Cross-Border Investments Imputing Financial Shape to Uncertain Business Situations - The Use of Real Options and the Lessard APV Approach - A Discussion

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Abstract

Cross Border investments have risk considerably different from the domestic scenario. Firms are under compulsion to indulge in cross border investments as a strategic imperative arising out of growth constraints and value-creation difficulties. The first task for the firm before embarking upon such a venture would be to quantify uncertainty to the extent possible and find ways for factoring this into a valuation model. Uncertainty itself can be classified in different ways and once the firm recognizes its level, either the Real Options Approach or the Lessard model of Adjusted Present Value for international capital budgeting can be used to evaluate the project. The Real Options approach enables the firm to convert the threat of uncertainty into an opportunity, while the Lessard model takes a systematic approach to dissecting the various aspects of cross country investment and weave these into a tangible model. While firms will have their strategic non-financial imperatives in going in for cross country investments, the use of a model like the one discussed in this paper will enable it to plan the uncertainty better.

Key Words : Abandonment Analysis, CFO, Lessard APV Approach, Real Options, Option Theory

Introduction

One of the great developments over the last 15 years has been the opening up of foreign investment avenues in many developing countries. In India, right from 1992 when the liberalization movement was launched, the controls and checks in respect of foreign investments have been eased gradually. This has resulted in a situation where the investing countries and entities can look at risk-return balance aspects in isolation as in a domestic investment before embarking upon the scheme.

Cross border investments have many perspectives. The perspective we are going to examine in this paper is from the angle of Indian conditions, where there are

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number of clear uncertainties, but quite intermingled with clarity in certain areas. For instance the foreign entity will know the areas where the investment can expand to in future and the tax regime is more or less fixed and transparent. What is more, the amount of repatriation and transfer of know-how are all regulated with well-defined rules. The flip side to this has been the slow enforcement mechanism for giving relief in respect of breach and consequently many foreign investors have been averse to the idea of protracted legal battles for enforcing rights.

The economic framework for cross border investments comes out of the saturation of domestic demand and the need to expand and grow to keep creating value for the stakeholders. With every progressive investment the foreign entity will assume greater risk and correspondingly expect a higher rate of return. The higher risk arises out of having all the risk inherent in a domestic scenario coupled with the country-specific risk attributable to default and business risk in alien centers.

In this paper we look at three learned propositions on uncertainty and its handling. They refer to different concepts and hence may not be universally applicable all together. All the same, their value lies in their seeking a totally logical (and not abstract) interpretation to handling of uncertainty especially in situations like cross-border investment.

Uncertainty Framework

Courtland, Kirkland and Vigueri (1997) have outlined three levels of uncertainty in their famous HBS article. The challenge before the CFO comes when the scenario is not only unclear but cannot be quantified also. These are typical strategic situations where the happening of one series of events might result in a set of figures and the happening of a different set of events might change the set of variables altogether. In fact, coping with uncertainty is such a raging topic now that a number of theories have been propagated and scores of articles written on it. The paper suggests a methodology for determination of a specific level of uncertainty for each situation and then to form generic strategies for it. For this the author divides the levels of uncertainty into the following categories:

- Clear enough future where the relevant facts are already available or capable of being gathered.
- Alternative futures consisting of a set of discrete scenarios of future uncertainty.
- Range of futures where the uncertainly does not fall into a clear bracket but might assume a range of events.
- True ambiguity wherein the scenario is uncertain and needs to be blindly forecast.

The article suggests a number of generic postures and actions to counter these levels of uncertainty. These would involve:

- Shaping the future Whereby the company aggressively launches a course of action, which would hopefully herald the way the industry functions in future.
- Adapt to the future Whereby the company sizes up the situation and plans its actions to suit the role model.
  And
- Reserve the right to play Whereby the company steps in for the purpose of keeping an option to be a participant in the future. As regards specific actions or moves, the paper suggests no-regret moves, options and big bets for various levels of uncertainty depending on the strategic posture of the company.

Until recently, most companies were merely following strategic initiatives and not fully translating their expectations into numbers. Thus a decision say to introduce a new sub-brand abroad at a lower cost segment and launch it by a strong advertising campaign might be taken without necessarily looking at the scenarios of possible sales and possible benefits from the strategy. The reason why financial projections did not form part of a strategic working paper could be attributed to the fact that the uncertainties were so high that to quantify these into any form would have been highly difficult. Further, Finance did not have enough models and risk reduction measures to counter uncertainties, in any case. Things have changed dramatically in recent years. The paradox for a CFO now lies in the fact that it is the uncertainty that will be the greatest opportunity for a strategic advantage. Presently, he has enough ammunition like tools of quantitative estimation, models of value determination and a plethora of customized derivative instruments, which could considerably bring down the risk of specific transactions and also act as a means of asset value enhancement. Simultaneously, thanks to improved regulatory mechanism markets have become more and more efficient, thereby resulting in quick corrective arbitrage to prevent market imbalances.

So coming to the Cross-border investment scenario, the first step will be the obvious one of collecting as much data as possible to make the uncertainty as "certain" as possible. The possible discrete scenarios say like governments changing, regulatory policies suddenly undergoing changes and inflation levels needs to be drawn up to make further analysis easy. The bigger

question of country risk and the possible ways of repatriation or investment channeling needs examine, similar to any other international business situation.

Eun (2001) classifies political risk as Macro risk and Micro risk. In the former, all foreign currency operations are affected by adverse political developments; while in the latter only selected areas of foreign businesses are affected. Based on the nature of the influence of these factors, political risk consists of transfer risk (arising from uncertainty about cross-border flows of capital, payments and know-how), operational risk (arising out of vagaries of policy of the host country) and control risk (arising out of regulation regarding ownership of local operations)

The Real Options Approach

Among all the tools in his control, the CFO would be well advised to use the Option Theory in most of the uncertain situations. An Option contract derives value from uncertainty. If the outcome is more or less certain, there is no great value in holding an option to use it. But if the outcome is highly uncertain, the option assumes significance in that it could be used if the conditions are favorable or otherwise simply discarded. So the Option way of thinking could be brought into management and specific decision-situations could be thought of as options. If it was sufficiently worthwhile to have an option to play, then it would be a much better alternative for the CFO than taking the full plunge. The price one has to pay for keeping the option will afterward become the only important consideration. These options in capital budgeting decisions could be in the form of the Option to Abandon, Option to Wait and Option to Time. An Option to abandon gives the company the right to go all out on a project and back out if the going is not good enough. The payoff, if such abandonment does take place after a brief period of time, when reckoned with the other flows, will tell us how important the right to back away is. As a corollary, the more valuable this option, the more we may be prepared to pay for having the option. Thus, an abandonment analysis will help the CFO in deciding upon the amounts to be foregone in order to retain the choice. The Option to Wait gives the company more time to decide whether to plunge into the project. Obviously, this will apply only to cases where the circumstances of business would not change dramatically in the interim. For example, in specific mining contracts, if a company is given some time to decide whether to take up a contract or not, that would enable it to study the market conditions and environment before taking the plunge. The CFO would be prepared to pay a price for the right to wait and this could then be thought of as an option premium. The Option to Time is not necessarily one that is given by the counter party. Based on a study of the market conditions the company can decide the best period to strike. But for this, the infrastructure and other wherewithal must be in place. This is brought about by the option for which the CFO will be prepared to part with a premium.

While conceptually, Real Options are a very interesting possibility in corporate capital budgeting, difficulties have been experienced on two counts valuation of such options and the question of maximum investment in such options. Valuation of Real Options cannot be as straightforward as the valuation of an equity option. This is because inherently a corporate decision-making situation involves a number of other levels of uncertainty than contemplated by the five inputs to the share option model. Attempts have been made by academics in recent years to correlate the inputs of a share option with that of the real option. In the process, the following similarity could be reached: India were contacted to participate in the survey. The survey was distributed either as a postal mail or as a web survey. Total responses received were 176, which constitutes a response rate of 17.6%. After deleting the responses, which could not fulfill minimum competency, total responses retained were 156. Table-1 shows detail demographic profile of respondents participated in the survey.

If data analysis could be done on the above lines, the Black Scholes Model itself could be directly used to give a first estimate of the value of the option. Alternatively, in case, the uncertainty boils down to the happening of one of only two possible events, the Binomial Option Pricing Model could be used to determine the right price of the option.

But, importantly, it is the question identification of the existence of Options that is of greater significance to the CFO. Once identified, these options could be valued by using one or more of the above models. But how do we spot an option-like situation from the strategic perspective?

Luehrman (1998) in his paper *Investment Opportunities as Real Options* gives a framework for identifying whether a real option exists at all in a given situation. According to this framework, the two principal requisites for a situation to be called an option are the existence of a modified NPV (called NPVq) and the presence of considerable cumulative variance of returns. The modified NPV (NPVq) is calculated as the NPV of inflows divided by the PV of outflows. In other words, the expected inflows are not discounted but the outflows are. If the NPVq>1, it shows that the project is having a

Time to Maturity	The time that can be taken before exercising the right to opt. For instance, if an option to plunge ahead could be deferred for a maximum of two years and could be exercised any time in that period, this would be tantamount to an American call option for two years.
Share Price	This is the value of the investment its NPV if undertaken now. Obviously, if the NPV is already good, we have nothing to discuss, but if the NPV is not quite good or even negative now, but likely to turn positive on the happening of specific set of incidents, then we have a real option in hand. The present NPV is the equivalent here of the current share price
Risk Free Return	Academics are divided as to whether one should take the risk free return itself for the purpose of analysis of real options or should take the WACC of the firm. Either way, this is easily determinable.
Exercise Price	The investment that the company will have to finally make to embark upon the project or capital budgeting decision
Variance of Returns	This can be easily substituted with the variability of the NPV under various scenarios. Again, it has to be borne in mind that the higher the variability, the better the value of the option.

positive potential. Both NPVq and cumulative variance must be present together for a real option to be worthwhile. If the modified NPV is greater than 1, but there is no cumulative variance present, it means that the outcome is more or less certain, which in turn makes the option unattractive. Similarly, if there is considerable cumulative variance, but this is not accompanied with a NPV q>1, it means that although there is considerable uncertainty, this does not work out to the favor of the organization, because whatever the circumstances, the NPV cannot be positive. The author also highlights specific situations wherein there could be a borderline case where either the modified NPV or the cumulative variance is not presently attractive, but could be strategically nurtured to become so. This is so when a major technological change is expected to take place, or the opening up of an economy is likely to result in an uncertain demand scenario in the future.

All in all, Real Option theory presents a very exciting opportunity to the CFO to give financial meaning to strategic alternatives. The only factor that has to be kept in mind is that too much of investment into these options would result in a definite erosion of capital, unless some of them fructify. The analogous situation is an investment in share options continuously. The company must have a positive strategy for these options and also have a rough upper ceiling of amounts that could be locked up in these ventures.

In India, there are number of recent examples of corporate strategy in the cross-country area. These strategic initiatives could be translated into the Real Options framework by the CFO so that the financial imperatives and consequences of the moves could be better understood. We have to, of course, remember that the theory of Real Options is still young and as more and more empirical studies are undertaken, new models would emerge. There is no doubt, however, that the Options way of Financial Management does give the CFO new vistas of strategic planning and companies would be richer for it.

While the models make an over simplistic way of solving the issue, the fact remains that uncertainty by itself is not a bad thing for an investment, provided the investor can point in time his outlay and has the choice of coming out of the plan itself. This is especially valuable in a foreign exchange investment and that is why in a modified way, the basic Real Options model can be usefully used. The greater the uncertainty, the greater the potential benefit provided the investor is able to afford the initial "Option price". Here lies the strategic imperative of having to decide on the extent of such possible outlays and a probability distribution of possible inflows.

The age-old theory of synergy can be re-written using the Real Options approach. While synergy is the easy way of thinking about the justification of an investment and making 2 +2 =5, the Real Options gives an even wider vista by saying that it can be much higher than 5 or sometimes lower than 4 itself, but you plunge into it only if the scenario suggests it going to the upward region and discard it on the other scenario. Of course, as stated earlier, this requires a small outlay for getting the "right to play".

Factoring in Uncertainty the APV Model

Conventionally, the Adjusted Present Value Method (APV) factors in various aspects of flows and analyzed each by taking individual discount rates into account. The great benefit of an APV approach is that it gives a strategic framework to decision-making by analyzing the parts of the whole and seeing how they contribute to the whole. In doing so, we discounts the different parts differently based on the respective risk and so what we finally get is the correct net position.

This approach has been adapted to suit the cross-border investment phenomenon by Donald Lessard (1985). His model uses the APV framework for analysis but more importantly factors in a number of special features of multinational investment. So much so, the model will have the advantages of all the other models of evaluating foreign investment projects, and gives a lot more insight.

The Lessard model is a special approach to view foreign capital expenditure. It uses the basic APV framework to factor in all the elements of uncertainty and arrive at a pattern for analyzing the flows. The model accepts the postulate that the flows will be denominated in a foreign currency and will then have to be converted to a parent uniform currency. The following special aspects need consideration:

A project may have a positive APV from the parent's angle and negative APV from the subsidiary's angle, or vice versa. This can arise because of laws that prevent free repatriation and transfer pricing for shielding higher taxes in one country.

- Under the model, cash flows are assumed to be denominated in foreign currency and converted to the parent currency at the spot rate.
- The marginal tax rate for the computation will be the larger of the domestic or foreign tax rates.
- Only the operational cash flow that can be legally remitted to the parent is considered.
- Only the incremental costs or revenues afar considering the opportunity costs should be considered.

Calculations in respect of concessional loans are to be specially made. The benefit to the investing entity is the difference between the loan amount converted into the parent currency; and the flows of interest and principal repayment discounted at the parent's nominal rate

In ascertaining the Weighted Average Cost of Capital (WACC), the parent should not consider the investment capital structure in isolation. The results are always better with a target capital structure.

Sometimes foreign governments allowing freeing of accumulated funds, if the project is undertaken. That is the investor now has the facility of freeing up his accumulated funds from other projects in the country if the new project is undertaken. This should be taken as an opportunity item from the APV angle

Since capital budgeting necessarily involves estimation of future expected flows, the Purchasing Power Parity theory (or any other well-defined postulate) can be taken as the basis for predicting exchange rates for the purpose of evaluation. Of course, it is possible to simulate this data with a range of possible exchange rates for getting more reliable results.

Like any other capital budgeting model, the Lassard approach involves estimation of various flows, discount rates and the exchange rate. To that extent the model is only as good as the estimates. However, given reasonably reliable estimates, the strategic vision of the project as a whole and its various components are better visible under this approach than in conventional capital budgeting.

The steps involved in this procedure can be summarized as follows:

Estimate the operation profits, depreciation tax shields and interest tax shields separately and if there is a concessional loan that has been sanctioned for the project, the tax shields arising out of the concessional loans need to be analyzed separately.

Estimate the exchange rate for conversion of foreign flows into domestic currency. Use the spot rates for the purpose of current conversion and then apply the `Purchasing Power Parity theory' to get an estimate of foreign exchange rates for conversion in the future, given the inflation estimates.

Determine a target capital structure for the company and find the corresponding WACC. It must be remembered that strategically the company is embarking upon this project only for enhancing the value to its shareholders. Hence it does not make a sense to view the project in isolation and have its separate capital structure and cost of capital used for evaluation.

Any concessional loan that the foreign country provides is to be viewed from the angle of first estimating the extent of concession and then evaluating tax shields on interest payments. The present value of interest and principal repayments for the loan at the regular rate gives the value of the loan. The full value of the loan

minus this present value is the value of the concessional loan. How this contributes to the acceptance of the project can be analyzed for further negotiation regarding enhancing this component or for reducing the interest rates.

For calculating tax shields the higher of the two countries' tax rates are to be taken and only cash flows that can be legally and promptly repatriated must be reckoned. The Operating Cash flows are to be discounted at the Cost of Equity, Depreciation Tax shields at the WACC and the interest tax shields at the cost of debt. The concesssional tax shields are to be discounted at the concessional cost of debt. As stated earlier in evaluating the concessional loan the discounting of flows are to be done at the regular cost of debt.

The Price to Pay

Ultimately, a cross border investment too has to satisfy the risk-return matrix of the organizations. The higher risk has to be compensated with the higher expected return. But in a cross border investment, factors like money market hedge of revenues, the peculiar economic exposure or general transactions exposure to which the firm is subjected will also play a role in determining a policy. Sometimes tax considerations and enabling of multinational netting will also influence this decision. However, a financial framework is certainly required before one can strategically view individual opportunities.

Another dilemma in cross border investments arises out of peculiar conditions within the industry. When organic expansions become the only way to survive sever competition and growth constraints, as in the pharmaceutical industry, it becomes sometimes necessary to assume greater risk. Here again, a financial framework on the above lines will bring out the extent of risk taken up and the corresponding return level.

Empirical Evidence

We see some research on the subject below that emphasizes in one way or the other the need for a financial framework:

Bailey, Chung and Kang (1999) study, "the impact of barriers to international capital flows with stock price data from 11 countries whose stock markets feature shares restricted to locals and otherwise identical shares available to foreigners. Large price premiums for unrestricted shares relative to matching restricted shares are typically observed. Although basic notions of international asset pricing offer a straightforward explanation for the price premiums, we find little evidence that the price premiums are explained by lower foreign required returns. Alternative concepts and theories centering on foreign investor demand and the supply of shares explain some of the time-series and cross-sectional variation of price premiums. More specifically, premiums for unrestricted shares are positively correlated with foreign investor demand in the form of international mutual fund flows, sentiment implicit in matching closed-end country fund premiums, market liquidity, and information reflected in press coverage, country credit rating, and firm size."

Portes and Roy (1999) follow a different approach by taking the cross border equity flows as between 14 countries in the period 1989 1996. They conclude, " We find that the geography of information heavily determines the pattern of international transactions. Our model integrates elements of the finance literature on portfolio composition and the international macroeconomics and asset trade literature. Gross asset flows depend on market size in source and destination country as well as trading costs, in which both information and the transaction technology play a role. The resulting augmented 'gravity' equation has equity market capitalization representing market size and distance proxying some informational asymmetries, as well as a variable representing openness of each economy. But other variables explicitly represent information transmission (telephone call traffic and multinational bank branches), an information asymmetry between domestic and foreign investors (degree of insider trading), and the efficiency of transactions ('financial market sophistication')."

Vihang and Ettiiene (1989) examine the capital flow restrictions in cross border investment patterns. The authors state as follows in their abstract, "This paper investigates the impact of capital flow restrictions on the pricing of securities, on the optimal portfolio composition for investors of different nationalities, and on their welfare. Under capital flow controls, the equilibrium price of a security is determined jointly by its international and national risk premiums, and investors acquire nationality-specific portfolios along with a market-wide proxy for the world market portfolio. Removal of investment barriers generally leads to an increase in the aggregate market value of the affected securities, and all investors favor a move toward market integration. Introduction of different types of index funds in the world market generally increases world market integration and investor welfare."

Conclusion

Cross border investment is more strategic than regular investments for a number of reasons ranging from uncertainty to estimation difficulties. However, the imperative arises out of the firm's need to grow or perish. The alternatives before the firm can then be viewed in a number of ways. Ultimately a financial framework is required to make the investment conform to financial policy and to be consistent with the firm's financial goals. The risk is that the firm takes up on

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