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# Doing business abroad: utility function model for country selection in preliminary screening phase

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**Abstract** The paper presents the utility function model applicable within the first stage of starting a new business abroad. An applied auxiliary mathematical model was constructed to assist in the preliminary screening phase of the country selection process. The model is based on a comparison of countries according to utility function. This paper also illustrates a short example, where selected economic criteria serve as input data for determining the utility values of particular countries. The suggested model is parsimonious, easy to understand and, within the above mentioned context, potentially suitable for entrepreneurs from various economic sectors.

**Keywords** Doing business abroad · Country selection · Preliminary screening phase · Utility function model

## 1 Introduction

Evaluation of prospective markets for a company aspiring for internationalization of their business is one of the most important decisions. This decision consists of several stages; each of them being a separate decision-making process. One of these

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stages is Country selection for establishing a new business. Country selection is a serious and difficult task, since, taking into account there are about 230 countries in the world, there is always a number of them as prospective markets. Furthermore, not all countries have the same market potential. Decision-makers, therefore, need to choose carefully where to expend their efforts and limited sources (Alon 2004). Regarding the mentioned limited (above all time, but also financial) resources, relevant literature recommends that the 'Country selection process' should consist of two or more stages (see e.g. Samli 1972, 1977; Ball and McCulloch 1982, 1990; Root 1987, 1994; Russow and Okoroafo 1996, etc.). The first stage means examination of a relatively large number of countries, which results in the creation of a sub-group (a much smaller sample of the countries chosen according to ab ante selected criteria), whereas the second and later stages include a more intensive, in-depth assessment of prospective markets within the sub-group extracted during the first stage (Gould 2002).

This paper does not focus on the process of country selection or the process of selecting appropriate evaluation criteria, both of which are widely discussed in international literature. The goal of this paper is more detailed with innovative approach and its aim is to present an auxiliary mathematical model for country selection. Within this study, the utility function model was constructed to assist in the country selection preliminary screening phase and thereby increase the quality of decision making within the mentioned subject. The model is based on a comparison of countries according to utility function and may be helpful for entrepreneurs from various economic sectors.

## 2 Country selection

There exist various views on the country selection issue. It means different things to different researchers, which also results in naming diversity. Thus 'Country selection' has a number of names, such as 'Foreign market selection', 'International market selection', 'Country market selection', etc.

According to Gould (2002), 'Country selection' is above all a part of the internationalization process. Other authors, such as Ozohronet et al. (2006), perceive 'International market selection' as a complex decision-making issue, as numerous factors related with the country, market and project have to be considered. Moles and Terry (1997) define country selection as an international portfolio asset allocation based on investing (via their capital markets) in countries that are likely to be the best performers in any given period. A slightly different view on this issue is given by Pittman (2006), who merges 'Expansion' with 'Relocation', so the term 'Country selection' is replaced by the term 'Site selection', and explains it as an investment decision in which most companies calculate the costs, benefits and returns on investment from amongst alternative locations. Perhaps the most comprehensive definition is provided by Sheridan (1988), who defines 'Country selection' as decision-making activities employed in the selection of one or more suitable foreign markets from at least two potential ones. The salient elements of the decision are the criteria on which the decision is based, the sources from which information is gathered, and the methods of analysis used.

**Table 1** One stage models

Sub-group	Sub-group	Authors
Market-grouping	Macro-segmentation	Bartels (1963), Liander et al. (1967), Litvak and Banting (1968), Sethi (1971), Sethi and Curry (1973), Sheth and Lutz (1973), Ramond (1974), Doyle and Gidengil (1977)
	Micro-segmentation	Hodgson and Uyterhoeven (1962), Wind and Douglas (1972), Douglas and Craig (1982), Papadopoulos (1983)
Market-estimating	Import demand	Multiple criteria: UNCTAD/GATT (1968), CFCE (1973) Economet. methods: Alexandrides (1973), Alexandrides and Moschis (1977) Shift-share analysis: Green and Allaway (1985)
	Total demand	Econometric methods: Moyer (1968), Armstrong (1970), Singh and Kumar (1971), Lindberg (1982) Multiple factor indices: Micro criteria: Douglas et al. (1982), Douglas and Craig (1983) Macro criteria: Conners (1960), Dickensheets (1963), Liander et al. (1967), Beckerman (1966), Moyer (1968), Samli (1977), Helsen et al. (1993)

Source: Gould (2002), Swoboda et al. (2007)

## 2.1 Country selection models

According to relevant literature, models can be divided into following basic groups: one-stage models and multi-stage models (Swoboda et al. 2007).

One-stage models usually use secondary data and can be divided into market-grouping and market-estimating models. Market-grouping models cluster together countries on the basis of language, culture or economic development similarity, etc. This category of models can then be split into the sub-groups of micro-segmentation (use of product-specific factors such as demographic, behavioral, etc.) and macro-segmentation (use of general factors such as political, legal, economic, etc.). Market-estimating models try to estimate the product's potential and can also be divided into the sub-groups of 'import demand potential' (which consider alternative modes of entry) and 'total demand potential' (without pre-specifying the mode of entry).<sup>1</sup> Table 1<sup>2</sup> listed below provides the overview of an example of one-stage models authors.

<sup>1</sup> Under the Mode of Entry, we understand a particular strategy applied by a company in compliance with a set of legal and economic options and limitations valid on a particular foreign market.

<sup>2</sup> The overview shown in Table 1 is elaborated according to Gould (2002) and Swoboda et al. (2007), hence not all of the authors mentioned there are listed in the references.

**Table 2** Multi-stage models

#	Stages	Authors
2	1. First step of screening process: market's size attractiveness (macro- and micro-economic indicators, firms' own capabilities) 2. Second step: market's structural attractiveness (cost/structural compatibility indicators, firm policy guidelines)	Rahman (2000)
3	1. Preliminary screening: demographic, political, economic, social/cultural, environmental factors 2. Identification: industry market potential 3. Selection: firm's sales potential and costs	Cavusgil (1985)
3	1. Screening: macro-level indicators (political stability, socio-cultural factors) 2. Identification: industry-specific information such as market potential/barriers 3. Selection: firm-specific primary data	Kumar et al. (1994)
4	1. Establish a country market set (corporate policy, practical considerations) 2. Identify a country (sources of information) 3. Evaluate the country: attractiveness, competitive position 4. Select a market: assessments of profitability	Brewer (2001)
4	1. Identification of country markets: macro-segmenting 2. Preliminary screening: macro-level indicators 3. In-depth screening 4. Final selection	Johansson (2003)
9	1. Decision criteria (global corporate objectives) 2. Global market situation and trends 3. Review of individual markets 4. Elimination of unfeasible markets 5. Feasible market/market entry options 6. Evaluation of feasible market/entry options 7. Multi-criteria: comparison of anticipated pay-offs for various market/entry options 8. Would all or any of the market/entry modes constitute a good global strategic fit? 9. Selection of the optimal market/entry mode	Koch (2001)

Multi-stage models usually start with preliminary screening phase (using macro-economic criteria), continue with in-depth screening phase (industry and product specification) and finish with conclusive selection (corporate specific aspects). This can be regarded as a basic multi-stage model. Table 2<sup>3</sup> brings an overview of selected multi-stage models (Table 3).

## 2.2 Preliminary screening phase

As mentioned before, 'Country selection' should consist of two or more phases. The first of them is usually the 'Preliminary Screening' phase. There is a certain singularity in this term within relevant literature; we can therefore meet with denominations such

<sup>3</sup> The overview shown in Table 2 is elaborated according to Swoboda et al. (2007), hence not all of the authors mentioned there are listed in the references.

**Table 3** Screening criteria

Criteria	Brief description	Authors
Physical	Differ in each market; topography (hills, altitude, other geographic features), climate (temperature, rainfall, snowfall, humidity, wind, sunshine), population density	Cooke (1972, p. 28), Douglas et al. (1982, p. 28), Douglas and Craig (1995, pp. 58, 60), Terpstra and Sarathy (1994, pp. 93–95)
Technological	Match between market and product in terms of the sophistication or complexity of science and technology (e.g. the necessary presence or absence of computers, aerospace and other attributes or industries)	Bradley (1995, p. 144), Douglas and Craig (1995, pp. 60, 61), Kotler et al. (1998, p. 119), Dujava (2012)
Economic	Economic attractiveness of each market; economic criteria can affect e.g. competition, technology or cost of enterprise via tax levels, infrastructure, labor cost, etc	Kotler et al. (1994, pp. 65–66), Douglas and Craig (1995, pp. 60, 61), Terpstra and Sarathy (1994, pp. 93–95), Ždárek (2009, pp. 527, 532, 537)
Political	Government stability, degree of influence on organizations and markets, national priorities, attitude toward foreign firms, and efficiency of the bureaucracy etc	Bradley (1991, p. 138), Cateora (1996, p. 138), Kotler et al. (1994, p. 72), Jain (1996, p. 248), Terpstra and Sarathy (1994, p. 153), Žák (2005)
Legal	E.g. product-related controls, the trade practices laws and regulations, restrictions on ownership, and contractual relationships with customers, employees and suppliers	Bradley (1991, pp. 154–161), Cateora (1996, p. 160), Kotler et al. (1994, p. 72)
Cultural	Include such matters as the market's religious, ethnic and linguistic variation and tolerance; different cultures frequently have different business practices; the higher the cultural distance between home and host market the more difficult to adapt to the new market	Albaum and Peterson (1984, p. 96), Bradley (1991, pp. 109–133), Cannon and Willis (1986), Douglas and Craig (1995, p. 60), Evangelista (1994), Fletcher and Bohn (1998), Goodnow and Hansz (1972), Gould and McGillivray (1998), Hafstede (1980, 1984, 1991, 1994, 2001), Krpec and Hodulák (2012) and many others
Ecological/environmental	Include the particular market's pollution levels and attitudes which differentially affect the quantity and kind of market demand, the marketing mix and the other operations of the organization (safe drinking water, pollution monitoring stations etc.)	Douglas and Craig (1995, p. 378), Kotler et al. (1994, p. 66), Terpstra and Sarathy (1994, p. 949)

Source: Self-processing according to Gould (2002)

as 'Initial Country selection', 'Initial country analysis', 'Initial country assessment', 'Gross country analysis', 'Gross foreign market analysis' or simply 'Screening'.

Russow and Solocha (1993) use the denomination 'Screening' and define it as an initial step in the Country selection process. In the context of international marketing, they see 'Screening' as a preliminary stage of the in-depth global assessment of opportunities. The authors perceive the objective of screening as an identification of potential markets quickly and inexpensively without regard to method of entry. Moreover, Gould (2002) notes that screening should be quick and cost-effective, reducing the large number of potential markets to a small number. Finally, we can conclude that preliminary screening phase is based on the use of different macroeconomic criteria.

### 2.3 Preliminary screening phase criteria

The criteria used in the preliminary screening phase mostly described in the relevant literature are: physical, technological, economic, legal, political, cultural and ecological.

Physical criteria differ in each country and include indicators such as topography, climate and population density. We consider these criteria as product-specific, which means they can be used for some products, but do not need to be used universally. The defenders of these criteria list authors such as Cooke (1972), Douglas et al. (1982), etc. Technological criteria can also be regarded as a product-specific variable, as some products are technology-sensitive, whilst others are not. Bradley (1995), Douglas and Craig (1995) are examples of many international writers who believe that technological aspect in the screening process should be considered. As far as economic criteria are concerned, their role is to express economic attractiveness of each market. The use of economic criteria is advocated particularly by Kotler et al. (1998), Terpstra and Sarathy (1994), etc. Legal criteria include influences such as product-related controls; trade practices laws and regulations, restrictions on ownership, etc. The supporters of this type of criteria are Bradley (1991), Cateora (1996), etc. Political criteria then pertain, for instance, to government stability, degree of influence on organizations and markets, national priorities, attitude toward foreign firms, efficiency of the bureaucracy, etc. Examples of the political criteria adherents are e.g. Bradley (1991) and Cateora (1996). Cultural criteria include such matters as the market's religious, ethnic and linguistic variation and tolerance. The use of cultural criteria is based on the belief that different cultures often have different business practices. Many authors also believe that the higher the cultural distance between the home and host markets, the harder it is to adapt to a new market. There is an enormous amount of literature dealing with the role of culture in international marketing, e.g. Bradley (1991), Kotler et al. (1998), Douglas and Craig (1995), etc. Ecological (environmental) criteria relate to the particular market's pollution levels and attitudes which differentially affect the quantity and kind of market demand, the marketing mix and other operations of the organization (safe drinking water, pollution monitoring stations, etc.) (Gould 2002). Among the supporters of these types of criteria are e. g. Douglas and Craig (1995), Kotler et al. (1998), etc.



### 2.4 Mode of entry versus screening phase

There are two approaches concerning the specific form of starting business abroad. The first possibility is to perform screening before the mode of entry selection. The advocates of this set up are e.g. Ball and McCulloch (1982), Root (1987), Russow and Okoroafo (1996), Cateora and Graham (2006). The opposite view is shared, for instance, by Anderson and Gatignon (1986), who believe that enterprises should first select the mode of entry and undergo the country screening process subsequently.

### 3 Utility function model

The utility function model is an auxiliary mathematical model designed for country selection and recommended particularly for its preliminary screening phase. It is based on the evaluation of countries based on their comparison according to utility function, while the utility function in our case is defined as a power function. The model principally uses secondary data, first of all because of costs minimization as well as for the purposes of currentness and maximum accuracy and veracity (Říha 2001).

Different criteria (indicators) may be used for country evaluation. These indicators can be selected on the decision-maker requirements basis.<sup>4</sup> The values of the characteristics are secondary data and are thus taken from various relevant sources.

Let  $m$  be the number of variables (indicators) in the model. The decision-maker has a choice of  $n$  countries (target points). Consequently, a matrix of variables' values for each country is formed, denoted by  $p_{ij}$ . This represents the value of the  $i$ th variable for the  $j$ th country. In that manner, we define variables' values matrix of size  $m \times n$ .

The calculation of the utility merits of the variables' values is carried out as follows. In the first step, it is necessary to define range limits within which the selected variable (indicator) moves. Let's denote the beginning and finis of the interval as  $p_{begin}$  and  $p_{end}$ , where

$$p_{begin} = p_{min} - dp_i \tag{1}$$

$$p_{end} = p_{max} + dp_i, \tag{2}$$

whereby it is valid that

$$dp_i = \frac{p_{max} - p_{min}}{10} \tag{3}$$

where

$$p_{min} = \min_{j \in \{1,2,\dots,n\}} (p_{ij})$$

$$p_{max} = \max_{j \in \{1,2,\dots,n\}} (p_{ij})$$

<sup>4</sup> When selecting criteria (indicators), we recommend a thorough study of relevant literature. An overview of the literature relating to criteria selection that may be helpful for decision-makers is discussed in the previous section of this article.

After this manner, we achieve that the utility measurement domain will exceed the minimum or maximum value by 10% of range. Consequently, we can calculate the mean value of the  $i$ th variable for all the spotted countries, namely:

$$\bar{p}_i = \frac{\sum_{j=1}^n P_{ij}}{n} = p_i^0 \tag{4}$$

In the next step, it is necessary to determine whether the inducted variable is minimizing or maximizing. The minimizing variable (indicator) represents “min is the best”, whereas the maximizing variable expresses “max is the best”. On this basis, the utility function will be chosen.

For maximizing variables (indicators), the utility function in this form will be chosen:

$$U_{ij} = \left( \frac{P_{ij} - p_{begin}}{p_{end} - p_{begin}} \right)^k \tag{5}$$

For minimizing variables (indicators), the utility function in this form will be chosen:

$$U_{ij} = 1 - \left( \frac{P_{ij} - p_{begin}}{p_{end} - p_{begin}} \right)^k \tag{6}$$

The last step before the actual calculation of the overall utility of the alternatives (countries) is an estimate of the exponent. Numerous expert and scientific articles devote to the issue of the exponent determination. See Říha (1987, 2001), Fajfr (2002). We decided to define the exponent by calculating the expectation (mean value). In this case, we perceive the expectation on the basis of the mean. After this manner, we can define the utility value of the  $i$ th variable (indicator) for the  $U_i^0$  value, whereby for maximizing as well as for minimizing variables (indicators), it is valid that  $U_i^0 = 0, 5$ . Consequently, according to the mentioned Eqs. (5, 6), the value of the exponent is calculated as follows:

- for the maximizing variables (indicators)

$$\ln(U_i^0) = \ln\left(\frac{p_i^0 - p_{begin}}{p_{end} - p_{begin}}\right)^k \tag{7}$$

$$k = \frac{\ln(U_i^0)}{\ln\left(\frac{p_i^0 - p_{begin}}{p_{end} - p_{begin}}\right)} \tag{8}$$

- for the minimizing variables (indicators)

$$1 - U_i^0 = \left( \frac{p_i^0 - p_{begin}}{p_{end} - p_{begin}} \right)^k \tag{9}$$

$$k = \frac{\ln(1 - U_i^0)}{\ln\left(\frac{p_i^0 - p_{begin}}{p_{end} - p_{begin}}\right)} \tag{10}$$

Thereafter, an overall assessment of countries will be determined on the basis of partial utility values, namely for the *j*th country, the utility total value will be calculated according to

$$U_j^* = \sum_{i=1}^m U_{ij} \tag{11}$$

Finally, the best country (alternative) is the one obtaining the highest value of total utility.

**Table 4** Variables

Macroeconomic condition variables		Trade conditions variables	
Variable	Abbreviations	Variable	Abbreviations
General government gross debt—% of GDP (2009)	GGGD	Business freedom	BF
Growth rate of real GDP per capita in % (2010)	GRRGDP	Trade freedom	TF
Real GDP growth rate in % (2010)	RGDPGR	Fiscal freedom	FF
Net national income—% of GDP (2010)	NNI	Government spending	GS
Inflation rate in % (2010)	IR	Monetary freedom	MF
Labor productivity per hour worked (2010)	LPHW	Investment freedom	IF
Unit labor cost growth: total economy in % (2010)	ULCG	Financial freedom	FinF
Unemployment rate in % (2010)	UR	Property rights	PR
Taxation—corporate tax	CT	Freedom from corruption	FFC
Taxation—value added tax	VAT	Labor freedom	LF
Social welfare—paid by employer in % (latest entry)	SW	Country risk	CR
Foreign direct investment (net inflow) in million \$ (latest entry)	FDI	Motorways m/capita	MmC
		Railway m/capita	RmC
		Nr. of international airports	NIA
		Nr. of ports	NP
		Nr. of flights to USA per week	NFUSA
		Location of the country	LC

**Table 5** Values for 2010

	BG	CY	CZ	EE	HU	LV	LT	MT	PL	RO	SK	SL
Macroeconomic condition												
GGGD	14.7	58	35.3	7.2	78.4	36.7	29.5	68.6	50.9	23.9	35.4	35.4
GRRGDP	0.70	0.60	2.10	3.10	1.40	0.40	3.00	3.50	3.70	-1.10	3.80	0.90
RGDPGR	0.30	0.60	2.30	2.40	0.80	-1.80	0.40	2.00	3.80	-1.90	4.00	1.00
NNI	80.9	86.9	76.0	80.2	78.9	84.1	86.8	79.4	85.5	98.5	80.1	82.1
IR	3.00	2.60	1.20	2.70	4.70	-1.20	1.20	2.00	2.70	6.10	0.70	2.10
LPHW	6.70	1.30	0.60	5.60	1.30	5.50	5.60	-0.30	1.40	0.40	2.20	-6.10
ULCG	-2.10	-1.10	-0.50	-9.20	-3.90	-8.50	-9.30	-5.90	-0.60	-3.50	-3.10	-0.10
UR	9.90	6.80	7.40	16.9	11.2	17.1	17.8	6.70	9.60	6.90	14.5	7.20
CT	10.0	10.0	19.0	22.0	19.0	15.0	15.0	35.0	19.0	16.0	19.0	20.0
VAT	20.0	15.0	20.0	20.0	25.0	22.0	21.0	18.0	23.0	24.0	20	20
SW	21.4	6.30	34.0	33.0	28.5	24.09	31.0	10.0	19.2	32.25	35.2	16.1
FDI	4,500	5,800	2,700	1,700	-5,600	72.00	348	895	11,400	6,300	-50	-67
Trade condition												
BF	75.8	80.1	69.8	80.9	76.50	72.80	81.70	70	61.4	72.0	73.40	83.6
TF	87.6	82.6	87.6	87.6	87.6	87.6	87.6	87.6	87.6	87.6	87.6	87.6
FF	86.9	74.6	81.0	80.7	69.7	82.5	86.1	62.5	74.0	86.8	84.2	65.1
GS	58.3	45.6	44.8	52.2	27.4	55.5	58.0	39.8	43.8	57.6	63.7	41.1
MF	75.5	87.6	80.0	78.7	75.9	73.5	74.5	80.1	78.1	74.4	81.6	80.5
IF	55	75	70	90	75	80	80	75	65	80	75	70
FinF	60	70	80	80	70	50	80	60	60	50	70	50
PR	30	80	65	80	65	50	60	70	60	40	50	60
FFC	38	66	49	66	51	45	49	52	50	38	45	66
LF	82	71.4	77	55.8	67.7	61.3	55.6	60	61.2	60.8	64.5	41.8
CR	4	0	0	0	0	5	4	0	2	4	0	0
MmC	0.06	0.32	0.07	0.08	0.09	0.03	0.12	0.01	0.03	0.02	0.11	0.37
RmC	0.55	0.00	0.31	0.92	0.78	0.82	0.54	0.00	0.53	0.5	0.67	0.61
NIA	4	3	6	4	5	3	4	1	12	12	5	3
NP	4	17	0	16	0	10	2	3	14	8	0	3
NFUSA	0	0	6	0	7	0	0	0	15	0	0	0
LC	3	0	2	3	2	3	3	0	3	3	2	3

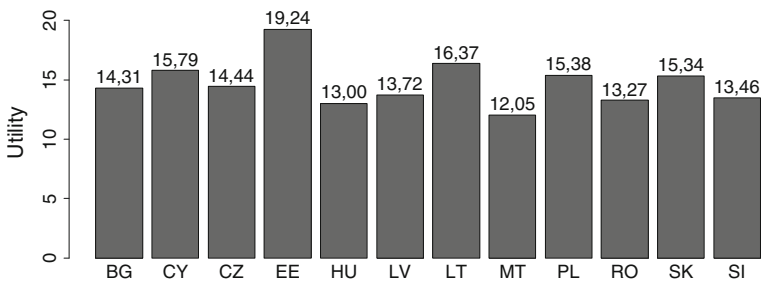
Source: Eurostat—statistical office of the European Union and The Heritage Foundation

#### 4 Illustrative example

This chapter proposes a simple example of the utility function model application. Let us consider a decision-maker aspiring for internalization, considering European countries. His essential requirement is that the selected country has to be an EU member, but outside the EU-15 countries (accession date prior to 1 May 2004). This requirement is often untaken, because of tax remission or cost reduction, which is possible in the new EU member states because of low wages level, low taxation, etc. The decision-

**Table 6** Parameters

	Type of variable	$p^{begin}$	$p^{end}$	$d^{pi}$	$p_i^0$	$U_i^0$	k
Macroeconomic condition							
GGGD	Minimizing	0.08	85.52	7.12	39.5	0.5	0.896070298
GRRGDP	Maximizing	-1.59	4.29	0.49	1.84	0.5	1.287155794
RGDPGR	Maximizing	-2.49	4.59	0.59	1.16	0.5	1.045465396
NNI	Maximizing	73.75	100.75	2.25	83.28	0.5	0.665820293
IR	Maximizing	-1.93	6.83	0.73	2.32	0.5	0.957304233
LPHW	Maximizing	-7.38	7.98	1.28	2.02	0.5	1.410522307
ULCG	Minimizing	-10.22	0.82	0.92	-3.98	0.5	1.213749675
UR	Maximizing	5.59	18.91	1.11	11.0	0.5	0.769293743
CT	Minimizing	7.5	37.5	2.5	18.25	0.5	0.675390077
VAT	Minimizing	14.0	26.0	1	20.67	0.5	1.179249585
SW	Minimizing	3.41	38.09	2.89	24.24	0.5	1.359514875
FDI	Maximizing	-7,300	13,100	1,700	2,333.17	0.5	0.92379852
Trade condition							
BF	Maximizing	59.18	85.82	2.22	74.83	0.5	1.303569921
TF	Maximizing	82.10	88.10	0.5	87.18	0.5	4.180817622
FF	Maximizing	60.06	89.34	2.44	77.84	0.5	1.389805775
GS	Maximizins	23.77	37.33	3.63	48.98	0.5	1.26772101
MF	Maximizing	72.09	89.01	1.41	78.37	0.5	0.698978549
IF	Maximizinz	51.5	93.5	3.5	74.17	0.5	1.123826481
FinF	Maximizing	47.0	83.0	3	65.0	0.5	1
FR	Maximizing	25.0	85.0	5	59.17	0.5	1.230962
FFC	Maximizing	35.2	68.8	2.8	51.25	0.5	0.938184932
LF	Maximizing	37.78	86.02	4.02	63.26	0.5	1.085824667
CR	Minimizing	-0.5	5.5	0.5	1.58	0.5	0.655278446
MmC	Maximizing	-0.03	0.41	0.04	0.11	0.5	0.596554813
RmC	Maximizing	-0.09	1.01	0.09	0.57	0.5	1.351982992
NIA	Maximizing	-0.1	13.1	1.1	5.17	0.5	0.754389108
NP	Maximizing	-1.7	18.7	1.7	6.42	0.5	0.752100307
NFUSA	Maximizing	-1.5	16.5	1.5	2.33	0.5	0.448164098
LC	Maximizing	-0.3	3.3	0.3	2.25	0.5	2.010051627



**Fig. 1** Overall utility

**Table 7** Utility function

	BG	CY	CZ	EE	HU	LV	LT	MT	PL	RO	SK	SL
Macroeconomic condition												
GGGD	0.794	0.294	0.548	0.892	0.075	0.532	0.615	0.179	0.372	0.682	0.547	0.547
GRRGDP	0.297	0.280	0.549	0.747	0.419	0.248	0.727	0.831	0.873	0.041	0.894	0.331
RGDPGR	0.378	0.42	0.665	0.679	0.449	0.088	0.392	0.621	0.884	0.074	0.913	0.477
NNI	0.413	0.619	0.191	0.385	0.332	0.528	0.616	0.353	0.575	0.944	0.381	0.458
IR	0.577	0.532	0.373	0.543	0.766	0.093	0.373	0.464	0.543	0.920	0.316	0.476
LPHW	0.885	0.447	0.397	0.789	0.447	0.78	0.789	0.335	0.454	0.383	0.514	0.030
ULCG	0.311	0.207	0.143	0.944	0.492	0.895	0.951	0.68	0.154	0.453	0.413	0.100
UR	0.420	0.158	0.215	0.882	0.514	0.894	0.935	0.148	0.397	0.168	0.734	0.197
CT	0.813	0.813	0.477	0.388	0.477	0.608	0.608	0.057	0.477	0.573	0.477	0.466
VAT	0.558	0.947	0.558	0.558	0.098	0.380	0.470	0.726	0.288	0.193	0.558	0.558
SW	0.590	0.966	0.157	0.194	0.356	0.505	0.267	0.895	0.662	0.222	0.112	0.745
FDI	0.603	0.664	0.518	0.470	0.101	0.391	0.404	0.431	0.923	0.688	0.385	0.384
Trade condition												
BF	0.541	0.730	0.302	0.766	0.570	0.417	0.803	0.309	0.039	0.385	0.441	0.893
TF	0.695	0.000	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695
FF	0.886	0.378	0.628	0.615	0.214	0.691	0.850	0.032	0.356	0.882	0.765	0.087
GS	0.745	0.417	0.397	0.582	0.043	0.669	0.737	0.282	0.373	0.726	0.896	0.311
MF	0.326	0.941	0.588	0.518	0.353	0.176	0.256	0.593	0.485	0.249	0.669	0.613
IF	0.061	0.521	0.398	0.907	0.521	0.647	0.647	0.521	0.279	0.647	0.521	0.398
FinF	0.361	0.639	0.917	0.917	0.639	0.083	0.917	0.361	0.361	0.083	0.639	0.083
PR	0.047	0.898	0.607	0.898	0.607	0.340	0.515	0.702	0.515	0.182	0.340	0.515
FFC	0.097	0.922	0.434	0.922	0.493	0.315	0.434	0.522	0.463	0.097	0.315	0.922
LF	0.910	0.676	0.799	0.343	0.595	0.458	0.339	0.431	0.456	0.448	0.527	0.067
CR	0.172	0.804	0.804	0.804	0.804	0.055	0.172	0.804	0.437	0.172	0.804	0.804
MmC	0.382	0.876	0.408	0.433	0.456	0.296	0.524	0.227	0.296	0.263	0.502	0.949
RmC	0.481	0.035	0.877	0.889	0.727	0.772	0.470	0.035	0.460	0.431	0.606	0.542
NIA	0.414	0.335	0.559	0.414	0.488	0.335	0.414	0.153	0.936	0.936	0.488	0.335
NP	0.383	0.937	0.154	0.899	0.154	0.658	0.277	0.332	0.821	0.572	0.154	0.332
NFUSA	0.328	0.328	0.675	0.328	0.714	0.328	0.328	0.328	0.962	0.328	0.328	0.328
LC	0.840	0.007	0.406	0.840	0.406	0.840	0.840	0.007	0.840	0.840	0.406	0.840
$U_J^*$	14.31	15.79	14.44	19.24	13.00	13.72	16.37	12.05	15.38	13.27	15.34	13.46

maker therefore decides between the following countries: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia. Let us assume that the investor is concerned about the macroeconomic and trade conditions in given country. The investor is thus interested in variables listed in Table 4. Macroeconomic condition variables and their precise definitions are available on Eurostat. Trade conditions variables and their precise meaning are available on The Heritage Foundation webpage.

Given values of selected variables for 2009 and 2010 are shown in Table 5 – Values for 2009 and 2010.

Values listed in Table 5 serve as input data for determining the utility values of particular countries. In the first step, it is necessary to calculate the initial range value  $p_{begin}$ , final range value  $p_{end}$  from the selected data, utility measurement domain  $dp_i$ , and the mean value of the  $p_i^0$  variable. Consequently, the inducted mean value will be used to estimate the value of the exponent  $k$ . Values of listed parameters are shown in Table 6.

Subsequently, we can calculate  $U_{ij}$  (here we distinguish between maximizing and minimizing variables). Finally, the best country (alternative) is the one that obtains the highest value of the total utility  $U_j^*$  (Fig. 1).

We can thus identify Estonia as the best country in our case study (as far as the selected indicators are concerned). The second best evaluated country is Latvia, with Cyprus finishing third. The model is constructed in a way to allow the decision-maker to choose his own country sampling file as well as the criteria. So the number of countries and the types of criteria are optional (even though limited only to quantitative data) (Table 7).

## 5 Conclusion

The aim of the article was to present a country selection model. Within our study, utility function model was constructed to assist in the preliminary country selection screening phase and thereby increase the quality of decision-making. We also introduced an illustrative example where ‘Gross Government Debt’ was the decisive variable. In the given context of our study, we identified Estonia, Latvia and Cyprus as the most suitable countries for starting a new business.

We also propose an auxiliary mathematical model based on a comparison of countries according to utility function. It is parsimonious, simple to understand and does not assume a particular mode of entry. The suggested model may be applied to enterprises (decision-makers) aspiring for internationalization, as well as to those facing some international expansion pressures.

The use of entirely qualitative data may be seen as the main limitation of the suggested model. The proposed model can be used as a base for more sophisticated models taking into account variables weights, probabilities of changes in trends, deviations of variables in the past, etc.

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