise not from a lack of assets but from constraints on the use of those assets. Theoretically, a country has its entire economy, through taxation and nationalization, as a resource for repayment, but popular opposition can prevent a government from accessing the "asset" side of the country's balance sheet. Therefore, on the one hand, cash flow constraints can cause default.

On the other hand, constraints against default also exist. The reputational effects of a country's default are long lasting and potentially profound. Even though many countries have rebounded economically after debt restructurings, default still carries a stigma. Barro (1996b) argues that reschedulings and restructurings of debt, not vigorous enforcement of loan agreements, have harmed developing countries by making access to commercial finance more difficult for them.

Cantor and Packer (1996) found a significant negative relationship between S&P and Moody's credit ratings and prior defaults, even after holding other macroeconomic factors constant. These rating agencies evidently believe that countries that have defaulted in the past are more likely to default in the future. *Euromoney*'s Country Risk Ratings also explicitly factor in past defaults.

Clearly, political risk plays a key role in assessing debt management and country risk. Certain political characteristics, as examined in Brewer and Rivoli (1990), can make default easy for a country's political leaders. Roubini (1991) found that fiscal policies are related to political and governmental instability. Citron and Nickelsburg (1987) point out that a change in leadership in developing countries brought about by political instability, coup, or assassination increases the likelihood of default. The new leadership may believe it has domestic political support for dealing harshly with "foreign investors."

This sort of behavior is less likely in developed countries because public and private debt is distributed widely throughout the countries' various economic strata. In addition, developed countries usually have extensive links to the global markets, links that would be harmed if debt obligations were not met.

The use of political variables in explaining country risk ratings has shown mixed results. Haque, Mark, and Mathieson (1996) found that using political variables added little value beyond using macroeconomic variables in explaining country risk. Cantor and Packer (1996) were able to explain the vast majority of a cross-section of sovereign credit ratings without using any political factors. Although measures of political unrest should have some validity in capturing country risk, Knack and Keefer (1995) found they do not necessarily explain such economic fundamentals as growth and investment.

This lack of success in finding a meaningful relationship between specific measures of political instability and credit ratings is curious, but keep in mind that political instability is negatively correlated with positive macroeconomic factors. Therefore, relatively higher political ratings (stability) are associated with relatively higher economic ratings (economic performance).

Using Ratings to Measure Country Risk

A number of services provide risk ratings for a broad cross-section of countries. The most prominent rating agencies are Moody's and S&P. These well-known providers rate only countries that have debt outstanding, however, so the countries that lack established debt markets are not rated.

Rating-Service Methodologies. The rating services use different methods and cover a different number of countries, but their ratings for specific countries do not differ significantly. Table 3 reveals the closeness of the risk ratings assigned by eight rating providers for countries with recognized equity markets (keep in mind the rating scale differences discussed in the appendix). Table 4 clearly shows that the Moody's and S&P ratings are highly correlated with measures produced by *Institutional Investor, Euromoney,* and the *International Country Risk Guide* of Political Risk Services. The ICRG ratings are generally less correlated with the other services. Figure 11 graphically depicts the relationship between the S&P ratings and the ratings of other services.

The various rating providers use different data to arrive at their overall ratings. In addition, a provider may from time to time weight the input factors differently. Although *Institutional Investor* is not a rating service per se, its sampling of country credit consensus illustrates this shift in weights. Table 5 shows that for OECD countries, respondents have over time increased the

Table 3. Selected Risk Ratings for Countries with Equity Markets, June 1996

Country	Moody's	S&P	CCR	EMCRR	ICRGC	ICRGP	ICRGF	ICRGE
Argentina	B1	BB–	38.4	57.2	74.5	76.0	38.0	35.0
Australia	Aa2	AA	71.0	92.6	83.0	85.0	44.0	37.0
Austria	Aaa	AAA	85.7	95.9	86.5	86.0	47.0	40.0
Belgium	Aa1	AA+	79.5	93.1	86.0	82.0	48.0	42.0
Brazil	B1	B+	35.8	55.4	66.0	64.0	34.0	33.5
Canada	Aa2	AA+	79.9	91.5	83.0	81.0	46.0	39.5
Chile	Baa1	A–	59.2	79.8	80.0	76.0	43.0	41.0
China	A3	BBB	56.4	70.8	80.0	76.0	43.0	41.0
Colombia	Baa3	BBB–	46.7	62.6	63.0	54.0	37.0	35.0
Czech Republic	Baa1	A	60.1	74.6	85.0	87.0	44.0	39.0
Denmark	Aa1	AA+	80.3	94.6	88.5	87.0	48.0	42.0
Finland	Aa2	AA–	72.2	91.0	83.0	84.0	42.0	40.0
France	Aaa	AAA	88.4	95.7	81.5	80.0	44.0	39.0
Germany	Aaa	AAA	91.5	96.6	58.0	56.0	24.0	36.5
Greece	Baa3	BBB–	49.8	73.3	77.0	79.0	38.0	36.5
Hong Kong	A3	A	65.4	85.4	82.0	78.0	46.0	40.0
Hungary	Ba1	BB+	43.6	67.7	78.0	80.0	41.0	35.0
India	Baa3	BB+	45.8	66.7	66.5	60.0	37.0	36.0
Indonesia	Baa3	BBB	51.8	73.2	72.0	67.0	40.0	37.0
Ireland	Aa2	AA	74.4	90.6	86.0	87.0	45.0	39.5
Israel	A3	A–	50.8	77.2	71.5	65.0	42.0	36.0
Italy	A1	AA	72.0	87.6	81.0	82.0	40.0	39.5
Japan	Aaa	AAA	91.0	97.2	88.0	84.0	48.0	44.0
Jordan	Ba3	B+	30.5	54.3	74.0	72.0	38.0	38.5
Malaysia	A1	A+	68.4	84.5	82.0	79.0	44.0	40.5
Mexico	Ba2	BB	41.2	58.8	69.0	66.0	39.0	32.5
Netherlands	Aaa	AAA	89.2	96.7	88.0	88.0	47.0	41.0
New Zealand	Aa1	AA+	70.3	91.1	83.0	84.0	45.0	37.0
Nigeria	NR	NR	14.8	32.3	50.0	54.0	23.0	22.5
Norway	Aa1	AAA	82.0	94.8	91.0	91.0	46.0	45.0
Pakistan	B1	B+	29.5	50.7	61.0	56.0	36.0	29.5
Peru	B2	BB–	27.2	47.5	64.0	59.0	35.0	34.5
Philippines	Ba2	BB	38.1	63.5	68.0	62.0	37.0	37.0
Poland	Baa3	BBB–	40.2	56.5	78.5	81.0	41.0	35.0
Portugal	A1	AA–	68.8	81.9	85.0	85.0	44.0	41.0
Singapore	Aa1	AAA	82.8	98.4	89.0	86.0	48.0	44.5
South Africa	Baa3	BB+	46.3	64.9	75.5	74.0	40.0	37.0
South Korea	A1	AA–	72.0	85.0	75.5	74.0	40.0	37.0

Table 3. (continued)

Country	Moody's	S&P	CCR	EMCRR	ICRGC	ICRGP	ICRGF	ICRGE
Spain	Aa2	AA	73.2	90.8	78.5	77.0	42.0	38.0
Sri Lanka	NR	NR	32.5	50.6	67.0	60.0	38.0	35.5
Sweden	Aa3	AA+	74.3	89.8	81.0	85.0	39.0	38.5
Switzerland	Aaa	AAA	91.5	98.5	91.0	89.0	50.0	43.0
Taiwan	Aa3	AA+	78.9	91.5	86.0	81.0	48.0	42.5
Thailand	A2	A	63.4	82.1	78.0	72.0	43.0	41.0
Turkey	Ba3	B+	40.4	58.4	59.0	55.0	34.0	29.0
United Kingdom	Aaa	AAA	88.2	95.9	80.0	81.0	45.0	34.5
United States	Aaa	AAA	90.9	97.2	83.0	82.0	46.0	38.5
Venezuela	Ba2	B	30.1	44.7	65.0	64.0	33.0	33.5
Zimbabwe	NR	NR	32.2	50.5	61.0	63.0	27.0	32.0

NR = not rated

Notes: Estimated ratings for nonrated countries (estimates based on CCR and EMCRR):

Nigeria	<B3	<B–
Sri Lanka	B2	B+
Zimbabwe	B2	B+

EMCRR = *Euromoney* Country Risk Ratings.

ICRGC = ICRG Composite Ratings.

ICRGP = ICRG Political Ratings.

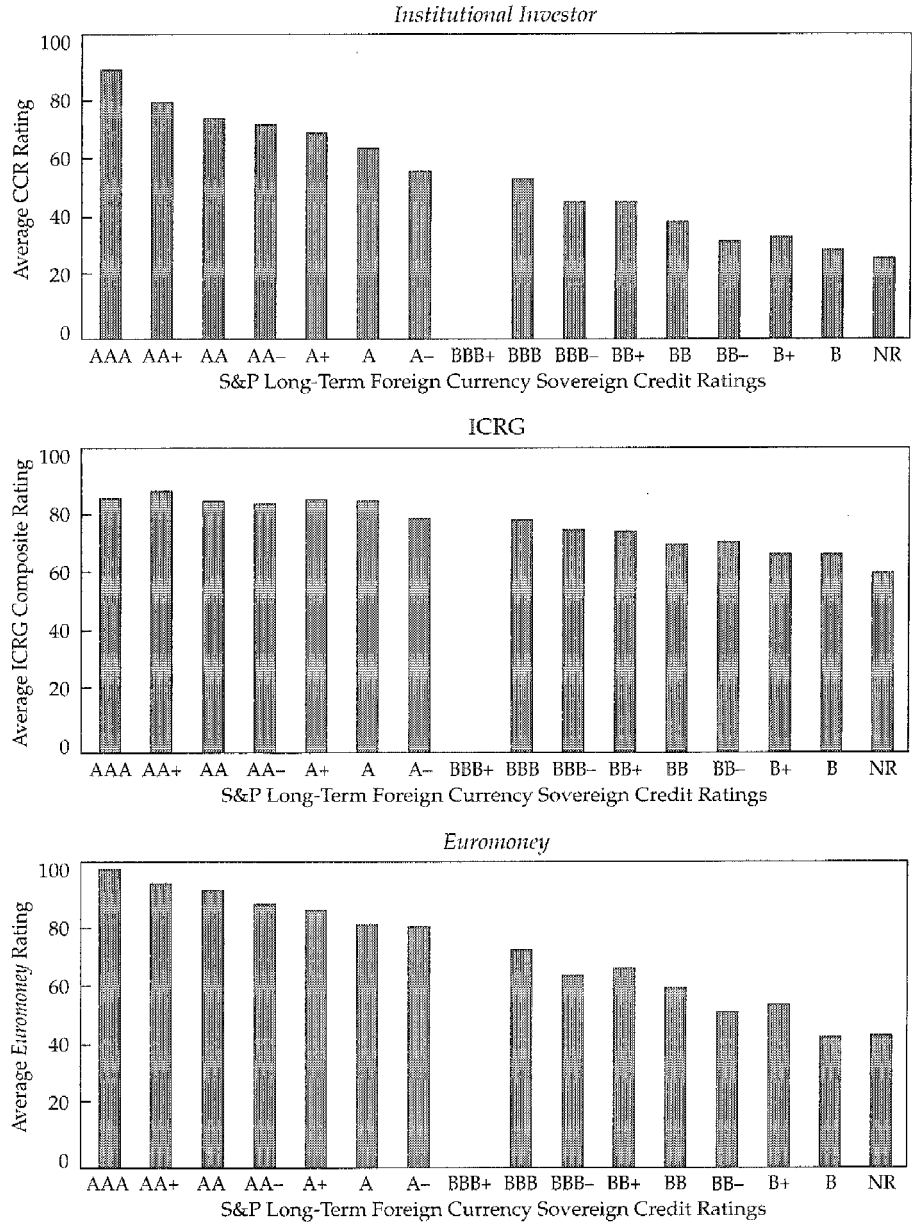
ICRGF = ICRG Financial Ratings.

ICRGE = ICRG Economic Ratings.

Table 4. Rank Correlations of Risk Ratings for Countries with Equity Markets, June 1996

	Moody's	S&P	CCR	EMCRR	ICRGC	ICRGP	ICRGF	ICRGE
Moody's	1.00	0.97	0.98	0.97	0.75	0.70	0.75	0.63
S&P		1.00	0.97	0.96	0.72	0.67	0.73	0.61
CCR			1.00	0.98	0.76	0.71	0.77	0.70
EMCRR				1.00	0.80	0.74	0.81	0.71
ICRGC					1.00	0.95	0.94	0.85
ICRGP						1.00	0.83	0.72
ICRGF							1.00	0.82
ICRGE								1.00

Figure 11. Risk-Rating Comparison, June 1996



NR = not rated.

Note: S&P credit ratings cover 49 countries with recognized equity markets.

Table 5. Critical Factors in *Institutional Investor*'s Country Credit Ratings

	OECD		Emerging		Rest of World	
	1979	1994	1979	1994	1979	1994
Economic outlook	1	1	2	3	3	4
Debt service	5	2	1	1	1	1
Financial reserves/current account	2	3	4	4	4	3
Fiscal policy	9	4	9	7	6	6
Political outlook	3	5	3	2	2	2
Access to capital markets	6	6	7	9	8	9
Trade balance	4	7	5	5	5	5
Inflow of portfolio investments	7	8	8	8	7	8
Foreign direct investments	8	9	6	5	9	7

Source: *Institutional Investor* (March 1994).

Table 6. Factors Used in *Euromoney* Country Risk Ratings

Factor	Weight
Economic data (projections)	25%
Political risk (consensus)	25
Debt indicators (external)	10
Debt in default or rescheduled	10
Credit ratings (S&P, Moody's, and IBCA)	10
Access to bank finance	5
Access to short-term finance	5
Access to international bond and syndicated loan markets	5
Access to and discount on forfaiting[a]	5
Total	100%

[a]From *Euromoney* (March 1996, p. 165): "Reflects the average maximum tenor available and the forfaiting ["forfeiting"] spread over riskless countries such as the United States. The score equals the average maximum tenor minus the spread. Countries for which forfaiting is not available score nothing."
Source: *Euromoney*, March 1996.

emphasis they place on fiscal policy and decreased the emphasis on debt service. Similarly, *Euromoney*'s ratings methodology has changed a number of times during its existence.

Most rating systems use a number of data sources, but most systems rank the data and weight political, economic, and financial risks according to relative importance. For example, as Table 6 shows, *Euromoney* takes debt market access into account (with a total 20 percent weight) but places predominant weight on political and economic factors. Tables 7 and 8 allow a comparison of the primary components of the 10 major rating providers and make clear that the services emphasize different factors. Some, such as Business Environment Risk Intelligence, emphasize political factors; others, such as Bank of America, use solely quantitative macroeconomic information. Each investor needs to understand the relative sophistication and complexity of the rating model the provider is using.

Table 7. Primary Components of Country Ratings

Factors	BoA	BERI	CRIS	EIU	EUROMY	INSTINV	MOODY	PRSICRG	PRSCOPL	S&P
Current account/balance of payments	✔	✔		✔	✔	✔	✔	✔	✔	✔
Debt	✔	✔		✔	✔	✔	✔	✔	✔	✔
Deficit	✔	✔		✔	✔	✔	✔		✔	✔
Economic structure and growth (export concentration, reliance on imports)	✔	✔		✔	✔	✔	✔		✔	✔
Foreign exchange/currency convertibility	✔	✔		✔			✔		✔	✔
GDP per capita/GDP	✔	✔		✔	✔		✔		✔	✔
Liquidity		✔		✔	✔			✔		
Parallel market							✔	✔		✔
Reserves	✔			✔	✔	✔	✔			✔
Savings rate				✔			✔		✔	✔
Inflation		✔							✔	✔
Access to capital markets		✔			✔	✔	✔			✔
Factionalization (political, ethnic, religious, ideological, linguistic)		✔	✔	✔		✔	✔	✔		✔
Social conditions/conflict/ history										
Attitudes/expectations		✔		✔	✔	✔	✔	✔	✔	✔
Coercive regime/legitimacy		✔					✔			

Table 7. (continued)

Factors	BoA	BERI	CRIS	EIU	EUROMY	INSTINV	MOODY	PRSICRG	PRSCOPL	S&P
Bureaucratic/technocratic competence, corruption/ policy flexibility		✔	✔	✔			✔	✔		✔
Criminal/military insurgency		✔	✔				✔	✔		✔
International commitment/ integration		✔			✔	✔	✔	✔	✔	✔
Legal framework		✔			✔		✔	✔		
Nationalization		✔					✔	✔		✔
Policy environment		✔	✔	✔	✔	✔	✔	✔	✔	✔
Regional politics		✔					✔	✔		✔
Infrastructure and local service management		✔					✔			✔
Labor costs/productivity		✔					✔		✔	✔

Notes:
BoA = Bank of America World Information Services.
BERI = Business Environment Risk Intelligence S.A.
CRIS = Control Risks Information Services.
EIU = Economist Intelligence Unit.
EUROMY = *Euromoney*.
INSTINV = *Institutional Investor*.
MOODY = Moody's Investor Services.
PRSICRG = Political Risk Services: *International Country Risk Guide*.
PRSCOPL = Political Risk Services: Coplin–O'Leary Rating System.

Table 8. Specific Factors Included in Country Ratings

Index subcomponents	BoA	BERI	CRIS	EIU	EUROMY	INSTINV	MOODY	PRSICRG	PRSCOPL	S&P
Political and policy		Qual		Qual	Qual	Qual	Qual	Qual		Quant/ Qual
Financial	Quant				Quant	Qual	Quant	Quant/ Qual	Quant/ Qual	
Economic	Quant	Quant		Quant	Quant	Qual	Quant/ Qual	Quant/ Qual		Quant
Operations		Quant/ Qual								
Remittances and repatriation of capital		Quant/ Qual								
Security			Qual							
Lending and trade				Quant/ Qual						
Export									Quant/ Qual	
Direct investment									Quant/ Qual	
Index type	Ordinal	Scalar	Ordinal	Scalar	Scalar	Scalar	Ordinal	Scalar	Scalar	Ordinal
Data sources										
Expert panel		✔							✔	
Survey					✔	✔				
Staff analysis			✔	✔			✔	✔		✔
Published data	✔	✔		✔	✔		✔	✔	✔	✔

Notes: Quant = quantitative; Qual = qualitative.

Relationship of Ratings to Macroeconomic Variables. Examining the sovereign credit ratings of S&P and Moody's, Cantor and Packer (1996) found that six factors explain more than 90 percent of the cross-sectional variation in ratings. Ratings were found to be associated with per capita income, external debt burden, inflation experience, default history, and level of economic development. They also found that sovereign credit ratings are closely related to market-determined credit spreads. They found credit ratings generally subsume the other macroeconomic factors in explaining market credit spreads.

Other researchers have found similar results. Burton and Inoue (1987) and Roubini and Bates (1984) found that such variables as level and growth of GNP per capita, inflation, and budget deficits help explain country risk. Oral et al. (1992) showed a link between country risk ratings and economic and political factors. Somerville and Taffler (1995), comparing consensus rankings, such as those provided by *Institutional Investor*, against formal models, found that bankers are overly pessimistic about the risk of developing countries. Moreover, although most researchers assume risk is uniform within each country, Phillips-Patrick (1989) argues that risk may vary among firms within a country.

We conducted an analysis similar to that of Cantor and Packer using solely macroeconomic data derived from the Penn World tables (Summers and Heston 1991, 1994). As Table 9 shows, we found that purely macroeconomic indicators do a good job of discriminating between country risk levels. The most powerful variables in this test were level and change of real per capita GDP in U.S. dollars (RGDP), level of population (Pop), and investment as a percentage of GDP. Although the R^2s for these regressions are high, some notable deviations of predicted ratings from actual risk ratings occurred. Hong Kong's predicted ratings, for example, were much higher than its actual ratings. We attribute this result to uncertainty surrounding Hong Kong's political situation. Switzerland, based solely on macroeconomic factors, had lower predicted ratings than actual ratings. The rating firms seem to value highly the intangible political and financial factors underlying Switzerland's relative stability.

The ratings may not contain any "new" information that is not already embedded in sovereign yields, but as explained in Cantor and Packer (1995), ratings in non-U.S. markets could be good summary measures of risk, just as U.S. domestic bond ratings are commonly thought to be in the U.S. market. That is, country risk ratings may be thought of as analogous to domestic bond ratings; to varying degrees, they capture much of the potential risks of owning sovereign debt. This background sets the stage for an examination of these ratings in conjunction with historical capital market returns.

Table 9. Explaining Risk Measures with Economic Variables: Cross-Sectional Regression Results

Independent Variables	Log(CCR)	Log(EMCRR)	Log(ICRGC)
Constant	–1.19	1.10	3.22
	(–1.83)	(2.10)	(14.23)
Log(real GDP per capita 1992)	0.44	0.30	0.11
	(7.50)	(6.00)	(6.64)
Log(Pop[a] 1992)	0.09	0.04	0.00
	(4.32)	(2.29)	(0.00)
Log(change in RGDP 1979–92)	4.29	3.78	1.50
	(2.59)	(3.57)	(3.23)
Log(Pop 1979–92)	–4.57	–2.19	–0.75
	(–0.81)	(–0.46)	(–0.54)
Investment as % of GDP	1.25	0.73	0.41
	(2.49)	(2.27)	(2.32)
Government as % of GDP	0.63	0.09	0.07
	(1.13)	(0.17)	(0.29)
Openness [b]	0.00	–0.04	–0.03
	(–0.09)	(–0.97)	(–1.31)

Notes: Dependent variables are risk ratings as of year end 1993; all *t*-statistics (in parentheses) use a heteroscedasticity-consistent (White 1980) covariance matrix. Independent variable from Summers and Heston (1994).

Observations	78	78	78
R^2	0.85	0.83	0.78
Adjusted R^2	0.84	0.82	0.76
Standard error of regression	0.27	0.19	0.09
F-statistic	58.72	50.36	35.08
Probability (*F*-statistic)	0.0	0.0	0.0

[a]Population in millions.
[b]Openness: (Exports + Imports)/GDP.

Country Risk Measures as Shorthand

Country risk measures may be valuable even if they are simply shorthand summaries of relevant risk factors. We found that these country risk measures can distinguish among various risk and expected return opportunities in the global fixed-income and equity markets. Harlow (1993) and Diamonte, Liew, and Stevens (1996) found ICRG's Political Risk Rating to be a good instrument for explaining global equity returns.

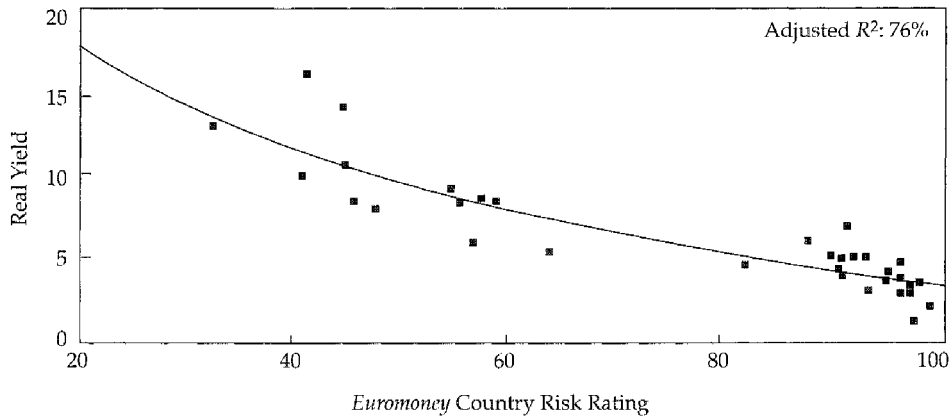
The country risk ratings have direct implications for the fixed-income markets. A comparison of explicit risk measures and market-derived risk levels shows substantial agreement. Therefore, these risk measures may be, in effect, summarizing the rank ordering of risk already found in the fixed-income market.

Examination of a broad cross-section of government bond markets shows that risk measures distinguish well between high- and low-risk countries. For example, Figure 12 shows a strong negative relationship, with an adjusted R^2 of 76 percent, between the *Euromoney* Country Risk Rating and real bond yields for a broad sample of developed and emerging markets. An investor should look at real yields—that is, the nominal yield less expected inflation—for a true approximation of the market's price of risk because we have found country risk to be highly correlated with inflation. We have also found essentially the same relationship for other country risk raters (not reported).

Figure 13 shows that the relationship between risk and real yield has held over time. Real yields for this figure were calculated as the yield on the national Salomon Brothers Government Bond indexes minus trailing 12-month inflation. These derived real yields were, in turn, lagged three months for data availability. As expected, we found a negative relationship between the ratings and real yields. Riskier countries, on average, do have higher real yields. The slope of the regression of real yields on the risk measure is not constant, however, and in the mid-to-late 1980s, it is sometimes even positive (has the wrong sign). One explanation may be incorrect estimation of the expected inflation rate when trailing realized inflation is used. Another explanation may be the small sample size, 10 developed countries, at the beginning of the test. We found the same pattern for other risk raters (not reported).

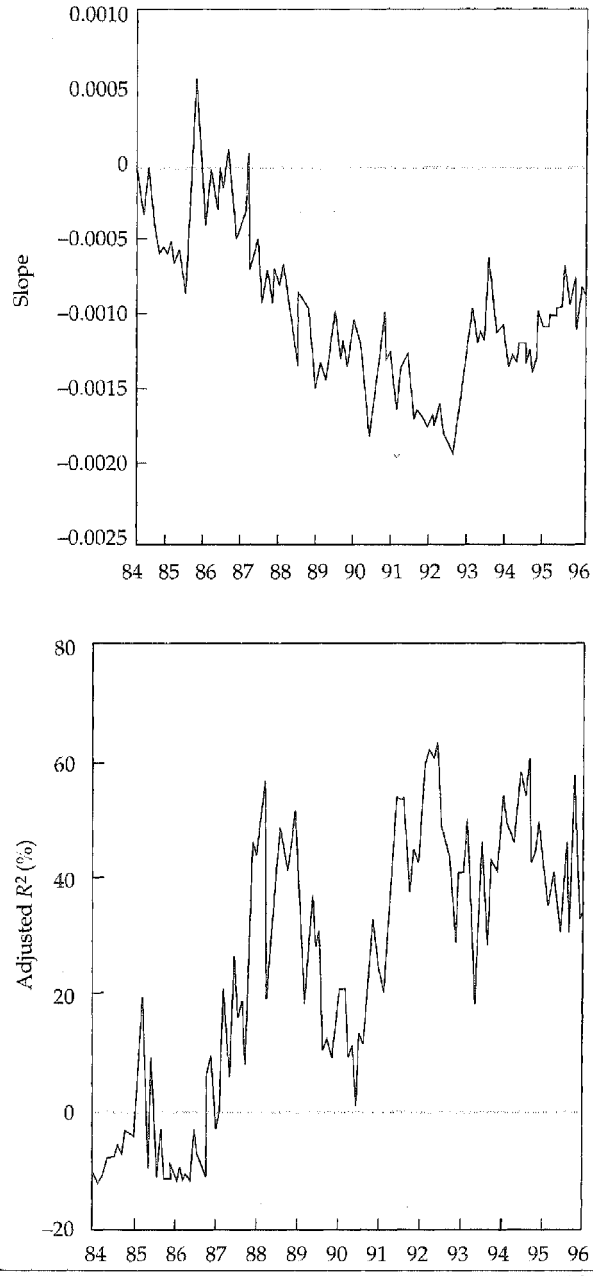
Clearly, country risk estimation is a multifaceted process and one thus fraught with potential pitfalls. One problem is the relatively poor quality and

Figure 12. Sovereign Real Yields and Risk Ratings, September 30, 1996



Notes: Real yield = Yield – 1997 consensus CPI forecasts. Yields for the developed countries are from Salomon Brothers World Government Bond indexes; yields for the emerging markets are stripped Brady bond yields from the Bank of Boston.

Figure 13. Real Yields and *Institutional Investor* CCR: Developed Countries, 1984–96



Notes: Monthly sample. Real yield = Salomon Brothers Bond Index yield – Trailing 12-month CPI.

timeliness of the economic data that are available for the emerging markets, which hampers investors' abilities to conduct purely quantitative macroeconomic risk analyses. A second problem is the subjectivity inherent in assessing political risk. Every service we have examined uses qualitative inputs for political ratings, as Table 8 clearly showed. This approach requires that the service be vigilant in examining dozens of countries on a timely basis. The banks that report to *Institutional Investor* usually maintain staffs of analysts whose sole job is to assess relative risk among countries. Most investment managers do not have that luxury.

Nevertheless, despite the pitfalls, some researchers have found evidence that the commonly used country measures of risk provide insights that are useful in the investment decision-making process.

Applications of Country Risk Analysis

Because of the relevance of country risk analysis to the financial markets, investors and investment managers can use estimates of country risk to answer a host of global financial management questions related to estimating expected return, volatilities, and correlations.

Framework for Examining Country Risk and Expected Returns

Table 10 contains a framework that shows how country risk might affect an asset's expected return. In the table, we have decomposed the risk premiums of 14 investment instruments into the premiums for foreign exchange, deposits, bonds, and equities.[13] Each row details an asset's return and the fundamental components of the return. Inflation plays an integral role in all these instruments. For example, consider the unhedged U.S. dollar foreign bond return (row 9), which is the sum of the local currency bond return (row 8) and the foreign exchange (FX) return (row 5). The unhedged foreign bond return is equivalent to the domestic inflation rate plus the foreign country risk premium plus the foreign term premium plus the change in the real foreign exchange rate. Note that the foreign exchange market implicitly prices inflation differentials and the domestic investor cannot access the foreign inflation rate. Historically, real foreign exchange prices have been quite volatile for long periods of time.

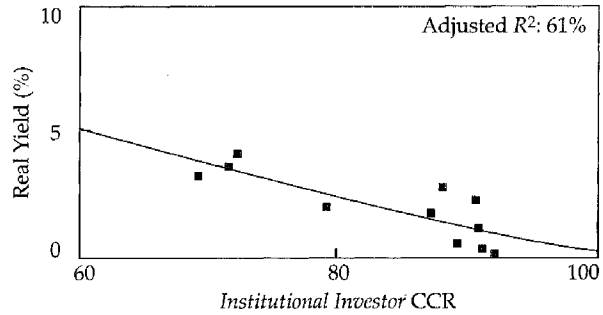
We assert that country risk is important at even the most basic asset level, that of the Eurodeposit. The real yields on Eurodeposits show differences that can be well explained by measures of country risk. Figure 14 shows that the *Institutional Investor* CCR explain about 68 percent of the observed differences in real yields on 12-month Eurodeposits for credit ratings above

[13]The framework is similar to the global risk premium framework found in Karnosky and Singer (1994). Their methodology focused on properly identifying each country's risk premium, including currency returns. We have modified their framework somewhat for ease of exposition.

Table 10. Risk Premiums from a U.S. Investor's Perspective

Instrument	Row	Inflation		Country Risk Premium		Term Premium		Equity Risk Premium		Real FX Change
		Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign	
Domestic deposit return (US$)	1	✔		✔						
Foreign deposit return (local currency)	2		✔		✔					
Forward FX premium	3 (= 1 – 2)	✔	–✔	✔	–✔					
Spot FX return (US$):										
Expected	4	✔	–✔							
Actual	5	✔	–✔							✔
Forward FX return (US$ hedged)	6 (= 3 – 5)			✔	–✔					–✔
Domestic bond return (US$)	7	✔		✔		✔				
Foreign bond return:										
Local	8		✔		✔		✔			
US$ unhedged	9 (= 8 + 5)	✔			✔		✔			✔
US$ hedged	10 (= 9 + 6)	✔		✔			✔			
Domestic equity return (US$)	11	✔		✔		✔		✔		
Foreign equity return:										
Local	12		✔		✔		✔		✔	
US$ unhedged	13 (= 12 + 5)	✔			✔		✔		✔	✔
US$ hedged	14 (= 13 + 6)	✔		✔			✔		✔	

Figure 14. Eurodeposit Real Yields and Risk Ratings, September 30, 1996



Notes: British Bankers Association 12-month Eurodeposit fixings. Real yield = Yield – 1997 consensus CPI forecasts.

60.[14] This method can be extended to other asset classes, and the explanatory power of country risk is similar. Thus, country risk can have a profound impact on asset prices.

One mechanism for the transmission of country risk is the deposit rate, but others could be at work. The term premium—the difference between the returns on bonds and deposits (see rows 7–10 in Table 10)—could also be related to country risk. That is, the country risk premium could have a term structure. Litterman and Iben (1991) and Fons (1994) found different term structures for different levels of credit risk in the U.S. corporate bond market. Investment-grade credits generally have upward-sloping term premiums, and credits of below investment grade generally have flat or downward-sloping term premiums. From this perspective, whether country risk in fixed-income instruments should have a term structure is not clear. A term structure of country risk that is not flat could have a profound impact on equity pricing because future equity cash flows should be discounted at the appropriate risk-adjusted rate. In subsequent work, however, we found evidence for upward-sloping term premiums for both investment-grade and below-investment-grade bonds.

Although we have explicitly assumed a "country risk premium" only in deposit returns in this framework, the possibility exists of a relationship between country risk and other variables. For example, the equity risk premium itself should be positively correlated with country risk. Another possi-

[14] We use one-year Eurodeposits because they most closely match available inflation forecasts (Consensus Economics, 1996).

bility, suggested by Dahlquist and Harvey (1997), is that real foreign exchange returns are related to country risk.

Given the relevance of country risk to the returns of all investment instruments, we can use this framework to estimate the relationship between country risk and bond and equity returns.

Estimating Expected Returns, Volatilities, and Correlations

An important challenge for global asset allocators is the estimation of expectations for long-term returns, volatilities, and correlations. One solution to the challenge is simply to use historical returns as the forward-looking estimates. This approach is "unconditional," in that it does not use any current information to make estimates, and it is comfortable; most investment practitioners are familiar with the work of Ibbotson Associates and its estimates of historical returns for the U.S. capital markets.

Unfortunately, applying this unconditional approach in global markets has some problems. If one wants to use the common statistical methods related to a world CAPM, beta and volatility (despite their lack of explanatory power), historical data are required for model parameters. However, the histories of equity and fixed-income returns are relatively short (by U.S. standards) in many countries. The emerging markets often provide no time period from which practical estimates can be made.

In earlier work, we used country risk measures to forecast future long-term expected returns, volatilities, and correlations, but that sort of simple model presents a number of problems. First, it does not eliminate the need for common time periods for which returns and risk measures are available. Second, model specification will influence the outcomes for countries in certain risk regions.

As a prelude to the analysis, we will first examine some of the data and currency issues.

Data. Data availability is an issue in terms of both returns and risk measures. MSCI started tracking developed international equity markets only in 1970, and the IFC started tracking emerging equity markets only in 1981. On the bond side, analysts have even fewer data. The commonly used government bond indexes published by Salomon Brothers and J.P. Morgan start for the developed markets in 1985. In the emerging markets, bond data are scarce; the primary data are Brady bond indexes starting in 1991, although several sources of country risk ratings have been available since 1984.

In addition to the problem of a lack of data, some of the data that are

available need to be treated with caution. A bias has been introduced by countries that have "re-emerged." Goetzmann and Jorion (1996) found that historical average returns for those countries are probably biased upward from their long-run averages. For example, Argentina's equity market began operations in the 1880s but submerged in the mid-1920s (that is, the market continued to exist but disappeared from the universe of investments considered by most investors). The common approach is to use Argentina's equity returns since 1976, but those historical average returns are misleading because they ignore the period when the market had basically a value of zero.

Currency. When dealing with data for many countries, the issue of how to deal with currencies always arises. On the fixed-income side, the issue is particularly challenging because currency volatility has played a dominant role in fixed-income returns. The average annualized volatility of government bond markets in 15 developed countries during the 1986–96 period was 5.3 percent in local currency terms versus 12.0 percent in unhedged U.S. dollar terms. For the equity markets, this issue is less of a problem than when dealing with bonds because currency changes are a smaller proportion of equity returns.

Country Risk Measures and Equities. Table 11 presents regression results for a universe of 49 national equity markets. The model used is a pooled time-series, cross-sectional regression of annual excess returns (or volatilities and correlations) against a country risk measure and the in-period change in the risk measure. Figure 15 shows that the lowest (highest) country risk ratings produced the highest (lowest) expected annual returns; the model produced similar fitted values for expected returns for the ICRG Composite risk measure and the CCR risk measure as of 1984 and 1979. The fitted values shown assumed no change in the risk measure and are thus univariate. Expected excess returns, which range from 5 percent to 60 percent, seem plausible.

In the case of volatility, some differences show up in model predictions. As Figure 16 shows, the ICRG and *Institutional Investor* models diverged widely at low credit-rating levels, which highlights the sensitivity of the model to the ratings used. That is, because absolute rating levels differ among the rating providers, a 30 from the CCR of *Institutional Investor* denotes a lower risk than a 30 from the ICRG Composite.[15] Therefore, the scales are not directly comparable.

Some differences also appear in the model predictions for correlations with the world market portfolio, as detailed in Figure 17. Note that, although

[15] At the time of writing, the lowest CCR rating (highest risk) was 6.3 (North Korea) and the lowest ICRG Composite rating was 29 (Liberia).

Table 11. Estimating Equity Returns, Volatilities, and Correlations

Regression	Period	Attribute	Intercept	Log Attribute	Change in Attribute[a]	Number of Observations	Adjusted R^2
Total return	4/84–3/96	ICRGC	0.87	–0.17	1.95	431	6.6%
			(1.68)	(–1.43)	(2.50)		
	4/84–3/96	CCR	0.81	–0.16	0.38	431	2.5
			(3.04)	(–2.58)	(0.51)		
	4/79–3/96	CCR	0.85	–0.17	0.48	504	3.4
			(3.29)	(–2.88)	(0.67)		
Volatility	4/84–3/96	ICRGC	1.91	–0.38	–0.05	431	16.4
			(5.55)	(–4.87)	(–0.22)		
	4/94–3/96	CCR	1.03	–0.19	–0.67	431	21.3
			(7.23)	(–5.63)	(–1.94)		
	4/79–3/96	CCR	1.03	–0.19	–0.68	504	22.3
			(7.39)	(–5.78)	(–2.07)		
Correlation	4/84–3/96	ICRGC	–4.14	1.06	0.12	431	32.3
			(–11.94)	(13.17)	(0.38)		
	4/84–3/96	CCR	–1.54	0.47	0.50	431	32.7
			(–11.05)	(14.16)	(1.55)		
	4/79–3/96	CCR	–1.53	0.47	0.61	504	31.5
			(–11.24)	(14.52)	(1.91)		

Notes: Annual observations: April 1979–March 1996 or April 1984–March 1996. Sample: 49 countries (MSCI, IFC). Returns are unhedged U.S. dollar total returns in excess of one-year U.S. government bond return. Correlations are with the MSCI All Country (AC) World Index (World Index before 1988). All *t*-statistics (in parentheses) use a heteroscedasticity-consistent (White 1980) covariance matrix. Sample excludes first three years of emerging market returns.

[a]Measures change over measured period.

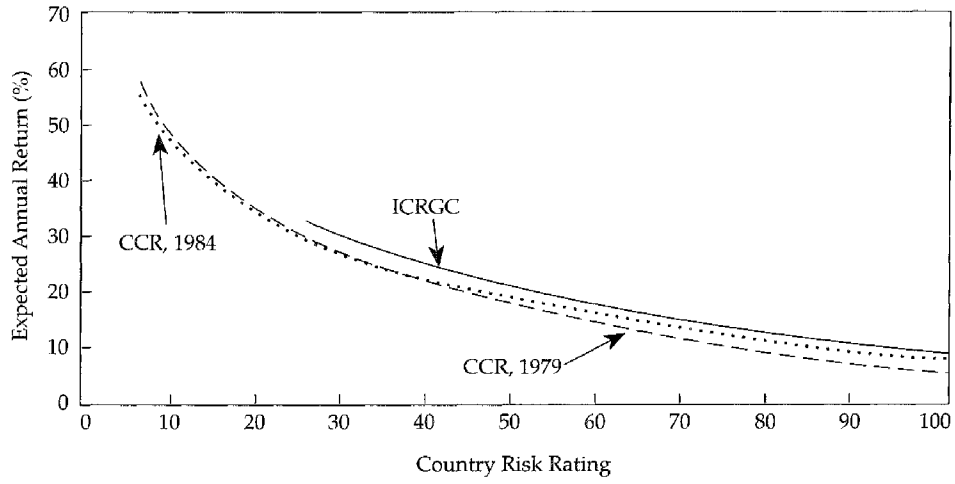
the models are in relative agreement for observations with high country risk ratings, the correlations diverge for low country risk ratings.

Figures 16 and 17 indicate that national market volatilities decrease and correlations increase as country risk declines.

Country Risk Measures and Bonds. The results for the fixed-income markets are less conclusive than those for the equity markets, even though the structural form of the fixed-income regressions was the same as the form used in the equity case. The relationship between country risk and fixed-income returns is best measured across as wide a span of country risk as possible, so the limited data set made achieving stable solutions difficult. The estimation procedures for fixed income were the same as used for equities except that the target variable was real local bond returns.

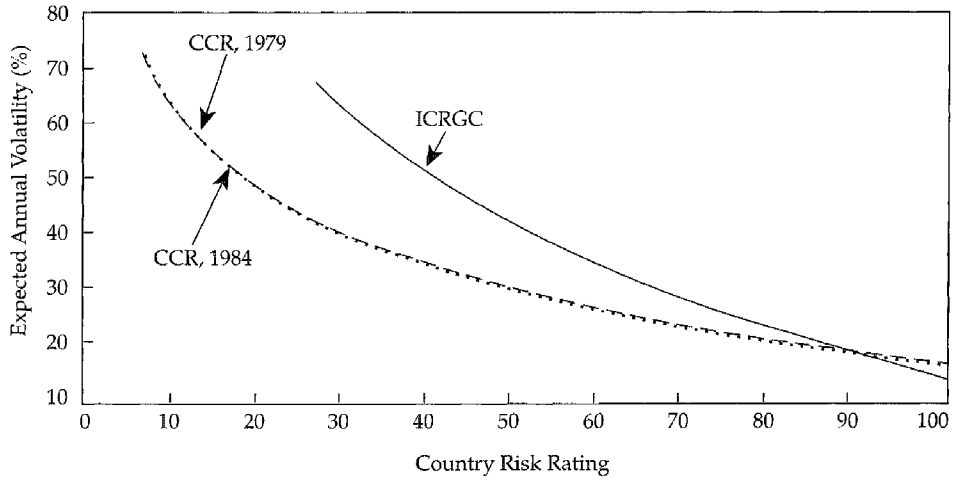
We examined two data sets. The first uses Salomon Brothers Government

Figure 15. Equity Returns: Expected Return Predictions



Notes: U.S. dollar equity excess returns. See Table 11 for model details.

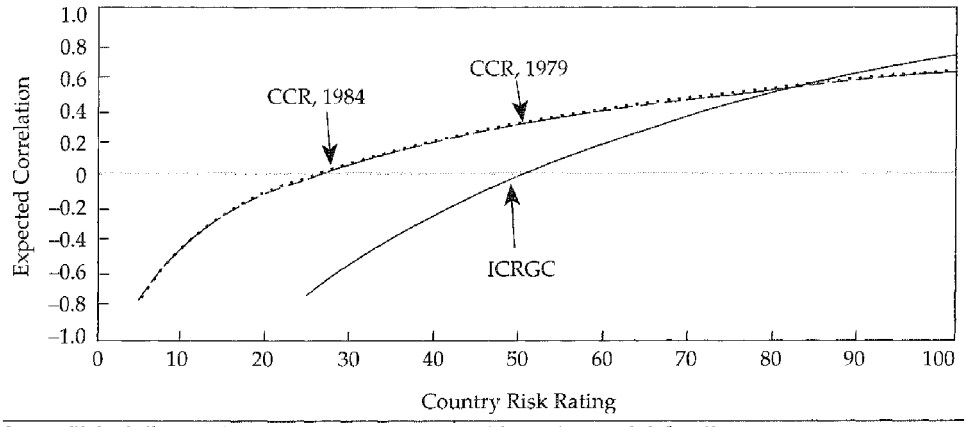
Figure 16. Equity Returns: Expected Volatility Predictions



Notes: U.S. dollar equity excess returns. See Table 11 for model details.

Bond indexes with five- to seven-year maturities. This set contains only 15 developed countries, all of which rated as having low country risk, which provided a clean, homogeneous sample. The other data set consists of the all-

Figure 17. Equity Returns: Expected Correlation Predictions



Notes: U.S. dollar equity excess returns. See Table 11 for model details.

market returns from 28 countries covered by Salomon Brothers, which includes Brady bond returns for the emerging markets. The results from the regressions are in Table 12.

The fitted expected real local bond returns are presented in Figure 18. The developed country and all-country models differ in their estimates for low-rating (high-risk) countries. The expected returns for the high-rating (low-risk) countries, however, are similar. The expected real local bond returns range from 4 percent to 44 percent.

As with returns, the fitted bond-market volatilities for the low-rating range depended on the sample of countries, as Figure 19 shows. The all-market sample, which includes Brady bond returns, shows much higher estimates of volatility at lower country-risk ratings. The developed market sample, because it was estimated for a smaller range of risk ratings, shows lower volatility estimates than the all-market sample. Similar patterns are seen in the correlation results, presented in Figure 20. The relationship is generally positive, and expected correlations with the world market portfolio are relatively high at the high-rating (low-risk) levels and near zero at the low-rating (high-risk) levels.

The results for the equity and fixed-income samples given in Tables 11 and 12 are summarized in Table 13 The only inconsistency is the negative sign for changes in the level of country risk for the fixed-income samples.

Returns to Country Risk: Linear or Nonlinear? In standard asset-pricing models, expected returns are a linear function of a risk factor or multiple factors, but the relationship between returns and risk factors may be

Table 12. Estimating Fixed-Income Returns, Volatilities, and Correlations

Regression	Sample	Intercept	Log CCR	Change in CCR[a]	Number of Observations	Adjusted R^2
Total return	Developed	0.84	–0.17	–0.51	129	4.7%
		(2.29)	(–2.11)	(–1.40)		
	All	0.63	–0.13	–0.18	170	12.6
		(2.96)	(–2.63)	(–0.38)		
Volatility	Developed	0.35	–0.07	–0.21	129	14.1
		(4.92)	(–4.18)	(–2.58)		
	All	0.60	–0.12	–0.20	170	65.8
		(9.18)	(–8.38)	(–1.38)		
Correlation	Developed	–4.11	1.06	3.66	129	20.0
		(–3.97)	(4.57)	(1.95)		
	All	–0.75	0.30	0.08	170	15.4
		(–3.66)	(6.39)	(0.14)		

Notes: Annual observations: April 1985–March 1996. Developed country sample: 15 countries with five- to seven-year return indexes from Salomon Brothers. All-country sample: 28 countries in all-country return index (includes Salomon Brothers Brady Bond indexes). Real local returns (in excess of domestic CPI). Correlations are with the Salomon Brothers World Government Bond Index. All *t*-statistics (in parentheses) use a heteroscedasticity-consistent (White 1980) covariance matrix.

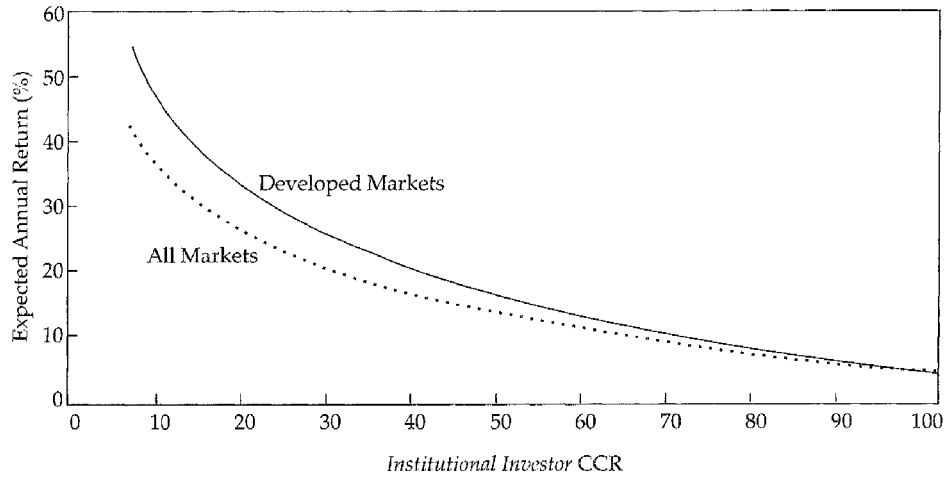
[a]Measures contemporaneous change.

nonlinear. When we estimated expected returns based on country risk attributes, we used the natural log of the risk attribute as one of the dependent variables in the various models, although the fit of the model is similar if the level of the risk attribute (rather than the natural log) is used. We used the natural log because we think that a percentage movement in the risk rating is a more relevant measure than the absolute movement. That is, a change in the risk attribute from 30 to 31 is more important than a relative movement from 90 to 91, which would produce a nonlinear payoff to risk, as Figure 21 shows.

Applying Risk Ratings to Developing Countries

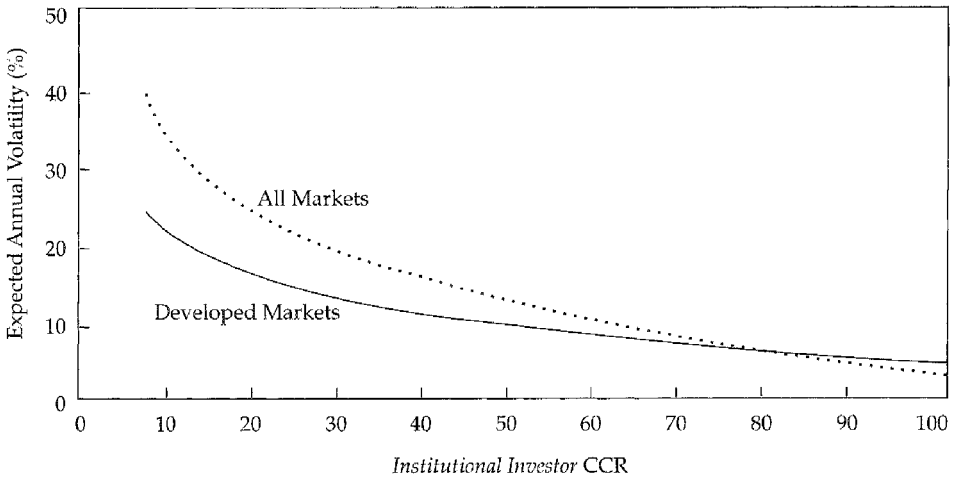
One of the most important developments in global investing since 1980 is the emergence of numerous stock markets. Goetzmann and Jorion (1996) and others have shown that those markets that have "officially" emerged have provided high average returns since 1980.

Figure 18. Bond Returns: Expected Return Predictions



Notes: Real local bond returns. See Table 12 for model details.

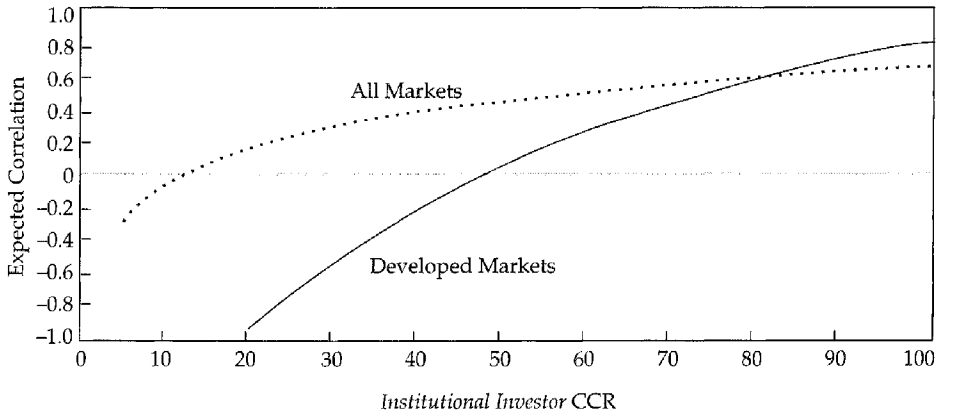
Figure 19. Bond Returns: Expected Volatility Predictions



Notes: Real local bond returns. See Table 12 for model details.

With the passage of time and as countries develop, however, the definition of "emerging market" becomes more and more difficult. Many countries that have been categorized as emerging are by some country risk measures less risky than some developed markets. At the other end of the spectrum are the

Figure 20. Bond Returns: Expected Correlation Predictions



Notes: Real local bond returns. See Table 12 for model details.

countries progressing from pre-emerging into the realm of recognized emerging markets.[16]

Country risk measures can help analysts understand the circumstances in which markets emerge and furnish clues as to which countries might emerge in the future. Because no single definition of emergence exists, we use in this section the year in which a country entered the IFC's EMDB. Figure 22 shows the median *Institutional Investor* CCR for four categories of countries. (The figure begins with 1980 because the IFC EMDB did not exist until 1979; the IFC countries are thus all in the "emergent" column for 1980.) The first category is those countries followed by MSCI in its database of developed countries. The second category is those countries already in the IFC database at a particular time. The third category is those countries that emerged at the end of each year; note that this bar does not exist for years in which no countries emerged. The last category is all other countries rated by *Institutional Investor* but not tracked by MSCI or the IFC. This diverse group of countries includes some developed countries that are too small to warrant equity market coverage and the oil-rich countries, but most of the group members are the developing countries.

In three of the seven years in which countries emerged, the new countries had higher-than-median ratings. In the other four years, the median emerging country rating is not very different from the ratings of the existing countries. The 1996 observation, with the new countries (Egypt, Morocco, and Russia)

[16] For further discussion of the role of emerging markets in global portfolios, see our previous work and Barry, Peavy, and Rodriguez (1997).

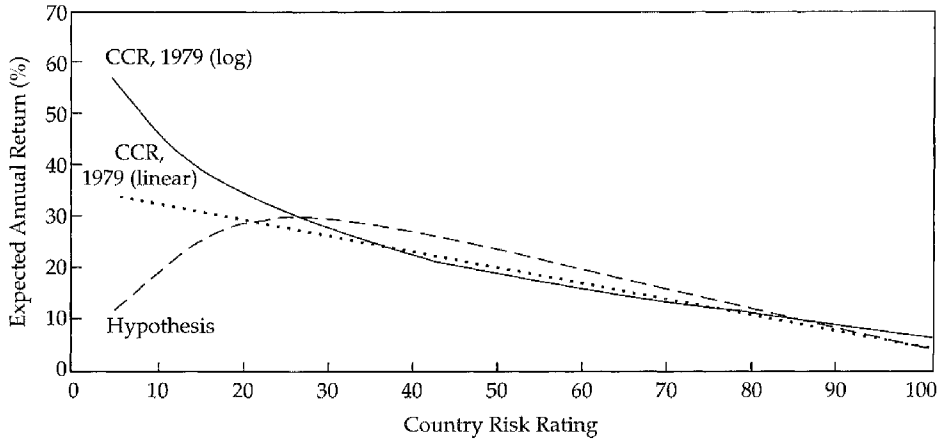
Table 13. Summary of Empirical Findings

	Level of Country Rating			Increase in Country Rating		
		Effect on:			Effect on:	
Measure	Expected Relationship	Equity	Fixed Income	Expected Relationship	Equity	Fixed Income
Return	Negative	–	–	Positive	+	–
Volatility	Negative	–	–	Negative	–	–
Correlation	Positive	+	+	Positive	+	+

having relatively low ratings, seems to be an outlier. This limited evidence suggests that countries that emerge have risk ratings comparable to the already existing IFC countries.

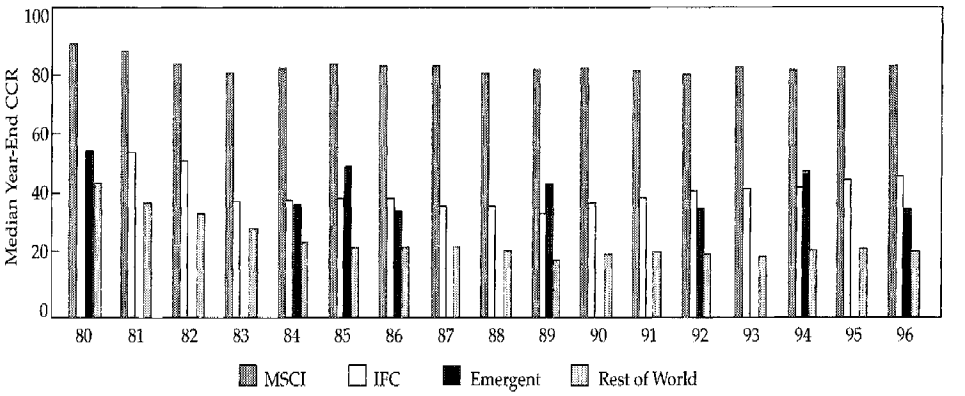
Some countries that are not yet covered by the IFC, including the 14 newly designated "frontier" markets (those that are not in any official index but are in the IFC universe), might "emerge" in the future with risk ratings comparable to pre-existing IFC countries. Such countries were listed in Exhibit 1. The following "developing countries" are not resource rich and have *Institutional Investor* Country Credit Ratings that are lower than the rest of the world, but their ratings have increased (that is, their riskiness has decreased) in the past three years: Barbados, Costa Rica, Croatia, Estonia, Lebanon, Panama, Paraguay, Romania, Seychelles, Swaziland, Uruguay, and Vietnam. Markets in these countries may never "emerge" because of their small size or because they cannot continue positive development. Continuing improvements in their credit ratings, however, may increase the possibility that they will develop sustainable equity markets.

Figure 21. Expected Return Models: U.S. Dollar Equity Excess Returns



Note: Hypothesis assumes nonmonotonic payoff to country risk.

Figure 22. *Institutional Investor* Country Risk Ratings around Emergence, 1980–96



Notes: MSCI and IFC = countries already in respective databases. Emergent = countries entering IFC Global Index database. Rest of World = countries rated by *Institutional Investor* but not in IFC or MSCI.

The fitted models described earlier in the monograph contained observations drawn primarily from developed countries, with low risk. When we included those developing countries that have reached some recognizable threshold, the sample was skewed to some degree toward generally "successful" countries. Assuming that newly recognized emerging markets enter the arena with risk ratings that are comparable to those of existing IFC countries is not much help in trying to estimate the payoff to risk when a rating is very low (risk is very high). Indeed, in that case, we are extrapolating the fitted values into an area of very sparse data.

When the risk rating is very low, expected returns are very high. The reason could be impressive opportunities in the country, or the reason could be a lack of opportunities. How can the investor judge? The following comment by Black (1995) on political stability, for which one could substitute other types of risk, highlights the issues involved in the relationship between risk and expected return:

> Investing in political stability is delicate, because either too little or too much stability can reduce expected return and growth.
>
> With too little political stability, we may see riot, revolution, and government or private theft of property, which means little incentive to save or invest, and a significant chance of losing the principal of any investment we make. With too much political stability, we may see debilitating tax-and-transfer

> schemes, plus a large government sector, which guarantees that we will lose a fraction of the return on any investment we make, especially if it succeeds.
>
> In my view, the government's most important role is finding the right level (and the right form) of political stability. (p. 114)

The model that we have fitted assumes that the payoff to country risk is independent of the level of country risk; that is, the reward for taking on an extra unit of country risk is the same no matter what the level of the risk. Black's quote implies that this assumption may not be the only approach.

Implications for Portfolio Management

The evidence we have presented so far suggests a link between country risk and expected returns—perhaps partly as a result of the link between country risk ratings and the many variables thought to affect asset prices. In the following sections, we explore some evidence that taking on country risk provides a payoff in portfolio simulations.

Country Risk and Fundamental Analysis

Because risk is multifaceted, it is not surprising that commonly used measures of risk are related to macroeconomic and financial market fundamentals. Examining some of these relationships in detail will help explain the link between country risk and expected return in a global setting.

Inflation. Inflation plays a key role in most country risk assessments. Indeed, we have found that country risk is highly correlated with inflation in a cross-section of countries. Expected inflation affects interest rates directly and thus plays an important role in asset-pricing theory.

As explained in Chan (1994), interest rates incorporate the expected level of inflation and the covariability of inflation risk with future consumption. This relationship is a potential reason for the relationship between country risk and expected returns. Country risk measures may be noisy proxies for the "true" fundamental relationship between expected inflation and expected asset returns.

The cross-sectional evidence indicates that high inflation is a negative attribute for an economy. Inflation measures discriminate between high-expected-return and low-expected-return countries. In a cross-sectional analysis, we found that portfolios formed on the basis of inflation achieve higher U.S. dollar returns in high-inflation countries. The magnitude of the return spreads are on a par with those of country risk measures. Ferson and Harvey (1993) explain that high inflation means risk for investors, who demand higher expected rates of return in the face of such expected inflation.

Demographics. Country risk is also related to certain long-term factors, such as demographics. Barro (1996a) found demographic variables that proxy human capital to be positively related to conditional economic growth.

Bakshi and Chen (1994), examining the role of demographics and expected equity market returns in the United States, found that as the population ages, investors require higher expected returns.

When we extended the Bakshi and Chen study to world equity markets, we found that the more rapidly aging countries experienced higher average returns. We also found that the rate of population aging is closely related to commonly used country risk variables. That is, countries that are aging rapidly are viewed as riskier, on average, than other countries. A particularly interesting aspect of this research is that estimates of population growth and population composition are available for long horizons. So, demographic data give investors a means of estimating long-term equity risk premiums.

Financial Ratios. Only a handful of market-derived measures are consistently available for countries. In fixed-income markets, a useful measure is real yield. Real yields are correlated with various country risk measures. In the equity area, valuation ratios such as book-to-price ratio (B/P), earnings-to-price ratio (E/P), and dividend yield (D/P) are the most prominent cross-sectional attributes. We have found that various country risk measures help explain the cross-section of valuation ratios.

These findings are consistent with evidence from the U.S. markets. Researchers have found that perceptions of company quality are negatively correlated with those factors that have been shown to predict financial market performance. Clarke and Statman (1994) found that common measures of quality, such as *Fortune*'s Overall Quality and Quality of Management Scores, are positively related to success and size and are negatively related to B/Ps, earnings variability, financial leverage, price volatility, and yield. Shefrin and Statman (1995), placing these findings in the context of the three-factor model of Fama and French (1992) (which relates equity returns to three risk measures—B/P, market capitalization, and beta) showed that the most admired companies are large companies with low B/Ps. If the analogy between common perceptions of quality and risk is a valid one, findings in a global context should be similar.

As with the inflation link to country risk measures, a link exists between fundamental factors in asset pricing and country risk measures. This relationship helps bring together explicit measures of risk (country risk ratings) and implicit measures of risk (financial ratios).

In the U.S. market, He and Ng (1994) found that a book-to-market (B/M) factor is priced even in a Chen, Roll, and Ross (1986) multifactor (arbitrage pricing theory) model. They found that B/M and size are related to relative distress. So, our finding that country risk ratings are correlated with both size and B/M should not be surprising. This correlation provides a clue to the

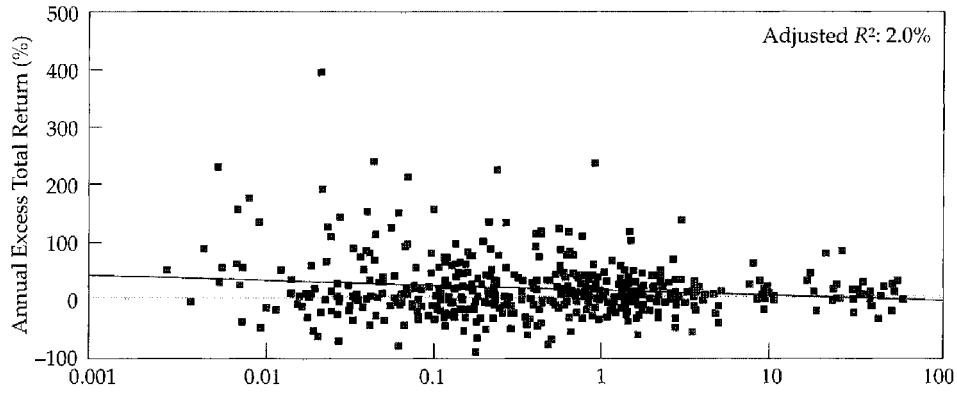
nature of the underlying pricing function. Country risk measures may simply be proxies for exposure to global risk factors that are already priced.

Size Effect. One commonly used cross-sectional variable in domestic asset pricing is size, or market capitalization. The use of size, and size-related variables, can also be justified in a global framework. We have already established a link between a country's state of economic development and expected returns in the country's markets. Because size is, in general, negatively related to economic development, size and expected returns should be related.

Previous research found a positive payoff to size as measured by the market capitalization of a country's market. Keppler and Traub (1993) demonstrated this payoff in the developed markets, and Bekaert et al. (1997) demonstrated the payoff in the emerging markets. Figure 23 shows the relationship between annual U.S. dollar returns and a country's share of world market capitalization for 48 countries. Note the negative, albeit weak, relationship in the time-series cross-sectional data. The figure shows market share and size to be somewhat correlated, so size could be a risk factor. To track the underlying economic fundamentals more closely than is shown in Figure 23, an analyst would need to examine such ratios as market capitalization per capita or market capitalization to GDP.

Table 9 showed that some country risk ratings are also positively related to population size. That is, larger countries have, on average, higher ratings

Figure 23. Market Size and Return Correlation: Size as a Possible Risk Factor, March 1980–March 1996



Notes: Annual observations. Unhedged U.S. dollar returns in excess of U.S. Treasury bill return. Data from MSCI and IFCC; first three annual IFC observations eliminated.

(lower risk). Therefore, investors can expect lower returns in the larger countries.

Country Risk and Holding-Period Returns

Much of the focus so far has been on the relationship between country risk and long-term (about 16-year) expected returns. Risk, in this context, is a long-term measure. If country risk ratings help in estimating long-term equity and fixed-income return expectations, then it stands to reason they may be useful in shorter-horizon portfolio management. To consider the usefulness of country risk ratings for portfolio management, however, some investigation is needed of whether risk and expected returns are related over short horizons. For example, can investors use risk ratings to effectively sort countries into different expected return "buckets" for short-term equity and fixed-income portfolio construction and management?

Equities. For long periods, sorting countries into portfolios based on *Institutional Investor*'s CCR distinguishes between high-expected-return and low-expected-return countries. We showed the results in Figure 9 for a 16-year period. In some subperiods, however, such as the early 1980s, no relationship apparently existed between risk rating and expected returns. During the 1980s, many emerging markets—Argentina and Brazil, for example—experienced large declines in risk ratings but expected returns did not rise. The spread between high-risk and low-risk tritiles was positive, but the payoff clearly fluctuated.[17] Using a regression format, we have found that risk-rating levels are related to expected returns both in the cross-section and through time but that the explanatory power of the risk ratings diminishes in the presence of valuation measures such as B/P.

Country risk measures are widely available for use in portfolio management, but they are not the only means for sorting countries based on risk. Bekaert et al. (1997) examined a number of country attributes for the emerging markets. They found that valuation measures, country risk measures, and proxies for the state of economic development are good indicators of relative expected returns. Variables such as a country's market capitalization to GDP or recent inflation are as useful as country risk ratings to sort high-expected-return from low-expected-return countries.

Table 14 reflects the use of all available countries rather than solely emerging markets and confirms the results of Bekaert et al. (1997). Focusing on the "All Markets" section, note that a number of factors in addition to the

[17] Finding out what drives this spread in returns through time is an interesting topic for future research.

Table 14. Risk-Level Portfolio Strategy: All, Developed, and Emerging Markets, July 1986–June 1996

Rating Source/ Risk Attribute	High Tritile					Low Tritile					Low Tritile – High Tritile		
	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Alpha
All Markets													
ICRGC	10.5%	10.6%	0.80	5.1%*	39%	25.6%	14.7%	0.35	23.3%**	50%	15.2%**	14.4%	18.2%***
ICRGP	8.8	9.7	0.76	3.7	35	25.3	14.8	0.35	23.0**	53	16.5**	13.3	19.3***
ICRGF	10.4	11.0	0.84	4.9	32	28.1	15.6	0.44	25.2**	52	17.6**	14.9	20.3***
ICRGE	10.4	12.1	0.85	4.7	68	26.5	15.7	0.38	24.0**	65	16.2**	14.9	19.3***
CCR	7.8	9.6	0.79	2.6	18	25.3	15.2	0.28	23.5**	41	17.5**	15.3	20.9***
EMCRR	7.3	9.5	0.77	2.1	26	27.6	15.6	0.31	25.5**	46	20.4**	15.0	23.4***
INFLATE	31.9	18.6	0.67	27.5**	68	12.0	9.8	0.70	7.3**	57	–20.0**	16.2	–20.2***
REALGDPPC	8.2	9.6	0.81	2.8	16	23.2	14.1	0.39	20.6**	35	15.0**	12.9	17.8***
OPENNESS	16.9	14.5	0.91	10.9**	25	17.3	13.4	0.60	13.3**	34	0.4	12.6	2.5
INV%GDP	8.3	10.8	0.81	2.9	26	22.5	13.1	0.34	20.2**	36	14.2**	12.9	17.3***
GOV%GDP	15.7	10.8	0.39	13.1**	30	18.7	14.3	0.90	12.7**	29	3.0	10.0	–0.4
MKCPGDP	10.9	11.3	0.90	5.0*	28	31.6	17.3	0.52	28.1**	54	20.6**	16.2	23.1***
POPGR	22.7	13.3	0.29	20.7**	36	12.0	13.8	0.97	5.5	24	–10.7*	13.7	–15.2***
AAGEGR	18.4	16.6	1.07	11.3**	29	13.0	10.0	0.50	9.7**	29	–5.4	14.1	–1.6
AVEAGE	9.0	11.1	0.80	3.7	17	21.2	13.2	0.26	19.4**	32	12.1**	13.5	15.7***
MKTCAP	8.1	10.7	0.87	2.3	24	28.8	17.2	0.52	25.3**	53	20.7**	16.4	23.0***
MKTCAPPC	11.7	10.7	0.86	6.0**	30	24.9	16.0	0.32	22.8**	49	13.2*	15.3	16.8**
BETA	13.1	10.7	0.79	7.8**	73	20.5	13.4	0.48	17.4**	68	7.5	13.1	9.5
VOLATILITY	23.4	14.8	0.52	20.0**	64	12.4	9.9	0.69	7.8**	45	–11.0*	13.4	–12.1**
MOM–3	22.9	18.5	0.76	17.9**	259	13.2	12.9	0.65	8.9*	284	–9.7	17.6	–9.0
MOM–12	23.8	17.6	0.67	19.3**	135	11.1	12.2	0.61	7.1	138	–12.6	17.6	–12.2
E/P	27.2	11.7	0.49	24.0**	101	8.0	12.3	0.80	2.7	75	–19.3**	10.7	–21.3***
B/P	26.8	11.8	0.45	23.9**	90	9.8	15.2	0.79	4.5	82	–17.0**	13.8	–19.3***
D/P	21.4	12.0	0.59	17.5**	67	16.7	15.8	0.85	11.0*	85	–4.8	12.3	–6.5

Table 14. (continued)

Rating Source/ Risk Attribute	High Tritile					Low Tritile					Low Tritile – High Tritile		
	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Alpha
Developed Markets													
ICRGC	7.7%	10.2%	0.80	2.3%	53%	10.1%	12.3%	0.91	4.0%	53%	2.5%	6.5%	1.8%
ICRGP	7.1	10.2	0.72	2.3	66	10.6	11.7	0.93	4.4	66	3.5	5.8	2.2
ICRGF	8.9	10.0	0.84	3.3	38	10.7	11.9	0.87	4.9	38	1.8	7.1	1.6
ICRGE	10.0	10.7	0.82	4.6	98	7.0	11.1	0.87	1.2	98	–3.1	7.5	–3.4
CCR	7.9	9.4	0.82	2.5	25	12.0	12.6	0.88	6.1	25	4.0	8.6	3.7
EMCRR	7.4	9.8	0.85	1.7	43	13.3	12.7	0.91	7.2*	43	5.9	8.1	5.5
INFLATE	7.6	11.6	0.91	1.6	80	10.9	10.5	0.81	5.5*	80	3.3	6.8	3.9
REALGDPPC	10.5	11.0	0.85	4.8	22	10.6	11.7	0.84	5.1	22	0.2	6.6	0.3
OPENNESS	12.5	12.2	0.81	7.1*	12	6.8	10.2	0.87	1.0	12	–5.7*	7.7	–6.1*
INV%GDP	7.8	12.1	1.04	0.8	20	12.2	10.8	0.83	6.7**	20	4.4*	5.7	5.8**
GOV%GDP	8.0	10.7	0.75	3.0	19	11.2	11.1	0.90	5.1*	19	3.2	7.6	2.2
MKCPGDP	11.0	11.8	1.02	4.2*	42	8.6	10.7	0.59	4.6	42	–2.4	9.7	0.4
POPGR	11.5	11.5	0.86	5.8*	21	6.2	9.0	0.65	1.9	21	–5.3	8.7	–4.0
AAGEGR	10.3	12.3	1.04	3.4	20	8.3	10.3	0.74	3.4	20	–2.0	6.8	0
AVEAGE	8.6	9.7	0.62	4.5	13	11.3	12.6	0.91	5.2	13	2.7	9.7	0.8
MKTCAP	6.9	9.6	0.86	1.2	30	9.8	11.0	0.68	5.2	30	2.8	8.0	4.0
MKTCAPPC	12.7	11.6	0.98	6.2**	35	7.0	11.1	0.63	2.8	35	–5.7	9.7	–3.4
BETA	10.4	9.7	0.77	5.3**	69	11.1	12.4	0.83	5.5	69	0.6	8.7	0.2
VOLATILITY	9.5	10.7	0.68	5.0	61	9.2	10.0	0.81	3.8	61	–0.3	8.0	–1.2
MOM–3	8.2	11.0	0.69	3.6	277	8.6	10.2	0.86	2.9	277	0.4	7.5	–0.7
MOM–12	13.2	12.7	0.84	7.6*	129	6.1	10.8	0.87	0.3	129	–7.1	9.9	–7.3
E/P	13.0	10.7	0.84	7.4**	61	7.4	10.9	0.83	1.9	61	–5.6*	7.4	–5.5*
B/P	9.9	10.3	0.82	4.5*	85	5.5	11.5	0.84	–0.1	85	–4.4	7.4	–4.5
D/P	13.0	10.8	0.85	7.3**	50	7.2	10.9	0.78	2.0	50	–5.8	8.0	–5.3

Table 14. (continued)

Rating Source/ Risk Attribute	High Tritile					Low Tritile					Low Tritile – High Tritile		
	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Alpha
Emerging Markets													
ICRGC	26.4%	22.5%	1.07	19.3%**	53%	23.6%	19.1%	0.0	23.6%**	64%	-2.8%	25.4%	4.3%
ICRGP	25.2	23.9	1.17	17.4*	72	18.5	14.6	-0.03	18.7**	53	-6.7	24.6	1.3
ICRGF	20.7	21.7	0.87	14.9	52	25.6	18.1	0.14	24.6**	73	4.9	25.0	9.8
ICRGE	22.5	21.4	1.06	15.4*	62	29.3	21.1	0.54	25.8**	77	6.9	20.1	10.3
CCR	22.5	21.1	1.01	15.8*	34	30.0	20.2	0.57	26.2**	44	7.5	21.8	10.4
EMCRR	22.1	21.1	1.01	15.4*	41	34.3	21.0	0.59	30.4**	59	12.2	24.1	15.0
INFLATE	43.6	25.6	0.63	39.4**	68	14.5	14.5	0.60	10.4*	58	-29.2**	22.5	-29.0***
REALGDPPC	30.3	27.1	1.03	23.5**	36	17.7	13.2	0.08	17.1**	31	-12.6	26.3	-6.3
OPENNESS	22.3	19.2	0.99	15.7**	36	26.1	21.7	0.32	24.0**	42	3.8	22.5	8.3
INV%GDP	24.8	21.7	0.88	18.9**	40	20.9	16.8	0.03	20.7**	41	-3.9	27.5	1.8
GOV%GDP	14.7	13.1	0.22	13.2**	33	36.0	22.2	0.84	30.4**	49	21.3**	18.4	17.2**
MKCPGDP	14.8	21.3	0.78	9.6	45	41.0	22.1	0.09	40.4**	85	26.2**	28.2	30.8**
POPGR	18.7	13.5	0.04	18.4**	33	30.1	23.7	1.06	23.0**	42	11.4	25.2	4.6
AAGEGR	29.6	23.3	1.18	21.8**	36	15.8	16.4	0.10	15.2**	33	-13.8	25.6	-6.6
AVEAGE	29.6	24.5	1.11	22.2**	41	20.1	14.8	0.53	16.5**	29	-9.5	21.6	-5.6
MKTCAP	17.4	19.8	0.91	11.3	49	34.6	19.4	0.10	34.0**	71	17.3	25.9	22.6**
MKTCAPPC	25.0	24.0	1.06	18.0*	51	16.2	18.2	0.22	14.7*	68	-8.8	27.0	-3.3
BETA	24.6	19.4	0.46	21.5**	82	18.5	18.3	0.44	15.6*	94	-6.1	25.2	-5.9
VOLATILITY	15.3	22.8	0.69	10.7	69	20.3	15.5	0.49	17.0**	67	5.0	24.8	6.3
MOM-3	35.6	27.1	0.77	30.5**	255	21.6	19.7	0.38	19.0**	280	-14.0	29.6	-11.4
MOM-12	31.3	28.1	0.57	27.5**	139	14.1	17.2	0.48	10.9	128	-17.2	32.0	-16.6
E/P	33.7	18.0	0.20	32.4**	108	13.3	20.4	0.85	7.6	97	-20.4**	22.5	-24.8**
B/P	40.4	19.1	0.34	38.2**	105	13.8	20.1	0.87	7.9	91	-26.7**	21.4	-30.2***
D/P	22.8	15.1	0.44	19.9**	85	20.5	23.8	1.04	13.6	104	-2.3	21.9	-6.3

Table 14. (continued)

Rating Source/ Risk Attribute	High Tritile					Low Tritile					Low Tritile – High Tritile		
	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Beta	MSCI AC World Alpha	Average Annual Turnover	Average Annual Return	Standard Deviation	MSCI AC World Alpha
MSCI AC World	6.7%	10.5%	1.00	0.0%									

Notes: Portfolios formed by sorting countries into three tritiles based on the level of the attribute; portfolios equally weighted by country and reformed quarterly. Data calculated from unhedged IFC Global and MSCI indexes in U.S. dollars. All returns in excess of 30 day U.S. Treasury bill.

INFLATE = annual consumer inflation (International Financial Statistics database).

REALGDPPC = real GDP per capita, from Summers and Heston (1994).

OPENNESS = openness, from Summers and Heston (1994).

INV%GDP = investment as percentage of GDP, from Summers and Heston (1994).

GOV%GDP = government as percentage of GDP, from Summers and Heston (1994).

MKCPGDP = market capitalization/GDP.

POPGR = annual growth in population (U.N. data).

AAGEGR = annual growth in average age of population (U.N. data).

AVEAGE = average age of population (U.N. data).

MKTCAP = market capitalization.

MKTCAPPC = market capitalization per capita.

BETA = beta with MSCI AC World Index (36 months trailing).

VOLATILITY = volatility (36 months trailing).

MOM–3 = trailing U.S. dollar total return (prior quarter).

MOM–12 = trailing U.S. dollar total return (prior year).

* = significant at the 10 percent level.
** = significant at the 5 percent level.
*** = significant at the 1 percent level.

country risk ratings have statistical power for this 10-year period. These results were obtained with equally weighted portfolios. Market capitalization, market capitalization to GDP, trailing inflation, real GDP per capita, volatility, and the valuation measures—all seem to explain significant return differences, and all with the correct signs.

In the case of the developed markets, the results are statistically significant in a few cases. For the emerging markets, a few of the variables—inflation, market capitalization, market cap to GDP, E/P, and B/P—continue to be statistically significant. These risk variables almost always show higher statistical power in the widest cross-section of countries. When the simulation was done using market capitalization weights (not shown), the statistical significance of the spread decreased almost across the board. The reason is the strong influence of market capitalization as a risk factor in the 1986–96 period.

Using macroeconomic information in a risk-estimation process has pros and cons. Macroeconomic factors such as inflation and GDP per capita are good proxies for country risk, but obtaining timely macroeconomic information for a large sample of countries is difficult. An analyst may be more comfortable with the data provided by risk-measurement services that publish the data on a more timely basis.

Fixed Income. The link between ratings and expected returns is most transparent in fixed-income markets, which provides managers the opportunity to add value through active bond management. In the United States, the positive relationship between corporate credit risk and expected returns is well documented (see, for example, Bennett, Esser, and Roth 1994). In a global context, we earlier found a strong statistical relationship between real yields and risk ratings. We also found limited evidence in a time-series cross-framework of a relationship between expected returns and ratings.

In previous studies, we developed fixed-income portfolio strategies in which countries were sorted by risk categories, including real yields. Even in a sample of exclusively developed countries, the risk ratings show some ability to discriminate between high-expected-return and low-expected-return countries. Fixed-income portfolios formed using country risk ratings such as the ICRG Composite rating outperformed portfolios based solely on real yields. In short, potential exists to add value to portfolios using risk-based information.

If sufficient high-quality emerging market data were available, the range of country risk among the developing countries would be much larger than found in our studies. As detailed earlier, the spread in country risk for the developed fixed-income markets is relatively small. So, accurately measuring the economic risk premium for country risk requires a combined developed and emerging market sample.

The role of currency is especially important in global fixed-income returns. If changes in real foreign exchange returns are not related to country risk with the same sign as expected returns, the changes can confound a trading strategy based on country risk. Of course, when hedged returns are considered, country risk provides no payoff.

Using Changes in Country Risk to Forecast Expected Returns

We have established that country risk and expected returns are related. Changes in the level of country risk should, therefore, be related to subsequent returns. Relatively little research has been done in this area, and the evidence from the U.S. market is somewhat mixed. Hand, Holthausen, and Leftwich (1992) and Goh and Ederington (1993) found that most of the information in credit-rating changes is already impounded in market prices. We present international evidence that markets are already pricing assets based on perceived country risk. The question for portfolio managers is whether changes in country risk ratings predict future abnormal returns.

Equities. We have found some evidence that changes in country risk are predictive of future equity market returns. A portfolio strategy of holding countries experiencing upgrades outperforms a strategy of holding countries experiencing downgrades. We also found that this strategy outperforms broad market benchmarks. The results for the emerging markets were particularly strong. Cross-sectional regressions of returns on changes in risk ratings confirmed the portfolio results.

Another way of examining this issue is through an event study. We examined the market-adjusted performance of a number of markets around ICRG upgrades and downgrades. We limited our examination to monthly data for ratings and returns. We tested each rating change and examined the individual monthly equity returns, in addition to the cumulative returns, around the change.[18] Table 15 shows the results using the ICRG Composite ratings for the developed markets, emerging markets, and all markets combined.

Leading up to changes in ratings, the markets moved higher, as expected. The effect of changes on the emerging markets was stronger than on the developed markets. In both cases, however, the subsequent returns were limited and not statistically significant. The results were strongest for the financial ratings and weakest for the economic ratings (not shown). The

[18] Future research could examine only those instances of large changes in ratings and their effect on returns.

Table 15. Effect of Changes in Risk Attributes on Subsequent Equity Returns

Sample Countries	Return Type	Sort	Number of Observations	Event Month −3	−2	−1	0	1	2	3	4	5	6
All	Monthly	Upgrade	1,486	0.7%	1.0%	1.1%	1.0%	0.7%	−0.1%	0.4%	0.1%	0.0%	0.2%
		Downgrade	1,333	−0.5	−0.7	−0.7	−0.7	−0.2	0.0	0.0	0.0	0.4	0.0
		Upgrade – Downgrade		1.2***	1.7***	1.9***	1.6***	0.8**	0.0	0.3	0.1	−0.4	0.1
All	Cumulative	Upgrade	1,486	0.7	1.7	2.8	3.8	4.5	4.4	4.7	4.8	4.9	5.1
		Downgrade	1,333	−0.5	−1.1	−1.9	−2.5	−2.7	−2.8	−2.7	−2.7	−2.3	−2.3
		Upgrade – Downgrade		1.2***	2.8***	4.7***	6.3***	7.2***	7.1***	7.4***	7.6***	7.2***	7.4***
Developed	Monthly	Upgrade	579	0.5	0.2	0.5	0.2	0.0	0.3	0.2	0.3	0.1	0.3
		Downgrade	655	0.0	−0.3	−0.6	0.2	0.4	−0.4	−0.2	0.0	0.0	−0.1
		Upgrade – Downgrade		0.6*	0.6*	1.1***	0.0	−0.4	0.7**	0.4	0.2	0.0	0.4
Developed	Cumulative	Upgrade	579	0.5	0.8	1.3	1.5	1.4	1.7	2.0	2.2	2.3	2.7
		Downgrade	655	0.0	−0.3	−0.9	−0.8	−0.4	−0.8	−0.9	−0.8	−0.7	−0.9
		Upgrade – Downgrade		0.6*	1.1**	2.2***	2.3***	1.8***	2.5***	2.9***	3.1***	3.1***	3.5***
Emerging	Monthly	Upgrade	907	0.8	1.5	1.6	1.4	1.2	−0.4	0.4	0.0	0.0	0.0
		Downgrade	666	−1.0	−1.0	−0.9	−1.4	−0.7	0.3	0.2	0.0	0.8	0.2
		Upgrade – Downgrade		1.7**	2.5***	2.5***	2.9***	1.8***	−0.7	0.2	0.1	−0.7	−0.1
Emerging	Cumulative	Upgrade	907	0.8	2.3	3.8	5.3	6.4	6.0	6.5	6.5	6.6	6.6
		Downgrade	678	−1.0	−1.9	−2.8	−4.3	−4.9	−4.6	−4.4	−4.5	−3.7	−3.5
		Upgrade – Downgrade		1.7**	4.2***	6.7***	9.5***	11.4***	10.7***	10.9***	11.0***	10.3***	10.1***

Notes: Monthly observations, rounded: January 1984–March 1996. Sample: 49 countries (MSCI, IFC). Risk attribute from ICRG Composite ratings. Excess returns are continuously compounded unhedged U.S. dollar returns in excess of MSCI World returns.

* = significant at the 10 percent level.
** = significant at the 5 percent level.
*** = significant at the 1 percent level.

markets seem to do a good job of discounting changes in ratings. As in the U.S. case, rating changes in non-U.S. markets apparently provide little significant new information.

Rating changes may be autocorrelated; therefore, investing in countries experiencing upgrades may garner future positive abnormal returns because of the tendency for rating changes to recur over time. Figure 24 shows that as the time horizon increases, the relationship between changes in country risk, as proxied by *Institutional Investor*'s CCR, and returns strengthens.

Fixed Income. Our previous research found that a portfolio strategy of holding those countries that have experienced country risk upgrades produces higher returns than the overall market return and higher returns than holding a similar portfolio of countries that have experienced downgrades. These results indicate that using changes in risk ratings for portfolio management may add some value. The strategy has relatively high turnover, however, and leads to nondiversified portfolios.

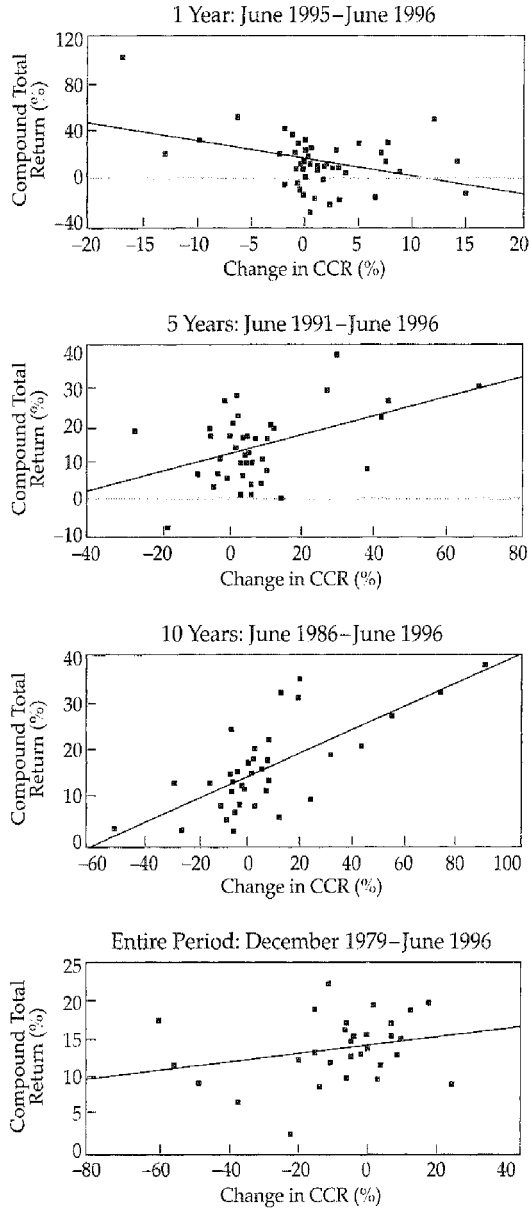
Cantor and Packer (1996) found that changes in country risk, as measured by S&P and Moody's sovereign credit ratings, are related to changes in sovereign yield spreads, adjusted by the appropriate U.S. yield. Upgrades led to lower spreads, and downgrades led to higher spreads. The results also indicated that the market impounds much of this information before the announced change (although less so in the case of emerging markets). The subsequent changes in spreads were found to be relatively small.

We applied the same methodology used in the equity case for the non-U.S. fixed-income markets. As in the case of the U.S. fixed-income arena, evidence that changes in ratings affect returns is limited. Table 16 provides some evidence that the majority of differential returns is captured prior to a change in the ICRG Financial rating for developed and emerging markets. The effect is short lived, however, and dissipates quickly after the ratings change. Other ratings (not shown) had even less statistical power.

Generating Abnormal Returns. One of the lessons of this monograph is that investment strategies that took on incremental risk in the periods examined were rewarded. Country risk ratings have value in effectively summarizing market perceptions of risk. Therefore, strategies that overweight the riskier countries, and those that are decreasing in risk, will, on average, outperform passive strategies. Country risk, however, like any other risk factor, is not rewarded in all periods. Any risk attribute will have periods in which it provides no compensation.

This monograph does not supply a recipe for tactical outperformance. Such performance requires insight into what future risk will be in relation to

Figure 24. Time Horizon and Country Risk: Change in *Institutional Investor* CCR and Returns



Note: Returns in U.S. dollars.
Sources: *Institutional Investor*; MSCI; IFC.

Table 16. Effect of Changes in Risk Attributes on Subsequent Fixed-Income Returns

Sample Countries	Return Type	Sort	Number of Observations	Event Month									
				–3	–2	–1	0	1	2	3	4	5	6
All	Monthly	Upgrade	83	1.1%	0.7%	0.5%	0.8%	0.8%	0.0%	0.4%	0.7%	–0.3%	0.0%
		Downgrade	69	–0.7	–0.3	–0.8	1.0	0.3	0.2	1.6	1.0	0.4	0.3
		Upgrade – Downgrade		1.9***	1.1	1.3**	–0.2	0.5	–0.2	–1.2	–0.3	–0.7	–0.3
All	Cumulative	Upgrade	83	1.1	1.9	2.3	3.2	4.0	3.9	4.4	5.1	4.7	4.7
		Downgrade	69	–0.7	–1.1	–1.9	–0.8	–0.6	–0.4	1.2	2.1	2.5	2.8
		Upgrade – Downgrade		1.9***	2.9***	4.2***	4.0***	4.5***	4.3***	3.2*	2.9	2.2	1.9
Developed	Monthly	Upgrade	48	0.3	0.2	0.4	0.6	0.0	0.0	0.1	0.6	–0.1	0.1
		Downgrade	40	0.0	0.1	–0.8	0.2	0.2	0.3	0.2	0.4	0.3	0.1
		Upgrade – Downgrade		0.4	0.0	1.2***	0.4	–0.2	–0.4	0.0	0.2	–0.4	0.0
Developed	Cumulative	Upgrade	48	0.3	0.5	0.9	1.5	1.5	1.5	1.6	2.2	2.0	2.2
		Downgrade	40	0.0	0.0	–0.7	–0.5	–0.3	0.0	0.3	0.7	1.0	1.1
		Upgrade – Downgrade		0.4	0.4	1.6**	2.1***	1.8**	1.4	1.4	1.5	1.1	1.1
Emerging	Monthly	Upgrade	36	2.3	1.6	0.7	1.0	1.8	–0.2	0.6	0.9	–0.5	–0.3
		Downgrade	29	–1.7	–1.0	–0.9	2.2	0.3	0.0	3.5	1.7	0.5	0.5
		Upgrade – Downgrade		3.9***	2.6*	1.6	–1.2	1.5	–0.2	–2.9	–0.9	–1.0	–0.7
Emerging	Cumulative	Upgrade	36	2.3	3.9	4.6	5.6	7.5	7.3	7.9	8.8	8.2	8.0
		Downgrade	29	–1.7	–2.6	–3.5	–1.3	–1.0	–1.0	2.4	4.2	4.7	5.1
		Upgrade – Downgrade		3.9***	6.5***	8.1***	6.9**	8.5**	8.3**	5.4	4.6	3.6	2.8

Notes: Monthly observations, rounded: January 1985–June 1996. Risk attribute from ICRG Financial rating. Sample: 27 countries (Salomon World Government Bond and Brady Bond indexes). Excess returns are continuously compounded real local returns in excess of Salomon World Government Bond and Brady Bond indexes.

* = significant at the 10 percent level.
** = significant at the 5 percent level.
*** = significant at the 1 percent level.

current levels of risk. Some firms, such as Political Risk Services and the Economist Intelligence Unit, do provide risk projections, however, and being able to predict future risk levels could lead to powerful portfolio strategies.[19]

Other Portfolio Management Applications

The framework we have developed for relating country risk and expected return is flexible and powerful. It has uses in solving a variety of problems commonly faced by global investment managers.

Currency Hedging as a Strategic Policy. One of the problems with trying to capture the returns from a global investment strategy is the inherent volatility of currency returns. One way of dealing with this problem, which plays a far greater role in fixed-income returns than in equity returns, is to hedge the currency risk away. The framework we introduced allows examination of global risk premiums, which will provide some insight into the currency hedging question.

The impact of currency volatility on bond returns was illustrated for a U.S. investor in Rows 7, 9, and 10 of Table 10. This investor has the choice of investing in domestic bonds, unhedged foreign bonds, or hedged foreign bonds. By investing in unhedged foreign bonds, the investor can access the foreign country risk premium, the foreign term premium, and the real foreign exchange return. If the investor decides to hedge, the risk, as well as the premium, of the real foreign exchange returns is eliminated and the investor simply earns the domestic risk premium because of the forward foreign exchange return. With covered interest rate parity, the forward foreign exchange price is defined by the relative interest rates of the country pair. Therefore, to hedge any sort of foreign exposure, an investor must give up the foreign country risk premium and receive the domestic country risk premium. For an investor in a relatively low-risk country, such as the United States, hedging nullifies the potential expected gains from taking on foreign risk.

Note, however, that if the foreign term premium is significantly higher than the domestic term premium, investing in hedged foreign bonds might make sense. When investing in a higher-risk country than one's home country, holding unhedged bonds reduces risk—and lowers expected return. Hedging back into the domestic currency in this case could actually enhance long-term expected returns.

[19] An interesting research topic would be the accuracy of published projections and their value in tactical country selection.

Portfolio Risk Control and Country Risk Measures. Country risk can play a role in strategic portfolio applications. The emerging versus developed country allocation can be viewed within a country risk framework. For example, because some emerging countries (e.g., Taiwan, South Korea, and Malaysia) have risk ratings that are the same as some of the developed markets, investors should view country risk and development along a continuum.

One can use risk ratings to measure and control both strategic and tactical risk. From a strategic viewpoint, the investor can allocate assets according to different levels of risk. For example, assume a fund wants to overweight emerging markets. If the fund uses a capitalization-weighted emerging markets index, it will be implicitly overweighting the least risky assets. This approach may reduce the expected return enhancement the fund was seeking by going into emerging markets in the first place. On the tactical level, many quantitative models used for tactical management serve up expected returns that imply significant deviations from a benchmark. Perhaps an investor using such a model would be well advised to measure not only the relative risk of the portfolio—that is, the tracking error—but also the absolute risk embodied in country risk ratings.

International investments are often sold on the basis of their diversification benefits. For example, Solnik, Boucrelle, and Le Fur (1996) found that for the G–7 countries (Canada, Italy, France, Germany, Japan, the United Kingdom, and the United States), the benefits of international diversification are greatly reduced during recessions and bear markets. The greater a country's economic and financial integration with the world, the higher its return correlation with the world. Therefore, as shown by Speidell and Sappenfeld (1992) and others, less-integrated countries, such as those in emerging market indexes, are generally good diversifiers. We showed in earlier work, however, that a portfolio of countries that are riskier than an emerging market index, as measured by country credit ratings, has an even lower correlation with the world and provides potentially better portfolio diversification.

Conclusions

A whole host of factors—global, national, sectoral, and currency—affect the returns to a global portfolio. In the first section of this monograph, we reported that country effects remain the key source of active investment performance. In addition, we argued that existing financial theory fails to provide a useful framework for evaluating risk in many global markets.

In the second section, we noted that common measures of country risk have strong foundations in economic theory, and we showed that country risk is related to expected returns and to country economic growth. We used the framework of the theory of conditional convergence to show the link between country risk and a common set of fundamental economic factors.

In the third section, we examined a host of publicly available risk measures and found that they summarize country risk. These measures have other attractive features for practitioner use: They are *ex ante* measures of risk, are publicly available, are comprehensive in scope, and in many cases, pick up the market's consensus view of risk for a large number of countries.

We presented findings in the next section that the consensus risk measures help explain expected returns, volatilities, and correlations in more than 130 countries. Our studies found that expected returns and volatilities are positively correlated with country risk, whereas the expected correlations with the world market portfolio are negatively correlated with risk.

Although country risk measures effectively summarize risk, investors cannot necessarily use them to gain abnormal profits. In the final section of this monograph, we showed that the equity and fixed-income markets quickly impound changes in risk. However, measures of country risk have practical applications in implementing global portfolio strategies, in risk control, and in enhancing understanding of the sources of returns.

We hope this monograph will aid analysts and researchers now and in the future as they tackle the topic of risk and expected return in the global financial markets. We have shown that measures of country risk proxy for the "true" economic factors underlying asset pricing. But global asset pricing, and its role in investment management, remains a dynamic and fruitful area for future research. Better analytical tools and more data will decide some of the unanswered questions raised in this monograph.

Appendix: Country Risk Ratings Used in the Monograph

Numerous country risk measurement services are available; Tables 5–8 describe in detail the factors used by a wide range of these service providers. In this monograph, we focus on several services; for them, we provide additional details. For example, Table 3 contains the ratings assigned by this handful of services to a large number of countries, and Table 4 shows the rank correlations of these measures.

The best-known ratings are the sovereign debt ratings of Moody's Investors Service and Standard and Poor's Corporation. These ratings are analogous to the better-known corporate debt ratings in the United States. In the case of sovereign debt, the ratings providers are measuring the creditworthiness of governments rather than of individual companies. Both services take into account numerous economic and political factors. Although the ratings are intended for use in the debt markets, we have adopted these sovereign ratings as general measures of country risk.

Two other services we relied on for this monograph, both published by well-known financial magazines, are *Institutional Investor*'s Country Credit Ratings and *Euromoney*'s Country Risk Ratings. These ratings are produced semiannually in March and September and cover more than 100 countries. The scales are from 0 to 100, with 100 the most creditworthy and 0 the least creditworthy. The two services are highly correlated, but they do use different methodologies. Table 5 shows the risk factors most cited by banks in *Institutional Investor*'s survey-based methodology. Table 6 highlights the factors currently used by *Euromoney*, which are a mix of quantitative economic and debt market factors and a survey-based political risk factor.

We also used country risk measurements produced by Political Risk Services under the *International Country Risk Guide* name. The ICRG provides four risk indexes: Political, Financial, and Economic indexes and a Composite Index of the first three. The Composite and Political ratings range from 0 to 100; the Economic and Financial ratings range from 0 to 50. The Political rating is double the weight of either the Economic or Financial rating. The ratings are composed of quantitative and qualitative factors noted in Tables 7 and 8. For example, the Political ratings are qualitative staff estimates from ICRG,

whereas the Economic ratings are driven almost entirely by such quantitative factors as inflation and economic growth. For details of the construction of these indexes, see Erb, Harvey, and Viskanta (1996b).

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