

Comments

Roberto Rigobon: Alberto Moel's paper studies a fascinating question: what is the impact on the development of a local market when domestic firms decide to issue ADRs? From the theoretical point of view, the answer to this question provides evidence on how markets evolve. Alberto's results do not support the innovation spiral advanced by Merton, but rather favor an alternative explanation that, I argue below, is consistent with so-called flight-to-quality effects. I applaud Alberto's effort to provide a first pass to this engaging question.

The goal of the paper is to determine whether listing an ADR improves the conditions for the other local firms. Alberto studies the impact on four dimensions: the degree of transparency (or openness); the possibility for foreigners to invest locally; overall liquidity; and the growth of the market. Surprisingly, his results indicate that the effects are mixed. Listing a new firm improves only the degree of transparency and deteriorates the other three measures. My prior assumptions were in line with the innovation spiral theory, which states that the competition for domestic assets by foreigners should encourage the development of local markets. Reading Alberto's paper has changed my view of the problem. This is not a reflection of how weak my prior assumptions were, but of how robust Alberto's evidence is.

Because this is a first pass to this question, it is subject to several critiques. I concentrate my comments on methodological issues and provide avenues for improving some of the results. Therefore, my comments are far more negative than my overall reaction to the paper.

The comments are organized as follows. First, I discuss some empirical issues with regard to the regressions Alberto runs. Except for the liquidity measures, the regressions should be taken cautiously. I include some possible solutions for the problems. Second, I discuss an alternative interpretation to his results and offer additional dimensions to explore in the future. Finally, I conclude.

Empirical Implementation

The results of the paper are based on three separate regressions: how transparency rules are affected by ADR listing, how market growth variables are influenced by the listings, and how liquidity changes with the issue of an ADR. Of these three regressions (or measures), the liquidity results are the most interesting and robust. The other two regressions are relatively weaker, and their conclusions should be taken cautiously.

For example, the results of the openness (or transparency) regressions could be explained by endogenous bias problems. In the growth regressions, the definition of the variables could create spurious correlations that have not been fully addressed in the implementation. These problems are not present in the liquidity regressions (or at least they are not very important). Hence, the liquidity regressions are more convincing than the other two.

In this section I discuss the problems with the openness and growth results, and offer some corrections that might solve them or diminish their impact.

Transparency and Openness Regressions

Alberto essentially estimates the following specification

$$\text{OPEN}_i = \beta_1 \text{LISTNUM} + \beta \cdot \text{Controls} + \varepsilon_i,$$

where LISTNUM is substituted by other measures of the intensity of ADRs in some of the regressions.

Alberto finds that listing is associated with an improvement in accounting standards. As even he argues, however, the decision to issue an ADR is endogenous. This result could thus be driven by reverse causality. In particular, assume that underdeveloped markets have the advantage that domestic firms have to invest relatively low effort to comply with accounting standards. The disadvantage is the limited and perhaps costly access to capital. If firms anticipate that transparency rules will be improved in the future, the advantage of issuing in local markets is reduced. Thus more firms issue ADRs in anticipation of these changes in the local regulation. In this context, more ADRs are associated with improvements in accounting standards mainly because the openness drives the listing decision.

This implies that in the previous regression, a positive β_1 could be the result of reverse causality. Alberto tries to deal with this complaint by showing the results of Granger causality tests. However, given that in this case it is difficult to assume that the residuals are not serially correlated, Granger causality test could give any result.

My suggestion is to find an instrument that changes the listing decision and that is exogenous to the accounting standard and its expectations. Such an instrument might be the time zone. It could be argued that firms are more likely to list if their country is located in the same time zone as the developed market where the ADR will be transacted. In other words, the degree of substitutability is larger if the local market is open at the same time as the developed market. On the other hand, if markets do not operate at the same time, the arbitrage opportunities are limited. I return to these issues below.

Growth Regressions

The growth regressions have a different problem: spurious correlation. Alberto finds that listing is associated with a reduction in the growth of local markets. Nevertheless, some of these results could be the outcome of the procedure to construct the left-hand-side variable. I concentrate most of the discussion on the capitalization variable, which Alberto defines as follows:

$$\text{CAPGDP} = \frac{\text{CAP (NON-ADR)}}{\text{GDP}}.$$

It is fair to assume that firms that decide to list in developed markets will benefit from doing so. They will be less credit constrained, the cost of capital will fall, and so forth. There exists a large literature in corporate finance arguing in favor of these effects (see the references in Alberto's paper). Under these circumstances, the firm that issues the ADR should grow faster than the ones that have no access to the capital market. This has two effects on the growth measure defined above. First, GDP grows as a result of the growth generated by the ADR firm, while there is no reason for the capitalization of other firms to increase. This implies that CAPGDP falls even if the ADRs have no effect on the other firms in the country. This effect might be small, and it should be relatively easy to

correct. The idea would be to exclude from the denominator the GDP produced by the ADR firm.

Second, if some of the other local companies compete with the ADR firm, the advantages that issuing the ADR represent to the ADR firm will be reflected in a decrease in the price of domestic competitors. Capitalization would thus appear to decrease even for a constant GDP. This is not a result of market development, but of the impact of competition. Again, this creates a drop in the CAPGDP measure, which can also be corrected in Alberto's specification.

To avoid spurious regressions, the capitalization measure should exclude from both the numerator and the denominator the industry to which the ADR firm belongs. The results will probably survive this change.

Liquidity Regression

Finally, Alberto discusses the relation between liquidity in other firms and the act of issuing ADRs. He finds that the liquidity of remaining firms' outstanding stocks falls whenever an ADR is issued. This is a very interesting result. The endogeneity should be small, given that anticipation of changes in accounting standards should have a small effect on liquidity. If anything, it should increase liquidity. Second, the way the liquidity variables are constructed has no spurious correlation built in. The results are quite robust.

Alternative Interpretation

This section presents an alternative interpretation to Alberto's results. I concentrate on the liquidity results. Alberto shows that in some markets, issuing an ADR is detrimental to the firms that do not issue ADRs. This result is in contrast with the innovation spiral raised by Merton. In fact, his results are consistent with a flight-to-quality effect.

A simple signaling model could explain these results. Assume there exists a pegging order on the cost of dealing with tougher accounting standards. Further assume that the different stock markets choose between a fixed cost of issuing in their markets and the marginal cost between the access to the next unit of capital and the cost of accounting standards.

Finally, assume that firms have preferences with regard to the access to capital and the cost of satisfying the accounting standards, and the types of firms differ on those trade-offs.

In this model, low fixed costs in the domestic market may be associated with a pooling equilibrium, and both types of firms issue stocks in the local market (see figure 2). However, when the domestic market increases the fixed cost by requiring the domestic firms to satisfy higher accounting standards, it generates a separating equilibrium in which the good types issue in the international market, while the domestic firms continue to trade in the local market (see figure 3).

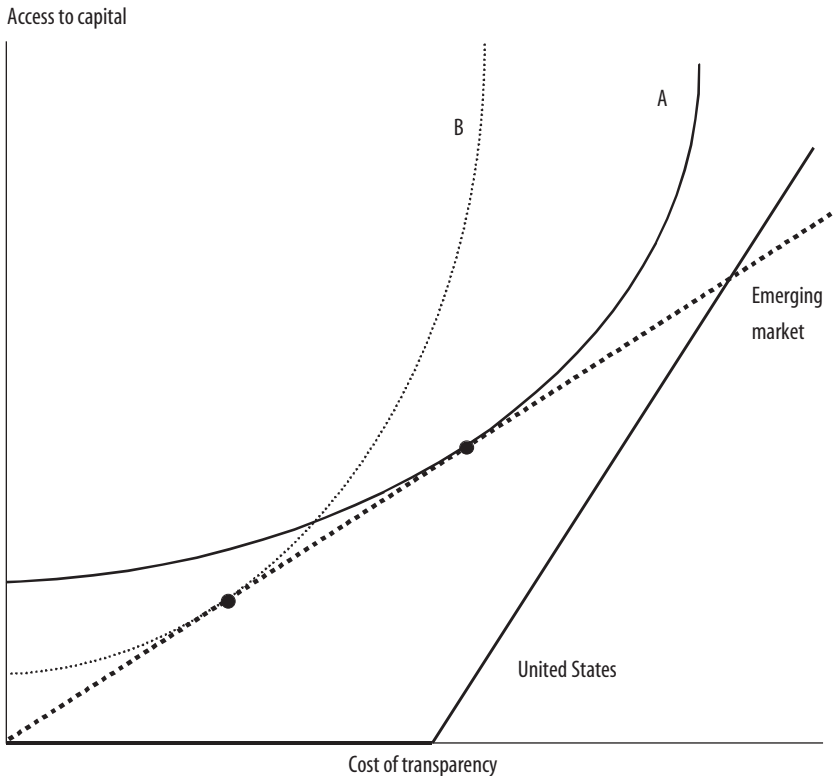
The equilibrium in figure 2 implies indifference curves that are lower than those achieved in figure 1. This result comes from the fact that the pooling equilibrium is no longer available. This does not imply, however, that the access to capital has been reduced. The equilibrium level of capital may, in fact, increase for some or all of the firms. This result depends on the shape of the indifference curves. In figure 2, I choose the slopes in such a way that the good types issue ADRs in developed markets and have access to more capital, while the remaining firms continue to trade in the domestic market and experience a drop in their equilibrium level of capital.

Alberto's results are consistent with the view that not issuing an ADR could be interpreted as a bad signal. The firms have less access to capital, their growth is reduced, their capitalization falls, and their liquidity is squeezed. Moreover, these effects occur for all the firms that stay in local markets, regardless of their size, industry, and degree of competition.

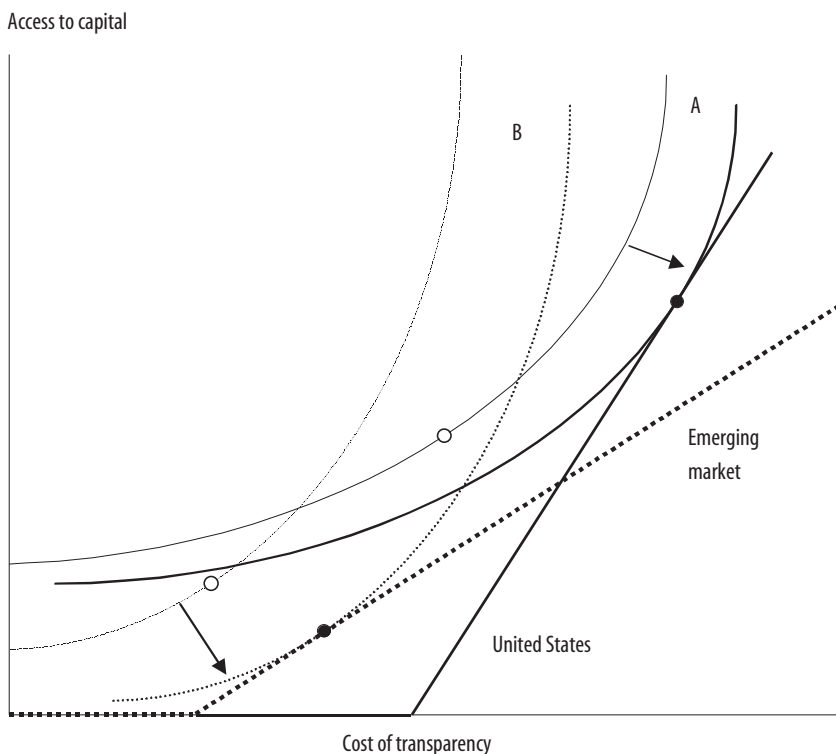
Further Research

Several aspects of the development of stock markets are not analyzed in this paper, and they should constitute part of future research in this area. One such issue is the impact of a new ADR on the overall volatility of the market. If ADRs are harmful to local markets, volatility could rise. Conversely, volatility might be reduced if ADRs help reduce the use of asymmetric information and improve the transparency in the market.

Another area that needs to be addressed has to do with the effect of a new ADR on the overall vulnerability of the market to external shocks. As with overall volatility, if ADRs are detrimental to domestic markets, the

FIGURE 2. Pooling Equilibrium

channel through which the markets are affected may be their external vulnerability. There are three possible avenues for studying this question. One is to look at the changes in conditional volatility when the developed market closes and their relation to the number of ADRs that have been issued. Second, the U.S. stock market has had instances of unanticipated trading stops. For example, trading was stopped a couple of days during the Hong Kong crash in October of 1997. Such events might have different effects on underdeveloped markets depending on the level of existing ADRs and how the market interprets the stops. Third, domestic markets may be affected by changes in U.S. interest rates. What is the pass-through from the United States to these markets, and how does it change with the presence of ADRs?

FIGURE 3. Separating Equilibrium

A third area for future research is whether ADRs act as a substitute for or complement to local instruments. As argued above, the geographic location of the market might explain the nature of ADRs. If the local and ADR markets are in the same longitude, then the instruments become high substitutes and ADRs are harmful to local markets. If they are in different longitudes, the ADRs improve local markets.

Conclusions

Let me finish how I started. This is a very nice paper that tackles an important question. The preliminary results indicate that issuing ADRs might be detrimental to local markets in several ways, which confirms some of

the complaints raised by local traders who find it increasingly difficult to operate in those markets.

The world is becoming an open and free capital market. It is moving toward harmonization of accounting standards, property rights, and so forth. This paper argues that this movement will imply a greater concentration of trade in developed stock markets, with less trade in local markets. Paradoxically, some of the policies have been implemented in an effort to develop local markets, but Alberto shows that they have had the opposite effect. This is a provocative result.

Alberto's paper offers a first look at the evidence, and more research is needed to further uncover the effect of ADRs on the development of local markets. I have no doubt that this topic will be raised again in the future.

Andrew Karolyi: The process of market liberalization over the past two decades has been one of the most important catalysts for financial market development and overall economic growth, especially among emerging markets. Important types of events that contribute to this process include regulatory changes with regard to foreign currency controls, foreign ownership limits, disclosure quality, and overall accounting information transparency. As a result, cross-border direct and portfolio flows have increased dramatically, especially to emerging markets. Researchers demonstrate a growing consensus that capital flow liberalization has facilitated stock market growth and thus overall economic development.¹

One of the important developments in global markets for facilitating cross-border equity portfolio flows has been growth and expansion of the American depositary receipt (ADR) market. ADRs are a common vehicle by which non-U.S. companies from developed and emerging markets around the world list their shares on U.S. exchanges and over-the-counter markets to attract a U.S. investor base. Though originally created by J. P. Morgan in 1927, ADRs have become a genuine financial innovation in the past two decades. In fact, a number of researchers have shown their positive impact on the valuation and cost of capital for the listing firms specifically and for the markets as a whole.² What has received relatively little attention from researchers is the impact of the growth in ADRs on

1. Levine and Zervos (1993); Bekaert and Harvey (1995a); Henry (2000).

2. On benefits to listing firms, see Karolyi (1998); Miller (1999); Foerster and Karolyi (1999, 2000). On market effects, see Bekaert and Harvey (1995a); Errunza, Hogan, and Hung (1999); Errunza and Miller (2000).

broader measures of financial and economic development for the home market. Do ADRs foster greater disclosure quality and information transparency at home? Do they promote an infusion of liquidity in the home market? Do they increase the home market's level of capitalization as a fraction of GDP? These questions underlie Alberto Moel's important new study.

Moel examines twenty-eight emerging markets using the International Finance Corporation's Emerging Market Data Base (EMDB) for the years 1988 to 1997. He develops a series of measures of home market development related to disclosure and accounting standards, market accessibility or investability, liquidity or turnover, and capitalization, in which the latter set of measures seeks to capture the spillover effects of ADR market expansion to non-ADR firms in the home market. He finds that listing ADRs—in terms of numbers or market value—adversely affects the development of the local market. Moreover, ADR market growth is a leading indicator of reduced market activity and capitalization. These results confirm the suspicions of market regulators and participants, especially in emerging Latin American markets, with regard to the detrimental or retardant effect of ADRs on domestic financial markets.

I have two major comments on the paper, both of which can be regarded as criticisms although they might more appropriately be represented as cautions to the reader. The first comment relates to a unique institutional feature of the ADR market, one that is firmly grounded in existing research and that can affect the interpretation of the forces at work in these markets. The second comment centers on the statistical and economic power of the tests and the empirical experiments employed.

Listing Is Not Enough

When ADRs are created by the U.S.-based depositary banks on behalf of the foreign companies listing on the U.S. exchanges, the home market shares are purchased on the open market and held in a custodial account of the depositary's local affiliate. On confirmation of the purchase, the depositary issues the ADR to the U.S. investor, who freely trades the receipt on the exchange. Cancellations reverse the process and result in a so-called flowback of the shares to the home market. This natural flow of

shares between the United States and the home market is unique to ADRs, and it represents an important challenge to the findings in the Moel paper. Basically, the act of listing the ADRs on the U.S. exchange does not necessarily reflect on the vitality of the ADR program. After all, one possible outcome for many ADR programs from around the world is flowback, which typically shrinks the size of the U.S. investor base, the program's trading activity and turnover in the United States, and the scope of the U.S. capital-raising activity. Each of these results undermines the objectives the company had sought to achieve with the listing. A number of theoretical models capture these key attributes of multimarket trading and its impact on volume, volatility, and valuation.³ Several empirical studies, in turn, confirm the importance of flowback and the distribution of trading among cross-listed markets for stocks.⁴

Moel focuses on the number of ADR listings (LISTNUM) and their composite market value (ADRSHARE and CONCENT) as proxies for the catalyst for openness, liquidity, and growth. A number of programs are dormant, however, with an overwhelming fraction of trading, ownership, and capital-raising activity in the domestic market. It would be useful for the study to discriminate among these programs. Alternative measures would include a measure of ADRSHARE that is adjusted for trading volume or a threshold-conditioned measure of LISTNUM that counts only those programs for which more than, say, 1 percent of global trading takes place in the United States.

Smith and Sofianos examine why some programs are more vital than others. They find evidence of strong regional factors that they attribute to time-zone effects (that is, markets located in the same time zones as the United States, such as Latin America, have greater U.S. trading than markets located in other time zones), as well as other weaker factors related to trading costs and the scope of capital-raising activity.⁵ Based on their findings, it seems reasonable to distinguish the results in the Moel study by region. A clinical study of the DaimlerChrysler global share program, in turn, shows that the extent of flowback is not necessarily related to ownership, which held reasonably steady following the creation of the

3. Pagano (1989); Chowdhry and Nanda (1991); Domowitz, Glen, and Madhavan (1998).

4. Sofianos and Smith (1997); Foerster and Karolyi (1998); Karolyi (2000).

5. Sofianos and Smith (1997).

program. A more important factor is the convenience of trading in the primary market, a role which Frankfurt and the Deutsche Börse readily assumed.⁶ This finding implies that location of ownership cannot necessarily be inferred from location of trading.

Statistical and Economic Power

The growth of the ADR market is a relatively recent phenomenon. While it has attracted much attention among researchers, most work to date (including my own) is significantly handicapped by the limited number of observations. This affects the power of statistical inferences in the tests. Many of the studies focus on the valuation or liquidity impact of the listing decision for individual firms; these researchers hope that there is not too much clustering of these events in calendar time, so that some statistical robustness can be preserved.

Moel's study is constructed at the country level, which greatly accentuates the problem of limited power. Based on a sample of twenty-eight countries over the period 1988 to 1997, the results from pooled time-series and cross-sectional draw on between 230 and 260 observations, which may appear reasonable at first. Three features of the data cause concern, however. First, like many innovations, the ADR listings occur in waves, which are typically concentrated within regions. For example, in Latin America, Mexico was the first market to initiate ADR listings with Tubos de Acero in 1964, Telmex in 1990, and Grupo Sidek in 1989. Chile's *Compañía de Telecomunicaciones de Chile (CTC)* followed in 1990, and substantial waves occurred in Argentina in 1993 and Brazil in 1994. If Moel wishes to emphasize the cross-sectional patterns in ADR listings and the outcome measures of openness, liquidity, and growth, Fama-MacBeth tests, which hold such statistical relationships constant across time, may be a useful alternative to the fixed effects with country and year dummies.⁷ Second, as indicated above, the data demonstrate substantial clustering by region, which creates dependence in the observations. If the goal of the study is to capture the time-series patterns in ADR listings, more robust results might be obtained by forming regional portfolios and employing

6. Karolyi (1998).

7. Fama and MacBeth (1973).

seemingly unrelated regression (SUR) models following Schipper and Thompson.⁸ Third, the ADR listings across regions and time are an important part of the global liberalization process, and they are thus endogenous to the system under study.⁹ Moel attempts to model the joint dynamics using Granger causality tests. The results are not very conclusive and reflect the limited power of the tests. A preferable, though still unsatisfactory, approach would be to employ a full vector autoregression (VAR) model with impulse response and variance decomposition analysis.¹⁰

Concluding Comments

The paper offers an important exploratory analysis of the patterns of ADR listings in emerging markets and shows some first indications of their association with factors related to financial and economic development in those markets. While other studies show that individual firms and their shareholders benefit substantially from listing, Moel's study indicates that ADRs have negative spillover effects to the other stocks in the domestic market in terms of disclosure quality, information transparency, accessibility, liquidity, and capital market development. These results imply that regulators and policymakers in those domestic markets, as well as investors and issuers, are right to have concerns about this financial innovation. The nature of appropriate policy prescriptions remains unclear.

8. Schipper and Thompson (1983).

9. Errunza, Hogan, and Hung (1999).

10. See Hamilton (1994, chap. 13).

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