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VALUING ACQUISITIONS IN EMERGING MARKETS: AN EXTREME SCENARIO FRAMING APPROACH*

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Abstract: Emerging markets are prone to *event risk* –major political, economic and institutional catastrophes that can radically change the attractiveness of an acquisition target almost overnight. Traditional risk measures are unable to capture these unusual yet highly disruptive events. This paper introduces Extreme Scenario Framing (ESF), a method to help decide real-asset investments in markets that are prone to major jolts. Whether in economic boom or bust, ESF helps avoid the narrow framing biases that may conduce managers to overpay (or underbid) for the target. ESF is illustrated via a case study in which a Brazilian firm is deciding to acquire an Argentine closely held company in the aftermath of Argentina's 2002 crisis.

1. Introduction

Overpayment in acquisitions is very common among U.S. takeover bidders.[1] *Overpayment* means paying for a target a value that is above and beyond its market value, i.e., when an acquisition premium is surrendered. Value destruction for the bidder's shareholders may occur if the price paid turns out to be larger than the fundamental value that could be extracted from the target under the acquirer's management.

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Overpayment may be the result of misvaluation and this, in turn, may result from behavioral biases in the acquirer. Duhaime and Schwenk (1985) were the first to suggest that an *illusion of control* (Langer, 1975) could be responsible for overoptimism in the valuation of a target (the illusion of control is the overestimation of the extent to which managers may successfully deal with uncontrollable events arising after the acquisition). In the corporate finance literature, the classical work on the link between overoptimism and overpayment is Roll's (1986), whereas Hayward and Hambrick (1997) and Malmendier and Tate (2003) provide proof of the relationship.

In this paper, I discuss other cognitive biases that may breed overoptimism and push managers to overpay for an acquisition target. After arguing that these biases are highly relevant for cross-border acquisitions in emerging markets, I introduce Extreme Scenario Framing (ESF), a method to alleviate the problem of overpayment. I also show that ESF may be useful to counterbalance the opposite bias –i.e., underbidding for a target. Finally, I illustrate ESF's application by means of a case study.

2. Narrow Framing in Corporate Acquisitions

In a comprehensive study of 39 global equity markets from 1921 through 1996, Goetzmann and Jorion (1999) have shown that most financial markets tend to emerge, submerge, and re-emerge through time. Markets emerge as dramatic changes in political, economic and institutional features make them suddenly attractive to international investors; they submerge when, hit by a major crisis, they disappear from the radar screen of investors for years – even decades; and re-emerge if a sweeping economic change in the opposite direction makes them attractive once again.

International investors may enter emerging markets at times of emergence (boom) or submergence (distress). Although an emerging market is obviously attractive, a submerging market may also lure investors that perceive the crisis as cyclical not structural, and assume that asset prices will likely go up under a future re-emergence.[2] Both under emergence or submergence,

however, investors run the risk of overpaying. Specifically, overpayment may be the result of three behavioral or cognitive biases which I will group under the broad name of *narrow framing*.

Narrow framing is the result of heuristics-driven, simplifying cognitive strategies on the part of the investors that are appraising an acquisition. A first component of narrow framing is the belief in the *law of small numbers* (Tversky and Kahneman, 1971), whereby the investor uses a limited number of informational inputs (e.g., a small sample of information) about the past to draw firm conclusions about the future. The bias produces estimates of risk and return that are anchored on the extrapolation of recent trends. When short-term information is used to draw longer-term forecasts for emerging markets, though, investors run into a serious problem; for retrospective analysis shows that the attractive returns observable under emergence are simply not sustainable in the long term.[3] Short-term data-driven overoptimism may induce a misvaluation on the high side and push investors to overpay for a target.

In emerging markets, the law-of-small-numbers bias may simply be triggered by data availability: there may be no long-term data on returns and volatilities for the market in question since country coverage by major financial institutions is usually discontinued under major economic crises; as a result, data on previous submergence episodes turns out to be unreliable or simply unavailable.

A second component of narrow framing I will call *naïve scenario framing* –the tendency to define a limited range of outcomes around an expected point of reference. When the analyst constructs three value scenarios for the acquisition –expected, optimistic, and pessimistic– the expected value will work as a *cognitive anchor* (Kahneman and Tversky, 1979) to the optimistic and pessimistic extremes. More specifically, the bias will make the latter vary *only mildly* from the expected value.[4]

Naïve framing may work satisfactorily only insofar as the economy is basically a single-state system –that is, a basically unchanged institutional environment with a stable set of political, social and economic premises (Davis and North, 1971). Yet the quantum nature of change in emerging

markets may push the market from emergence to submergence in no time and render an acquisition value much lower than the pessimistic scenario assumed in the naïve framing exercise. In the same way, a market may go from submergence to emergence; naïve framing assumes only the former is possible, and will thus bias value down, causing the bypassing of a profitable acquisition deal.

Naïve framing is fueled by a third component of narrow framing: the taking of an *inside view* (Kahneman and Lovallo, 1993) of the acquisition. This means considering only the project at hand and ignoring the performance of similar acquisitions in past periods of the same market –including failed acquisitions. Investors' attention tends focus on the present and the future only, while overlooking both distant times *and* failed projects (Levinthal and March, 1993). The inside view may lead investors to overlook the fact that historical results during past emergence periods may in fact have been much lower than the rosy numbers they are plotting for the future. This will derive in an overoptimistic appraisal of the value of the target.

In short, the three narrow framing biases we have discussed so far may lead investors to misvalue a target on the high side, overbid for it, and perhaps surrender a non-recoverable acquisition premium. It can also lead to misvaluation on the low side and to the bypassing of profitable acquisitions. How can this problem be avoided?

Unfortunately, traditional mean-variance optimization does not provide an adequate framework for dealing with extreme event losses (Powers, 2003). Catastrophes like financial crises, wars, expropriations, or political upheaval are events in the far tail of the outcome distribution, and thus not easily captured in the standard asset pricing models of corporate finance. Such models assume only small local changes in security prices while ignore the large jumps in price and volatility that take place in an extreme event (Liu *et al*., 2003).

Goetzmann and Jorion (1999) suggest that investors in emerging markets should use long-term scenario analysis to capture the unusual but highly disruptive events that cannot be easily embodied in traditional risk analysis. Along this line, I propose to use *Extreme Scenario Framing (ESF)*, a valuation

approach that: (a) expands the framing of events in order to mute narrow framing biases; and (b) allows the analyst to use yet another cognitive bias –loss aversion– as an additional compensatory mechanism for overoptimism. As obvious as ESF may sound in principle, the reader must bear in mind that real-life managers do *not* plan for catastrophes (see e.g. Mitroff and Alpaslan, 2003; Watkins and Bazerman, 2003; Arnold, 1986). And if they fail to account for the "losers" as well as the "winners" in equity markets, they get a biased view of history which ignores important information about actual investment risk (Jorion and Goetzmann, 1999). Our ESF model makes potential catastrophes explicit *and* turns cognitive biases in favor, rather than against, the decision-maker.

3. Extreme Scenario Framing: Theory and Practice

Argentina is a typical example of a re-emerging market. With the oldest stock exchange in Latin America (dating from 1872), it disappeared from investors' radars in the late 1960s as a result of hyperinflation and interest rates policies, re-emerged in 1975, only to submerge again during the 1980s (Goetzmann and Jorion, 1999). It made a stellar reappearance in 1991, when it regained the interest of international investors since a new macroeconomic policy pushed the economy back on the track of growth (Pereiro, 2001a). A currency board which tied the peso to the U.S. dollar at a 1:1 relationship eliminated the endemic inflation that had besieged the economy for years, while an ambitious privatization plan eliminated the long-lasting operating deficits of the large public companies; international private operators took control of these, revamped the outdated infrastructure of basic sectors –energy, telecommunications, water supply– and quickly improved service level and productivity. This deregulation fostered competition and a fall in consumer prices.

The new policy triggered an explosive growth in foreign and local direct investment. Between 1991 and 1997, privatizations-related investment grew at 29% annually, to a total of about $24 billion. In the same period, "pure"

–i.e., not related to privatizations– foreign direct investment grew at a compounded annual rate of 136%, up to a cumulative amount of about $ 34 billion. Stock market capitalization grew at about 21% annually from 1991 to 1999. M&A deals amounted to more than $49 billion between 1995 and 2000 only. In short, the country had became one of the so-called big emerging markets of the world (Garten, 1997), and the star pupil of international investors.

Argentina's free market policy prevailed until late 2001, when a creeping fiscal deficit triggered rumors of devaluation, pushing companies and individual savers to siphon bank deposits out of the country in enormous amounts. In a desperate move to prevent a bank run, the government froze bank deposits, abolished the currency board, devalued the Peso by 40%, and imposed strict foreign exchange and currency controls. After being fully opened to international investors for a decade, the country went back to a regulated, fully segmented status in just a few days (see Figure 1 for additional details).

Figure 1. Argentina: The 2001-2002 crisis (Based on Pereiro, 2002A)
• Sep.2001-Dec.2001: market demand collapses, with falls of 50% to 90% depending on the sector. By May 2002, the volume of banking activity has shrunk to 20% of the pre-crisis level.
• Sep.2001: Freezing of deposits.
• Jan.2002: Compulsory asymmetric "pesification" of assets and liabilities.
• Dec.2001: transferring funds out of the country is prohibited. Default on the foreign debt is announced. The cost of money soars. Annual call rate in Jan 2001: 6.2%; by May 2002 it reaches 47.5%; by July 2002 it reaches 78.5%+.
• Jan.2002: The peso is officially devalued 40%. Benefits to export-oriented firms are unclear, as new and changing taxes are levied on exports. By July 2002, real devaluation amounts to 75%+.
• Inflation is back. In six months (Jan-Jun 2002), it reaches a cumulative figure of 53.9% –more than the cumulative figure for the ten previous years (1992-2001, equal to 43.1%). Hyperinflation is again a real possibility.

Upon the crisis, several multinationals felt it was time to leave the country for good. For instance, U.S. broadband access providers Velocom and Millicom sold their Argentine holdings to local partners Datco and Soldati. Yet at the same time, other multinationals were lured by the low prices of local targets being offered for sale. Among these newcomers were many Brazilian firms who, having lagged far behind the cash-rich U.S., Spanish and British multinationals that had heavily invested in the country during the 1990s, were suddenly attracted to Argentina: In early 2002, AmBev (Brahma) of Brazil, a large beverages company, acquired 37% of the shares of the Argentine beer market leader, Quinsa, for $ 350 million. Soon after, Brazilian oil giant Petrobras acquired Argentina's #2 oil company, Perez Companc, for $ 1.13 billion. Other Brazilian firms would soon follow suit.

In July 2002, Miltex, an Argentine privately held food processing company with sales concentrated in the domestic market, was approached by Merigiana, a large and closely held Brazilian food company.[5] Miltex reacted by offering to sell 100% of its shares to Merigiana. Merigiana's appraisers were faced to the challenge of estimating the value of the target firm's equity in quite a turbulent moment. Since the economy was in its submergence phase, narrow framing biases could have made the acquirer be overpessimistic about the long-term future of the target. To avoid so, the acquirer proceeded to apply ESF, as follows:

A. Modelling cashflows in the local currency. The first step in ESF is to develop *extreme value scenarios* for the target. Figure 2 shows them: an optimistic one, involving a reversion to growth; and a pessimistic one, assuming a stagnant, recessive environment continues. Merigiana believes the optimistic extreme makes sense as experience proves that hysteresis (a reversion to a previous state of growth) is a possible outcome in emerging markets.

The cash flow in each extreme scenario may be construed as the expected composite of many outcomes (from best-case to worst-case), and the probabilities of those cashflows occurring, *within the extreme scenario's basically unchanged institutional environment*. Scenarios are *extreme* in the

Figure 2. Valuation spreedsheet for the Miltex-Merigiana acquistion (millions)*					
	2003	**2004**	**2005**	**2006**	**2007**
Free cashflows forecast in A$ (Argentine Pesos)					
Pre-crisis free cashflow to the firm in planning horizon	**170**	**200**	**215**	**225**	**235**
Post-Crisis Optimistic Free Cashflow in Planning Horizon	**51**	**80**	**107.5**	**157.5**	**188**
As a % of Pre-crisis Scenario	30%	40%	50%	70%	80%
Terminal Value, at MVIC/Sales= 0.80, Sales 2007= A$ 1,080 million					864
Post-Crisis Optimistic Total Free Cashflow, A$	**51**	**80**	**107.5**	**157.5**	**1,052.00**
Post-Crisis Pessimistic Free Cashflow in Planning Horizon	**51**	**70**	**86**	**101.3**	**117.5**
As a % of Pre-crisis Scenario	30%	35%	40%	45%	50%
Terminal Value, at MVIC/Sales= 0.58, Sales 2007= A$ 675 million					388.8
Post-Crisis Pessimistic Total Free Cashflow	**51**	**70**	**86**	**101.3**	**506.3**
Free cashflows forecast in $ (U.S. Dollars)					
Optimistic exchange rate forecast (A $/$)	3.7	3.7	3.5	3.4	3.3
Pessimistic exchange rate forecast (A$/$)	4.7	4.5	4.5	4.0	4.0
Optimistic total free cashflow	13.8	21.6	30.7	46.3	318.8
Pessimistic total free cashflow	10.9	15.6	19.1	25.3	126.6

Figure 2. Valuation spreedsheet for the Miltex-Merigiana acquistion* (continued)					
	2003	**2004**	**2005**	**2006**	**2007**
Cost of Capital ($-based)					
Optimistic scenario					
Riskfree rate in the U.S.	3.30%	3.30%	4.50%	4.50%	4.50%
Country risk premium	60%	20%	15%	14%	14%
Cross-border beta	0.85	0.91	0.95	0.98	1
Firm beta	0.57	0.57	0.57	0.57	0.57
U.S. market risk premium	4%	4%	4%	4%	4%
Double counting depressor	0.56	0.56	0.56	0.56	0.56
Firm-related unsystematic risk premium	6%	6%	6%	6%	6%
Cost of equity capital	70.40%	30.50%	26.70%	25.80%	25.80%
Interest-bearing debt on assets ratio	5%	5%	5%	5%	5%
Cost of debt US comps	7%	7%	7%	7%	7%
Cost of debt	17%	15%	12%	12%	12%
Tax rate	35%	35%	35%	35%	35%
WACC	**67%**	**29%**	**26%**	**25%**	**25%**
Pessimistic scenario					
Riskfree rate in the U.S.	3.30%	3.30%	4.50%	4.50%	4.50%
Country risk premium	90.00%	90.00%	83.14%	68.57%	63.90%
Cross-border beta	0.82	0.82	0.83	0.84	0.85
Firm beta	0.57	0.57	0.57	0.57	0.57
U.S. market risk premium	4%	4%	4%	4%	4%
Double counting depressor	0.56	0.56	0.56	0.56	0.56
Firm-related unsystematic risk premium	6%	6%	6%	6%	6%
Cost of equity capital	100.30%	100.30%	94.70%	80.20%	75.50%
Interest-bearing debt on assets ratio	5%	5%	5%	5%	5%
Cost of debt	17.00%	17.00%	16.00%	15.00%	15.00%
Tax rate	35%	35%	35%	35%	35%
WACC	**96%**	**96%**	**91%**	**77%**	**72%**

Figure 2. Valuation spreedsheet for the Miltex-Merigiana acquistion* (continued)					
	2003	**2004**	**2005**	**2006**	**2007**
Market Value of Invested Capital and Implied Equity Value					
Market value of invested capital (or firm value), optimistic	$160.50				
Market value of invested capital (or firm value), pessimistic	$23.30				
Debt	$5.00				
Implied equity value, optimistic	$155.50				
Implied equity value, pessimistic	$18.30				
Minimum Monetary Goal of Acquirer	$5.00				
Maximum price-Optimistic Scenario	$150.50				
Maximum price-Pessimistic Scenario	$13.30				
* All the synergies Merigiana feels can be realized upon acquisition have been built into the cashflows.					

sense that they paint a radically different view of the same economy: one is a positive yet realistic outlook in which the economy is expected to fall back in the track of growth; the other is a gloomy outlook, in which the environment is not expected to change for good along the investment horizon. Note that the extreme scenarios are very different from each other, and not, as in naïve scenario framing, mild deviations from a single "expected" case.

Appraisers should next had to decide on whether to use nominal or real data in the valuation. Finance practitioners make a call for consistency: use nominal rates to discount nominal cashflows, and real rates to discount real

cashflows. But beyond that, there is no agreement among academics as to whether the nominal or real approach should be used in emerging markets. Kuemmerle (2002) has argued for the real approach, while Copeland et al. (2000) have argued for a hybrid (nominal + real) approach. Smith and Smith (2000), in turn, are for the nominal approach.

Yet the key question here is whether it makes a difference to use nominal or real data. The fact is that the nominal and real approaches will render the same NPV only under the most restrictive conditions (Patterson, 1995). First, real and nominal cashflows and discount rates should be related to each other via a simple Fisher-type relationship; yet this relationship holds true only if the financial leverage of the firm is zero, or if the personal tax rate is equal to the corporate tax rate (Ezzell and Kelly, 1984) –conditions unlikely to hold in many real-life companies, including Miltex. Second, the NPV equivalence needs the naïve assumption that revenues and costs will be affected by the same inflation rate –the general level of inflation. Yet in many high-inflation economies (like Argentina and Brazil), the assumption is unlikely to hold, as prices tend to rise faster than costs.

If a nominal analysis will not render the same NPV as a real one, which approach should be used? Merigiana chooses to craft *nominal* cashflows and discount them at a *nominal* rate, for three reasons. First, a cognitive one: only nominal data really allows managers to fully visualize the probable evolution of revenues and costs –i.e., managers tend to think in nominal terms. Second, for attaining efficiency in the valuation exercise; since most data available from financial information services are nominal, it is more effective to use nominal data than embark on computing real data; applying the real approach is not a straightforward process, as there is no readily agreed-upon method for selecting a real discount rate (Rappaport and Taggart, 1982), and thus the nominal approach results more expedient for valuation purposes (Mehta et al., 1984). Finally, taxes and depreciation may introduce systematic upward biases in a valuation obtained with real rates; this may make overpayment likely (Velez-Pareja and Tham, 2002).

Beyond the 5-year planning horizon, Miltex is expected to be valuable as well, and this requires defining a plausible terminal value for the target.

Merigiana has a hard time in figuring out long-term growth rates for the free cashflow, as this involves making daunting predictions on the future of a turbulent economy. They choose instead to use a cross-sectional, diachronic value reference: a firm value-to-sales multiple for Year 2007 from a comparable company.

Since there are no good comparables for Miltex in the local stock market, they resort to an average multiple obtained from carefully selected U.S. comparable companies. Yet this multiple needs to be properly adjusted before being applied to Miltex's economic parameters. Cross-border corrections of multiples are mandatory, as similar companies may be valued differently in different geographic markets, for two reasons. First, major differences exist among countries regarding accounting reporting practices. It makes no sense to compare, for example, the earnings level of a German company with that of a Venezuelan firm, if the differences between the generally accepted accounting principles (GAAP) for each country are not properly known and accounted for.

In the U.S., a clear distinction exists between the accounting statement and the tax statement; both are based on different calculation rules –GAAP and tax regulations, respectively– and both are accepted by the law; the former is presented to investors, and the latter to the IRS for tax purposes. In contrast, in many European, Asian, and Latin American countries, the accounting statement is also used as the tax report. This provides a powerful incentive for management to artificially depress reported earnings through accounting shenanigans –not all of them permitted by the law– in order to pay lower taxes. Some typical maneuvers include recording as period expenses items that should be otherwise recorded as capital expenses; creating "hidden reserves," useful for smoothing earnings volatility; applying accelerated depreciation methods in countries where their use is allowed to artificially depress earnings; and revaluing assets, a practice that is allowed in some countries but not in others.

The second reason to adjust multiples across borders is that different national stock markets may have widely different perceptions on the value of the same group of assets. These differences may be due to country risk

differentials perceived among economies, or to the simple fact that markets may value differently the same managerial/company attributes. As a result, similar companies with equivalent expected earnings may bear different values in different national stock exchanges. For instance, P/E ratios of U.S. and U.K. companies are substantially smaller on average than those of firms operating in Germany or Japan, even after accounting adjustments have been made. In other words, there exists a *country-related* effect on company value that cannot be resolved just by normalizing financial statements (Solnik, 1996).

Due to these reasons, Merigiana knows that it is not possible to directly apply U.S. multiples to the Argentine target, and proceeds to correct them. Terminal value multiples for Miltex are computed as the product of two factors: (a) the median market value of invested capital (MVIC)-on-sales ratio for a small sample of U.S. comparables in the food industry (0.80); and (b) a cross-border adjustment –the quotient between the marketwise MVIC/Sales ratio in Argentina vs. the U.S. For the optimistic scenario, the cross border adjustment is 1.00, and corresponds to 1997, a year of economic recovery after the Mexican crisis of 1995. For the pessimistic scenario, the cross-border adjustment is 0.72, corresponding to 1998, a year of deep crisis in Argentina after the Russian default; this yields a MVIC/Sales of 0.58 for 2007. Firm beta is computed by relevering the median beta of U.S. comparables with Miltex's D/E ratio.

B. Transforming local cashflows into a reference currency. The computation of discount rates in emerging markets poses daunting technical challenges: country risk premiums may be misleading due to government regulations, market risk premiums may be very large or negative, and domestic comparables from which betas may be extracted could well be unavailable.[6] For this reason, Merigiana prefers to compute U.S.dollar-based discount rates, which pose fewer technical problems. Peso cashflows are likewise translated into U.S. dollars by using spot exchange rate forecasts coming from an investment bank.

C. Modelling the cost of capital. Next comes the thorny issue of defining a U.S. dollar-based required rate of return for discounting Miltex's U.S. Dollar-denominated cashflows. Merigiana assumes that, after the deal, shareholder's wealth will be concentrated in just two stocks: Merigiana and Miltex. As a result, the diversification benefits for Merigiana's shareholders will be severely limited.[7] This assumption discourages the use of a global CAPM (O'Brien, 1999; Stulz, 1995, 1999; Schramm and Wang, 1999) for computing the cost of capital of the target, since such would imply full diversification on the part of acquirers.

Merigiana decides to use instead the Private Venture Adjusted (PVA) CAPM, a full risk asset pricing model designed to compute the cost of equity capital of closely-held firms in emerging markets. In the PVA CAPM, the unsystematic risk arising from imperfect diversification is explicitly priced (see Figure 3) by including three premiums on top of the riskfree rate: the

Figure 3. The private venture adjusted CAPM

U.S. market risk premium. The size of this premium is a controversial issue. Although most U.S. practitioners use a 7% to 8% premium, some analysts argue that such a premium would have discouraged most of the strategic investments U.S. corporations made in the 1990s, which were considered as strategic for maintaining corporate competitiveness. New data also challenges the 7% figure: computations show that the long-term U.S. market premium is substantially lower –between 3.5% to 5.1%. And given the existence of transaction costs and imperfections in the diversification process, the premium could be even smaller –about 1.5% to 2.5%. In this line, many practitioners recommend to use a 4% to 5% market premium, as the figure for a mature stock market in a developed economy.

Country beta. The sensitivit of stock returns in the local bourse to U.S stock market returns. The country beta allows to calibrate the data from the U.S. market to the local market.

U.S. risk-free rate. Since the United States is considered by many to be the epitome of an efficient marke, its riskfree rate is used as the global market proxy.

Firm beta. The median (or cap-weighted average) of the unlevered betas of a group of carefully chosen local or U.S comparables, properly relevered using the target's debt.

Double counting depressor. Since stock market risk *does* already include a component of macroeconomic risk, the inclusion of a country risk premium breeds a problem of risk double-counting. The inclusion of the $(1-R^2)$ factor depresses the equity risk premium to partially counter the overestimation problem. R^2 is the coefficient of determination of the regression between the volatility of returns of the local market and the variation of country risk; it maybe thought of as the amount of variance in the local market volatility that is explai ned by the country's macroeconomic risk.

$$\text{Cost of Equity Capital } C_E = R_{f\,U.S.} + R_C + B_C \times \text{Beta} \times (R_{M\,U.S.} - R_{f\,U.S.}) \times (1 - R^2) + \text{URP}$$

Country risk premium. Computed as the spread between a sovereign U.S. bond and a similar local sovereign bond. It encompasses the many faces of country-related unsystematic risk: (a) the riskderived from social and/or political turmoil, which may negatively affect company performance; (b) the chance of expropriation of private assets by the government; (c) the potential of emergence of barriers to the free flow of cross-border capital streams, which may restrain, for instance, the remittance of royalties to headquarters: (d) the possibility of currency devaluation –that is, currency risk; (e) the chance that the government will not pay its international lenders, which may make the country credit rating plunge and the local cost of money soar –sovereign risk or default risk; and (f) the risk derived from unexpected inflation.

When financial markets are integrated and the investor is fully diversified, country risk becomes irrelevant, as it is diversified away through a geographically varied portfolio. If investors are, however, constrained from entering or exiting specific country markets, they may find themselves isolated, or segmented, from such markets, and come to bear country-related risk. Segmentation may be due, first, to observable factors such as legal restrictions, discriminatory taxation, and different transaction costs; and second, to psychological barriers as lack of familiarity and other informational disadvantages that prevent diversification. Such barriers help explain the home-bias effect: in practice, porfolio managers all over the world concentrate their monies in their country of origin, despite the potential benefits of fully diversifying in a global portfolio.

Unsystematic risk premium. Most entrepreneurs do not invest in many businesses simultaneously, but rather in a limited number –even in a single firm only. When diversification is imperfect, its potential benefits are low or simply absent. As a result, a firm-related, unsystematicrisk premium must be added. This premium is idiosyncratic to the target firm, and is based on differences in size, liquidity and control in comparison with minority positions of large quoting firms, which are the usual reference in the classical CAPM. The URP can be obtained via trial and error for a specific cashflow, by checking which premium equates a specific adjustment on the value of equity. The adjustment can be computed from a list of comparable M&A transactions effectively occurred in the local market.

classical CAPM-based systematic risk; an unsystematic, country-related risk; and an unsystematic, firm-related risk. Under ESF, the acquirer will use the PVA CAPM to compute a different cost of equity for each extreme scenario.

Figure 2 shows that, within each scenario, the PVA CAPM uses a time-varying discount rate. To understand the logic of this, consider the sovereign bond yield –the most common proxy for the country risk premium (Godfrey and Espinosa, 1996; Lessard, 1996; Budyak and Hackett, 2000). Although a sovereign bond yield curve may bear different shapes, an upward-sloping pattern is the usual occurrence (Campbell, 1995; see the curve in Figure 4a for an illustration); this is because investors demand a liquidity premium for longer maturities (Choudhry, 2001).

When constructing the discount rate, valuation practitioners in both the U.S. and Argentina usually employ a *constant* sovereign yield premium –the one corresponding to a bond whose term matches that of the investment under appraisal (Pratt et al., 1996; Bruner, 1998; Pereiro, 2006). Yet if the real yield curve is instead upward sloping, a constant premium will systematically underestimate the NPV of the project, for earlier cash flows are discounted at higher rates than should be (Patterson, 1995).

In contrast, when a severe macroeconomic crisis hits, the yield curve inverts itself, going to strongly downward sloping (see the curve in Figure 4B): the crisis makes bond prices drop dramatically, as investors deem extremely difficult to collect their monies in the short term from a defaulted government. Since yield and price of a bond bear an inverse relationship, short-term yields suffer an abrupt increase, turning negative the slope of the yield curve.

With a steep downward-sloping curve, the use of a constant country risk premium (equal to the yield spread of a long-term sovereign bond) is an *over-optimistic* valuation strategy, as earlier cashflows are discounted at *lower* rates than should be. A crisis makes earlier cashflows much riskier than later cashflows, and the former should be discounted at *higher* rates. This situation mimics that of uncertain technology ventures whose risk is high at first and then shrinks with time, as initial technical and market

Figure 4a. The country risk premium under crisis / May 2000

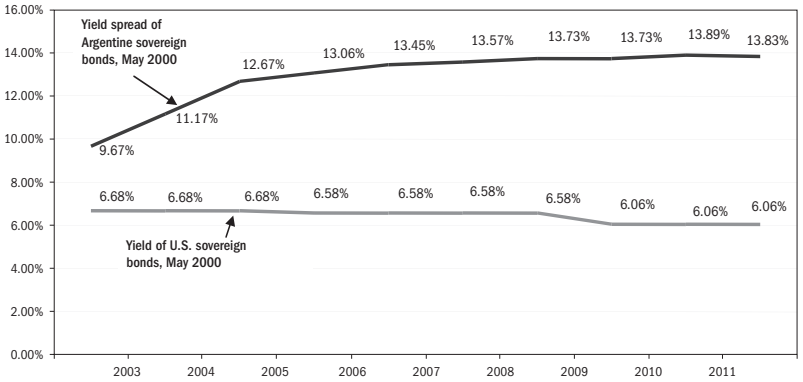
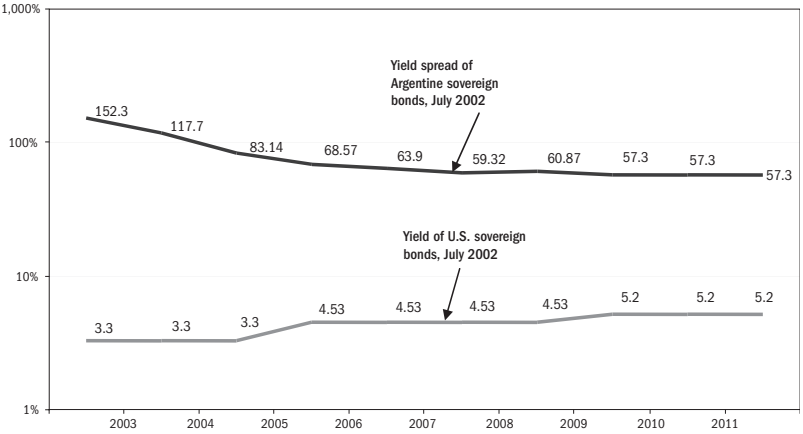


Figure 4b. The country risk premium under crisis / July 2002*



*Log scale.

uncertainties get resolved (see e.g. Hodder and Riggs, 1985). A time-varying, decreasing discount rate is the proper tool to compute the cost of equity in these situations, and this is what Merigiana chooses to do (see Figure 2).[8] For the optimistic scenario, appraisers arbitrarily cuts the yield at 60% for 2003 and then apply a rapidly decreasing yield for the remaining years. For

the pessimistic scenario, in contrast, they kink the yield curve arbitrarily at 90% for 2003 and 2004, but apply the values straight from the yield curve in Figure 4B to the rest of the planning horizon.

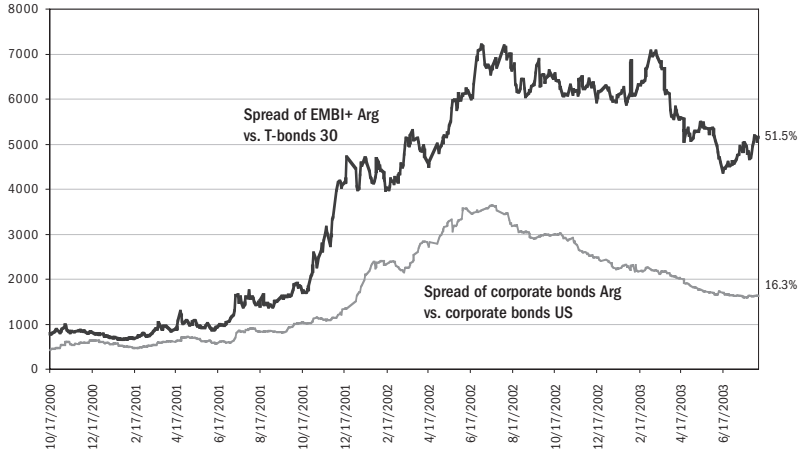
Some would argue that the outrageously large country risk premiums that result from the exercise –from about 60% to 90%– should not be used for the determination of the cost of equity, since beyond a yield of 1,000 or 1,500 basis points, trading of the reference sovereign bond may actually stop and yields will be theoretical not real. Yet the objection is irrelevant as long as the numbers give managers a plausible *ex-ante* measure of the risk they perceive present in the project. Figure 2 shows that Miltex's resulting WACC oscillates between 72% and 96% in the pessimistic scenario. Such figures may be plausible to the investor, as they are well in line with the required rates of return sought by seasoned venture capitalists in high-risk startups, both in the U.S. and Argentina (see e.g. Timmons, 1994; Wetzel, 1997; Pereiro, 2001b).[9] Clearly, Miltex is not a start-up but rather a well-established firm; yet the staggering nature of the *country* where it operates justifies the use of such large cost of capital figures.

The analyst that finds such sovereign yields implausible may resort to another technique: the use of corporate bond yields. Nakhjavani and Wong (2002) argue that under macroeconomic crises, the bonds of large, credit top-rated domestic corporations show lower yields than the corresponding sovereign bond yields. These blue-chip firms have access to global debt and equity finance at rates cheaper than those of more domestically focused peers. Along this line, the analyst could proxy the country risk premium by the spread in an index of local corporate bonds against a global corporate bond index; under this method, the resulting country risk premium will be smaller and hence more plausible. As an illustration, by July 2002 the Argentine sovereign bond spread as measured by Morgan Stanley's EMBI+ was 71.1%, while the spread of an index of Argentine corporate bonds quoting in the NYSE against a US corporate bond index, climbed to 35.2% only (see Figure 5). In the remaining of this paper, however, I will assume the investor is using the sovereign yield spread as a proxy for the country risk premium.

Envisioning the future evolution of the cross-border beta is more difficult. Country beta is the correlation between the U.S. and the foreign stock market multiplied by the quotient of the volatilities for both markets (Lessard, 1996). Under a crisis, correlation may be expected to decrease if we assume no worldwide contagion effect is present; but the volatilities quotient may well go up –then the resulting direction of the change in country beta is uncertain.

In our case, the Argentine cross-border beta goes from 0.91 to 0.82 as the crisis erupts: the drop in correlation outweighs the increase in the volatility of Argentine stocks. This smaller beta renders a smaller systematic risk premium. Yet we still get a large total cost of equity figure, as the huge country risk premium more than counterbalances the decrease in systematic risk. The systematic risk premium plays, in fact, a very minor role in the resulting term structure of Miltex's discount rate. Figure 2 shows that Merigiana assumes an upward-sloping term structure for the cross-border beta, as expects the cross-border correlation to increase faster than volatility is decreasing. As for the factor correcting the double counting of risk, Merigiana finds that the number does not change under the crisis –country risk seems to continue explaining about 44% of Argentine stock returns.

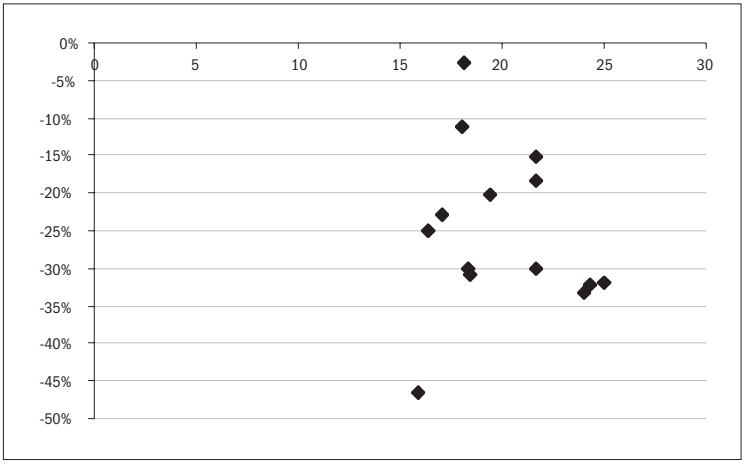
Figure 5. Corporate bond spreads for argentina



Next comes the issue of deciding on the evolution of the firm beta and the U.S. market risk premium. Firm betas tend to shrink with time, as companies grow stronger and more stable. Yet Merigiana believes Miltex is an already mature firm with a stable beta, and uses a constant beta –the median beta of a group of carefully selected U.S. comparables, properly relevered with Miltex's target D/E ratio. Regarding the U.S. market risk premium, Merigiana opts to use a constant figure (4%), considered to be a plausible long-term premium for the world's most mature and efficient stock market (Damodaran, 2002; Pereiro, 2002b).

Finally, recall that Miltex is a closely-held company. In order to define a proper firm-related unsystematic risk premium for it, Merigiana performs simulations with the valuation spreadsheet, learning that the sensitivity of Miltex's equity value, given its expected debt levels, is about 0.6:1 –i.e., a 0.6% increase in the discount rate triggers a fall in equity value of about 1%. The average unsystematic risk discount for equity-controlling positions in large Argentine closely held firms like Miltex is 10% (Pereiro, 2001a); then

Figure 6. Percent difference between P/E ratios of public vs. private firms in the U.S. as a function of P/E ratios of public U.S. firms, 1985-2000*



*Based on data from Mergerstat Review 2001, as quoted in Pratt (2001).

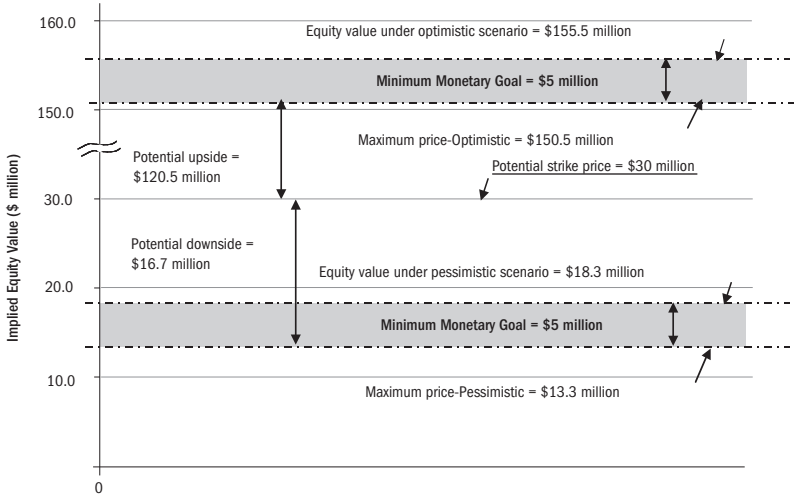
6% is the premium to be introduced into the discount rate. But, should this premium change with the level of economic activity? Figure 6 shows a plot of the difference between the P/E ratios of public vs. private firms in the U.S. against the state of the economy, the latter proxied by the P/E of public firms. Correlation between both variables is very low –0.09 when outliers from 1993 and 1994 are included in the regression, and 0.12 when removed. This suggests that the differential premium between private and public firms is uncorrelated with the general level of economic activity. Merigiana assumes the finding may also hold for Argentina, and applies a constant 6% premium all along the planning horizon.

D. Computing the long-term value of the target. So far, ESF has rendered two alternative values for Miltex's equity: $18.3 million and $ 150.5 million (Figure 7). This large dispersion comes as no surprise, for extremes scenarios are the reflection of dramatically different conditions and should thus produce widely different outcomes.[10]

The next step is to draw "value windows" from the extreme scenarios. First, Merigiana defines a minimum monetary goal (MMG) for the transaction. This is usual behavior, as investors define in their minds a measure of economic success against which they contrast the present value of the projects under appraisal (Socol and Kuhn, 2000). For instance, assuming a $ 5 million MMG, a *desirability window* can be defined for the acquisition: all prices below $ 13.3 million will be accepted. A *rejection window* can be likewise defined: all prices above $ 155.5 million will be rejected. But what is the long-term value of the target?

ESF defines long-term asset value as a weighted-average of the values in the extremes, multiplied by their respective state probabilities. Such value will be *free* from narrow framing, in the sense that extremes have already been incorporated in the analysis of future outcomes. To compute the probabilities of each extreme state Merigiana could use different econometric methods like Logit/Probit, structural VAR, or discriminant analysis (Burkart and Coudert, 2002). It can also use simply a historical frequency analysis;

Figure 7. Value windows in the Merigiana-Miltex deal



for example, Bordo et al. (2001) have determined that the annual frequency of all types of crises (currency, banking or twin crisis) in emerging markets to be about 27%; this means expecting a crisis every 3.4 years. Further, crises will produce an average output loss in the economy of about 9%, lasting an average of 2.4 years until recovery.[11] When applied to the Merigiana case, a 27% chance of for the submergence state derives in a probability-weighted average value for Miltex of about $117 million. This is the number that must inform the ensuing price negotiation.

E. ESF as a transparent decision-making tool. I will conclude by showing that ESF may also help identify other biases in the acquisition decision. For simplicity, assume now the probabilities of occurrence of the extreme scenarios are assigned an equal chance; assume further that the price being talked by both parties is $ 30 million. Under these conditions, rational decision-making would predict acquirers will pay up to $80 million for Miltex –a price at which the upside (potential for value creation) and downside (potential for value destruction) are of similar size. Yet, *most real-life acquirers will be*

willing to pay up to $ 50 million only. This *behaviorally-loaded* breakeven point has been documented by the prospect theory of choice (Kahneman and Tversky, 1979), which suggests that losses carry about 2.5 times the weight of gains in the mind of the average investor (Shefrin, 2001).

This overweighting of losses has a name: it is a behavioral bias called loss *aversion* (Kahneman and Tversky, 1979), and means that the decision to invest is much more influenced by *downside* risk than by the total or the upside risks perceived by the investor (Estrada, 2000; Miller & Leiblein, 1996; Ruefli, Collins and Lacugna, 1999). The experiment shown in Table 1 suggests that the effect is in fact operating in the case of Merigiana-Miltex.

Table 1. Decision-making experiment for the Merigiana-Miltex deal[a]

Deal Price ($ million)	Group I: % accepting to invest	Group II: % accepting to invest	Upside (GAIN)	Downside (LOSS)	Upside Minus Downside	Behaviorally-loaded downside (BLD)	Upside Minus BLD
10	100	100	140	3	143	7.5	147.5
20	100	56	130	-7	123	-17.5	112.5
30	62	33	120	-17	103	-42.5	77.5
40	62	33	110	-27	83	-67.5	42.5
50[b]	8	22	100	-37	63	-92.5	7.5
60	0	0	90	-47	43	-117.5	-27.5
70	0	0	80	-57	23	-142.5	-62.5
80[c]	0	0	70	-67	3	-167.5	-97.5
90	0	0	60	-77	-17	-192.5	-132.5

a. Decision behavior of two groups of subjects exposed to Merigiana's decision situation. Group I: 19 advanced corporate finance MBA students from the Kenan-Flagler Business School, University of North Carolina at Chapel Hill. Group II: 9 advanced corporate finance MBA students at the HEC School of Management, Paris. In both groups, subjects stop accepting to invest at about the $ 50 million point. BLD= 2.5 x Downside.

b. Behaviorally-loaded break-even point.

c. Rational break-even point.

Loss aversion can be used, at the acquirer's discretion, as a compensatory mechanism for overoptimism. The logic of rational choice (expected utility theory) is generally satisfied in transparent choice situations but often violated in non-transparent ones (Tversky and Kahneman, 1986). The advantage of ESF is that it provides transparency –and hopefully rationality– to the investment decision, for it forces the potential acquirer to clearly spell out the maximum affordable loss, and to decide whether or not the deal price must "stretch" to achieve a behaviorally-loaded monetary goal. In other words, the acquirer may or may not decide to succumb to the loss aversion bias (i.e., decide to follow prospect theory instead of the rational theory of choice). In any case, ESF makes the bias evident to the acquirer.

4. Deciding Acquisitions under Extreme Scenario Framing

Investors deciding to acquire a firm in an emerging market may succumb to narrow framing biases, whereby they anchor their perceptions of the future in the most recent past only. If the target is in a state of emergence, they may either overlook the possibility of catastrophic losses or overestimate the potential for growth in the recovery phase of the economy; if the current state is submergence, biases may make them overlook the possibility of future recovery.

This paper discusses Extreme Scenario Framing (ESF), a valuation method designed to temper the bidder's decision-making process and help him in avoiding overpaying or underbidding for a target. ESF appraises the value of a company via a binary framework that reflects the extremely different and evolving "views of the world" the acquirer holds in mind. First, ESF downplays the effects of narrow framing since it incorporates in the analysis extreme outcomes which are based on long-term historical data. Second, the method spells out clearly the buyer's attitudes toward downside risk and loss aversion –an additional bias that may or may not be used, at the acquirer's discretion, to moderate the investment decision. By managing narrow framing and loss aversion, ESF may decrease the proneness of an acquirer to overpay

for a target company in a takeover bid, and so avoid the destruction of shareholder's value. Alternatively, it may help avoid underbidding, thus preventing the bypassing of a potentially profitable acquisition deal.

NOTES

1 For extensive reviews of the available evidence, see Andrade *et al*., 2001 and Bruner, 2002.

2 Distressed firms may attract portfolio managers following contrarian strategies; multinational firms searching for inexpensive ways of establishing locally; and *distress funds* –private equity buyers that acquire devalued firms, take over the debts of the targets, and prepare these for sale in rosier times. Even multinationals that have, in expansion times, injected money in heavily foreign-currency indebted local companies may find it attractive to take over the debts of the latter and capitalize them as shares in times of crises. If the market re-emerges, all these investors may extract a substantial upside from the deal.

3 Jorion and Goetzmann (1999) show that the median annual return for all world equity markets over 1921-1996 (the US excepted) is a meager 0.8 percent per annum.

4 A typical construction may run as follows: "Assume that sales will be 20% lower and costs 30% higher than expected in the pessimistic case, and sales 10% higher and costs 5% lower than expected in the optimistic case".

5 Both Merigiana and Miltex are fictitious firms, yet they are based on real-life companies.

6 See Pereiro (2006) for a detailed discussion.

7 The assumption of underdiversification of Merigiana's shareholders is fully plausible and in line with a growing amount of empirical evidence that confirms that many types of investors hold in practice highly concentrated portfolios. See for instance Huberman (2001) on individual investors, Moskowitz and Vissing-Jorgensen (2002) on entrepreneurs, Norton and Tenenbaum (1993) and Schertler (2001) on venture capitalists, Freear, Sohl and Wetzel (1997) and Pereiro (2001b) on angel investors, and Coval and Moskowitz (1999), French and Poterba (1991), Cooper and Kaplanis (1995), Hasan and Simaan (2000) and Glassman and Riddick (2001) on portfolio investors and money managers.

8 The usefulness of a time-varying rate is questionable if most of the value of the target is concentrated in the terminal value. This is indeed the case for Miltex; yet we will use a time-varying rate to illustrate the procedure. The analyst should decide whether the additional expense incurred by using a time-varying analysis is justified in each case.

9 Smith and Smith (2000) argue that the rates used by venture capitalists are not really discount rates but hurdle rates, conceived to encompass the large risk embodied in a private acquisition. This argument does not deter venture capitalists from their usual practice of using extremely large rates for discounting cashflows of the ventures under their appraisal. In any case, our point in this paper is that large rates of discount may perfectly be a plausible benchmark for an imperfectly diversified investor.

10 The binary payoff structure may suggest a real option is present, but this is just a mirage since the investment cannot be staged: Miltex's shareholders have warned they wish to cash out and fully retire from the acquired firm if the deal goes forward.

11 Figures are computed over 1973-1997. The precise number for crisis frequency in emerging markets is 26.7%. Bordo et al. (2001) define output loss as the cumulative difference between pre-crisis trend growth and actual growth in GDP from onset to recovery. A regression analysis could be conducted to forecast the free cashflows of the acquisition as a function of GDP. *Duration* of a crisis is the number of years before GDP growth returns to the trend rate of GDP growth of the 5 years preceding the crisis. For industrial nations, the frequency of crises, output loss and duration figures are, respectively, 12.2%, 6.3%, and 2.7 years %. These numbers are clearly material, suggesting the ESF methodology may also be fruitfully applied to acquisitions in developed markets.

REFERENCES

Andrade, G., M. Mitchell, and E. Stafford, 2001, New evidence and perspectives on mergers, *Journal of Economic Perspectives* 15, 103-120.

Arnold, J.H., 1986, Assessing capital risk: you can't be too conservative, *Harvard Business Review* (September-October), 113-121.

Bordo, M., Eichengreen, B., Klingebiel, D. and M.S. Martinez-Peria, 2001, Is the crisis problem growing more severe?, *Economic Policy*, April, 51-82.

Bruner, R.F., 2002, Does M&A Pay? A survey of evidence for the decision maker, *Journal of Applied Finance* (Spring-Summer), 48-68.

Bruner, R.F., K.M. Eades, R.S.Harris and R.C.Higgins, 1998, Best practices in estimating the cost of capital: survey and synthesis, *Financial Practice and Education*, 14-28.

Budyak, J.T. and L.P.Hackett, 2000, International cost of capital, in: R.F.Reilly and R.P.Schweihs, eds., *Handbook of Advanced Business Valuation* (McGraw-Hill, New York).

Burkart, O. and V. Coudert, 2002, Leading indicators of currency crises for emerging countries, *Emerging Markets Review* 3, 107-133.

Campbell, J.Y., 1995, Some lessons from the yield curve, *Journal of Economic Perspectives* 9, 129-152.

Choudhry, M., 2001. *The Bond and Money Markets: Strategy, Trading, Analysis* (Butterworth-Heinemann, London).

Cooper, I. and E. Kaplanis, 1995, Home bias in equity portfolios and the cost of capital for multinational firms, *Journal of Applied Corporate Finance* 8, 95-102.

Coval, J.D., and Moskowitz, T.J., 1999, Home bias at home: local equity preference in domestic portfolios, *Journal of Finance* 54, 1-39.

Davis, L.E., and D.C. North, 1971. *Institutional change and American economic growth* (Cambridge University Press, London).

Damodaran, A., 2002, *Investment valuation* (Wiley, New York).

Duhaime, I.M., and C.R. Schwenk, 1985, Conjecture on cognitive simplification in acquisition and divestment decision making, *Academy of Management Review* 10, 287-295.

Copeland, T., Koller, Y. and J.Murrin, 2000. *Valuation: measuring and managing the value of companies* (Wiley, New York).

Estrada, J., 2000, The cost of equity in emerging markets: a downside risk approach, *Emerging Markets Quarterly*, 19-30.

Ezzell, J.R. and W.A. Kelly, Jr., 1984, An APV analysis of capital budgeting under inflation, *Financial Management*, 49-54.

Freear, J., Sohl, J.E. and W.E. Wetzel, 1997, The informal venture capital market: milestones passed and the road ahead. In: Sexton, D.L. and R.W. Smilor (Eds.), *Entrepreneurship 2000*, (Upstart, Chicago), 47-69.

French, K.R. and J.M.Poterba, 1991, Investor diversification and international equity markets, *American Economic Review* 81, 222-226.

Garten, J.E., 1997, Troubles ahead in emerging markets, *Harvard Business Review* 75, 38-50.

Glassman, D.A. and L.A.Riddick, 2001, What causes home asset bias and how should it be measured?, *Journal of Empirical Finance* 8, 35-54.

Godfrey, S. & R. Espinosa, 1996, A practical approach to calculating costs of equity for investments in emerging markets, *Journal of Applied Corporate Finance* 9, 80-89.

Goetzmann, W.N. and P. Jorion, 1999, Re-emerging markets, *Journal of Financial and Quantitative Analysis* 34, 1-31.

Hasan, I. and Y.Simaan, 2000, A rational explanation for home country bias, *Journal of International Money and Finance* 19, 331-361.

Hayward, M.L.A. and D.C. Hambrick, 1997, Explaining the premiums paid for large acquisitions: evidence of CEO hubris, *Administrative Science Quarterly* 1, 103-127.

Hodder, J.E. and H.E. Riggs, 1985, Pitfalls in evaluating risky projects, *Harvard Business Review* 63, 128-135.

Huberman, G., 2001, Familiarity breeds investment, *Review of Financial Studies* 14, 659-680.

Jorion, P., and W.N. Goetzmann, 1999, Global stock markets in the twentieth century, *Journal of Finance* 54, 953-980.

Kahneman, D. and D. Lovallo, 1993, Timid choices and bold forecasts: a cognitive perspective on risk taking, *Management Science* 39, 17-31.

Kahneman, D. and A. Tversky, 1979, Prospect theory: an analysis of decision under risk, *Econometrica*, 263-291.

Kuemmerle, W., 2002, Valuing cash flows in an international context, Working Paper N9-803-028, Harvard Business School.

Langer, E.J., 1975, The illusion of control, *The Journal of Personality and Social Psychology* 32, 311-328.

Levinthal, D.A. and J.G. March, 1993, The myopia of learning, *Strategic Management Journal* Winter, 95-112.

Lessard, D., 1996, Incorporating country risk in the valuation of offshore projects, *Journal of Applied Corporate Finance* 9, 52-63.

Liu, J., Longstaff, F.A., and J. Pan, 2003, Dynamic asset allocation with event risk, *Journal of Finance* 58, 231-259.

Malmendier, U. and G. Tate, 2002, *Who makes acquisitions?: CEO overconfidence and the market's reaction*, Working Paper, Stanford University.

Mehta, D.R., Curley, M.D. and H. Fung, 1984, Inflation, cost of capital, and capital budgeting procedures, *Financial Management*, 48-54.

Miller, K. D. and M. J. Leiblein, 1996, Corporate risk-returns relations: returns variability versus downside risk, *Academy of Management Journal* 39, 91-122.

Mitroff, I.I. and M.C. Alpaslan, 2003, Preparing for evil, *Harvard Business Review* (April), 3-9.

Moskowitz,Y. and A.Vissing-Jørgensen, 2002, The returns to entrepreneurial investment: a private equity premium puzzle?, *American Economic Review* 92, 745-779.

Nakhjavani, M. and G. Wong, 2002, Valuation in emerging markets: the treatment of global companies, Proceedings of the Conference on Valuation in Emerging Markets, Batten Institute, Darden Graduate School of Business Administration, University of Virginia.

Norton, E. and Tenenbaum, B.H., 1993, Specialization versus diversification as a venture capital investment strategy, *Journal of Business Venturing* 8, 431-442.

O´Brien, T.J., 1999, The global CAPM and a firm's cost of capital in different currencies, *Journal of Applied Corporate Finance* 12, 73-79.

Patterson, C.S., 1995. *The Cost of Capital: Theory and Estimation* (Quorum Books, Connecticut).

Pereiro, L.E., 2006. The practice of investment valuation in emerging markets: evidence from Argentina, *Journal of Multinational Financial Management* 16, 160-183.

Pereiro, L.E., 2002a. Paradise lost: the lessons of Argentina for international investors, *Journal of Corporate Accounting and Finance* 13, 17-21.

Pereiro, L.E., 2002b. *Valuation of companies in emerging markets: a practical approach* (Wiley, New York).

Pereiro, L.E., 2001a, The valuation of closely-held companies in Latin America*, Emerging Markets Review* 2, 330-370.

Pereiro, L.E., 2001b, Tango and cash: entrepreneurial financing and venture capital in Argentina, *Venture Capital* 3, 291-308.

Powers, M.R., 2003, "Leapfrogging" the variance: the financial management of extreme-event risk, *Journal of Risk Finance* (Summer), 26-39.

Pratt, S.P., 2001. *Business Valuation Discount and Premiums* (Wiley, New York).

Pratt, S.P., Reilly, R.F., and R.P. Schweighs, 1996. *Valuing a Business: The Analysis and Appraisal of Closely Held Companies,* (McGraw-Hill, New York).

Rappaport, A. and R.A. Taggart, 1982, Evaluation of capital expenditure proposals under inflation, *Financial Management*, 5-13.

Roll, R., 1986, The hubris hypothesis of corporate takeovers, *Journal of Business* 59, 197-216.

Ruefli, T.W., Collins, J.M. and LaCugna, J.R., 1999, Risk measures in strategic management research: aud lang syne?, *Strategic Management Journal* 20, 167-194.

Schertler, A., 2001, *Venture capital in Europe's common market: a quantitative description*, Working paper # 1087, Kiel Institute of World Economics, 1-103.

Schramm, R.M. and H.N.Wang, 1999, Measuring the cost of capital in an international CAPM framework, *Journal of Applied Corporate Finance* 12, 63-72.

Shefrin, H., 2001, Behavioral corporate finance, *Journal of Applied Corporate Finance* 14, 113-124.

Smith, J.K. and R.L. Smith, 2000, *Entrepreneurial Finance* (Wiley, New York).

Socol, R.S. and R.L. Kuhn, 2000, How valuations affect transactions: psychological powers of financial numbers, in: Reilly, R.F. and R.P.Schweihs, eds.: *Handbook of Advanced Business Valuation* (McGraw-Hill, New York).

Solnik, B., 1996. *International investments*, (Addison-Wesley, Reading, MA).

Stulz, R., 1999, Globalization, corporate finance, and the cost of capital*, Journal of Applied Corporate Finance* 12, 8-25.

Stulz, R., 1995, Globalization of capital markets and the cost of capital: the case of Nestle, *Journal of Applied Corporate Finance* 8, 30-38.

Timmons, J., 1994. *New Venture Creation* (Irwin, Chicago).

Tversky, A. and D. Kahneman, 1986, Rational choice and the framing of decisions, *Journal of Business* 59, 251-278.

Tversky, A. and D. Kahneman, 1971, The belief in the law of small numbers, *Psychological Bulletin 76*, 105-110.

Velez-Pareja, I. and J. Tham, 2002, Valuation in an inflationary environment, Proceedings of the Conference on Valuation in Emerging Markets, Batten Institute, Darden Graduate School of Business Administration, University of Virginia.

Watkins, M.D. and M.H. Bazerman, 2003, Predictable surprises: the disasters you should have seen coming, *Harvard Business Review* (March-April), 3-10.

Wetzel, W.E., Jr., 1997, Venture capital, in: W.D. Bygrave, ed.: *The Portable MBA in Entrepreneurship* (Wiley, New York).