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The future of investment in emerging markets

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Research Summaries

The Future of Investment in Emerging Markets

Campbell R. Harvey*

Emerging market investments are certainly not for the faint of heart. In the early 1990s, several papers promoted the high average returns in these markets. Indeed, on the surface, these returns appeared to be much higher than those generated by investing in developed countries. At the same time, several developing countries liberalized their equity markets, allowing foreigners relatively

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unfettered access to them. As a result of these liberalizations and of domestic U.S. conditions, there was a sharp increase in U.S. capital flows to these equity markets.

Despite the considerable history of research on emerging markets, much of the current work was initiated as a result of the World Bank Conference on Portfolio Investment in Developing Countries, held in Washington in late 1993. Stijn Claessens and Sudarshan Gooptu brought together there a diverse group of academics and practitioners to try to gain a better understanding of emerging equity markets, and a number of myths about emerging markets were put to rest. Some of the ideas presented at

the conference motivated much of the research, including my own, on emerging markets over the next five years. That research is discussed here.

Special Challenges

I discuss these data challenges first, because we can ask many interesting questions about emerging markets, but we must take into account the special features of the data before trying to answer these questions. Most empirical research on emerging markets relies on the International Finance Corporation (IFC) indexes. These indexes represent portfolios of securities that comprise at least 60 percent of the market capitalization

in each emerging market. For some countries, there are only a few stocks in the IFC index portfolio. For example in December 1997, there were only 15 securities in the IFC global index for Hungary, 17 in the Moroccan portfolio, and 19 in the Venezuelan portfolio. Korea had the largest number (195) of securities. India had 133 securities in its IFC index, but more than 5,000 equity securities are listed in India. The small number of securities in these indexes means that the country portfolio may contain some variance that is usually diversified away with larger portfolios.

The IFC launched its data product in 1981. However, it reports data on eight countries back to December 1975, and on one country back to 1977. These data were "backfilled,"¹ which led to an obvious bias. The stocks selected in 1981 for the indexes would not necessarily be those selected in December 1975. This "look-back bias" should raise the portfolios' observed mean performance.

There may be other biases in emerging market equity data as well. Goetzmann and Jorion² showed that historically, markets have emerged, submerged, and re-emerged. For example in the 1920s, Argentina had a larger market capitalization than did the United Kingdom. However, its equity market all but disappeared by the 1930s. When we sample the data from 1981 and calculate statistics based only on this sample, we overlook what has happened in the longer term. While this is true for any market, it is particularly acute in emerging markets.

Further, there is extraordinary volatility in emerging markets. For example, from January 1981 to March 1998 the returns on the U.S. dollar index created by Morgan Stanley Capital International had a standard deviation of 14.4 percent on an annual basis. Among the 28 emerging

markets with more than three years of available data, dollar returns in 26 markets had standard deviations that were double the U.S. volatility; 9 markets had triple the U.S. volatility; and 7 had more than quadruple the U.S. volatility.

High volatility need not be a problem for analysis, but the data need to be analyzed with care. For example, practitioners were promoting the high average returns of these emerging markets in the early 1990s, while I pointed out (see n. 1) that there is a large difference between arithmetic and geometric average returns. In the period prior to June 1992, for example, the arithmetic average return for Brazil was 21.7 percent per annum. However, the return to a buy-and-hold strategy averaged only 3.7 percent per annum.

Also, the distribution of emerging market equity returns data is highly non-normal.³ In portfolio theory, we usually think of optimizing a portfolio to minimize the variance for some target level of expected return. This paradigm is not sufficient when there is significant skewness and kurtosis in the data. Part of my research shows that the presence of higher moments significantly affects optimal portfolio weights.⁴

Expected Returns

How do we measure expected returns in these emerging markets? A naive extrapolation of history probably is not desirable. For example, the IFC began tracking Russia in January 1996. The average U.S. dollar geometric return was 68.6 percent through March 1998. Few would expect this type of return performance to persist.

The measurement of expected returns is important for portfolio analysis as well as for corporate finance. Indeed, one of the problems most discussed in international corporate finance is the measurement of

an appropriate discount rate to use in evaluating investment projects in emerging markets.

The standard theory in finance begins with a world version of a capital asset pricing model. An asset's covariance with a diversified world portfolio should determine its expected return. I test this model and find three problems. First, as already mentioned, the data are highly non-normal, which poses a problem in a model that only rewards covariance risk.⁵ Second, the risk parameters change through time and allowances must be made for this nonstationarity. Third, these markets, at least for part of the sample, are not integrated into world capital markets. As a consequence, I strongly reject this model.⁶

The assumption of financial market integration is critical to the theory. For many of the emerging markets, though, this assumption is violated. As a result, traditional asset pricing models cannot be applied.

Market Segmentation and Integration

Theory tells us how to price assets in an open economy with a world version of asset pricing theory, and in a closed or segmented economy. But what if the country has moved from a segmented economy to an integrated economy? And, suppose we are not sure of the transition date.

My research with Bekaert⁷ began with identifying the transition from an integrated to a segmented economy using an asset pricing model. Theory suggested a particular model for the integrated state and another for the segmented state. We framed the transition in terms of regime-switching: this particular problem seems ideally suited for a regime-switching framework, in that each of the regimes is well defined economically. We came up with a method for determining when the transition from

segmented to integrated markets (or vice versa) occurred for 12 emerging equity markets.

Next, we examined emerging market volatility.⁸ Given its persistence, we thought that we would be able to extract more information from the volatility. But estimating volatility in an emerging equity market proved to be very challenging. Our volatility model had to allow for both skewness and kurtosis in the returns distributions.

One common feature of these papers is the observation that various types of information will affect asset prices, depending upon whether the market is integrated or segmented. We postulate that local (country-specific) information is more likely to affect a country's equity returns and volatility when the country is segmented, and that world information is more likely to have an effect when the country is integrated into world capital markets. Our papers let the relative importance of local versus world information change through time. This contrasts with the usual approach, which forces fixed weights on conditioning information in time-series models.

These papers represent attempts to use the data in determining when market integration occurred. We are also able to shed light on the behavior of emerging market returns (average returns, volatility, correlation with the world, and predictability) in segmented versus integrated states.

Liberalizations

My early research with Bekaert lets the data determine the transition from integrated to segmented states. However, some of my current work examines "event" dates. In a recent paper, Bekaert and I examine three types of events that are related to market liberalizations: the introduction of a country mutual fund; the introduction of American Depository

Receipts (ADRs); and changes in government regulations.⁹

The introduction of a country fund, or the listing of an ADR, gives foreigners ways to access the local market without physically trading in it. While the local market officially might be closed to foreign portfolio investment, these vehicles open a market. We contrast the introduction of ADRs and country funds to official liberalizations.

This research really focuses on the definition of "liberalization." A traditional approach would focus exclusively on government regulations, or what we call official liberalizations. However, a market could be technically closed to foreigners but effectively open to foreign investment if foreigners could access it in different ways, such as through ADRs and country funds.

Our research examines the behavior of expected returns, volatility, and correlations with the world before and after liberalizations defined in different ways. We are careful to control for macroeconomic events and the structure of each country's equity market. We also explain that the liberalization process is both gradual and endogenous.

Our analysis suggests that expected returns decrease slightly after liberalizations, and correlations with world market returns increase. This does not imply that the diversification benefits of investing in emerging markets have disappeared. The post-liberalization correlations are still much lower than comparable correlations for developed countries. Our results do not support the notion that liberalization leads to significant increases in volatility.

In addition to determining the impact of liberalizations on emerging equity markets, our method has the ability to discern the impact of particular types of liberalizations. We leave for future research, though, the

question of identifying the most effective types of liberalizations.

Dating Integration

My recent research with Bekaert and Robin L. Lumsdaine applies novel structural break tests to financial and economic series whose behavior is likely to be affected by a market integration.¹⁰ We examine univariate as well as multivariate break tests.¹¹ In contrast to other empirical implementations of these methods, we allow for all the parameters to change after the capital market liberalization. Consistent with our previous research, we find that the relation between local market returns and world information is altered as a result of market integration. We not only present statistical tests of whether the break is significant, but we also present the median break dates with a 90 percent confidence interval around the break. That is, we "date" market integration using economic and financial series.

One particularly interesting indicator is U.S. capital flows to emerging markets. Linda Tesar and Ingrid M. Werner initiated the research on capital flows.¹² Using the equity flows data, Bekaert and I establish the date when flows "break" in the upward direction.¹³ We then trace the impact of these flows on both the behavior of the equity market and on a wide variety of economic aggregates. We argue that the increase in capital flows probably reflects an effective liberalization. That is, U.S. flows to these markets could occur only if the liberalization were operational and credible.

Future Questions

As with most research, we usually uncover more questions than answers. This is certainly the case for emerging markets. While we understand much more about these impor-

tant markets today than we did just five years ago, there are a number of gaps in our knowledge.

Perhaps the most glaring gap is a dynamic economic model of the integration process. Currently, we do not have an asset pricing theory that allows for a gradual and anticipated process of liberalization. This model would help us understand the complex economic and financial changes that I document in some of my research. Further, many corporations are wrestling with proposals to make direct investments in emerging markets. In order to evaluate these proposals, they need an asset pricing model that suggests appropriate hurdle rates for each potential investment. As corporations expand their operations to emerging markets, this need becomes more acute. The next generation of emerging markets research will have to meet this challenge.

Editor's note: Professor Harvey submitted this article for publication three weeks before the Russian equity market crashed.

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Patents, Patent Citations, and the Dynamics of Technological Change

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Economists accept that technological change contributes powerfully to long-run improvements in living standards. Yet, we know surprisingly little about the determinants of technological change, including the relative contributions of different economic agents to the change process, the empirical sensitivity of the proc-

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ess to economic incentives, and the extent of market failure surrounding decisions affecting investments in new knowledge and technology. In part, this lack of knowledge is attributable to the fact that, until recently, some economists have tended to view technology as a "black box" that affected the economic system but that was itself driven largely by exogenous noneconomic forces, such as the advance of science. Pioneering work by Schmookler, Griliches, and others showed that this was not true; more recently the so-called New Growth Theory of Romer, Lucas, Grossman and Helpman, and others, has placed technology squarely within the economic system. However, grappling with these ideas empirically requires con-

fronting the reality that many of the relevant activities, although endogenous to the political-economic system, are carried out in institutions such as universities and government laboratories, and may not be amenable to analysis with the standard tools of the theory of the firm.

More fundamentally, microeconomic analysis of the process of technological change must confront severe measurement problems. Fundamentally, technological change is driven by an investment process that produces a form of capital that is hard to see or measure. Moreover, technological change is inherently an interrelated and cumulative process: an important part of the economic consequence of investments made by one agent is the effect that such