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Country Selection for New Business Venturing : A  
Multiple Criteria Decision Analysis

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## **Biographies**

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## Country Selection for New Business Venturing: A Multiple Criteria Decision Analysis

Venturing into international markets has become increasingly common for firms of all sizes. The international venture may take various forms, all reflecting a desire to establish some sort of international presence. Often, company executives face the choice among a handful of potential locations on which to open a foreign branch. As a first step, the aspiring international entrepreneur must undertake an environmental analysis, which consists of gathering information on potential locations and evaluating this information under several criteria. The decision maker must then evaluate various courses of action from numerous perspectives. This evaluation procedure is commonly performed in an ad hoc fashion, but we demonstrate that a more formal approach, Multiple Criteria Decision Analysis (henceforth MCDA), can help decision makers analyze their country selection process for market entry. We offer an overview of this methodology and, using a commercially available software package, analyze the country selection problem. Published international statistics are used to augment our decision model and test its applicability on five volunteer practitioners. We further perform a sensitivity analysis on the results. We show how this process can be conducted in a manner that is appealing and transparent to a decision maker not versed in the theoretical aspects of MCDA, while approaching the analysis in a rigorous fashion. A discussion of the practical applicability of the procedure, and suggestions for further enhancing its appeal to the business world, is offered. By engaging in a systematic evaluation of alternatives using an established MCDA methodology, decision makers not only gain insight into the tradeoffs that must be made, but also become better prepared to justify the decision to stakeholders.

## **Introduction**

Jean-François owns a medical equipment business in the U.S. and has been exploring the possibility of opening a foreign branch in Western Europe. Jean-François realizes that this is a critical decision and some time and effort must be spent to gather information on countries of interest. He also realizes that several criteria are involved on which to base his country selection decision. Jean-François is well educated in management and knows that his decision process can be formalized and, as a result, minimize “risking his shirt”. Although his board of directors is with him on this expansion decision, the board must be convinced that the country he selects is really the one to go for. As a result, Jean-François needs a decision-making approach that allows him to gain insight into the tradeoffs that must be made from selecting one Western European country as opposed to another and, most importantly, allows him to be prepared to justify the decision to his board. Jean-François is looking for a decision process that can be conducted in a manner that is appealing and transparent, yet rigorous.

Jean-François is certainly not the only person facing such a decision. Venturing into international markets has become increasingly common for firms of all sizes. Selecting a country in which to establish a new business venture is a significant and important managerial decision, and inherently a multicriteria one. Many published studies that focus on identifying a country for foreign direct investment list factors one must consider, but the formal use of MCDA methods in those studies has not been revealed by our literature review. This article seeks to illustrate how the use of MCDA, based on parsimonious measures, can facilitate the decision-making process on which country to venture into.

Interests in measures are shared by scholars in multiple disciplines. In addition to the international business literature that is most related to our application herein, the innovation

literature has addressed the issue of whether metrics are valuable tools to help managers measure the merits of new projects.<sup>1</sup> The knowledge management literature also discusses the idea of rationalizing what is usually done by instinct. In their 2002 work, Zollo and Winter state that people “often think imperfectly but constructively”. They also argue that knowledge articulation, whereby “implicit knowledge is articulated through collective discussions, debriefing sessions, and performance evaluation processes”, helps firms create and maintain more consistent performances across time.<sup>2</sup> The use of MCDA involves articulating the knowledge about decision processes, and thus could contribute to more consistent decision making over time. Consistency cannot, however, imply stagnation. Good knowledge management – and sound decision making – require evolution, reassessment and adaptation.

Among businesses, ad hoc or “gut feel” country selection decisions are very common, whereas the use of analytical decision models is not. Multicriteria methodologies are indeed rarely used in private companies, and even more rarely among small business owners. In their 2000 book, Pomerol and Barba-Romero listed published real world MCDA applications.<sup>3</sup> Although some managerial and strategic decision situations arise on their list, none of those applications relate to the stage in the decision process where the decision maker must select a country in which to establish a new business venture.

In 2000, Kasanen and colleagues proposed that the reason why relatively few MCDA models have widespread applications in the business world might be that its theory oversimplifies real world decision processes.<sup>4</sup> The same year, Pomerol and Barba-Romero contended that MCDA could sometimes be rejected because of simplifying assumptions, and other times because of overly complicated questioning of decision makers. We maintain that MCDA has the potential to improve the decision process in cases where managerial decisions

overlook options, fail to evaluate consequences in terms of explicitly stated criteria and are less than efficient. Experienced business decision makers are no doubt capable of making informed country selection decisions without the aid of a decision model. We nevertheless support the view that the employment of a formal method such as MCDA may lead to a better analysis of all facets of the problem. We further believe that these models help decision makers arrive at decisions that can be better explained and defended. As a result, our decision aid approach to the country selection problem is not only new but informative.

The remainder of this article is organized as follows. We first offer a review of relevant literature and present some background on MCDA. In the subsequent section we model the decision of selecting a foreign country for new business venturing by first enumerating the criteria and countries involved in that decision. We then describe how we tested the applicability of the proposed decision model on five volunteer practitioners. A summary of sensitivity analyses performed after each of the applications follows. We conclude with a discussion of the practical applicability of the MCDA procedure and suggestions for further enhancing its attractiveness to practitioners.

## **Literature Review**

In this section we review relevant subsets of the international business literature. First, we look at studies for which a list of criteria is used to identify countries for foreign direct investment (henceforth FDI). Second, we discuss the literature on the assessment of country investment risk that also uses lists of criteria. The indicators for country selection used in our study reflect criteria that are repeatedly alluded to in the existing literature. By offering a discussion of the various methodologies used in those reviewed studies, we also demonstrate that

our methodology has certain advantages over the methodologies they used. Table 1 summarizes the objective of and the measures used in those studies.<sup>5</sup>

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(Insert Table 1 about here)  
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We go back as far as three decades for the work of Kobrin who used socio-economic and political indicators to investigate the relationship between various aspects of the environment and flows of U.S. FDI in manufacturing. He applied regression analysis to correlate FDI to measures of government instability and subversion (found insignificant), socio-economic development, market size and potential, and economic growth. This work highlights the importance of economic, cultural and demographic indicators, but, contrary to the next studies, the unimportance of political indicators. A regression approach sheds light into which criteria are relevant for FDI. However, it does not provide a country ranking, nor does it help decision makers eliminate inferior country alternatives, obtain the relative importance of criteria to be used in the country selection decision, or better explain and defend the country selection to stakeholders.

A decade later, Meyer-Ehrman and Hamburg developed and tested a normative model to help firms identify a subset of countries to be used in the information search for manufacturing investment. These authors argue that, although Aharoni “points out that firms do not look at the entire world when seeking potential location sites for F.D.I.,” which is an empirically based observation, others have stressed the need for a normative approach to the country selection decision.<sup>6</sup> As a result, Meyer-Ehrman and Hamburg offered a prescriptive method that incorporates both highest mean scores and highest variance scores (a measure of risks) for each individual indicator. Country ranking is then based on an aggregate measure of the weighted



probability that each indicator scores above a corresponding threshold. This work also highlights the importance of economic and cultural indicators, in addition to political and legal ones. Their ranking method works well as long as countries can be clustered, which goes along with their objective. The methodology we offer is superior in that we can perform sensitivity analysis to first help decision makers observe the implications on their decisions from changes in the relative importance of criteria (as represented by weights) and, second, allow for a discussion that aids them in understanding the implications of their expressed preferences.

For export-oriented FDI, the 1993 work of Woodward and Rolfe, focusing on the Caribbean Basin, used a logit model to estimate the probability of a country being selected for investment in manufacturing. They mainly focused on political variables, but found that unionization rate and land area are insignificant. A year later, Kumar examined the role of structural and policy factors in explaining a country's attractiveness for investment by U.S. firms. Based on ordinary least square regressions, they concluded that all of their economic variables were significant but export-orientation of U.S. affiliates, international orientation, and stock of U.S. FDI per capita. As mentioned earlier, these regression-based approaches do not provide a country ranking, nor do they help decision makers eliminate inferior country alternatives, express their perceived weights of criteria, or better explain and defend the country selection.

More recently, the 1999 work of Brush, Maritan, and Karnani focused on the empirical determination of the relative importance of factors impacting a plant opening decision for four types of manufacturing operations. They used a survey approach where they asked the respondents to what degree each of their economic, political, legal and cultural indicators

influences the respondent's plant location decision. Our focus diverges from this work as we are interested in aiding the country selection decision.

Closest to our focus is the 2002 work of Zhao and Levary which, based on economic and political indicators, ranked countries for FDI in the e-retail industry. We complement this work in two important ways. We offer a general model (and indicators) that can be customized for any industry and we further develop their approach by proposing a more rigorous methodology for obtaining the weights of criteria used in the country evaluation.

The literature on country investment risk evaluation includes multicriteria approaches and has similarities with our framework. The reviewed literature in Table 1 presents the 1992 work of Cosset, Siskos and Zopounidis, the 1993 work of Cook and Hebner, and the 2001 work of Doumpos, Zanakis and Zopounidis.<sup>7</sup> These three studies developed MCDA models for ranking countries as per their risk based on economic and/or political indicators. Our work differs from these in the methodologies employed, and in how it deals not only with country investment risk, but also with a myriad of other factors. This is in line with the 2005 work of Khanna, Palepu and Sinha who caution aspiring international business people against relying solely on country investment risk.<sup>8</sup> Our model is intended to eliminate inferior alternatives for market entry, considering financial risk as well as legal and cultural aspects which are important for country selection. Our framework helps include these often subjective aspects in the decision process.<sup>9</sup>

Our literature review on formal models of country selection coupled with testimonials from professionals in the field has revealed an extensive list of factors to be considered in country selection. In deciding which criteria (or factors) to select, we followed the necessary conditions for the use of a MCDA approach: avoiding the pitfalls of redundancy, lack of independence, and extreme complexity while being comprehensive and sensitive to criteria

relevance. Equal weights of these factors are observed in some country ratings.<sup>10</sup> Equal weights, however, are essentially arbitrary and do not necessarily reflect the priorities of entrepreneurs.<sup>11</sup> We propose that not all factors be weighted equally, and that this variation and the associated tradeoffs be acknowledged and incorporated in the decision process.<sup>12</sup>

## **Background on MCDA**

The original motivation for the development of the MCDA field was the realization that decision makers needed tools beyond financial analysis to assist them in resolving conflicts between various interests and goals. Instead of transforming all interests and goals into monetary units and performing a cost benefit or cost effectiveness analysis, MCDA acknowledges that not all factors can be expressed in money terms. Indeed, one of its most important contributions is the development of approaches that help decision makers organize and synthesize information of a complex and conflicting nature by taking explicit account of intangible criteria.<sup>13</sup> MCDA seeks to integrate objective measurements with value judgment and thus makes inevitable subjectivity explicit and attempts to better manage it.

MCDA proposes to aid decision makers in the understanding of tradeoffs, resulting in a ranking of alternatives whenever possible, and in at least the elimination of clearly inferior alternatives. The result tends to be a better, less controversial and more defensible decision. This methodology does not propose, however, to “decide for the decision maker”. Current research concentrates mostly on structuring a problem that requires a decision and on helping decision makers learn more about the problem through the model. The final output of these models is not to be understood as an “answer to the problem” but rather in a clearer picture of the consequences of selecting a certain course of action. When tradeoffs among economic, social,

environmental and other criteria have to be made, MCDA helps decision makers understand and communicate these tradeoffs, thus promoting good decision making.<sup>14</sup>

Almost any decision is inherently a multiple criteria decision, which is a much different statement than “any decision should be made using MCDA methodologies”. No one in their right mind would apply a MCDA methodology to decisions that have to be made quickly or to decisions that, in the grand scheme of things, really are not that important. In their 2002 book, Belton and Stewart recommend applying MCDA to explore “decisions that matter”, as measured by the level of conflict between criteria or by the level of disagreement among stakeholders as to the relative importance of criteria. If an overseas location needs to be located into a network of suppliers and users that is predetermined, the importance of the criterion “proximity to network of buyers and suppliers” may assume such proportions that all other criteria pale when compared to it. Applying MCDA may not be necessary in this case. If, however, a handful of locations pass the “proximity to network” test, and a decision still must be made among them, then MCDA may play an important role (in this situation one would probably eliminate the “proximity to network” criterion from the list of criteria used to further narrow the selection of a location).

In this study we apply a class of MCDA models generally known as value measurement models, which are based on Multiattribute Value Theory (henceforth MAVT).<sup>15</sup> MAVT is one of the most widely employed MCDA methods in practical applications<sup>16</sup>, and in our personal experience easily understood by individuals who are part of the business world. This approach requires careful development of the scales in which each criterion is evaluated. Value functions attempt to translate the relationship between a certain evaluation and the satisfaction this evaluation brings to the decision maker. The relative importance of each criterion is then assessed, and an overall score for each alternative is developed. General road maps applied by

MCDA modelers typically involve 6 steps, which are discussed in Appendix A for value function based methods.<sup>17</sup>

## **Applying MCDA for Selecting a Country**

### *Criteria Selected and Country Alternatives*

We model the problem of selecting a foreign country for new business venturing from the point of view of an entrepreneur who, having already made the decision to proceed with international expansion, is now evaluating a host of countries into which to venture. Our approach was tested on five different subjects that, although all based in the U.S., had various degrees of international expertise.

We drew from the lists of factors included in multiple sources to develop the criteria listed in Table 2; a description of these published indices is offered in Appendix B. We note that Khanna, Palepu and Sinha cautions entrepreneurs against a sole reliance on published indices that fail to incorporate information about the institutional context in each country. The merits of relying on published indexes to represent the criteria used in the country analysis are their availability to the general public at low or no cost. Furthermore, the organizations that publish these indexes are established and respected. A small business could easily undergo an analysis such as the one we proposed by relying mostly on these published indexes, complemented by a few customized cultural aspects. An entrepreneur with more significant resources, however, does not need to be constrained by our suggested criteria. Such an individual may have ready access to consultants and/or experts in various fields. An entrepreneur may wish to develop a hierarchy of criteria that is very different to the one presented herein, and rely on these experts to assess the countries under consideration under the desired criteria. The methodology we present is general

and the use of published indices should be interpreted as only an example of how this “thinking tool” can be employed even if resources are limited.

In deciding which criteria to select, we followed the necessary conditions enumerated previously, attempting to avoid the pitfalls of redundancy, lack of independence, and extreme complexity while being comprehensive and sensitive to criteria relevance. Our process of criteria selection was developed with a top-down approach and a value tree framework, both as described in Appendix A. Once the overall goal of “selecting the best country to venture into” was defined, four sub-goals emerged – (socio-)political, legal, economic and cultural. Performance measures (17 lower level criteria) fell under one of these sub-goals, resulting in the hierarchy of criteria as in Figure 1.

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(Insert Table 2 and Figure 1 about here)  
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For perspectives other than the cultural one, we attempted to identify publicly available indices that would reflect the performance of countries under each of the lower level criteria of the value tree shown in Figure 1. Cultural preferences are particular to each decision maker, and were therefore considered separately. Because some published indices are composites of several factors, and because these factors are often given the same weight in the composition of the index, we made an effort to draw upon individual factors – the raw data upon which the index is built – and not on the composite indices. Whenever possible we used for each criterion global reference points which are set to best and worst measures of performance expected to occur in realistic situations and are based on the range of possible values for each index. In some instances the use of global reference points would be highly subjective (e.g. how high or low can

be GDP growth). In those cases we opted for the use of local reference points corresponding to best and worst measures of performance within the set of alternatives.<sup>18</sup>

We applied our model to a set of 14 alternatives/countries: Argentina, Brazil, Egypt, Germany, India, Indonesia, Iran, Japan, Mexico, Nigeria, Poland, Russia, South Africa and Turkey. These nations are distributed throughout the world, span a range of stages of economic development and political climate, and data are available for them. The next step involved quantifying how well each country met each sub-goal, by defining the level of each measure for each alternative. This was paramount to obtaining information on how each country rated on each of the selected factors.

For the criteria measured by published indices, this step consisted of direct data collection and entry of numerical scores, ranges of possible values and reference points. Table 3 contains the numerical scores used in the model for the 14 selected countries. This table is robust with respect to the sources of data for the 15 non-cultural measures detailed in Table 2, but, as time goes by, it would be advisable to refresh the data by looking at recent reports of our various sources of information. For measures that are part of the cultural perspective goal, however, the performance of each country under each of the two measures depends on the cultural background of the decision maker. Furthermore, these performance measures are best described not by numerical scores, but by categorical labels. We defined four levels of performance – four categorical labels – for each of the two cultural measures. For language these labels are “fluent”, “basic notions”, “easy to learn” and “difficult to learn” while for local customs they are “similar”, “easily learned”, “difficult to master” and “incompatible with my values”. The evaluation of the countries under the two cultural measures was done individually with each of

our practitioners, thus reflecting their cultural background and perceptions of the countries under consideration.

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(Insert Table 3 about here)  
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*Value Function and Weight Elicitation for the Five Practicing Entrepreneurs*

We conducted the next steps of our MCDA by representing the preferences of five distinct decision makers. Our intentions were twofold. By interacting with five real entrepreneurs, we attempted to test the feasibility of the application of MCDA. By comparing the five experiments and contrasting them to a sixth “benchmark” result, we wished to highlight the fact that there is no “right answer” to a multiple criteria analysis; rather the outcome of the analysis is a function of the values elicited from each individual decision maker.

The five practicing entrepreneurs who agreed to contribute time to our research were unfamiliar with MCDA. Hence, with each individual entrepreneur, our exercise started with an explanation of the theory and motivation for the use of this method. We then presented the structure of the model, asked them to imagine themselves in the position of having to select a country to venture into, and proceeded to elicit their value functions and weights. In reality, the interaction between decision modeler and decision maker would start at an earlier point by including the decision maker in the development of the hierarchical criteria structure and in the selection of alternatives. Instead, we pre-selected the criteria and countries to save the interviewees’ time and to create a mean of comparison.

Once the modeling phase was completed, we proceeded to develop value functions for each selected criteria. This step was performed interactively with each practicing entrepreneur. We were interested in evaluating the applicability of value function elicitation in practice. In our



experiments, a few of the decision makers exhibited some initial discomfort with the procedure, but as the evaluations proceeded, they understood the implicit assumptions and felt much more at ease with the questions. Others felt comfortable with the procedure right upfront. The assessment of the 17 value functions varied among our five entrepreneurs between 40 and 75 minutes.

For all but the cultural perspective goal, value functions were obtained by each entrepreneur directly adjusting the value function displayed on the computer screen. We also constructed a “benchmark” subject as a proxy for the current state of entrepreneurial theory where the preferences of this fictitious entrepreneur reflect the absence of criteria weighting.<sup>19</sup> This subject was modeled by assuming that all measures (lower level criteria) had a weight equal to  $1/17$ . An implication of the equal-weight-for-all-measures assumption is that the more measures are under a perspective, the higher the weight of that perspective (higher level criteria weights are computed as the sums of lower level criteria weights). This fictitious “benchmark” entrepreneur possesses linear value functions by construction.<sup>20</sup>

Representative value functions for the criterion “labor regulations” appear in Figure 2. Notice how each one of the interviewed entrepreneurs perceives incremental changes on the levels of this criterion differently. G.O. feels that the benefit he would derive from selecting a country with a level of “labor regulation” of, say,  $z_i + \Delta$  instead of selecting a country with a level of “labor regulation” of  $z_i$  would depend only on  $\Delta$ , yielding a linear relation. E.P., by contrast, is indifferent among countries with no or relatively low “labor regulations” (low values on the horizontal axis); as regulations increase, however, his comfort level with the country decreases in a linear fashion. B.A. and M.D. values are both represented by interesting – but somewhat similar – curves. Both entrepreneurs seem to want a happy medium. They value a movement

away from too many regulations – an impediment for business – just as much as a move from too little, which could potentially lead to abusive labor practices.

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(Insert Figure 2 about here)  
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The assessment of value functions for the cultural measures had to proceed in a different fashion, since these aspects were evaluated solely in terms of a finite number of categorical labels. A continuous value function would not be appropriate to represent the discrete nature of these measures. The assessment method selected consisted of direct assessment of the value within the [0,1] interval that the decision maker would associate with each label.

Weights of the various criteria were obtained by asking each entrepreneur a series of questions about their preferences, employing the swing-weight method. This process was conducted in a “bottom-up” fashion, with questions about the lowest level sub-criteria being asked first. For each of the sub-goals (cultural, economic, legal and political perspectives), each entrepreneur was asked to imagine a hypothetical country that had the lowest possible ratings in every measure of that sub-goal. If he could choose only one measure in which to improve this country from lowest to highest possible rating, which measure would this be? This measure was given a value of 100. He was then asked to choose a second best measure, and assess the importance of its improvement from worst to best as a percentage of the first measure’s maximum “swing”. The questioning was repeated until weights for all measures of a sub-goal had been elicited, and then proceeded with the next of the four sub-goals. The swing-weight method was quite intuitive to our decision makers at the lowest level, but for some more difficult at the higher level (cultural, economic, legal and political). In spite of this, the questioning was conducted in less than 20 minutes in all cases. Resulting weights are in Table 4.

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### **Country Rankings and Sensitivity Analysis**

Figure 3 shows, for each of our practitioners, the country rankings resulting from the aggregate value function utilized in this exercise. The juxtaposition of the rankings for the various subjects highlights some important issues. By contrasting the results obtained with the rankings of the “benchmark” entrepreneur, we notice that markedly different country rankings result from the introduction of the concept of criteria weights. The ranking differences resulting from individual preferences should also be noted.

The variation in results observed among the various entrepreneurs underscores the importance of conducting sensitivity analysis, where decision makers can observe the implications on their decisions from changes in key model parameters. We performed sensitivity analyses on our results for each entrepreneur by varying the weights attributed to each sub-criterion (or measure) and examining how this variation would affect the ranking of alternatives. The graphs of Figure 4 help visualize the weight variation that would result in an alteration of the original order. The vertical line marks the current weight and associated ranking. We show in Figure 4 two measures for which M.D. assigned relatively extreme weights. A very low weight was assigned to “access to financial capital” and a significant weight to “lack of human rights and political freedom”. Note that for both measures Germany and Japan remain on the top ranks even for large weight variations, while the ordering of other countries is more sensitive to variations in weights. For example, consider the “access to financial capital” measure, currently assigned a weight of 1.2%. As the relative importance of this measure increases to around 5%, a rank reversal between Poland and South Africa occurs. Even more dramatic are the effects of

changes in the weight of this measure on the attractiveness of Iran as a potential new market. As the weight to “access to financial capital” increases, Iran moves from one of the least attractive new markets to as high as the preferred one. Rank reversals similarly occur by either increasing or decreasing the importance of the measure “lack of human rights and political freedom”.

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During the course of the sensitivity analysis, this practicing entrepreneur expressed surprise at the significantly different rankings of Poland and Russia. It is precisely this type of reaction that makes us advocate the use of MCDA. The software we used permitted us to produce the graph in Figure 5, which we used to examine the scores of these two countries in detail. The ensuing discussion aided M.D. in understanding the implications of his expressed preferences. Figure 5 demonstrates to him that the relatively high weight placed on “lack of human rights and political freedom” sways the country rankings in favor of Poland.

Another entrepreneur, B.A., was surprised by his low ranking for Mexico, which resulted from the low utility allocated to that country with respect to legal perspective. He was also surprised by his high ranking for Turkey. We used a bar diagram of utilities, as shown in Figure 6a, to explain why these two countries fared the way they did. It is interesting to note that the contribution of “GDP growth rate” and “level of crime” are extremely high not simply because of the weight placed on these criteria, but because the combination of weight, country ratings and shape of the utility curves for these criteria. “GDP growth rate”, for instance, has a relatively low weight of 5%. However, Mexico and Turkey lay at very different points on his pronouncedly S-shaped utility curve, as exhibited by Figure 6b.

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(Insert Figures 5 and 6 about here)  
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At the conclusion of our experiment with each practicing entrepreneur, we conducted a short debriefing session. M.D. felt that the questioning process was manageable and objective, and that it could be applied to a real country selection decision process. Of course, in a real world scenario the involvement of the decision maker would have to start at an earlier phase in the modeling (M.D. would have structured the model slightly differently, particularly the representation of the cultural measures). The process of weight elicitation stimulated him to think in fresh new ways about the four perspectives of the analysis (cultural, economic, legal and political). For example, he pondered the relative importance of environmental factors that a firm can affect through its operations, versus those that require a change on the part of the firm.

C.G. commented that the approach is valuable because it helps structure one's decision process and, as a result, helps decision makers think about their decisions. E.P. argued that this exercise educated his decision-making capabilities and increased his sensitivity on what affects what. He added that the methodology can substantiate his decision when involved in a group because it standardizes the language one can use as a group of decision makers. He also appreciated the flexibility of the methodology in that it can allocate zero weight to some criteria that may not be relevant.

B.A.'s business focused on providing capital to startups and, as a result, he exhibited a utility function for the criterion "access to financial capital" that was inverted as compared to that of our other entrepreneurs (low access to financial capital translated in the highest utility). B.A. commented that, as a provider of capital, he possesses due diligence check lists where he separates the "must" from the "would be nice to have". Consequently, he would have preferred

thresholds for the criteria's values as opposed to a continuum. Furthermore, he commented that he would have thought that the economic perspective is the most important to his business, but going through our decision making process made him realize that it is, instead, the legal perspective.

Last, G.O. argued that there was value in using this methodology, especially for established firms wishing to expand. For many entrepreneurs and their startups, however, country selections are based on personal facts such as, in his personal situation, the country of origin of a spouse. He also maintained that entrepreneurs are likely to dislike to be told not to expand or start their new venture in the country they have already selected. He therefore suggested the use of MCDA on other aspects of starting a business in an already selected country so as to evaluate what might be problematic in that country. We explained that MCDA can easily be adapted to the context he suggested.

With each entrepreneur we discussed how sensitivity analysis on the weights of the criteria helped in understanding the implications of his preferences. Such analysis can do more, and in particular help select a mode of entry. For instance, a country that did not fare well, due to a low rating in a cultural perspective criterion, could remain under consideration for an alternate entry mode such as a joint venture. We also discussed how decision makers in each particular industry would have distinct preferences regarding weights and value functions (e.g. for our entrepreneur with a technology transfer business variations in PPP were relatively unimportant). We believe that insights such as these greatly improve the quality of the decision making process, confirming our proposition that MCDA can provide a positive contribution to decision makers.

## **Discussion**

The results of our application underscore the importance of not only performing sensitivity analysis, but of discussing its results with key decision makers. We reiterate that current MCDA practice intends to aid decision makers, not prescribe what the “optimal solution” is. The preferences articulated by the decision maker are influenced by the modeling and structuring of the problem (e.g. by the way questions about weights are asked), and by the fact that decision makers are not always consistent or rational.<sup>21</sup> By involving the decision maker in the performance of the sensitivity analysis, the MCDA modeler brings these issues to the surface, and allows for a potential reevaluation of previously assessed preferences.

Our model is general enough to serve any industry, and applies a commercially available package with published data, with the vision of making the approach appealing to the business world. For an entrepreneur, the country selection process better reflects the complexities of real business environments in that more facets of the problem can be considered simultaneously and a non-equal weighting of performance-related constructs can be used yielding to a more accurate preference function. As a result, decisions can be better explained and defended.

Although not explicitly shown in our country-selection application, our methodology permits the incorporation of other types of criteria, including “on-off” criteria, probabilistic criteria, and criterion thresholds. For instance, “on-off” criteria could be “belonging to technology cluster” and “availability of technologically savvy labor”. Countries that do not meet minimum requirement on such a criterion can be eliminated from further analysis. We note, however, that the same criteria could be modeled, instead, with a scale that reflects “degrees of belonging to the cluster” or “size of the technologically savvy labor pool”. A criterion with a threshold would be, for instance, market size. It is possible to establish a minimum market size

below which a country would be eliminated from further analysis – as discussed earlier, one of our entrepreneurs would have felt more comfortable with that type of criteria. A probabilistic criterion would account, for instance, for the need to follow a big customer (without knowing with certainty where such customer will be located in the future) and be stated as “likelihood of customer ABC having a significant presence in the country”. For each country under consideration there would be a (subjective) probability of this event, and such probability would be incorporated in the model.

We recognize that weight elicitation in which we engaged during the analysis has the drawback of vulnerability to cognitive biases. In contrast with the situation where the decision maker makes “gut” decisions alone, when he or she engages in a systematic process led by an experienced decision analyst, the cognitive and motivational biases that tend to occur in weight elicitation may be overcome. Indeed, the sensitivity analysis which is an inherent part of good MCDA practice served as a safeguard that reduced the impact of cognitive biases. Furthermore, experienced decision makers tend to overlook established objectives and instead rely on intuition and various heuristics when undertaking the selection process.<sup>22</sup> Heuristics are “rules of thumb” that while not “bad” per se, are susceptible to various sources of cognitive biases.<sup>23</sup> Experienced entrepreneurs, the ones most likely to use intuitive decision making, could benefit from the minimization of cognitive biases that tends to result from a structured process such as the one we propose. Inexperienced ones, on the other hand, would benefit from using a MCDA approach by understanding it as a learning tool. The process of model building will encourage these less seasoned individuals to carefully evaluate priorities, engage in systematic rating and critically examine results through sensitivity analysis.



<b>Lessons for executives</b>	
Important to...	because...
introduce the concept of criteria weights	<ul style="list-style-type: none"> <li>• it better captures an executive's preferences</li> <li>• it produces markedly different rankings</li> <li>• it stimulates executives to think in fresh new ways about the perspectives of the analysis (e.g. cultural, economic, legal and political)</li> </ul>
Perform sensitivity analysis	<ul style="list-style-type: none"> <li>• executives can observe the implications on their decisions from changes in the criteria weights</li> <li>• there are variations in results among various stakeholders</li> <li>• it allows for a discussion that aids executives in understanding the implications of their expressed preferences</li> </ul>
consider simultaneously more facets of the problem	<ul style="list-style-type: none"> <li>• problems are typically complex and executives need tools that can manage complexity</li> </ul>

As highlighted above in the lessons for executives, this work speaks to those in a position to influence the country selection process and, also, it speaks to academics. The country selection process we propose can better reflect the complexities of real business environments in that more facets of the problem can be considered simultaneously and a non-equal weighting of performance-related constructs can be used yielding to a more accurate preference function. As a result, country selection decisions can be better explained and defended. Moreover, we presented the background of MCDA and communicated the basic mechanics of how the decision model exposes the tradeoffs and provides a clearer picture of the consequences of each choice. Scholars involved in executive education in the fields of international entrepreneurship and strategic planning are thus provided with discussions that may enhance their course reading list. The criteria and published indices used in our analysis should also be of interest to this audience.

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**Lessons for academics**

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Teaching and researching applications of mathematical models for strategic business decisions can be valuable

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Yet, there are not enough studies in the management literature on the operationalization of technical tools or processes that can benefit strategic business decisions

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When multiple criteria must be taken into consideration, the use of MCDA methodologies has proven valuable because it helps to

- model the preferences of decision makers
  - eliminate potentially inferior courses of action
  - predict how decisions will be made
  - arrive at more defensible decisions
- 
- 

We also realize that our framework can be refined. Our choice of indices to assess the performance of the 14 countries we studied may be challenged. Some of the indices we selected might have violated the assumption of non-redundancy. In particular the indices used as surrogates for the “difficulty to own and operate property” measure (Table 2, criterion 6) and the “environmental, workplace and product safety regulations” measure (Table 2, criterion 9) include in their composition multiple aspects, some of which may have overlapped with other measures we employed. In spite of these shortcomings, we felt that from the array of published indices currently available, the ones we selected were the most adequate to represent the set of measures included in our hierarchy of goals.

Our work has concentrated on deterministic evaluations of the performance of various countries under the criteria selected for this analysis. A natural extension of our approach would be to include uncertainty in our analysis. As a case in point, the World Bank Institute Worldwide Governance Research Indicators Dataset is given as point estimates with a margin of error, which can be incorporated in the analysis. Similarly, the subjectivity associated with the assessment of our two cultural measures can be better incorporated in the model with the use of a

discrete probability distribution over the possible descriptive labels for those measures. For example, we could account for the uncertainty that is inherent to the language measure by introducing a discrete probability distribution over the labels “fluent”, “basic notions”, “easy to learn” and “difficult to learn”. The introduction of this treatment would permit us to assign, e.g., a probability  $p$  that Russian would be “easy to learn” and  $1-p$  that it would be “difficult to learn”.

The cultural perspective is only measured by language and local customs. Although these two measures are useful indicators, other cultural elements could be integrated in our framework. We note, however, that our review of the literature on FDI and country selection reveals that cultural perspective are rather rarely used (Table 1). In his 1998 work where he attempts to better understand the usefulness of intercultural comparative techniques in selecting countries in which to retail, Reynolds argues that “cultural values are somewhat remote from the analysis, because of the sheer difficulty of assembling even the most simple of comparable data sets.”<sup>24</sup>

Business venturing decisions are rarely made by a single individual. As is the case with most decisions that are complex enough to warrant the MCDA approach, a group of stakeholders is involved in the decision. Our application illustrates the strength of our methodology in being able to discuss and debrief the weighting process between multiple people and, as a result, come up with a single set of preferences for a group of stakeholders. A facilitator can help stakeholders understand the reasons for any differences of opinion on the structure of the model (alternatives, criteria, preferences) and clarify areas of disagreement. Once consensus is reached, the method can be applied with the entire group synthesized by one “imaginary” decision maker. This careful evaluation of priorities and critical examination of ranking through sensitivity analysis should appeal to the business world.

## Appendix A: MCDA Modeler's Road Map

*Criteria Identification.* The decision maker possesses a hierarchy of criteria, or value tree, with which alternatives are evaluated. MCDA modelers interact with decision makers to reveal these criteria, which may be measurable on a numerical scale or quantifiable on a categorical scale (e.g. low, medium, high). The set of criteria must be non redundant and judgmentally independent (tradeoffs between two criteria cannot depend on the level of a third criterion). It must also be sufficiently complete as a collection, but as simple and concise as possible, and compatible with the time and effort that decision makers are willing to allocate when working with the decision modeler. Researchers differ on the merits of a bottom up versus top down approach to building the set of criteria. The latter begins with an overall goal (e.g. selecting the best country), expands that overall goal into sub-goals (e.g. economic perspective) and further breaks each sub-goal into more detailed sub-criteria (e.g. GDP growth rate) until a measurable criterion emerges. These sub-criteria are for this reason often referred to as “measures”; we use the terminologies interchangeably in this article. The bottom up approach is alternative focused and starts with evaluating the pros and cons of each alternative. In our application we follow the lead of respected scholars, including Hobbs and Meier who argue in their 2000 book that it leads to better decisions, and opt to use the top down approach, structuring criteria as a value tree.<sup>25</sup>

*Listing of Alternatives.* Decision makers may be confronted with a set of alternatives too large to manage, may develop a set of alternatives that is not comprehensive, or may list overlapping alternatives. Decision modelers use pre-screening methods in an attempt to limit the number of alternatives to a manageable one by eliminating clearly inferior alternatives at the onset. Techniques that help the development of a comprehensive list of alternatives have been discussed by several MCDA researchers.<sup>26</sup> Most multiple criteria software packages, including the one we employ, can handle only a set of alternatives that are independent of each other. Overlapping should therefore be avoided.

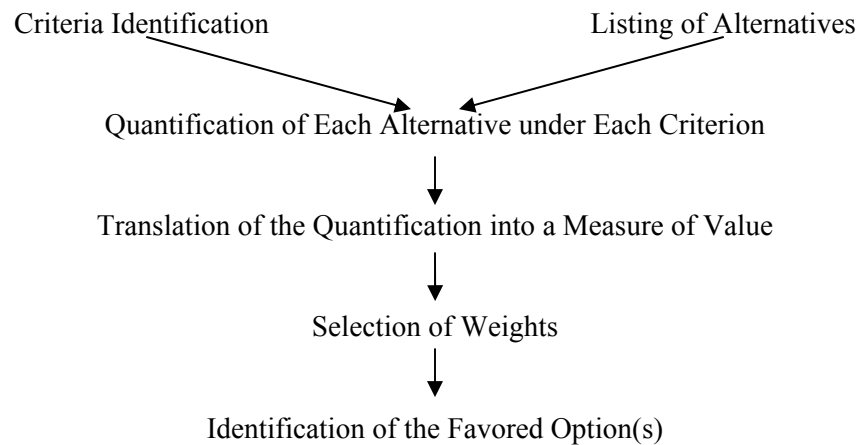
*Quantification of Each Alternative under Each Criterion.* The assessment of the performance – or score – of an alternative on each criterion can be an undisputable, measurable quantity, or a subjective, qualitative evaluation. This quantification is generally performed jointly by MCDA modelers and experts in the subject matter being decided on. For value measurement models, performance is assessed on an interval scale of measurement containing minimum and maximum reference points. When the performance of an alternative is assessed in terms of a subjective description (e.g. good or bad), this description is later converted into a numerical value, in relation to the specified reference points. Certain methodologies permit the consideration of a probability distribution of scores as an alternative to a deterministic assessment.

*Translation of the Quantification into a Measure of Value.* Given an alternative  $a \in A$  and a “lowest level” criterion (on a hierarchical structure)  $i \in \{1, \dots, I\}$ , let  $z_i(a) \in Z_i$  be a measure of performance of alternative  $a \in A$  with respect to criterion  $i$ , where  $I$  is the number of criteria under which alternatives are evaluated and  $Z_i$  the set of possible scores for criterion  $i$ .  $z_i(a)$  may be defined on a natural cardinal scale, on a constructed ordered categorical scale, or on an ordinal scale. The axioms of MAVT state that there exists a value function  $v(z_i(a))$  (in  $[0,1]$ ) such that  $a$  is preferred to  $a'$  on criterion  $i$  if and only if  $v(z_i(a)) > v(z_i(a'))$ . While the origin and scale of  $v(z_i(a))$  are arbitrary, two reference points  $z_i^0$  and  $z_i^*$  must be defined such that  $v(z_i^0(a)) = 0$  and  $v(z_i^*(a)) = 1$ . These reference points may be local (set to best and worst measures of performance within the set of alternatives  $A$ ) or global (set to best and worst measures of performance expected to occur in realistic situations).<sup>27</sup> The use of a common unit allows the MCDA modeler to aggregate the value functions of each criterion into an overall value function.

*Selection of Weights.* Not all criteria in a MAVT application will carry the same “weight”. This step is the one most often debated by scholars in the field.<sup>28</sup> For instance, in their 2002 book Belton and Stewart refer to the assessment and interpretation of the relative importance of each criterion – its weight – as “a matter of heated controversy”. They discuss the difficulties encountered by an MCDA modeler during weight elicitation. The various attempts by scholars to address these difficulties may be at the root of the debate. The mathematical interpretation of the weight of a criterion varies with the MCDA method being used. Consequently, a method of elicitation that may yield mathematically correct weights for MAVT cannot be directly applied to elicit weights to be used in another method. Also, when attempting to ask a decision maker questions about their preferences as expressed by weights, modelers tend to encounter very little resistance – people think they can accurately express their preferences by weights. However, inconsistencies surface when modelers attempt to use the weights. In his 1992 work, Stewart favored the swing-weight approach, where a decision maker is asked about the relative importance of an improvement from worst to best level in one criterion relative to all others.<sup>29</sup> In MAVT models, the weight of a criterion directly reflects the relationships between scores in that criterion and scores on all other criteria. Weights and measurement scales are intimately related, and the weight of a higher level criterion is the sum of the cumulative weights of its sub-criteria. Weight determination usually involves interaction between MCDA modelers and decision makers, in a process commonly known as weight elicitation. When properly elicited, resulting weights are valid and represent tradeoffs that decision makers are willing to make.

*Identification of the Favored Option(s).* Once criteria weights are identified, the MCDA modeler aggregates value functions  $v(z_i(a))$  for each criterion  $i$  in an attempt to sort out the degree of preference that each decision option enjoys. The simplest approach to the aggregation is a weighted sum of the value

functions  $v(z_i(a))$ . Although more complicated aggregation procedures are sometimes proposed, the additive function is very intuitive, widely used in practice, and mathematically sound provided that criteria are properly defined and the scoring process understood by the decision maker.<sup>30</sup> The following flow-chart shows the six steps involved in a MCDA modeler's road map.



## Appendix B: Description of Published Indices

The vast majority of indices utilized in this article are recommended by the Foreign Investment Advisory Service of the World Bank Group ([www.fias.net/investment\\_climate.html](http://www.fias.net/investment_climate.html)).

### 1) Economic Freedom of the World Index

The Economic Freedom Network Index, which ranks 123 countries, is a joint venture involving 59 research institutes in 59 countries around the world. The data was retrieved from [www.freetheworld.com](http://www.freetheworld.com). (Gwartney, J., Lawson, R., Park, W., Wagh, S., Edwards, C., de Rugy, V., 2002. Economic Freedom of the World: 2002 Annual Report. The Fraser Institute, Vancouver, BC, Canada.)

Each component of this index ranges from 0 (worst) to 10 (best). Many of the components of this index are based on data published by the International Monetary Fund (IMF) and the World Economic Forum. The method is described in the report mentioned above. Components utilized in our article are:

- i. extension of credit;
- ii. restrictions in foreign capital market exchange/index of capital controls among 13 IMF categories;
- ii. impartial courts;
- iii. law and order

## 2) International Country Risk Index – Financial

Produced by the PRS Group ([www.prsgroup.com/icrg/sampletable.html](http://www.prsgroup.com/icrg/sampletable.html)), this index assigns a numerical value to a predetermined range of risk components, according to a preset weighted scale. The index varies from 0 to 50, with higher value of the index corresponding to lower perceived risk. The PRS Group is a commercial venture that provides data and analysis to companies who wish to make business and investment decisions.

## 3) Growth of Real Gross Domestic Product (GDP)

We obtained 2002 GDP growth estimates from the World Bank publication Global Economic Prospects 2003 ([www.worldbank.org/prospects/gep2003](http://www.worldbank.org/prospects/gep2003)). Average annual growth is given in %. This measure varies from a minimum of -11.9% (Argentina) to a maximum of 7.8% (China).

## 4) Purchasing Power Parity (PPP)

PPP is the per capita Gross National Product adjusted by purchasing power. The base for the adjustment is the cost of living in the United States. Data used in this article was obtained from the World Development Indicators Database ([www.worldbank.org/data/icp/pppdata.htm](http://www.worldbank.org/data/icp/pppdata.htm)). PPP for the countries for which this database publishes this index varies from 48,080 international dollars (Luxembourg) to 480 international dollars (Sierra Leone).

## 5) Index of Economic Freedom

Published annually since 1995 by the Heritage Foundation ([www.heritage.org/research/features/index/](http://www.heritage.org/research/features/index/)), it includes 50 variables divided into 10 categories: trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and foreign investment, banking and finance, wages and prices, property rights, regulation and black market activity. The 10 factors are weighted equally, and we were unable to determine the exact composition of each of the factors, or the weight of each variable in its composition. Hence, we limited the use of this index to measures for which no other index seemed adequate. Scores of each component of the index range in value from 1 to 5, with 1 being the score most conducive to economic freedom. Components utilized in our model were:

- i. property rights: variables included in this factor are
  - freedom from government influence over the judicial system;
  - commercial code defining contracts;
  - sanctioning of foreign arbitration of contract disputes;
  - government expropriation of property;
  - corruption within the judiciary;
  - delays in receiving judicial decisions;
  - legally granted and protected private property.

ii. regulation: variables included in the regulation factor are

- licensing requirement to operate a business;
- ease of obtaining a business license;
- corruption within the bureaucracy;
- labor regulations, such as established work weeks, paid vacations, and parental leave, as well as selected labor regulations;
- environmental, consumer safety and worker health regulations;
- regulations that impose a burden on business.

(As discussed, we recognize that some of these factors may overlap with other indices used in this article. We were interested in utilizing only the component “environmental, workplace and product safety regulation”. We assume that the overall factor can be used as a proxy for this particular component, for lack of a more appropriate index. )

## 6) Doing Business

Doing Business is published by the World Bank Group ([rru.worldbank.org/DoingBusiness](http://rru.worldbank.org/DoingBusiness)). We employed two of the indices that are part of Doing Business:

i. index of labor regulations

The index for the regulation of labor markets is constructed by examining the detailed provisions in the labor laws, and is the sum of the employment laws index and the industrial relations law index. The index takes values between 1 and 6, with higher values implying more rigid regulation. It was initially assumed that the “most preferred” level of regulations was 1, and the “least preferred” was 6. These preferences were later adjusted to reflect the preferences of each decision maker.

ii. entry regulations

This component of Doing Business documents the cost and time required to complete all the procedures necessary to establish and to legally operate a business in a given country. To make the data comparable across countries, the World Bank documents the procedures for a hypothetical company with certain unchangeable characteristics. “Number of procedures” is one of the measures available for the entry regulations component of doing business. “A procedure is defined as any interaction of the company founder with external parties, including obtaining all the necessary permits and licenses and completing all the required inscriptions, verifications and notifications to enable the company to start operation.” The number of procedures for all countries for which data is available varies from 2 to 20

## 7) Corruption Perception Index (CPI)

Transparency International ([www.transparency.org](http://www.transparency.org)) publishes this index annually. The index is based on 14 polls and surveys from seven independent institutions. A detailed description of the methodology employed to compute the index (in 2001) is available at [www.gwdg.de/~uwwv/2001.htm](http://www.gwdg.de/~uwwv/2001.htm).



The CPI score “relates to perceptions of the degree of corruption as seen by business people, academics and risk analysts”, and ranges between 10 (highly clean) and 0 (highly corrupt).

#### 8) Freedom House Country Ratings

The Freedom House ([www.freedomhouse.org/ratings/index.htm](http://www.freedomhouse.org/ratings/index.htm)) has been publishing its “Freedom in the World survey” since 1973. The index is measured on a 1 to 7 scale, with 1 representing the highest degree of freedom. The index has two components, political rights and civil liberties. We averaged those two components to develop the scores for our measure.

#### 9) The World Bank Institute Worldwide Governance Research Indicators Dataset

The Governance indicators dataset ([info.worldbank.org/governance/kkz2002/mc\\_chart.asp](http://info.worldbank.org/governance/kkz2002/mc_chart.asp)) reflects a “compilation of responses given by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries”. The indicators are given as point estimates on a scale ranging from -2.5 (worst) to +2.5 (best). The methodology employed in the compilation is described in "Governance Matters III: Governance Indicators for 1996–2002" (May 2003 draft) available from [www.worldbank.org/wbi/governance/pubs/govmatters3.html](http://www.worldbank.org/wbi/governance/pubs/govmatters3.html). We used data from “Political Stability”, one of the indicators of the Dataset.

#### 10) Piracy Rates

Piracy rates are published by the Business Software Alliance (BSA; [www.bsa.org](http://www.bsa.org)), an organization dedicated to software management and copyright protection, cyber security, trade, e-commerce and other Internet-related issues. BSA members include Adobe, Apple, Autodesk, Avid, Bentley Systems, Borland, CNC Software/Mastercam, Internet Security Systems, Macromedia, Microsoft, Network Associates and Symantec. Software piracy is measured as the amount of business application software installed without a license. Values are in percentage. We assumed that software piracy rates are an adequate proxy for the lack of protection for all types of intellectual property.

Table 1. Country selection criteria proposed in the international business literature

Study	Objective	Criteria				
		Economic	Political	Legal	Cultural	Other
<b>Foreign direct investment</b>						
Kobrin 1976	To develop and test a descriptive model for investigating the relationship between aspects of the environment and flows of U.S. FDI in manufacturing	% of economically active population in agriculture % of economically active population in mining and manufacturing GDP GDP per capita GNP growth rate GNP growth rate per capita	Character of bureaucracy Regime type Changes in effective executive Major cabinet changes General strikes Riots Government crises Purges Assassinations Armed attacks Coups d'état Guerrilla warfare Revolutions Irregular executive transfers		Interest articulation by associational group Interest articulation by non-associational group Ethnic and linguistic fractionalization Literacy	<i>Demographics</i> 1965 population Urbanization Primary and secondary school enrollment Human resource utilization Telephones per capita Radios per capita Newspaper circulation per capita Commercial vehicles per capita Transportation
Meyer-Ehrman and Hamburg 1986	To develop and test a normative model for determining how firms should select the country to be used in the information search for FDI in manufacturing	GNP GNP growth rate Income Availability of local capital Availability of labor Stability of labor Corporate tax level Annual inflation Number of devaluations % of devaluation Currency forecast Overall balance of payment Reserves/imports ratio Convertibility in foreign currencies	Political stability Government intervention in business Likelihood of internal disorder and vandalism Delays in getting approval Desire for foreign investment Quality of infrastructure	Probability of nationalization Restrictions on capital movement Limits on foreign ownership Limits on expansion of foreign-owned firms Restriction on foreign trade	Cultural interaction	
Woodward and Rolfe 1993	To develop and test a predictive model for estimating the probability of country selection for export-oriented FDI in manufacturing	GNP per capita Wage rate Exchange rate devaluation Inflation rate Transport cost Manufacturing concentration Land area Profit repatriation restrictions Tax holiday length	Political stability Unionization rate	Free trade zones		

Kumar 1994	To develop and test a descriptive model for examining the role of structural and policy factors in explaining a country's attractiveness for export-oriented FDI by U.S. firms	Export-orientation of U.S. affiliates Wage rate Employment in export processing zones Industrial capacity Dependence on intrafirm imports International orientation Stock of U.S. FDI per capita				OPEC member dummy
Brush, Maritan and Karnani 1999	To develop and test a descriptive model for investigating the determinants of four plant location strategies	Proximity to important markets Proximity to key customers Proximity to key supplies Proximity to other facilities Raw materials Energy Capital local technology skilled labor Low cost labor Access to protected markets Tax conditions	Regional trade barriers Government subsidies Exchange rate risk Advanced infrastructure Politics	Labor practices and regulation Environmental regulation	Language Culture	
Zhao and Levary 2002	To develop and test a normative model for ranking countries for FDI in the e-retail industry	Growth rate of internet users Skilled local personnel computer and information technologies Currency convertibility Consumer purchasing power GNP growth rate Controls on profit repatriation	Local infrastructure for package delivery Political stability Degree of bureaucracy Degree of incentives for FDI Government restrictions on ownership of operation			

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### Country investment risk assessment

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Cosset, Siskos and Zopounidis 1992	To develop a normative model for ranking countries as per their risk	GNP per capita Propensity to invest Net foreign debt to exports Reserves to import ratio Current account balance on GNP Export growth rate Export variability	Political instability			
Cook and Hebner 1993	To develop a normative model for ranking countries as per their risk	Industrialization Economic problems Growth potential Balance of payments Debt servicing capacity International standing	Political stability Consistency of policies Fiscal policy Monetary policy Susceptibility to war Foreign investment policy Foreign exchange policy			Social stability
Doumpos, Zanakis and Zopounidis 2001	To develop a normative model for ranking countries as per their risk	GNP per capita Real GDP growth rate Projected GDP growth rate Projected inflation rate Short-term interest rate				<i>Firm specific</i> Depth and liquidity Performance and value Economic and market risk Regulation and efficiency

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Table 2. Published indices used in the country selection problem

<i>Measure</i>	<i>Indices</i>	<i>Source</i>
1. access to financial capital	A component of the Economic Freedom of the World Index called “extension of credit”	The Fraser Institute, 2002 www.freetheworld.com
2. ease of profit repatriation	A component of the Economic Freedom of the World Index called “restrictions in foreign capital market exchange/index of capital controls among 13 IMF categories”	The Fraser Institute, 2002 www.freetheworld.com
3. financial security	International Country Risk Index	The PRS Group, 2002 www.prsgroup.com/icrg/sampletable.html
4. GDP growth rate	Growth of real gross domestic product	Global Economic Prospects, 2002 (estimate) www.worldbank.org/prospects/gep2003
5. PPP	Purchasing power parity	World Bank World Development Indicators, 2001 www.worldbank.org/data/icp/pppdata.htm
6. difficulty to own and operate property	A component of the Index of Economic Freedom defined as “the extent to which the government protects private property (...) and how safe private property is from expropriation”	Heritage Foundation, 2003 www.heritage.org/research/features/index/
7. business law	A component of the Economic Freedom of the World Index called “impartial courts”	The Fraser Institute, 2002 www.freetheworld.com
8. lack of crime	A component of the Economic Freedom of the World Index called “law and order”	The Fraser Institute, 2002 www.freetheworld.com
9. environmental, workplace and product safety regulations	One of 6 factors composing the “regulation” component of the Index of Economic Freedom	Heritage Foundation, 2003 www.heritage.org/research/features/index/
10. labor regulations	“Labor Regulations”, one of the topics of “Doing Business” that focuses on alternative employment contracts, conditions of employment, job security, collective bargaining, worker participation in management, and collective disputes	“Doing Business”, a World Bank publication, 2002 rru.worldbank.org/DoingBusiness
11. risks for intellectual property	Software piracy rates	7th annual Business Software Alliance Global Software Piracy Study, 2001 www.bsa.org
12. bureaucracy	A component of “Entry Regulations” one of the topics of “Doing Business”, defined as the number of procedures to open business	“Doing Business”, a World Bank publication, 2002 rru.worldbank.org/DoingBusiness
13. lack of corruption	Corruption Perception Index which “reflects the degree to which corruption is perceived to exist among public officials and politicians”	Transparency International, 2001 www.transparency.org
14. government stability	“Political Stability”, a governance indicator which is a compilation of perceptions of the quality of governance of a large number of enterprises, citizens, non governmental organizations, commercial risk rating agencies and think tanks	The World Bank Institute Worldwide Governance Research Indicators Dataset info.worldbank.org/governance/kkz2002/mc_chart.asp
15. lack of human rights and political freedom	The levels of political rights and civil liberties worldwide by assigning each country and territory the status of “Free”, “Partly Free” or “Not Free”	The Freedom House Country Ratings, 2001-2002 www.freedomhouse.org/ratings/index.htm

Table 3. Country ratings on each measure

	Access to Financial Capital, 2002	Ease of Profit Repatriation, 2002	Financial Security, 2002	GDP Growth Rate, 2002 (estimate)	Purchasing Power Parity, 2001	Difficulty to Own and Operate Property, 2003	Business Law, 2002	Lack of Crime, 2002	Environmental, Workplace and Product Safety Regulations, 2003	Labor Regulations, 2002	Risks for Intellectual Property, 2001	Bureaucracy, 2002	Lack of Corruption, 2001	Government Stability, 2002	Lack of Human Rights and Political Freedom, 2001-02
Argentina	6.9	3.8	17	-11.9	11690	4	5.2	8.3	3	3.49	62	14	3.5	-0.74	3
Brazil	7.3	0.8	30.5	0.7	7450	3	6.2	3.3	3	3.93	77	16	4	0.17	3
Egypt	6.8	5.4	37	1	3790	3	5.7	6.7	4	3.83	58	13	3.6	-0.35	6
Germany	8	9.2	38	0.4	25530	1	9.2	8.3	3	3.39	34	9	7.4	1.06	1.5
India	6.3	0	41	4.8	2450	3	8	6.7	4	2.31	70	10	2.7	-0.84	2.5
Indonesia	3.8	1.5	34.5	3.2	2940	4	4	3.3	4	2.61	88	11	1.9	-1.37	3.5
Iran	9.5	0	39	4.8	6230	5	4.9	6.7	5	2.31	56	9	0	-0.62	6
Japan	8.1	7.7	47	0	27430	2	7	8.3	3	2.77	37	11	7.1	1.2	1.5
Mexico	4.1	1.5	37	1.3	8770	3	5.2	3.3	3	3.49	55	7	3.7	0.22	2.5
Nigeria	6.6	5.4	35.5	-0.6	830	4	3.6	5	4	1.89	71	9	1	-1.49	4.5
Poland	6.6	0.8	39.5	1	9280	2	5.8	6.7	3	3.47	53	11	4.1	0.71	1.5
Russia	5.9	0	38	4.3	8660	4	5.2	5	4	3.73	87	19	2.3	-0.4	5
South Africa	9.2	0.8	34	2.2	9510	3	8	3.3	3	2.78	38	9	4.8	-0.09	1.5
Turkey	4.3	2.3	32	4.1	6640	3	6.5	6.7	3	3.12	58	13	3.6	-0.61	4.5

Table 4. Weights (in %)

<i>Sub-Criteria (Measure)</i>	<i>Entrepreneur</i> M.D.	<i>Entrepreneur</i> G.O.	<i>Entrepreneur</i> C.G.	<i>Entrepreneur</i> B.A.	<i>Entrepreneur</i> E.P.	<i>“Benchmark”</i> <i>Entrepreneur</i>
Language	2.5	6.8	1.1	4.0	3.5	5.9
Local Customs	7.5	13.5	2.7	8.0	2.8	5.9
Access to Financial Capital	1.2	4.5	4.3	2.0	5.7	5.9
Ease of Profit Repatriation	2.4	5.6	8.6	9.4	4.3	5.9
Financial Security	4.9	5.1	5.2	9.9	5.7	5.9
GDP Growth Rate	3.6	3.4	3.5	4.9	5.0	5.9
Purchasing Power Parity	0.6	5.3	6.0	4.9	3.6	5.9
Difficulty to Own and Operate Property	7.3	5.1	2.6	4.9	7.1	5.9
Business Law	8.7	8.1	5.1	14.3	6.8	5.9
Lack of Crime	7.8	4.8	10.1	12.9	5.1	5.9
Env., Workplace and Product Safety Reg.	3.5	2.8	4.0	2.9	4.3	5.9
Labor Regulations	3.5	1.6	5.1	2.9	6.4	5.9
Risks for Intellectual Property	6.5	7.3	4.0	7.1	8.6	5.9
Bureaucracy	5.4	7.7	11.8	0.3	7.8	5.9
Lack of Corruption	10.2	8.6	8.3	3.7	9.8	5.9
Government Stability	10.8	8.1	9.4	4.7	6.8	5.9
Lack of Human Rights and Political Freedom	13.6	1.7	8.3	3.3	6.8	5.9
<i>Higher Level Criteria (Perspectives)</i>						
Cultural	10	20	4	12	7	12
Economical	20	29	30	36	31	35
Legal	30	25	28	40	31	29
Political	40	26	38	12	31	24

Figure 1. Hierarchical structure of the country selection problem

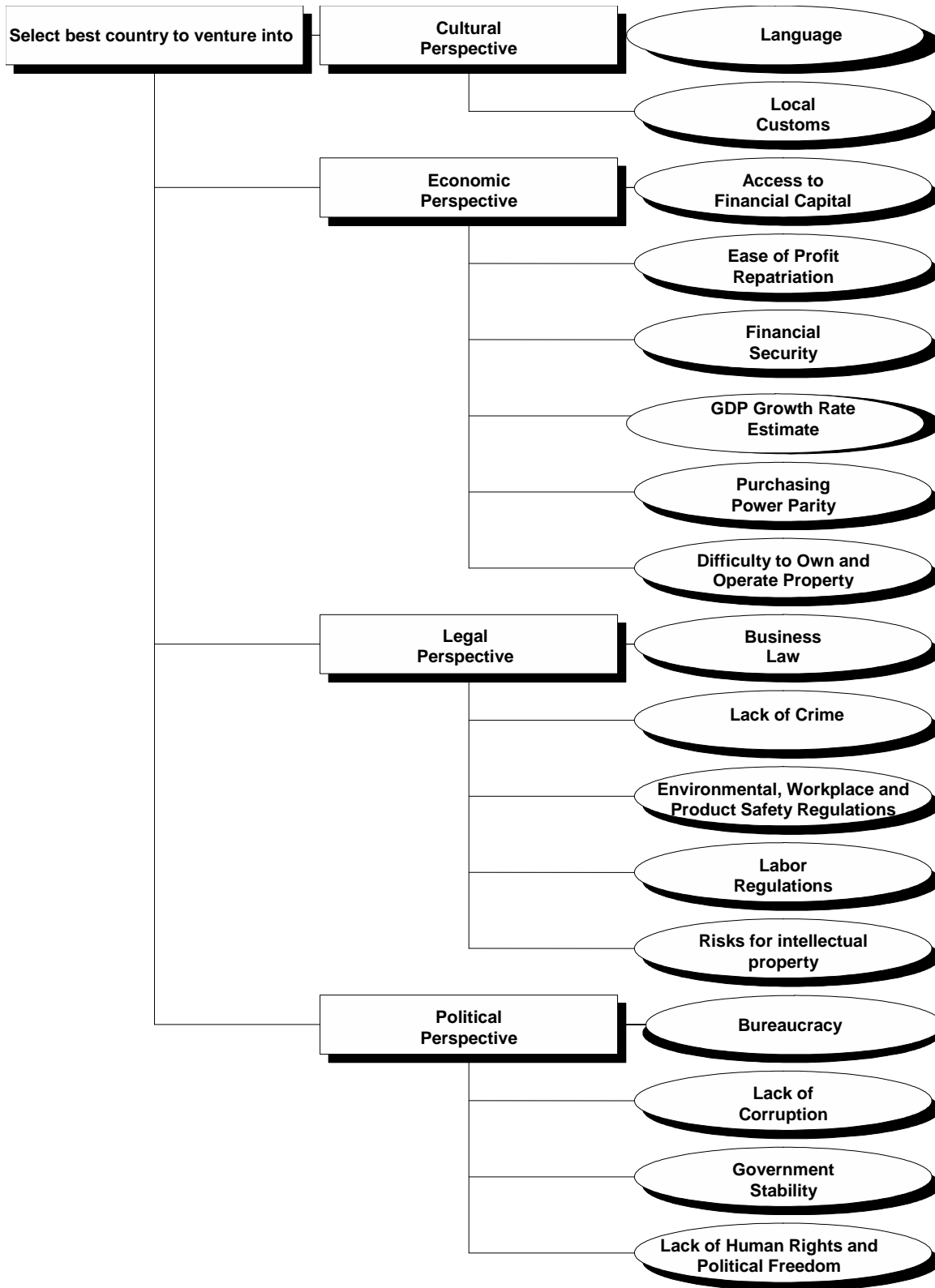


Figure 2. Value functions for “labor regulations”

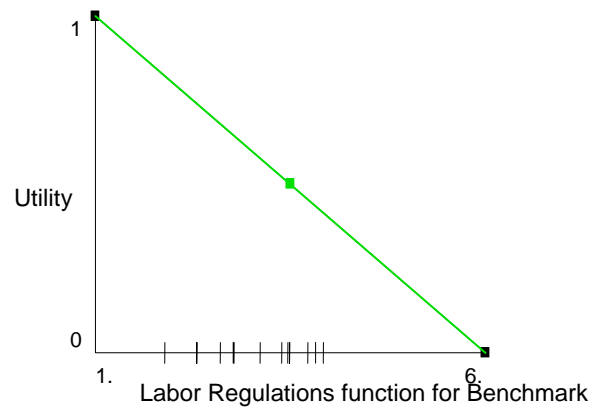
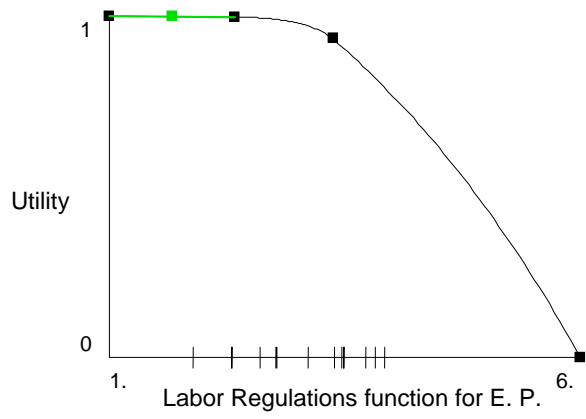
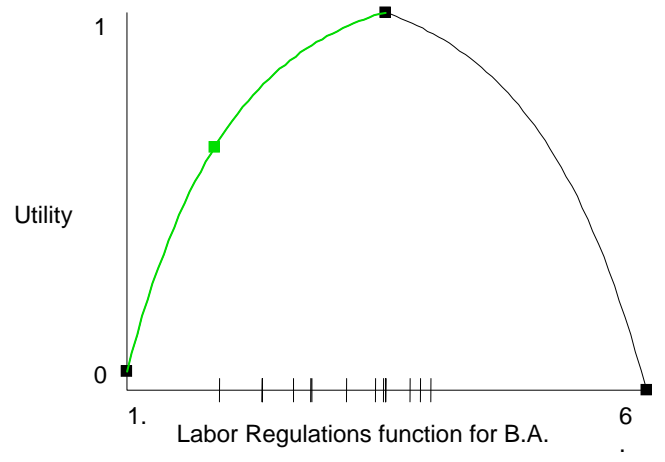
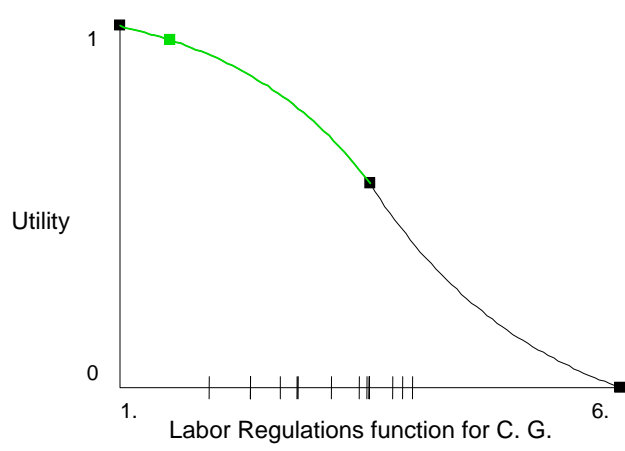
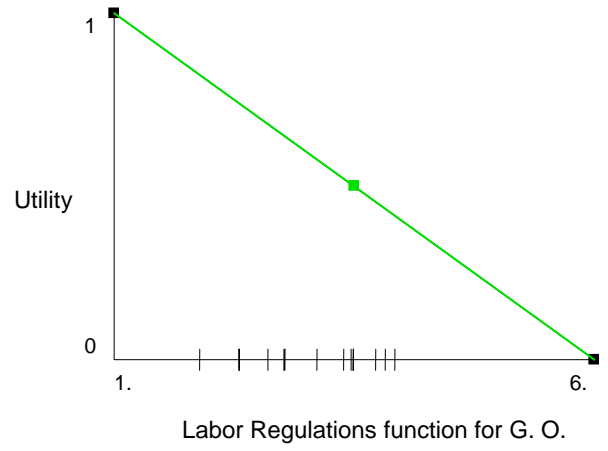
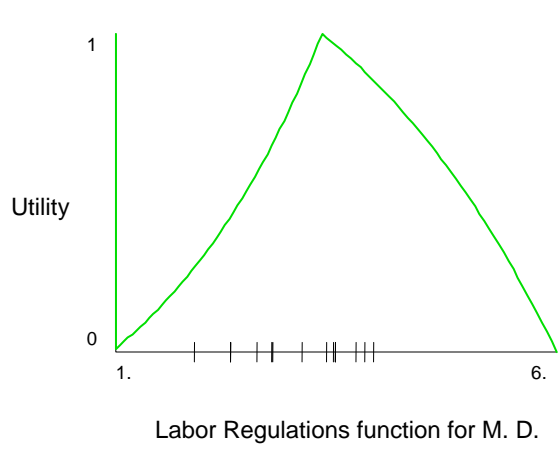
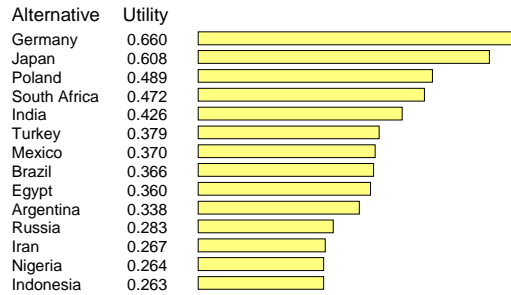




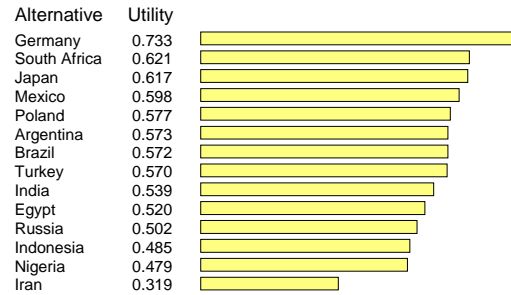
Figure 3. Country rankings

Ranking for Select best country to venture into Goal



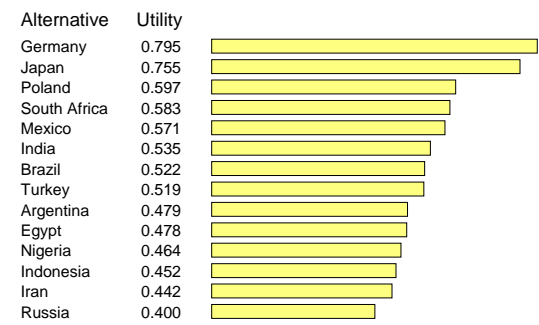
Preference Set = M.D.

Ranking for Select best country to venture into Goal



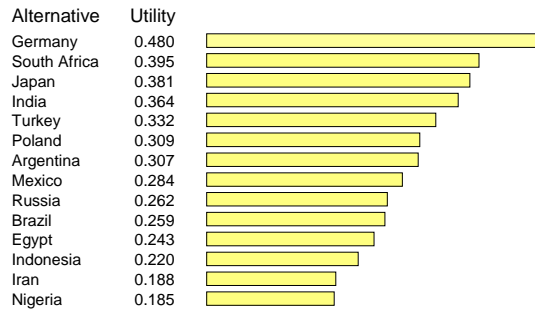
Preference Set = G.O.

Ranking for Select best country to venture into Goal



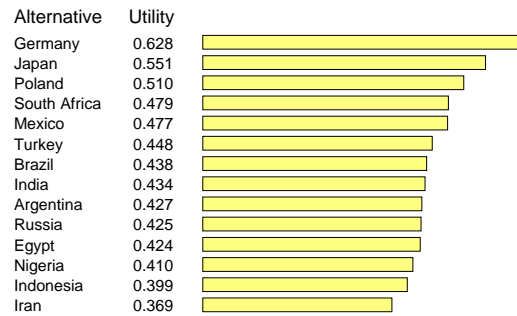
Preference Set = C. G.

Ranking for Select best country to venture into Goal



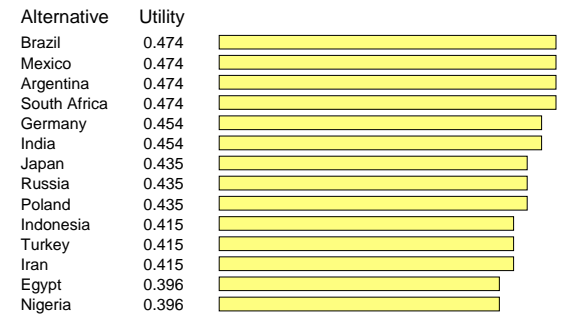
Preference Set = B.A.

Ranking for Select best country to venture into Goal



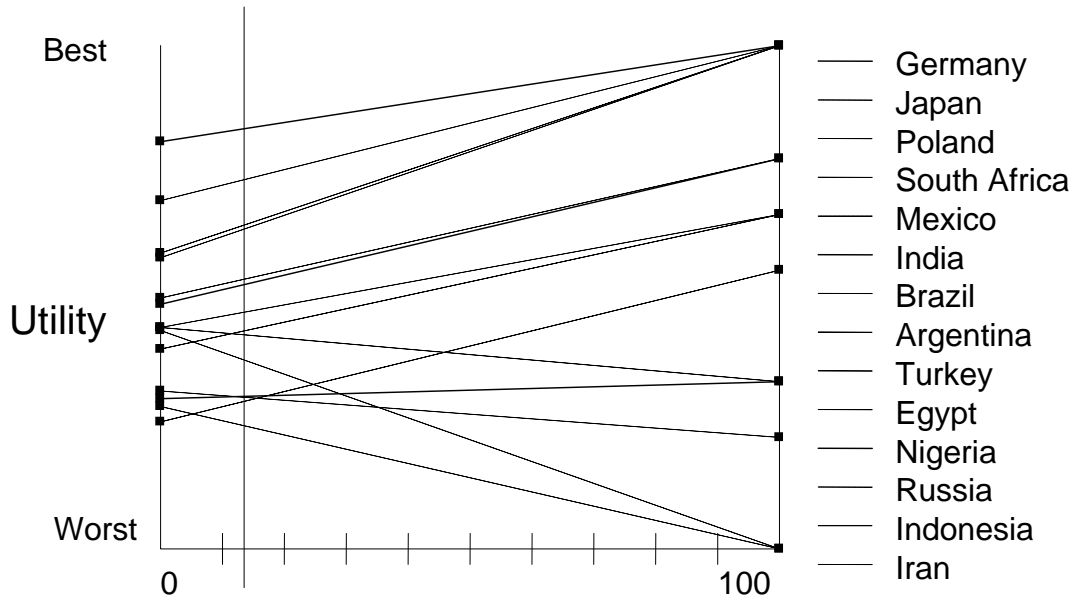
Preference Set = E.P.

Ranking for Select best country to venture into Goal

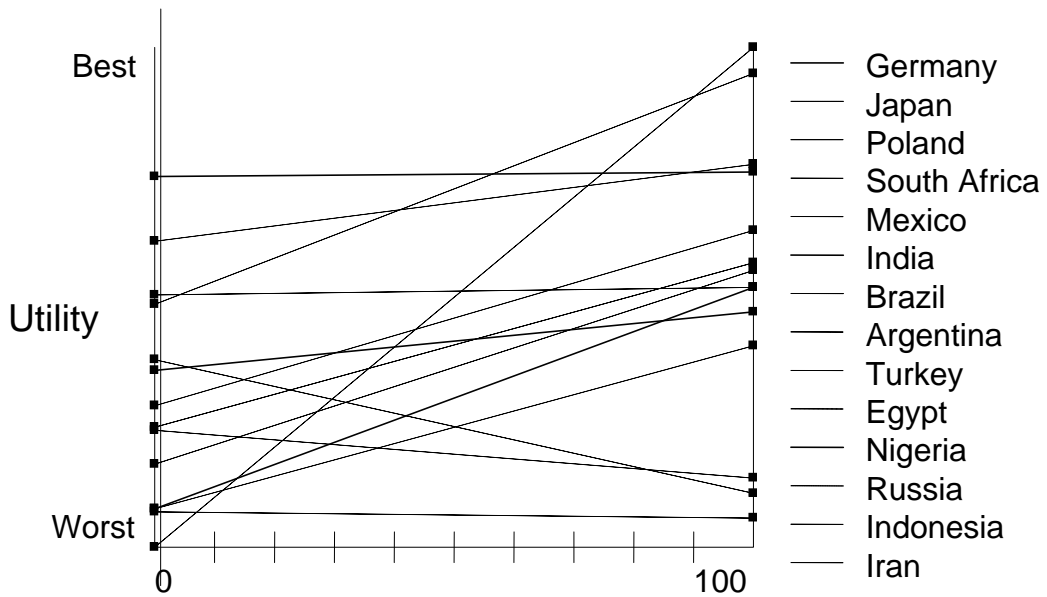


Preference Set = benchmark

Figure 4. Sensitivity graphs for representative measures for M.D. (countries are listed in descending order of their rankings for the current measure weight)



Percent of Weight on Lack of Human Rights and Political Freedom, M.D.



Percent of Weight on Access to Financial Capital, M.D.

Figure 5. Detailed analysis of two countries for M.D.: Russia and Poland

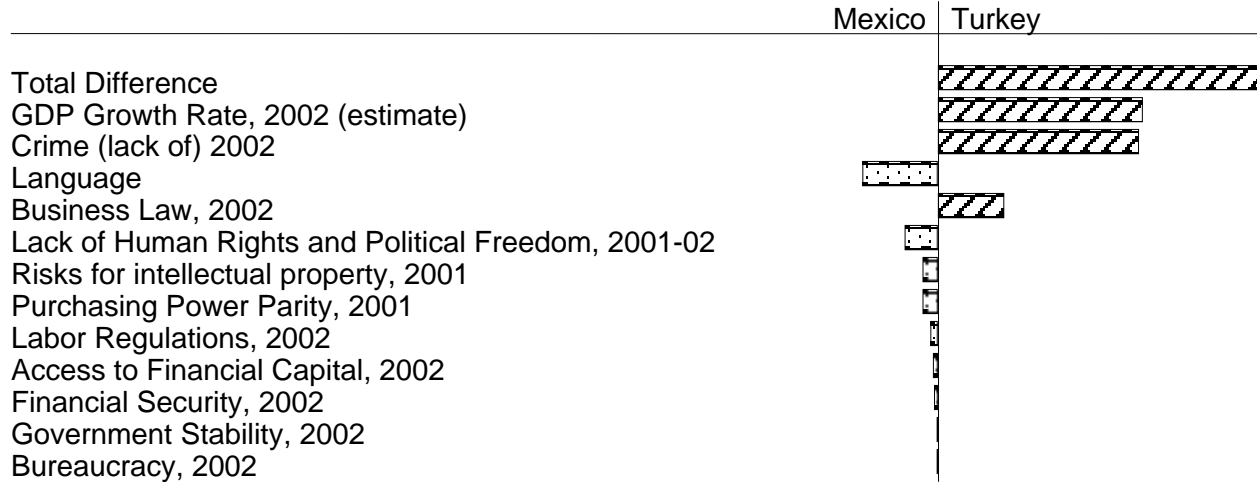
Overall Utility for	Poland	0.489
	Russia	0.283
	Difference	0.205



Preference Set = M.D.

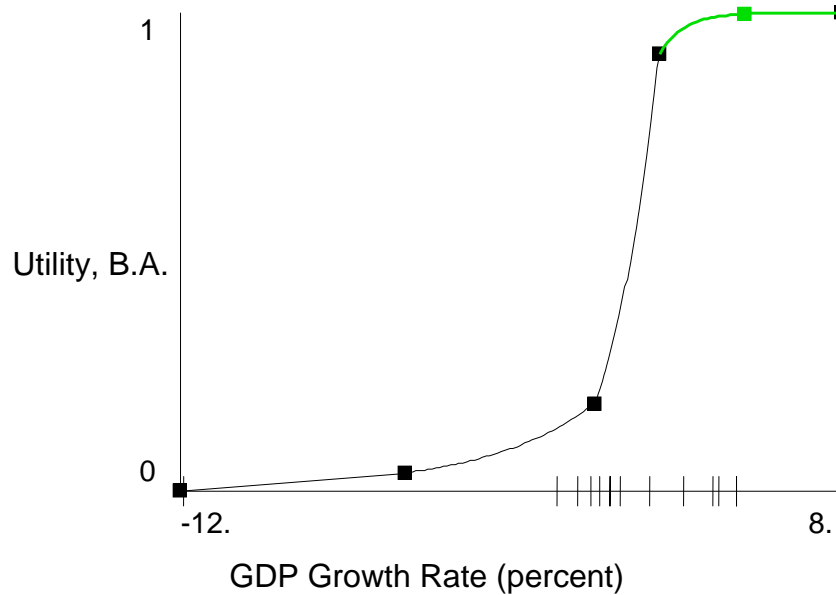
Figure 6. Comparing Mexico and Turkey for B.A.

Overall Utility for	Turkey	0.332
	Mexico	0.284
	Difference	0.047



Preference Set = B.A.

(a) levels of utility per criterion



(b) S-shaped utility curve for “GDP growth rate”

## Endnotes

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- <sup>1</sup> In the context of recognizing breakthrough innovations in large established firms, see for instance Colarelli O'Connor, G., Rice, M., 2001. Opportunity recognition and breakthrough innovation in large established firms. *California Management Review* **43**(2), 95-116.
- <sup>2</sup> The quotes are, respectively, on page 350 and 341 of Zollo, M., Winter, S., 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization Science* **13**(3), 339-351.
- <sup>3</sup> Pomerol, J.-C., Barba-Romero, S., 2000. *Multicriterion Decision in Management: Principles and Practice*. Kluwer Academic Publishers, Boston, MA.
- <sup>4</sup> Kasanen, E., Wallenius, H., Wallenius, J., Zionts, S., 2000. A study of high-level managerial decision processes with implications for MCDM research. *European Journal of Operational Research* **120**, 496-510.
- <sup>5</sup> Kobrin, S.J., 1976. The environmental determinants of foreign direct manufacturing investment: An ex post empirical analysis. *Journal of International Business Studies* **7**(2), 29-42; Meyer-Ehrman, C., Hamburg, M., 1986. Information search for foreign direct investment using two-stage country selection procedures: A new procedure. *Journal of International Business Studies* **17**(2), 93-116; Woodward, D.P., Rolfe, R.J., 1993. The location of export-oriented foreign direct investment in the Caribbean Basin. *Journal of International Business Studies* **24**(1), 121-144; Kumar, N., 1994. Determinants of export orientation of foreign production by U.S. multinationals: An inter-country analysis. *Journal of International Business Studies* **25**(1), 141-156; Brush, T.H., Maritan, C.A., Karnani, A., 1999. The plant location decision in multinational manufacturing firms: An empirical analysis of international business and manufacturing strategy perspectives. *Production and Operations Management* **8**(2), 109-132; Zhao, H., Levary, R.R., 2002. Evaluation of country attractiveness for foreign investment in the e-retail industry. *Multinational Business Review* **10**(1), 1-10; Cosset, J.-C., Siskos, Y., Zopounidis, C., 1992. Evaluating country risk: A decision support approach. *Global Finance Journal* **30**(1), 79-95; Cook, W.D., Hebner, K.J., 1993. A multiple criteria approach to country risk evaluation: With an example employing Japanese data. *International Review of Economics and Finance* **2**(4), 327-348; Doumpos, M., Zanakis, S.H., Zopounidis, C., 2001. Multicriteria preference disaggregation for classification problems with an application to global investing risk. *Decision Sciences* **32**(2), 333-385.
- <sup>6</sup> Aharoni, Y., 1966. *The Foreign Investment Decision Process*. Division of Research, Graduate School of Business Administration, Harvard University, Boston, MA. The quote is from Meyer-Ehrman and Hamburg, 1986, op. cit. pp. 97. The need for rational decision processes is stressed in Stobaugh, R.B. Jr, 1969. How to analyze foreign investment climates. *Harvard Business Review* (September-October), 100-108.

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- <sup>7</sup> Cosset, J-C., Siskos, Y., Zopounidis, C., 1992. Evaluating country risk: A decision support approach. *Global Finance Journal* **30**(1), 79-95; Cook, W.D., Hebner, K.J., 1993. A multiple criteria approach to country risk evaluation: With an example employing Japanese data. *International Review of Economics and Finance* **2**(4), 327-348; Doumpos, M., Zanakis, S.H., Zopounidis, C., 2001. Multicriteria preference disaggregation for classification problems with an application to global investing risk. *Decision Sciences* **32**(2), 333-385.
- <sup>8</sup> Khanna, T., Palepu, K.G., Sinha, J., 2005. Strategies that fit emerging markets. *Harvard Business Review* June, 63-76.
- <sup>9</sup> A multicriteria approach has also been used in the context of venture capitalists' assessment of potential investment. The 2000 work of Shepherd, Ettenson and Crouch relied on conjoint analysis to investigate the types of information used by venture capitalists to evaluate new business ventures and how these investors use this information to assess likely new venture profitability. Although the firm-level indicators used are not relevant to our country selection focus, their approach is a MCDA one. The conjoint analysis approach, a descriptive process that proposes to capture decision policies as the decisions are made, sheds light into which criteria are relevant for the decision making process. It is based on Multi Attribute Value Theory (henceforth MAVT), but unlike the MAVT approach we propose herewith, it infers the relative weights of these criteria. The inference process uses either a set of previously made choices or an artificially constructed portfolio of options presented to the decision maker. In either case, this approach offers decision makers a very limited number of possible ratings for each criterion (e.g. high or low). Conjoint analysis derives utility scores for each criterion in a manner analogous to linear regression. Shepherd, D.A., Ettenson, R., Crouch, A., 2000. New venture strategy and profitability: A venture capitalist's assessment. *Journal of Business Venturing* **15**(5-6), 449-467.
- <sup>10</sup> E.g. the Heritage Foundation's Index of Economic Freedom gives each of its 10 factors a weight of 10%.
- <sup>11</sup> Executives who responded to interviews conducted for the A.T. Kearney's Foreign Direct Investment (FDI) Confidence Index<sup>®</sup> survey, e.g., discussed the relative importance of social, political and economic factors in their intentions for future foreign investment. A.T. Kearney, Inc., 2002. FDI Confidence Index, Global Business Policy Council, Alexandria, VA.
- <sup>12</sup> Our results show that changes in weights do affect rank orderings of potential new markets.
- <sup>13</sup> See the work of Nijkamp, P., van Delft, A., 1977. *Multi-Criteria Analysis and Regional Decision Making*, vol. 8 of the series Studies in Applied Regional Science, Martinus Nijhoff Social Sciences Division, Leiden; Belton, V., Stewart, T.J.S., 2002. *Multiple Criteria Decision Analysis: An Integrated Approach*, Kluwer Academic Publishers, Boston, MA.

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- <sup>14</sup> Keeney, R.L., Raiffa, H., 1976. *Decisions with Multiple Objectives*. John Wiley & Sons, New York, NY.
- <sup>15</sup> This late 1960s theory became established after the 1976 work of Keeney and Raiffa (op. cit.), and now underlies many commercially available software packages that give each decision option a score on each individual criterion.
- <sup>16</sup> See, e.g., Belton and Stewart, 2002, op. cit.
- <sup>17</sup> Hobbs, B.F., Meier, P., 2000. *Energy Decisions and the Environment*. Kluwer Academic Publishers, Boston, MA.
- <sup>18</sup> We acknowledge the fact that some MCDA scholars take issue with “mixing and matching” global and local reference points. We follow the line of thought of Stewart, however, that does not oppose this practice. Stewart, T.J., 2003. Value Function Methods – Practical Basics. Presentation at the International Summer School on Multiple Criteria Decision Aid, Montreal, Canada.
- <sup>19</sup> Discussions on the relative importance of each factor to be considered in country selection are typically missing in entrepreneurship research.
- <sup>20</sup> Discrete functions for the cultural measures and continuous functions for all other measures.
- <sup>21</sup> Guitouni, A., Martel, J.-M., 1998. Tentative guidelines to help choosing an appropriate MCDA method. *European Journal of Operations Research* **109**, 501-521.
- <sup>22</sup> See Shepherd D.A., Zacharakis A., Baron R.A., 2003. VC’s decision processes: Evidence suggesting more experience may not always be better. *Journal of Business Venturing* **18**, 381-401.
- <sup>23</sup> For a classic discussion see Tversky, A., Kahneman, D., 1974. Judgment under uncertainty: Heuristics and biases. *Science* **185**, 1124-1131.
- <sup>24</sup> The quote is on page 249 in Reynolds, J., 1998. Methodological problems of intercultural comparisons of retail environments. *GeoJournal* **45**, 245-254.
- <sup>25</sup> While Belton and Stewart (2002; op. cit.) ascribe to the view that there is “no right way” of doing this task, and suggest that perhaps both approaches could be used, Hobbs and Meier (2000; op. cit.) believe that the works of Keeney (1992) and Gregory and Keeney (1994) show that the top down approach leads to better decisions. Keeney, R.L., 1992. *Value Focused Thinking*. Harvard University Press, Boston, MA; Gregory, R., Keeney, R.L., 1994. Creating policy alternatives using stakeholder values. *Management Science* **40**, 1035-1048.
- <sup>26</sup> For a summary see Belton and Stewart, 2002, op. cit., page 53.
- <sup>27</sup> In their simplest form, value functions are linear, reflecting a constant satisfaction from improving an alternative by one additional unit of a criterion. However, practitioners in the MCDA field have found that preferences are often better represented by S-shaped functions (Belton and Stewart, 2002, op. cit.).

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<sup>28</sup> Hobbs and Meier (2000; op. cit.) review weighting methods and comment on the advantages and shortcomings of each.

<sup>29</sup> Stewart, T.J., 1992. A critical survey on the status of multiple criteria decision making theory and practice. *Omega* **20**(56), 569-586. For more details on the swing-weight approach see von Winterfeldt, D., Edwards, W. 1986. *Decision Analysis and Behavioral Research*. Cambridge University Press, New York, NY.

<sup>30</sup> Stewart, 1992, op. cit.