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Multicriterial Evaluation for Emigration Decisions

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Abstract

Regardless of age and education level, many young adults in Romania, either employed or unemployed, think of a job abroad to be more satisfying than a job in the residence country. But a complex analysis of relevant criteria to be considered in order to wisely decide if emigration is a solution (with all its impact on their entire live) is needed. For a responsible emigration decision where the objective is multidimensional, apart from qualitative analysis a quantitative multicriterial Pareto dominance-based analysis may be achived. The paper reviews over 25 relevant criteria to be considered in an emigration decision, and describes the Pareto-dominance method applicable to this context. Additionally, the Romanian environment is explored from the emigration perspective and recommendations to students over choosing careers are advanced.

Keywords: *emigration; multicriterial evaluation; welfare; Pareto dominance*

JEL Classification: *F22; I31; C02; E24.*

Introduction

A significant segment of young adults in Romania, even university graduates, considers that the most important problem regarding their career path consists in the lack of finding a decent job in Romanian society, in accordance with their professional and social expectations and therefore decides to emigrate. Some of them may find their most adequate role in a foreign country, whereas others lose years and opportunities until conclude to come back in their country, because the foreign society did not fulfill their various kind of needs. A big part of these youngsters do not analyse the issue in a wide manner, do not consider in the emigration decision all the relevant factors which will impact their lives on short, medium and long term.

Based on (1) the young adults' actual problems on self-knowledge, primarily regarding passion, skills, needs and potential, (2) the reported experiences of people which left Romania and did not find a better condition considered all their needs (even the decision was done based on multiple factors), and (3) the unseen favorable features and opportunities in the native environment, we consider that *the real problem is the lack of a multidimensional analysis* done by the people who intend to emigrate. This analysis should start by an authentic self-scanning and self- sensing in order to discover the own active (and passive) potential, and should involve all the major factors which influence the intrinsic subjective fulfillment.

In the next chapter a multidimensional perspective on the Romanian environment is presented (opportunities and drawbacks, specific economic, social and cultural issues). The reason for that resides in making more understandable the necessity of considering many life aspects when an emigration decision is to be taken.

In the third chapter the multicriterial emigration evaluation process is described, alongside with examples and interpretation.

Romania – Unauspicious or Favorable Context for a Job Seeker?

Romanian population constantly decreased since 1992 to 84% in august 2017 (19,600,000 inhabitants). The civil active population (employees, employers, self-employed and unpaid family worker) was 8,317,600 in 2016, a ratio of approximately 42% in total population.

The number of permanent *emigrants* reported by The (Romanian) National Institute of Statistics (NIS) for 2000-2016 time span, recorded a 55% increasing in 2016 against 2000, as figure 1 depicts. The maximum number was recorded in 2016 – 22,807 (NIS, 2017), and is expected a similar trend in the near future.

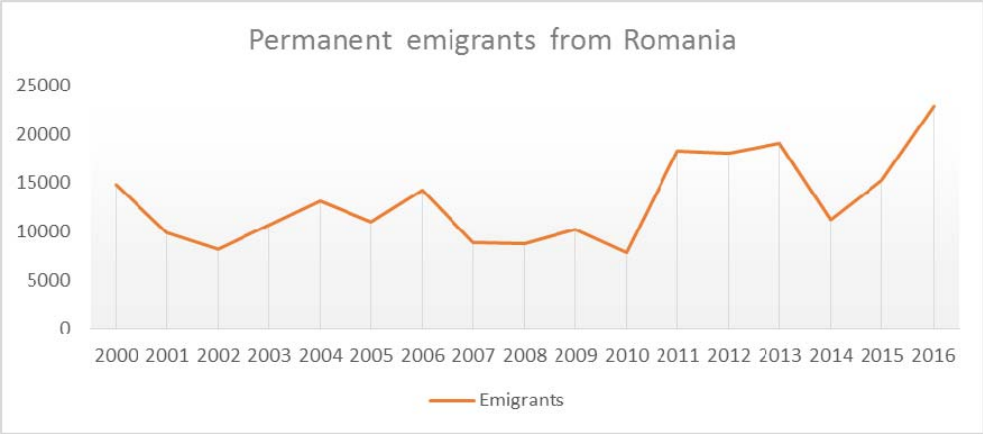

Fig. 1. Permanent emigrants curve (NIS, aug. 2017)

Preferred destinations for these emigrants in 2016 were: Spain (5,361), Germany (3,959), Italy (3,575), Austria (1,347), USA (1,281) and Canada (1,086). To notice that these are generally countries with a large average life expenctancy.

To the permanent emigrants the temporary emigrants are added, which are significant as well (see Table 1 for the 20-29 age span).

Table 1. Temporary emigrants from Romania, by age

Year / Age	2014	2015	2016
20-24	23,596	32,055	40,557
25-29	32,327	47,756	35,224

The active population in the pool of emigrants transfer abroad their profit, their value (including education and invested resources), supplementary lowering the revival power of the native economy.

ILO unemployment rate was 5.9% in 2016, with an average of 6.9% for the 2000-2016 interval. It slightly rose during the crisis – from 5.6% in 2008 to 7% in 2010 and 6.8% in 2012. Important to note is that the highest average value was for medium level education people (an average of 7.7% for 2000-2016); in the higher education level the indicator was only 4% in average for the same time span. ILO unemployment rate was 5.4% in average for the age soan of 25 and over.

The *Gross National Income* was 99.2% as GDP (gross domestic product) share, in average, since 1999 to 2016, with the lowest values in 2004 and 2006 (95-97%) (NIS, 2017). For the 2000-2016 time period*, the inequality of income distribution* sweapt from 4.5 (in 2000) to 8.3 (in 2015) with an average of 6.08. Allianz calculated each country's wealth Gini coefficient (a measure of inequality), and USA has the most wealth inequality, with a score of 80.56 in 2015, showing the most concentration of overall wealth in the hands of the proportionately fewest people. In this dashboard, the second highest place score was found in Sweden with 79.9 (a nation long thought of as egalitarian one) and UK with 75.72. When OECD examined income inequality, it reported that the USA is on the fourth highest place, being exceeded by Turkey, Mexico, and Chile (Sherman, 2015).

For the majority of Romanian employed population, *salary* constitutes for the present the main source of income. The evolution of effective salary index shows a rise with 61.7% in 2016 comparing with 1990, and with 30.8% comparing with 2010.

Revitalizing *the coherence between work effort, financial result, reward and sustainable human development* is still a necessity in Romania and in many other countries. As (Done, 2013, pp. 46) noticed, this relationship is influenced also by the increasing of the variable component (profit sharing, personal merit, production itself and resource saving) in the total income of employees. The rise of the shareholding and ratio of profit in income motivate high-performance employees and contribute to economic growth.

Still many young job seekers do not know what to ask from the employer; in fact, they give the most of the power to employers, ignoring that a work relationship is a peer-to-peer relationship, where each part brings its specific share. On the other hand, there are employers that do not ask the employees a better and authentic participation to the profit (from economic, time, organizational etc. perspective). Students and graduates should understand that it is not such important to work, but is important to work efficiently and effectively, to know how much of their work brings profit to the enterprise. It is also advisable that they embrace the performance-remuneration management system and consider teamworking a central tool for good personal and collective performance.

For these reasons, a solid time and human investment in *economic education for all the students is a prerequisite to a sustainable development.* A lucrative result of such economic education would be the understanding also of the cyclic nature of economy. Therefore, the society could at an earlier stage limit the crisis effects, which are significant for SMEs (small and medium-size enterprises). Pronounced and long crises lead to massive emigration, particularly of the young population, but a proper education (especially in academia) together with their responsible and forbearing behavior would open their minds to the opportunities offered by the crises themselves. Efforts to filling contiguous niches or to professionally reshaping or to collaborate for the greater good are to be fruitful on long term and to concur to the crisis end. As (Hill, 2013) claims, a good business is a business which has the ability to generate profit in the future.

Population in medium-developed economies should understand that financial crisis employment loss is significant also in the stable well-developed economies, as figure 2 depicts. Leaving your native country even in crisis time is not necessary a solution even for the individual.

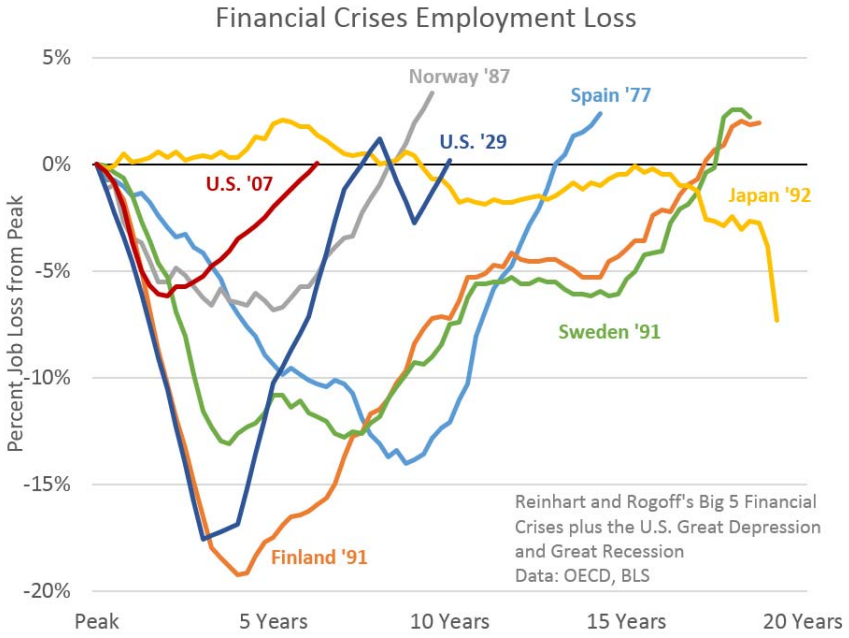

Fig. 2. Financial crises employment loss for seven stable economies (1929-2007)

Source: OECD

In the Romanian area there still are unused opportunities that could turn to profit, comparing with other regions (transport infrastructure, tourism, ecological buildings, ecological agriculture, innovations etc.). The *Start-up Nation* guvernamental program annualy offers 44,000€ to 10,000 newly proposed SMEs. In august 2017 over 19,000 business plans were sent from the applicants and from 10,000 plans verified, 8,531 were accepted and financed (Start-up Nation, 2017). The foreign direct investment rose since 2004 to 2015 (where data available) with only 18% on average. The native investment as performance, time or money, in the environment which originated from, brings fulfillment at various levels.

Production of goods and services continues to be the main material support for welfare and Romanian people still have much to offer in this direction. If the society becomes aware of this and additionally the governmental programmes motivate the residents in participation (with work, innovation and investment) in national production, our export would also raise. In 2016 Romania exported $64.8B and imported $72B, making it the 40th largest exporter and the 40th largest importer in the world. During the five years 2011-2016 the exports have increased at an annualized rate of 0.8%, while imports have decreased at an annualized rate of -0.7% (atlas). While exports raise, the GDP also raises in a stable manner on a long term.

The yearly Romanian *growth rate of GDP per capita* was between 2.5 and 10.3 for the 2000-2008 time span, it was negative in 2009 and 2010 and raised in 2011-2016 at values between 1.1 and 5.4 (NIS, 2017).

Citizens' confidence in state institutions measured in 2004-2016 period is at a low level (an average of 22.8%), with decreasing values in 2009-2012 time span.

Life expectancy at birth constantly rose since 2000 from 70.5 to 75.5 years in 2016. Life expectancy at age 65 also rose since 2000, from 14.4 to 16.5 in 2016 (NIS, 2017). These data must be analysed in comparison with the global average life expenctancy of 70 years; countries like Japan, Australia, Spain and Germany have a life expectancy of 80 years (Roser, 2017).

The ecological association The New Economics Foundation in Great Britain proposed a dashboard, *Happy Planet Index*, based on four criteria: life expectancy, experienced wellbeing, inequality of outcomes and *ecological footprint* (human impact on Earth' ecosystem, measured by population pressure on biosphere and consumption reported to planet regeneration biocapacity). The dashboard places Romania on the 55th position in 140 countries, in front of Italy and Japan. Romania has also a higher natural wealth versus the global average. The Romanian Environment Ministry stated that in the last years, the downfall of biodiversity leads to an annual cost of 7% in GDP. Regarding area of artificial land as share of total area, Romania has a value of 4.53%, fact that places it on the sixth lowest position between European countries (Eurostat, 2017).

Multicriterial Emigration Decision Tool

The decision process regarding choosing a job / a career in the residence country or abroad has a satisfactory result if the process is properly managed, as any problem solving process – adequately using the *Information-Decision-Action* (IDA) loop (see figure 3).

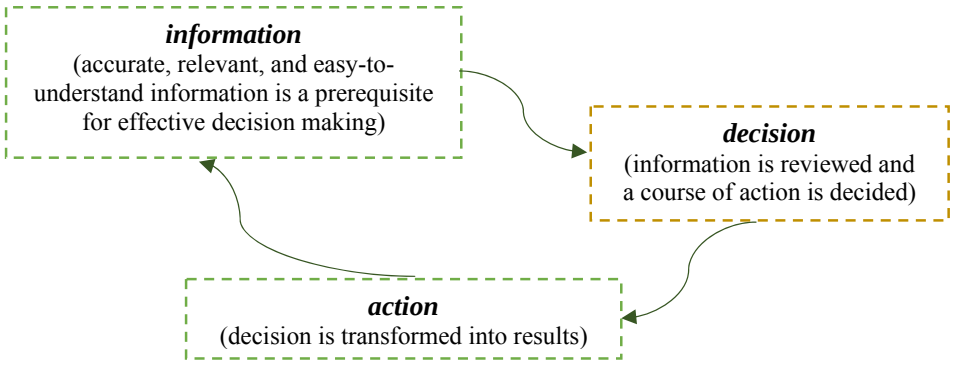

Fig. 3. The IDA loop

All the three factors must be present and balanced to achieve optimal results. The IDA loop is as strong as its weakest link.

The Decision Model

When emigration comes into one's mind, the decident must wisely handle the issue to minimize risks and all kinds of costs, because multiple (visible and hardly seen) effects come with such a decision. Having data about the target environment and good self-knowledge as input *Information*, one could use the specific *Decision* tool described in figure 4, that customize the general decision process in (Popescu, 2017), in order to select an optimal solution (regarding the time span, the context and the pursued objective) and to *Act* upon it.

All alternatives must be carefully analyzed – which countries are on the list?, which is the context (job type, urban or rural area etc.)?, and which are the objectives?. The problem should be a multobjective one and all the criteria or factors that are relevant to a certain decident should be included in the analysis.

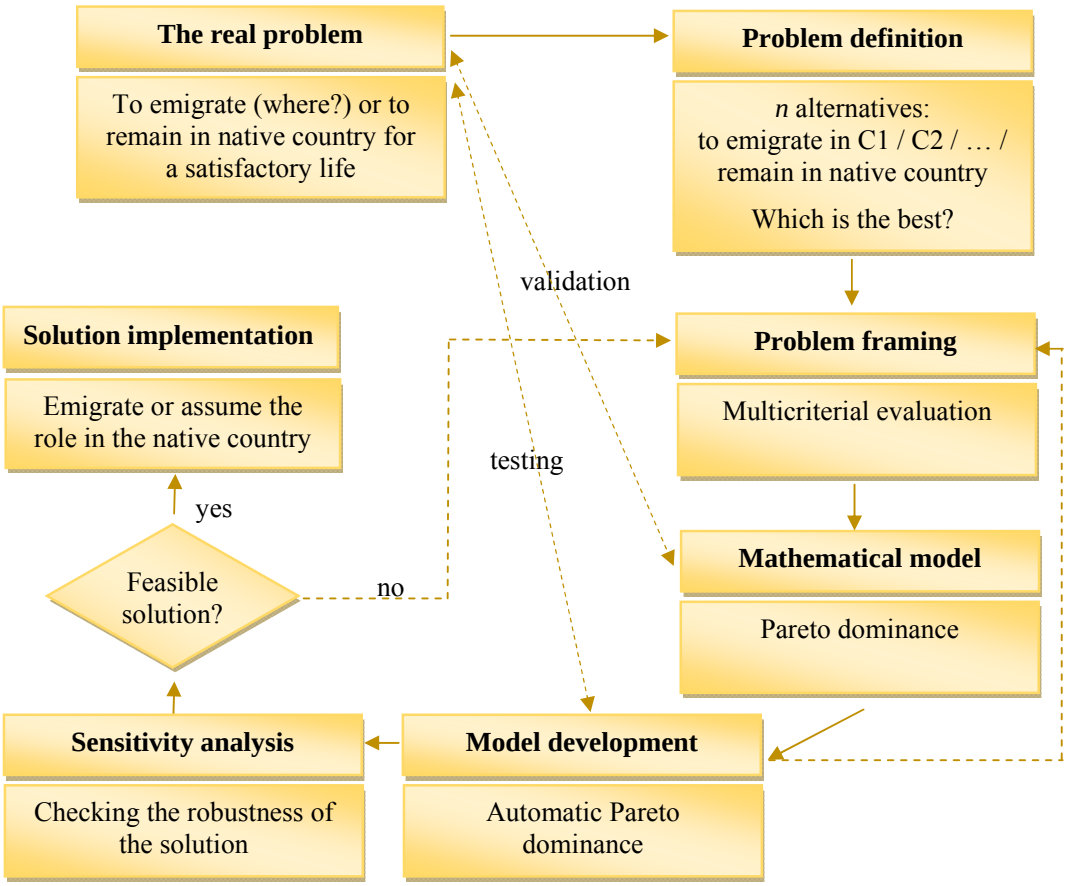

Fig. 4. Skeleton of the proposed emigration decision tool

The problem framing is necessary to supply an adequate mathematical model, and the development phase allows testing and building the operative tool. A sensitivity analysis once achieved and feasibility of the solution approved, the only thing to do remains solution implementation.

Criteria to Be Considered in an Emigration Decision

The philosophical thinking always placed happiness as the final goal and meaning of human existence. Therefore it can not be absent in a model having the purpose to evaluate the quality of human life. As (Done, 2013, pp. 9) emphasizes, *the main four facets of a good existence* are: the economic growth, a sustainable human development, welfare and happiness. Some authors include the sustainable human development into the wide concept of welfare.

First of all, a decident must know that all these facets are subjectively estimated by every person, based on his/her own preponderant needs and motivations. Therefore, other person's decision is advisable not be taken for granted as if it would be a good decision also for you. The adjusted Maslow's hierarchy of needs (see table 2) synthetically describes the needs and types of motivation in decision making, especially for the significant choices in life.

Table 2. Adjusted Maslow's hierarchy of needs (after (Huitt, 2007) and (Done, 2013, pp.44))

Nature of connection with the environment	**Categories of needs**		**Type of motivation**
Spirit	Devotion to others, ego transcendence	Abnegation (support for others' welfare, sacrifice)	Moral
	Self-seeking, self-fulfillment	Self-actualisation (harmony, to be – to have – to do consonance, balance, order, peace)	
Soul	Cognition and creativity	Cognitive needs (knowledge, understanding, meaning, exploration, curiosity, innovation, shift in cognition)	Professional
	Recognizing and rewarding performance	Esteem needs ((self-)esteem, (self-)respect, sense of competence, recognition for social status)	Psychologic
	Affiliation	Love and belongingness (giving and receiving love, trust, acceptance, community)	
Body	Security of a dignified living	Safety needs (protection, familiarity, ownership, income, philosophy or religion to give life meaning)	Economic
	Necessaries	Physiological needs (food, oxygen, shelter, clothing, rest, activity, sex etc.)	

A high moral person tends to prevalently choose an (emigration) alternative associated with social responsibility motivations (self-actualisation and devotion to others). On a high level in Maslow's hierarchy of needs, one searches personal evolution on vocational career path. Elites in the middle-class tend to give up basic needs to fulfill higher needs, and welfare unfulfillment is increasingly a result of the social, political and technical systems rather than of the economic system (Done, 2013). On the other hand, some job seekers are not also career seekers. Their objective is therefore placed on a lower level of motivations.

In a coarse-grained perspective, the objective for an optimal selection between emigration alternatives may be expressed as the following four-component function:

$$f = (\text{economic objective, psychologic objective, professional objective, moral objective}). \quad (1)$$

In other words, the alternative which satisfies all the categories of needs in a maximal measure is searched.

Another perspective includes in the analysis, besides the welfare provided by the target environment, the personal background (skills, abilities, values, etc.) that significantly influences the fitness in that environment:

$$g = (\text{welfare provided by the environment, personal background}). \quad (2)$$

Though a certain environment may offer a satisfactory welfare, if the personal professional competence is poor, the optimal decision should not correspond to that environment.

Regarding *welfare*, various definitions and concept areas were proposed. Done (2013) declares that in order to build a *synthetic expression for human welfare* we must take into account:

- sustainable human development indicators (average life expectancy, adjusted GDP per capita, education level);
- leisure time dimension and manner of spending leisure time;
- work satisfaction;
- interpersonal relationships;
- ecological footprint.

The increasing of welfare depends also on the extent to which the hierarchy of needs integrates and harmonizes with the economic and financial performances of companies.

Our decision model contains over 25 factors (which can be additionally detailed), combining the two mentioned perspectives ((1) and (2)):

- welfare provided by the target environment:
  - standard of living
  - adjusted GDP per capita, home prices, stock prices, government debt
  - growth rate of GDP per capita
  - average income (for the target job area)
  - inequality of income distribution
  - work satisfaction: visible results of own work, meritocracy, implemented sustenable principles (promotion of teamworking, promotion and support for initiative, justice for all, the right man in the right place (Fayol, 1916)), respect for the employees, participatory management
  - unemployment rate and professional competition (for the target job area)
  - opportunities and support for entrepreneurship
  - ownership
  - life expectancy
  - acceptance and equitable treatment for foreigners
  - average education level
  - interpersonal relationships (including family and friends)
  - specific welfare for the (future) family members: job, education etc.
  - existence of a sure job position
  - citizens' confidence in state institutions
  - transport infrastructure, quality of health services, quality of public services (including legislation)
  - economic stability, legislative stability
  - ecological footprint (including pollution)
  - leisure time dimension, manner of spending leisure time (including opportunities for personal hobbies)
  - nutritional habits
  - climate

- personal background:
  - skills, knowledge, professional competence level, efficiency, personal brand,
  - values, interests, resilience, self-esteem, responsibility (for own actions, for others, for the environment), ethics, desire for useful integration, objective self-evaluation (passion and recognition of potential)
  - experience, learning availability.

For every alternative considered, for each criterium the actual value or a value in a scale (to designate the attended degree) is recorded.

Multicriterial Evaluation. Pareto Dominance

When multiple criteria are to be simultaneously satisfied at optimal (minimum or maximum) level, a multi-objective problem is set. In multi-objective optimization, Pereto dominance method proved to be the best evaluation method, maintaining each criteria separated. For every solution considered (emigration alternative in our case), the dominance-based rank is determined to indicate the performance relative to the quality of the entire set of solutions. Based on Pareto optimal dominance defined in (3), the Pareto fronts are built.

A feasible solution $x^{(1)}$ is said to ***Pareto dominate*** another solution $x^{(2)}$ if:

- $x^{(1)}$ is not weaker than $x^{(2)}$ in any criteria and
- $x^{(1)}$ is better than $x^{(2)}$ in at least one criteria. (3)

Consequently, for any two solutions, either one dominates the other or the two are not comparable (does not exist a dominance relation between them). In our terms, either an emigration alternative is better than the other, or the two alternatives are not comparable – additional preferences are necessary to decide if a decision must be taken.

Having a set of *n* alternatives to compare, we can use formula (3) to compare every alternative to all the other alternatives. Therefore, one or many Pareto fronts are determined: all the alternatives that are not comparable are placed on a given front, every alternative that dominates another alternative is placed on a high level front (as in figure 6). One can be interested only in the first front (the highest level front), where he/she finds all the alternatives that are better in all the criteria than all the other alternatives. The other fronts become attractive if the alternatives on the first front are abandoned and a further decision must be taken.

For example, we consider five alternatives with only two criteria (both of them best to be maximized), whose values are those in Table 3.

Table 3. Set 1 of data for a bi-criterial evaluation of five alternatives

Criteria \ **Alternative**		Alt1. Romania	Alt2. Canada	Alt3. Germany	Alt4. France	Alt5. Sweden
adjusted GDP per capita, $	↑	23,991	44,025	**50,200**	43,600	49,175
entrepreneurship support (0..10)	↑	**7**	6	4	5	**7**

Fig. 5 shows the 2D graphical view of Pareto dominance for data in table 3. There are three dominance relations (5 dominates 1 and 2, 2 dominates 4), for all the other pairs does not exist dominance.

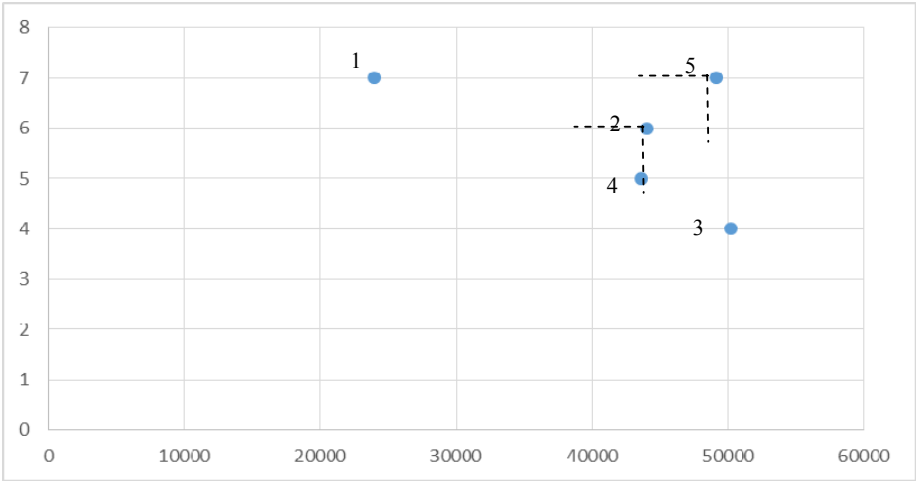

Fig. 5. Pareto dominance for data in table 3

Fig. 6 shows the 2D graphical view of Pareto fronts for data in table 4.

Table 4. Set 2 of data for a bi-criterial evaluation of five alternatives

Alternative / **Criteria**	Alt1. Romania	Alt2. Canada	Alt3. Germany	Alt4. France	Alt5. Sweden
life expectancy at birth ↑	**75,5**	73	74	71	72
entrepreneurship support (0..10) ↑	**7**	6	4	3,5	3

There are three Pareto fronts: (Alt1), (Alt2, Alt3), (Alt4, Alt5). Therefore alternative 1 is the best choice, then alternative 2 or 3, and in the third row alternative 4 or 5.

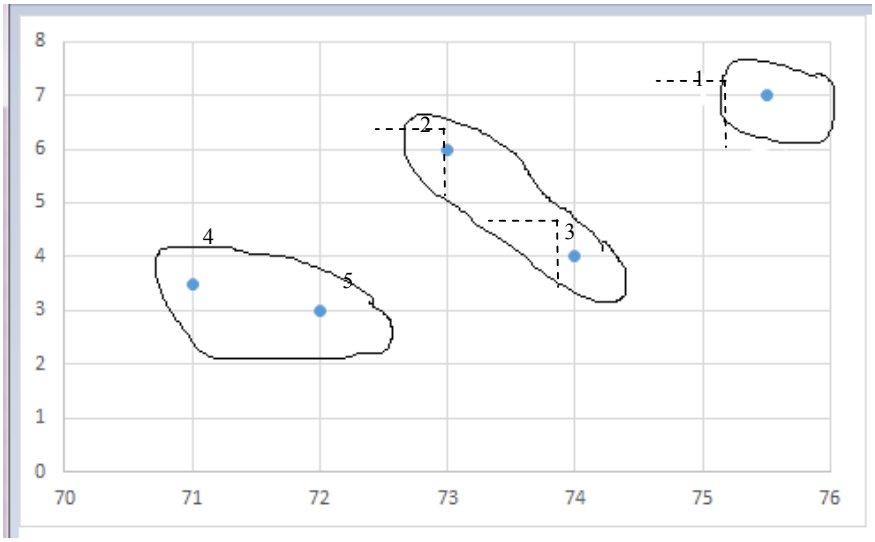

Fig. 6. Pareto fronts for data in table 4

When *n* criteria are added in the analysis, the virtual graphic is *n*-dimensional.

The decision tool may be extended to determine the optimal alternative in the entire space of all possible values for all the criteria considered.

Conclusions

In recent decades, there are countries that face the problem of massive emigration, especially of young adults, with effects on long term over the native economic growth. In Romania the number of permanent emigrants, in searching of a better welfare, increased with 55% in 2016 in comparison with 2000, while development opportunities are ignored and a comprehensive analysis of emigration decision it is not achieved. As we described in detail in the second chapter, the Romanian economic, technological, socio-cultural and ecological environment needs revival from some perspectives, but from other perspectives it's a favorable context for the job seekers or career seekers.

Though the income is the most frequent criterium to choose or change a job, there are entire sets of other important criteria which affect overall life, and it is absolutely necessary to be considered in every process of choosing and changing a job, either in the residence country or abroad. These criteria are highly subjective and indicate the prevalent motivations for decision, according to the adjusted Maslow's hierarchy of needs (table 2).

A synthetic expression for human welfare consists in five components: sustainable human development indicators, leisure time dimension and manner of spending leisure time, work satisfaction, interpersonal relationships and ecological footprint. A student-oriented economic education (aiming at self-knowledge, promotion of teamworking, performance and ethics), together with actual economic growth lead to an increasing welfare. It is vital for the young people (and subsequently for the society where they live) to answer in a responsible way to questions like these: what is my best role in the world?, what can I do in my native space?, how can I turn my passion towards contemporary niches?, etc.

Alongside various relevant aspects to hold when an emigration decision is to be taken (which can also be used when a job changing decision is to be taken inside the country), the paper describes the Pareto dominance method to compare multidimensional emigration alternatives. Even certain criteria seem to be crucial (for example average income, specific welfare for family members and work satisfaction) and an emigration decision is implemented upon it, some other factors which influence the existence on daily basis may prove to be more important to adaptation (as food or air pollution or support for initiative). For reasons alike the proposed tool proves to be a support in emigration decision.

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