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INETA ŽIČKUTĖ

THE IMPACT OF MIGRATION FACTORS ON INTERNATIONAL MIGRATION DECISIONS: A BEHAVIOURAL ECONOMICS PERSPECTIVE

Doctoral dissertation
Social Sciences, Economics (04S)

2018, Kaunas

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INETA ŽIČKUTĖ

MIGRACIJOS VEIKSNIŲ ĮTAKA TARPTAUTINĖS MIGRACIJOS SPRENDIMUI: ELGSENOS EKONOMIKOS POŽIŪRIS

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CONTENTS

List of figures

List of tables

List of annexes

List of term definitions

International migration decision – pre-migration decision-making attributing some extent of willingness to a person (1) to migrate to a foreign country for no less than twelve months or (2) to stay in their home country continuing to live without restriction of work reason (Parey, Waldinger, 2008 in Gibson, McKenzie, 2011; Hoppe, Fujishiro, 2015; Nowotny, 2014).

Risk attitudes – parameters of prospect theory, encompassing risk preference and loss aversion (Lim, Morshed, 2015).

Risk preference (σ) – "the extent to which people are comfortable with probabilistic gains or losses" (Lim, Morshed, 2015, p. 2), i.e. "individuals' willingness to take or avoid risk" (Kuhnen, Chiao, 2009, p. 1), identifying a person's risk preferences by extent into risk-averse ($\sigma < 1$), risk-neutral ($\sigma = 1$) and risk seeking/lover ($\sigma > 1$).

Risk-aversion attitude – risk-averse person, whose risk preference measurement is lower than 1 ($\sigma < 1$).

Risk-neutrality attitude – risk-neutral person, whose risk preference measurement is equal to 1 ($\sigma = 1$).

Risk-seeking/lover attitude – risk-seeking/lover person, whose risk preference measurement is higher than 1 ($\sigma > 1$).

Loss aversion (λ) – "relative (multiplicative) weighting of losses relative to gains" (Sokol-Hessner et al., 2009, p. 1), identifying a person's loss aversion by indicating people as gain-seeking $\lambda < 1$, gain-loss neutral $\lambda = 1$ and loss-averse $\lambda > 1$.

INTRODUCTION

Relevance of the research. Evidence suggests that people make decisions with bounded rationality, which can be described as the concept situated at the heart of behavioural economics (Jolls, 2017). Behavioural economics is an increasingly important area which is trying to understand human behaviour. Kahneman and Tversky (1979, 1992) presented a new framework of prospect theory which explains how people make decisions under risk and uncertainty. For this work Daniel Kahneman was awarded the Nobel Memorial Prize in Economics.

Loss aversion is an important concept of behavioural economics associated with prospect theory that can play an important role in addressing the issue of irrational human behaviour. Loss aversion provides a behaviour tendency of preference that people are more likely to avoid losses than seek gains because "/.../ losses loom larger than gains" (Kahneman, Tversky, 1979, p. 279).

However, even nowadays when the issue of rationality has received considerable critical attention, rationality is a continuing view in trying to explain human decisions to migrate. Previous studies, representing migration decisions by expected utility theory, characterized risk preferences by only one parameter – concavity of a utility function. Such representation of risk role limits the explanation of behaviour. The prospect theory of behavioural economics can play an important role in addressing the issue of migration, incorporating such parameters as risk preference and loss aversion into the analysis. There is evidence that such incorporation could be a valuable instrument (Czaika, 2015). The reduction of assumptions on standard economics models could achieve more reality-reflecting explanation of human behaviour. Being aware of the role of risk in migration allows to reflect it in the design of political decisions, prioritizing programs important to people.

Unquestionably, loss aversion cannot completely explain people's migration decision because there are other factors (e.g. economic, social, political, demographical, cultural, psychological, geographical, etc.) which have a significant impact on the migration decision. Nevertheless, models supplemented by loss aversion could better describe and predict human behaviour.

Scientific problem and its level of investigation. Widely applied migration theories could be systematized into neoclassical and new migration theories, mainly encompassing the economic equilibrium theory (Smith, 1776, Ravenstein, 1889 in Bauer, Zimmermann, 1999), Heckscher-Ohlin theory (Heckscher, 1949, Ohlin, 1933 in Kjeldsen-Kragh, 2002), rural-urban migration theory (Harris, Todaro, 1970; Todaro, 1969), human capital theory (Sjaastad, 1962), early decision-making theory (Lee, 1966), dual labour market theory (Doeringer, Piore, 1971; Piore, 1979), self-selection theory (Borjas, 1987), family migration theory (Mincer, 1978 in Kubursi, 2006), relative deprivation theory (Runciman, 1966), motivation decisions theory (Sell, De Jong, 1978), rational expectation theory (De Jong, Gardner, 1981), and consumption theory (Wallace, 1997 in Liebig, 2003). In addition, network theory (Massey et al., 1993), cumulative causation theory (Myrdal, 1957), systems theory

(Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), Zelinsky theory (Zelinsky, 1971), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993), etc. are widely involved in migration decision analysis.

The listed theories identify and analyse the impacts of a broad group of migration factors, such as wage differences and income inequality (Bertocchi, Strozzi, 2008; Cai, Esipova, Oppenheimer and Feng, 2014; Cattaneo, 2008; Cooray, Schneider, 2016; Ivlevs, 2014a; Lim, Morshed, 2015; Mayda, 2010; Nivalainen, 2004; Vernazza, 2013; Zaiceva, Zimmermann, 2008), the level of a country's economic development (Bonasia, Napolitano, 2012; Cooray, Schneider, 2016; Etzo, 2011; Hadler, 2006; Hyll, Schneider, 2014; Jennissen, 2003, 2004; Mayda, 2010; Zaiceva, Zimmermann, 2008), the price politics of products (Bonasia, Napolitano, 2012; Deluna, Darius, 2014; Vernazza, 2013), unemployment impact (Cattaneo, 2008; Cooray, Schneider, 2016; Deluna, Darius, 2014; Etzo, 2011; Van Der Gaag, Van Wissen, 2008; Hadler, 2006; Hoppe, Fujishiro, 2015; Jennissen, 2003, 2004; Mayda, 2010; Vernazza, 2013; Zaiceva, Zimmermann, 2008), the disproportion of labour between sectors (Bertocchi, Strozzi, 2008; Van Der Gaag, Van Wissen, 2008; Nivalainen, 2004), tax system (Gibson, McKenzie, 2009), the science and education system (Cooray, Schneider, 2016), the possibilities of employment (Van Der Gaag, Van Wissen, 2008; Heitmueller, 2002, 2005; De Jong et al., 1983), personal life conditions (Hoppe, Fujishiro, 2015; Polgreen, Simpson, 2011), cultural life, i.e. access to cultural centres, museums, etc. (Hadler, 2006; Ivlevs, 2014; Williams, Baláž, 2014), social conditions (Hadler, 2006; Hoppe, Fujishiro, 2015; Ivlevs, 2014), the level of heath care (Hadler, 2006), environmental conditions (Williams, Baláž, 2014), migration networks (Hoppe, Fujishiro, 2015; Ivlevs, 2014; Nowotny, 2014), the economic situation (Czaika, 2012, 2015), etc.

However, despite a variety of migration theories, the neoclassical and new migration theories are directly linked to standard economic models with the assumption of rationality and value maximization. Standard models cannot explain the complexity of migration process (Bonasia, Napolitano, 2012).

The first tries which incorporated the risk variable into migration decision explanation were more on the theoretical level (e.g. Anam, Chiang and Hua, 2008) or speculative framework (e.g. Heitmueller, 2002, 2005) and based on other approaches (Anam et al., 2008; Heitmueller, 2002, 2005; De Jong et al., 1983), i.e. risk level could be described as an adjective variable and its role for migration decision was not proved empirically. Some authors (e.g. Baláž, Williams, 2011; Nowotny, 2014) estimated risk under gamble conditions and linked it with migration decision. It can offer some insights into understanding whether risk attitudes have an effect on the willingness to become a migrant or not. But the question is whether or not such evaluation is significant and describes the migration decision well. Initial research measuring the effects of risk attitudes with empirical proof towards migration began at the end of the first decade of 21st century (Jaeger et al., 2007) with more research continuing to nowadays (Akgüç, Liu, Tani and Zimmermann, 2016; Dustmann, Fasani, Meng and Minale, 2015; Gibson, McKenzie, 2009, 2011;

Williams, Baláž, 2014). It shows the necessity to further investigate the role of risk attitudes as a determinant of migration.

Several authors provide new insights and link migration decision analysis with behavioural economics. Polgreen and Simpson (2011) compare people from happy and unhappy countries and propose an explanation for migration decision using prospect theory. Czaika's (2015) research results reveal some evidence maintaining the implications of the migration prospect theory. The indications are that migration decision analysis should consider risk attitudes based on behavioural economics which is a significant area for research and understanding how people make decisions in reality.

Therefore, the **scientific problem of this dissertation** is defined as *what impact do migration factors have on international migration decisions from the perspective of behavioural economics?*

The object of research – the impact of migration factors on international migration decisions from the perspective of behavioural economics.

The aim of this research is to disclose the impact of migration factors on international migration decisions from the perspective of behavioural economics.

The objectives of the research:

1. To reveal migration factors which have an impact on migration decision;
2. To highlight the role of risk attitudes with an impact on migration decision;
3. To create an evaluation model for evaluating the impact of migration factors on migration decision from the perspective of behavioural economics;
4. To design a methodology for evaluating the impact of migration factors on international migration decision from the perspective of behavioural economics;
5. To identify the impact of socio-economic migration factors and risk attitudes on international migration decision from the perspective of behavioural economics in the case of youth in Lithuania.

Methods of research. Systematic, comparative and logical analysis based on the methods of comparison, classification, systematisation, generalisation and graphical modelling were performed analysing scientific literature and representing research results. Online survey created by using *eSurveyCreator* for data collection was used. The elicitation method of behavioural economics prospect theory parameters quantification was applied. Principal components analysis was employed to identify the groups of socio-economic migration factors. To evaluate the impact of migration factors on international migration decision from the perspective of behavioural economics this research uses ordinal logistic regression. Mathematical and statistical analysis of research results are conducted by employing the MATLAB, IBM SPSS Statistics 23 and Microsoft Office Excel 2007 software.

Limitations of the research. The main limitations of the research are related to (1) the international migration decision phase, (2) reference point, (3) migration destination country and consideration of other important circumstances, (4) socio-economic migration factors and (5) the complexity of designed methodology.

The dissertation defines the dependent variable of *international migration decision* as *pre-migration decision-making attributing some extent of willingness to a person (1) to migrate to a foreign country for no less than twelve months or (2) to stay in their home country.* This dependent variable consists of all pre-migration decision-making phases and the actual migration decision is not analysed.

Reference point is one of feature of the prospect theory, which, in accordance with Kahneman and Tversky (1979), can be described as "/.../ one's current asset level, but sometimes it can be an expectation, from where the gains and losses are coded, which may differ from the current asset level" (in Virlics, 2013, p. 1013). In this dissertation, the reference point was identified as the average of graduates' salary after graduating. Other reference points were not in the scope of the dissertation which can have some influence on the risk attitudes.

Respondents were asked to disassociate their migration decision from a particular country. Modelling situations, wages and price differences between origin and destination countries were taken by using data from the United Kingdom. Since the destination country can have a meaningful impact as well, this effect was not evaluated. Moreover, the research was disassociated from such factors as differences between countries' tax deduction from the salary, more detailed effects of occupation and emigration costs.

The impact of rather broad groups of socio-economic migration factors was considered in the analysis due to the complexity of the new instrument. Considering more narrow socio-economic factors could provide more concrete actions for policy makers.

One of the main advantages of eliciting methods is the identified availability to estimate parameters (Charness, Gneezy and Imas, 2013). But the complexity of the designed methodology reveals some limitations of the sample, i.e. because the simulation question is so complex, some groups of society cannot understand the question properly (e.g. people with lower education who are not familiar with such terms as probability, etc.).

The novelty of the research and fields of its application. The novelty and significance of the dissertation are revealed by the following research results:

- The migration factors and their impact on the migration decision have been analysed and systematized. The role of risk on the migration decision has been thoroughly analysed, systematised and described.
- The impact of the components of behavioural economics prospect theory and its application in migration decision has been distinguished. The importance of risk attitudes under the domain of gains and losses implementation in migration decision analysis was identified and described.
- A model of the impact of migration factors on migration decision from the perspective of behavioural economics is developed. This dissertation provides a new model which is based on socio-economic variables and new components of behavioural economics prospect theory, encompassing the explanation of different people's behaviour under the domain of gains and losses, i.e. risk preference and loss aversion.

- A methodology which allows to quantify risk attitudes in migration decision was designed, providing detailed guidelines of method application in migration decision analysis. Because of the designed methodology, new components can be added into the analysis, i.e. risk preference and loss aversion, which results in more precise analysis of migration decision-making, enables to measure the impact of migration factors on international migration decisions from the perspective of behavioural economics.
- The eliciting method and components of the prospect theory were applied, i.e. risk preference and loss aversion, in the evaluation of migration decision-making.
- The model of the impact of migration factors on migration decision was empirically investigated from the perspective of behavioural economics in the case of youth in Lithuania. On the basis of the empirical results, the impact of international migration factors on international migration decision was analysed and described.
- The developed model which allows to measure the impact of migration factors on migration decision-making from the perspective of behavioural economics could be applied in the governmental policy decisions. Data related to migration risk attitudes can be valuable for policy makers considering the impact of implementing different programs. It would allow managing the emigration flow in advance, i.e. when the emigration decision is in the willingness phase which would result in more possibilities to initiate appropriate decisions in order to prevent/regulate migration flows. It can be a valuable additional instrument outlining the most important indicators in the formation of such national strategies as outlined in "Lithuania 2030".

The structure of the dissertation. This dissertation is composed of three chapters, the logical structure of which is provided in Figure 0.1. The first part theoretically analyses of the impact of migration factors on migration decision from the perspective of behavioural economics. The impact of migration factors on migration decision and the perspective of behavioural economics on migration decision are provided, which results as a presentation of the theoretical model for analysing the impact of migration factors on migration decision from the perspective of behavioural economics. The second part is concerned with the methodology design. Firstly, the research sample and structure is presented. Secondly, the design of empirical research methodology for evaluating the impact of migration factors on international migration decision-making from the perspective of behavioural economics is explained in detail. Thirdly, the empirical model is provided and the methods of analysis are described. The third part presents the findings of the empirical research of socio-economic migration factors and risk attitudes on international migration decision-making. In addition, a summary and discussion of empirical research results are provided.

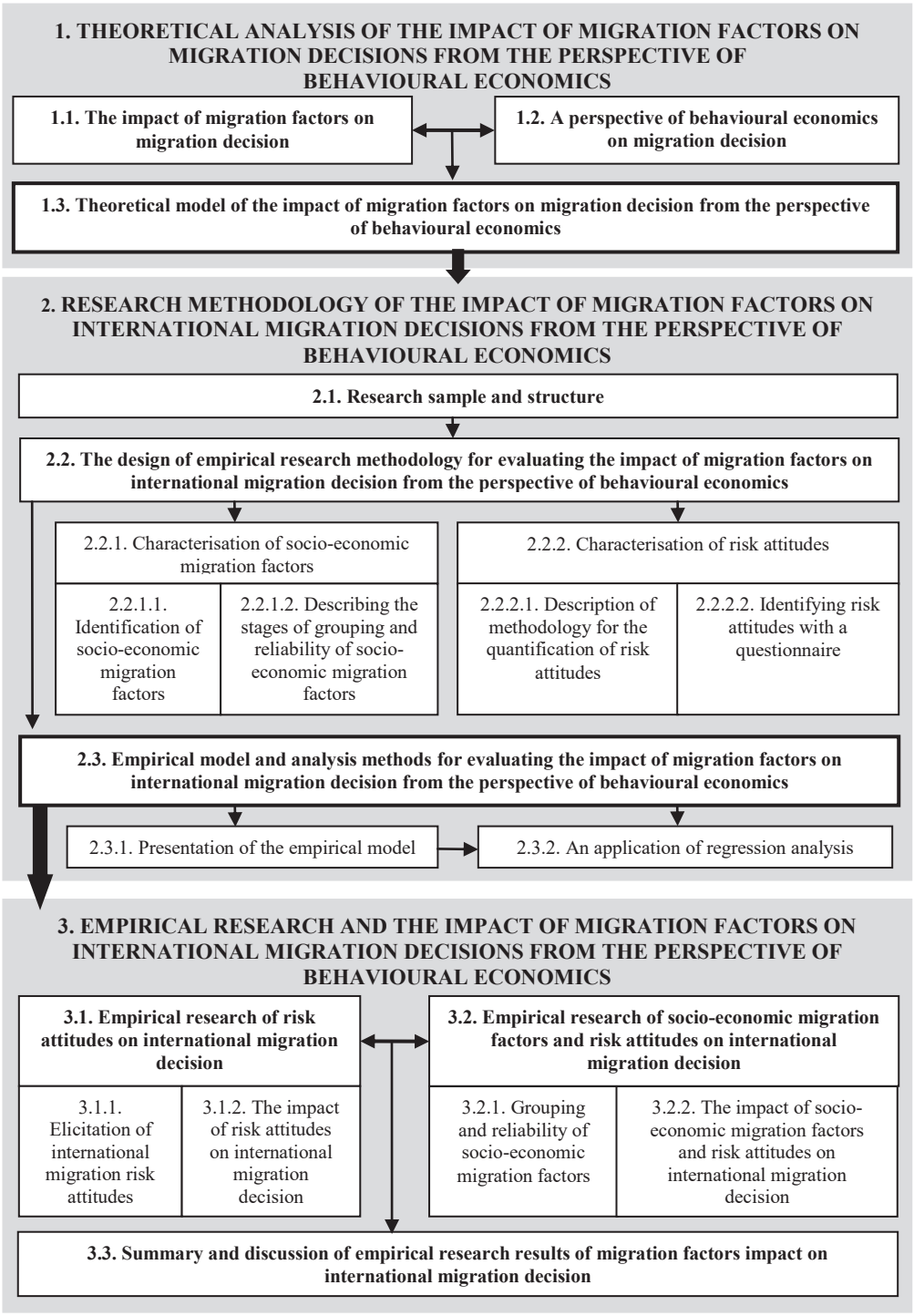


Figure 0.1. Logical structure of the dissertation
(designed by author)

1. THEORETICAL ANALYSIS OF THE IMPACT OF MIGRATION FACTORS ON MIGRATION DECISIONS FROM THE PERSPECTIVE OF BEHAVIOURAL ECONOMICS

The first chapter of this dissertation is devoted to the theoretical analysis of the impact of migration factors on migration decision-making. Firstly, it analyses the effects of migration factors on migration decision, then presents the approach of behavioural economics towards migration decision. The third part of the chapter introduces a theoretical model for evaluating the impact of migration factors on migration decision from the perspective of behavioural economics.

1.1. The impact of migration factors on migration decision

A review of scientific literature shows that internal and international migration factors are related, e.g. Jong et al. (1983) provide a comparison of migration determinants which have an impact on internal and international migration intentions. Otoiu (2014) provides an analysis which shows the similarities and differences between the drivers of migration analysis among the microeconomic and macroeconomic factors. Most variables are considered for both types of migration, i.e. internal and international. The focus of this dissertation is on international migration; however, as international and internal migration closely overlap, the theories, models and empirical findings concentrating on general migration reasons are reviewed as well.

Scientific literature allows to identify the most widely analysed migration theories, encompassing the economic equilibrium theory (Smith, 1776, Ravenstein, 1889 in Bauer, Zimmermann, 1999), the Heckscher-Ohlin theory (Heckscher, 1949, Ohlin, 1933 in Kjeldsen-Kragh, 2002), the rural-urban migration theory (Harris, Todaro, 1970; Todaro, 1969), the human capital theory (Sjaastad, 1962), the early decision-making theory (Lee, 1966), the dual labour market theory (Doeringer, Piore, 1971; Piore, 1979), the self-selection theory (Borjas, 1987), the family migration theory (Mincer, 1978 in Kubursi, 2006), the relative deprivation theory (Runciman, 1966), the motivation decisions theory (Sell, De Jong, 1978), the rational expectation theory (De Jong, Gardner, 1981), the consumption theory (Wallace, 1997 in Liebig, 2003), the network theory (Massey et al., 1993), the cumulative causation theory (Myrdal, 1957), the systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), the Zelinsky theory (Zelinsky, 1971), the "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993) (Kumpikaitė-Valiūnienė, Žičkutė, 2017; Žičkutė, Kumpikaitė-Valiūnienė, 2015).

Based on the analysed migration theories, different reasons for migration can be highlighted, such as wage differences and income inequality, the level of country's economic development, product price politics, the disproportion of labour between sectors, the unemployment level, the tax system, the science and education system, the possibilities for employment, personal life conditions, the access to cultural centres and museums, social conditions, the level of health care,

environmental conditions, migration networks, cycles of economy. The migration factors highlighted in migration theories are systematised in Table 1.1.

Table 1.1. Migration factors highlighted in migration theories (Kumpikaitė-Valiūnienė, Žičkutė, 2017, p. 91)

Factors	Theories
Wage differences and income inequality	Economic equilibrium theory (Smith, 1776, Ravenstein, 1889 in Bauer, Zimmermann, 1999), Heckscher-Ohlin theory (Heckscher, 1949, Ohlin, 1933 in Kjeldsen-Kragh, 2002), Todaro and Harris-Todaro theory (Harris, Todaro, 1970; Todaro, 1969), early decision-making theory (Lee, 1966), dual labour market theory (Doeringer, Piore, 1971; Piore, 1979), self-selection theory (Borjas, 1987), family migration theory (Mincer, 1978 in Kubursi, 2006), relative deprivation theory (Runciman, 1966), motivation decisions theory (Sell, De Jong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), network theory (Massey et al., 1993), cumulative causation theory (Myrdal, 1957), systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007)
Level of country's economic development	Economic equilibrium theory (Smith, 1776, Ravenstein, 1889 in Bauer, Zimmermann, 1999), Todaro and Harris-Todaro theory (Harris, Todaro, 1970; Todaro, 1969), early decision-making theory (Lee, 1966), dual labour market theory (Doeringer, Piore, 1971; Piore, 1979), relative deprivation theory (Runciman, 1966), motivation decisions theory (Sell, DeJong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), cumulative causation theory (Myrdal, 1957), systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007)
Product price politics	Todaro and Harris-Todaro theory (Harris, Todaro, 1970; Todaro, 1969), early decision-making theory (Lee, 1966), relative deprivation theory (Runciman, 1966), motivation decisions theory (Sell, De Jong, 1978)
Disproportion of labour between sectors	Todaro and Harris-Todaro theory (Harris, Todaro, 1970; Todaro, 1969), early decision-making theory (Lee, 1966), rational expectation theory (De Jong, Gardner, 1981), network theory (Massey et al., 1993)
Unemployment level	Early decision-making theory (Lee, 1966), dual labour market theory (Doeringer, Piore, 1971; Piore, 1979)
Tax system	Todaro and Harris-Todaro theory (Harris, Todaro, 1970; Todaro, 1969), early decision-making theory (Lee, 1966), self-selection theory (Borjas, 1987)
Science and education system	Human capital theory (Sjaastad, 1962), early decision-making theory (Lee, 1966), family migration theory (Mincer, 1978 in Kubursi, 2006), motivation decisions theory (Sell, De Jong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), network theory (Massey et al., 1993), systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), Zelinsky theory (Zelinsky, 1971)
Possibilities of	Early decision-making theory (Lee, 1966), family migration theory

Factors	Theories
employment	(Mincer, 1978 in Kubursi, 2006), motivation decisions theory (Sell, DeJong, 1978), rational expectation theory (De Jong, Gardner, 1981), network theory (Massey et al., 1993), cumulative causation theory (Myrdal, 1957), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993)
Personal life conditions	Human capital theory (Sjaastad, 1962), motivation decisions theory (Sell, DeJong, 1978), rational expectation theory (De Jong, Gardner, 1981), cumulative causation theory (Myrdal, 1957), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993)
Access to cultural centres and museums	Early decision-making theory (Lee, 1966), motivation decisions theory (Sell, DeJong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), cumulative causation theory (Myrdal, 1957), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993)
Social conditions	Early decision-making theory (Lee, 1966), self-selection theory (Borjas, 1987), relative deprivation theory (Runciman, 1966), motivation decisions theory (Sell, DeJong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), cumulative causation theory (Myrdal, 1957), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993), network theory (Massey et al., 1993), systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), Zelinsky theory (Zelinsky, 1971)
Level of health care	Motivation decisions theory (Sell, De Jong, 1978), rational expectation theory (De Jong, Gardner, 1981), consumption theory (Wallace, 1997 in Liebig, 2003), systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), Zelinsky theory (Zelinsky, 1971)
Environmental conditions	Consumption theory (Wallace, 1997 in Liebig, 2003)
Migration networks	Network theory (Massey et al., 1993), cumulative causation theory (Myrdal, 1957), "Migration hump" (Martin, Taylor, 1996 in De Haas, 2010; Martin, 1993)
Cycles of economic	Systems theory (Mabogunje, 1970, Portes, Böröcz, 1987, Kritz et al., 1992 in De Haas, 2007), Zelinsky theory (Zelinsky, 1971)

Moreover, there are other widely applied theories, such as the push and pull theory developed by many researchers from the early 20th century until nowadays (De Haas, 2010, pp. 1, 4), although most of migration reasons overlap between theories.

The majority of recently analysed migration factors are based on groups of factors indicated in Table 1.1. A review of factor indicators is systematised in Table 1.2.

Recently, ***wage differences and income inequality*** were analysed by Bertocchi and Strozzi (2008), Cai et al. (2014), Cattaneo (2008), Cooray and Schneider (2016), Ivlevs (2014a), Lim and Morshed (2015), Mayda (2010), Nivalainen (2004), Vernazza (2013), Zaiceva and Zimmermann (2008), etc.

Table 1.2. A summary of migration factor indicators
(designed by the author in accordance with Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 876 and Annex 1)

Author	Factors
Czaika (2015)	Future general economic and unemployment prospects; networks, foreign employment; income gap; unemployment rates; job vacancy ratio
Czaika and Vothknecht (2014)	Current subjective well-being; (economic) aspirations for the future
Polgreen and Simpson (2011)	Happiness; GDP (per capita real gross domestic product); GDP growth (growth rate in real GDP)
Bonasia and Napolitano (2012)	Employment rate; relative income (using per capita regional income); educational level (low/high); house prices; carbon dioxide emission; juvenile delinquency
Tupa and Strunz (2013)	Unemployment; number of new jobs; self-esteem and need for fulfilment; learning and practicing language skills; new knowledge; having a job with a higher salary; social status; motives of migrant's needs
Jennissen (2003, 2004)	Real wage; real GDP per capita; unemployment; shortages at the bottom of the labour market and unemployment; the certainty of sufficient household income; the degree of (income) inequality; average years of education; material and cultural linkages between countries; the size and quality of the network of the migrant population in the destination country; the number and quality of organizations that facilitate migration to the destination country
Cattaneo (2008)	Wage; unemployment rate; personal characteristics (gender, age, education, experience, marital status) and other information, such as occupation and industries
Van Der Gaag and Van Wissen (2008)	GDP per capita, unemployment, employment; inflation, lending interest, real interest; female labour force participation, employment in services, ageing of the labour force
Kurunova (2013)	GDP per capita; unemployment rate; consumer price index; minimum wages; social protection expenditures; natural increase/decrease of population; fertility rate
Cooray and Schneider (2016)	Corruption; income per capita; government expenditure on education; institutions; Gini index; unemployment rate; wages; visa restrictions index
Hoppe and Fujishiro (2015)	Age; network; unemployment; job benefits; career aspiration; self-efficacy
Deluna and Darius (2014)	GDP per capita; population; distance; unemployment rate; consumer price index; freedom from corruption; fiscal freedom; cross exchange rate; religion; language; OECD
Lim and Morshed (2015)	Home income; migrant stock; partner's income
Ivlevs (2014)	Life satisfaction; gender; age group; marital status; children; linguistic

Author	Factors
	minority; education; wealth index; perceived income decile; financial situation; employment; type of settlement; health; migrant networks
Cai et al. (2014)	Subjective well-being; household income
Hyll and Schneider (2014)	Aversion to relative deprivation; West contact; relative income; economic situation
Vernazza (2013)	Individual income; migrant income; average income; unemployment and unemployment rate; age; college degree; marital status; children; price level
Etzo (2011)	Population size; aerial distance between the main city in the ending region and the main city in the destination region; GDP per capita in the origin and destination regions; unemployment rate
Mayda (2010)	GDP per worker; relative inequality; unemployment rate; emigration rate (t-1); distance; common language
Zaiceva and Zimmermann (2008)	Gender; age; marital status; years of schooling; self-employment; unemployment and unemployment rate; inactive; homeowner; place; children; household size; migration experience; satisfaction with salary; GDP per capita
Bertocchi and Strozzi (2008)	Wage gap; agricultural share; share of young; institutional quality index; political institutional index; migration institutional index
Hadler (2006)	Objective individual characteristics; household characteristics; previous moves; occupation; motives (career, finance, social benefits, public services, social life, etc.); contextual characteristics (size of community, GDP country, GDP-gap of region)
Nivalainen (2004)	Family characteristics (age, children, education, migration experience, home ownership, unemployment experience, income); regional characteristics (unemployment rate, size of municipality, share of agriculture, share of industry)

Indicators of wages (Cooray, Schneider, 2016), individual income (Vernazza, 2013), perceived income decile (Ivlevs, 2014), satisfaction with salary (Zaiceva, Zimmermann, 2008) and financial situation (Ivlevs, 2014) have a statistically significant negative effect on migration decision. While analysing household income, Nivalainen (2004) finds that family income has a positive effect and Cai et al. (2014), who compared average national international migration desires in poor and rich countries, reveals a statistically significant positive effects only for rich countries. Lim and Morshed (2015) found a statistically significant negative effect of home income and a statistically significant positive effect of partner's income. Considering emigration rates of high, medium and low-skilled migrants, a statistically negative effect was found for high-skilled migrants and positive effects were reported with regards to medium and low-skilled migrants. Cattaneo (2008) analysed wage differential and Bertocchi and Strozzi (2008) researched wage gap, finding a statistically significant positive effect. In line with the research of Cattaneo (2008) and Bertocchi and Strozzi (2008), Mayda (2010) confirmed the importance of income inequality by proving the statistically significant effect of the origin country's relative inequality. On the other hand, Cooray and Schneider (2016) who

consider the Gini index of high, medium and low-skilled migrants report a statistically significant negative effect on medium and low-skilled migrants.

The level of country's economic development was analysed by Bonasia and Napolitano (2012), Cooray and Schneider (2016), Etzo (2011), Hadler (2006), Hyll and Schneider (2014), Jennissen (2003, 2004), Mayda (2010), Zaiceva and Zimmermann (2008), etc.

Etzo (2011) and Mayda (2010) analysed the effect of origin and destination countries on migration using the indicator of GDP per capita. In both research, GDP per capita in the destination area had a statistically significant positive effect. Whereas in the origin regions, negative (Etzo, 2011) and positive (Mayda, 2010) effect was statistically insignificant. Significant positive effects of GDP and GDP-gap in a region (Hadler, 2006), GDP per capita (Jennissen, 2003, 2004), GDP per capita of unskilled migration flow (Bonasia, Napolitano, 2012) were revealed. Zaiceva and Zimmermann (2008) report a statistically significant negative influence of GDP per capita on the intentions to migrate abroad. For an explanation of the differences in analysis see Zaiceva and Zimmermann (2008). In general, the economic situation of a country has a statistically significant negative effect (Hyll, Schneider, 2014).

Product price politics were considered by Bonasia and Napolitano (2012), Deluna and Darius (2014), Vernazza (2013), etc. Vernazza (2013) analysed the price level and identified a statistically significant positive effect. Deluna and Darius (2014) looked into the consumer price index but no statistical significance was reported. Bonasia and Napolitano (2012) compared unskilled and skilled migrants' behaviour analysing the difference of house price index and noticed a statistically negative effect for both groups of migrants.

The impact of unemployment was analysed by Cattaneo (2008), Cooray and Schneider (2016), Deluna and Darius (2014), Etzo (2011), Van Der Gaag and Van Wissen (2008), Hadler (2006), Hoppe and Fujishiro (2015), Jennissen (2003, 2004), Mayda (2010), Vernazza (2013), Zaiceva and Zimmermann (2008), etc. Authors use indicators of individual level considering whether a migrant is unemployed or not and considering the macroeconomic determinant, i.e. the level of unemployment. Most authors find that unemployment both on the individual (Hadler, 2006; Hoppe, Fujishiro, 2015; Vernazza, 2013) and macroeconomic level (Cooray, Schneider, 2016; Deluna, Darius, 2014; Vernazza, 2013) has a positive effect.

Other migration factors linked to ***the disproportion of labour between sectors*** (Bertocchi, Strozzi, 2008; Van Der Gaag, Van Wissen, 2008; Nivalainen, 2004), ***tax system*** (Gibson, McKenzie, 2009), ***science and education system*** (Cooray, Schneider, 2016), ***the possibilities of employment*** (Van Der Gaag, Van Wissen, 2008; Heitmueller, 2002, 2005; De Jong et al., 1983), ***personal life conditions*** (Hoppe, Fujishiro, 2015; Polgreen, Simpson, 2011), ***cultural life i.e. access to cultural centres, museums, etc.*** (Hadler, 2006; Ivlevs, 2014; Williams, Baláž, 2014), ***social conditions*** (Hadler, 2006; Hoppe, Fujishiro, 2015; Ivlevs, 2014), ***the level of health care*** (Hadler, 2006), ***environmental conditions*** (Williams, Baláž, 2014), ***migration networks*** (Hoppe, Fujishiro, 2015; Ivlevs, 2014; Nowotny, 2014),

the economic situation (Czaika, 2012, 2015), ***family reasons*** (Hadler, 2006; Ivlevs, 2014; Vernazza, 2013; Williams, Baláž, 2014), ***political corruption*** (Cooray, Schneider, 2016; Deluna, Darius, 2014), ***intolerance on personal attitudes, intention to spread culture and religion*** (Deluna, Darius, 2014), ***wish for change*** (Hoppe, Fujishiro, 2015; Ivlevs, 2014) were analysed as well. For an example of the considered indicators and their effect on migration see Annex 1 and Annex 2.

Moreover, the role of risk in migration decision was analysed and, depending on the criteria of the nature and methods of risk, systemised into three broad groups: (1) risk as an adjective variable based on general context, (2) risk as a predominant variable: risk attitudes assessed under conditions of gambles, and (3) risk as a predominant variable: self-assessed risk attitudes in the general and, partly, in migration context. Further each of these groups is described in more detail.

Risk as an adjective variable based on general context

The first attempts at incorporating the risk variable into the explanation of migration decision were more on the theoretical level (e.g. Anam, Chiang and Hua, 2008) or used speculative framework (e.g. Heitmueller, 2002, 2005) as well as other approaches (Anam et al., 2008; Heitmueller, 2002, 2005; De Jong et al., 1983), i.e. the risk level could be described as an adjective variable and its role for migration decision was not proved empirically.

Jong et al. (1983) performed an analysis of migration intentions determinants based on the value-expectancy theory and showed the important role of subjective expectations when trying to attain particular values and goals. Jong et al. (1983) state that people make decisions using costs and benefits, and migration factors are definable as subjective and weighting on anticipatory basis for certain goals. They propose an explanation for migration intention with the implementation of the value expectancy score, which can be calculated as is given in Equation (1.1).

$$Value\ expectancy\ score = \sum(V_i \times E_i); \tag{1.1}$$

here V – values/goals score and E – the expectancy score "for each value and location".

Value score was obtained by asking respondents to rate 28 migration-related values (De Jong, Fawcett, 1981 in De Jong et al., 1983) by importance where each answer had a particular response code: very important (score of 3), fairly important (score of 2), and not important (score of 1).

The expectancy score was measured by asking respondents about their expectancy to achieve a particular value or goal in each location (origin, internal and international) where each response had a particular code as well: a high expectancy (score of 3), medium (score of 2), and low (score of 1). Previous research showed that the highest expectancy for origin, destination (internal and international) were chosen as (1) affiliation, comfort and morality dimensions (intended non-movers), (2) a better place to attain wealth or acquire status (intended movers for international migration), and (3) providing entertainment, education and job opportunities (intended movers for internal migration) (Gardner et al., 1981 in Jong et al., 1983).

Jong et al. (1983) name the value expectancy score as a place-specific attraction score which can be used as a predictor of migration intentions. Authors emphasize that such an indicator of values which show the economic and non-economic goals and expectancies expressing individuals' subjective probabilities of the value attainments valuably contributes to understanding the cost-benefit calculations. The value-expectancy component is not the only one included as the determinant of intentions to move; other groups of components, such as personal efficacy and risk-taking; migration norms and experience; contacts, constraints, facilitators; individual demographic and human capital characteristics; and household characteristics. All additional 18 determinants are listed in Annex 2.

Descriptive means' results in the study by carried out by Jong et al. (1983) show that the higher score of value-expectancy is for people who are intended movers (137.63 vs. 143.34 for internal location; 151.71 vs.160.71 for international location). It is worth to notice that the score of value-expectancy in the place of origin is the highest comparing all intended movers and non-movers with a very low difference between the origin and international locations. Considering people who were intended to move abroad, the value-expectancy was the highest for the international location (163.70) when comparing with the origin (158.08) and internal (135.74) places. It is in line with all 6 regression models which were presented by Jong et al. (1983). The component of value-expectancy in the analysis of intentions to move abroad is a significant determinant. It shows a statistically significant positive effect of value-expectancy in international destination and statistically significant negative effect of value-expectancy score for internal migration. The score of value-expectancy in the place of origin does not have a statistically significant effect.

Additionally, other migration determinants provide some suggestive insights that intended migrants tend to be more risk-taking, have more migration experience (including internal), networks, money for movement, higher education, they tend to be single, younger and have a higher status. A more positive evaluation of perception of future local community development is identified for intended non-movers. Basic needs, such as electricity in homes, shows higher accessibility for the people who identify themselves as non-movers. In addition to the value-expectancy component in the regression models, statistically significant effects were identified for variables such as the number of times visited capital (internal migration) which shows the potential to know new environment, family network including such determinants as the number of former household members living outside of the local village, and a place to live and help with job search in international destination, as well as money for migration. The above-mentioned determinants have a positive influence for migration decision initiation. All these determinants of intentions explain 24 percent of variance. (De Jong et al., 1983)

Systematized research of migration factors (De Jong et al. (1983)) with highlighted risk role on migration decision is provided in Table 1.3.

Table 1.3. The role of risk-taking variable on migration decision (designed by the author in accordance with De Jong et al., 1983)

Independent variables	Impact
Value-expectancy:	
• in the location of origin	(+)
• in the internal destination	(-)**
• in the international destination	(+)**
Personal efficacy and risk-taking:	
• risk-taking	(+)
• getting ahead is a matter of luck (disagree)	(+)*
Migration norms and experience:	
• perception of norms for permanent migration	(+)**
• prior migration experience	(+)
• number of times visited internal destination	(+)**
Contacts, constrains, facilitators:	
• number of former household members living outside local village	(+)**
• place to live and help with job search in an internal destination	(+)
• place to live and help with job search in an international destination	(+)**
• money to move to an internal destination	(+)
• money to move abroad	(+)**
• perception of future local community development	(+)
Individual demographic and human capital characteristics:	
• years of school completed	(+)
• marital status (not married)	(-)
• age	(-)
Household characteristics:	
• years of school completed by household head	(+)
• number of children 18 and under at home	(+)
• adequacy of household financial situation	(-)
• electricity in home	(-)

Note: * and ** indicate significance at the 5 percent and 1 percent levels, respectively; (+) and (-) denote positive and negative effects, respectively

It can be noticed that the value-expectancy approach to migration decisions has a valuable and statistically significant effect for intentions for international migration and notwithstanding the statistical results of risk application into the model showing the risk-taking variable not as statistically significant but as providing some valuable characteristics of non-movers and intended movers. The risk-taking variable is identified as having a positive effect on the intentions to move abroad and demanding further research.

Heitmueller (2002, 2005) analysed migration incentives based on unemployment benefits and the role of risk aversion level was incorporated in the speculative framework.

General variables which can increase the likelihood to migrate, as they increase the gain from migration, can be listed as high wage and unemployment

benefits, ease for placement (Heitmueller, 2005). But the likelihood for migration decreases when income in the origin country increases (Heitmueller, 2005).

Having the same situation of opportunities abroad, individuals evaluate their gains differently because of their risk attitudes – whether an individual is risk-loving, risk-neutral or risk-averse. Heitmueller (2005) states that the less averse an individual is, the higher the likelihood for migration is since risk aversion diminishes the returns from migration. Heitmueller (2005) proposes that "[r]isk averse individuals are less likely to engage in international migration than risk-neutral individuals, other things equal" (Heitmueller, 2005, p. 99). It is associated with the returns from migration which differ in the degree of risk aversion. Heitmueller (2005) calls risk aversion "a taste variable" which "on its own is unlikely to affect economic and social outcomes" (Heitmueller, 2005, pp. 99–100).

Donkers et al. (1999) report that persons who are younger and have higher income are likely to be less risk-averse (in Heitmueller, 2005). Heitmueller (2005) argues that the migration decision can be made not just because of higher migration returns but of the opportunity to cover migration expenses.

Migration costs can be reduced by outspreaded networks in the destination country (Massey and Espana, 1987, Levy, Wadycki, 1973, Bauer, Zimmermann, 1997 in Heitmueller, 2005). Heitmueller (2005) believes that networks can work as unemployment benefits at the time of unemployment. The question is which financial assistance is more important from the migrants' side.

Heitmueller (2002, 2005) proposes a framework of migration incentives with unemployment benefits considered in it. The model was simulated with data of hourly earnings (PPPs and actual US Dollar exchange rates) and the net income position of a single unemployed person in both the origin and destination countries, and hourly wage as a gap between the destination countries. The level of risk aversion and employment possibilities (approximation of the employment rate) were included in the simulation as well. The author agrees that there is a lack of knowledge about the extent of risk aversion potential migrants have and follows other research results which provide the estimated coefficients of risk aversion. According to Abdulkadri and Langmeier (2000), Beetsma and Schotman (2001), Friend and Blume (1975), Donkers et al. (1999), the estimated coefficient range of risk aversion varies between 2 and 7 (Heitmueller, 2005). In order to split the risk attitude into risk-loving, risk-neutral and risk-averse people, Heitmueller (2005) took the risk coefficient range between (-3) and 7, where 0 is attributed to risk-neutral individuals.

Value of calculation shows that if migration occurs (see Equation (1.2)), a person will make decision to migrate only when $\Gamma_{k,t}^{i} > 0$ and will choose a destination where the returns can be maximised, i.e. choosing the country with the highest gain of $\Gamma_{k,t}^{i}$, i.e. $\max_{i \in N} \Gamma_{k,t}^{i}$.

$$\Gamma_{k,t}^{i} = \sum_{t=0}^{T} \frac{R_{k,t}^{i} - CE_{t}^{h}}{(1+r)^{t}} - P^{i}; \tag{1.2}$$

here $\Gamma_{k,t}^{i}$ – net discounted income flow, $R_{k,t}^{i}$ – gross return from migration, *CE* – the certainty equivalent (benefits are transformed into monetary units), P^{i} – migration cost/fee (in author's calculations equals 0), t – period/time, k – individual, r – discount rate, h – home country, i – destination country.

The relationship between the return from migration (in PPP, US Dollars) and coefficient of risk aversion (from (-3) to 7) are modelled for three different entitlement scenarios: (1) with entitlements, (2) without entitlements, and (3) trade-off of two periods, i.e. entitlement is available just in the second period. Each scenario has two cases when the individual is employed and unemployed. Equality (positive/negative difference) between the returns from migration and migration costs would provide an amount of money which would not make a difference for the potential migrant regarding the decision to stay or migrate (willing to migrate/willing to stay in origin country). Filling the model with data from the Czech Republic, Hungary and Poland with two potential destination countries, namely, Germany and France, shows that when individuals' risk aversion increases, the likelihood to emigrate declines. The difference between these scenarios is not as notable when the individuals can be described as risk–loving and risk–neutral. The situation is different when individuals are risk–averse and do not have access to unemployment benefits; the return from migration quickly decreases and becomes negative when the coefficient achieves 1 and more. The situation is different when entitlements are present, since the return from migration becomes slightly lower than in the case of risk–loving and neutral individuals.

Heitmueller's (2002, 2005) summarised research of migration factors with the risk role on migration decision highlighted is provided in Table 1.4.

Table 1.4. The role of unemployment benefits ratio in relation to the level of risk aversion on migration decision
(designed by the author in accordance with Heitmueller, 2002, 2005)

Independent variables	**Impact**
The ratio of real GDP per capita	(-)**
Unemployment ratio	(+)**
Migration stock	(+)
Unemployment benefits ratio (in relation with the level of risk aversion)	(-)/(+)
Social protection expenditure ratio (as a share of GDP)	(-)**

Note: ** indicates significance at the 5 percent level; (+) and (-) denote positive and negative effects, respectively

The framework of migration incentives developed with regards to unemployment benefits was not proved empirically as having a statistically significant effect but the inclusion of social protection expenditures into the model provided a statistically significant negative effect for emigration rate. Heitmueller (2002) proposed that people who are risk-averse are less prone to international

migration than risk-neutral individuals, keeping other things equal. The values of risk aversion level were assessed using speculative framework.

Anam et al. (2008) created a model of an option cum portfolio which combines two effects in the analysis of migration decision – option value and diversification. If one was to analyse the effects separately, the main characteristics of option value effect when migration tends to be postponed (i.e. reduced/small migration level; "waiting – optimal") could be characterised as:

- a small level of risk aversion which is definable as risk neutrality;
- small difference between foreign and domestic wages, i.e. no wage-pulling effect;
- market volatility/higher uncertainty or the degree of market uncertainty in the home country enhances the option value effect;
- waiting dominates because of an increased value of information at the time of higher domestic uncertainty.

The main characteristics of the diversification effect when migration tends to be encouraged immediately (i.e. high migration level) are as follows:

- risk averse;
- a large difference between foreign and domestic wages, i.e. wage-pulling effect;
- a small degree of market uncertainty in the home country;
- the information is less valuable.

Even if there is a negative wage difference between the destination and origin countries under such conditions as high market volatility at home, i.e. a family gives less value for the jobs at home, high risk aversion and a large family size, migration can occur because of risk diversification, i.e. the diversification effect dominates against the option value effect.

Risk has some influence in migration decision. Anam et al. (2008) describe two situations how foreign wage premium has an influence in relation to the level of risk aversion: (1) in a family which is risk-neutral or present a moderate/low risk aversion level, the level of migration increases with an increase of foreign country's wage premium because of the risk level which has a minimal impact for migration; the main determinant for migration is the gap between origin and destination countries; (2) in a family with a high level of risk aversion and more family members who had already migrated, an increase of wage difference between foreign and origin countries can become negative and reduce the level of migration.

A summary of Anam et al. (2008) research of migration factors with the highlighted risk role on migration decision is provided in Table 1.5.

The aforementioned research model was based on the optimum timing approach considering the option value and diversification effects. The role of risk aversion was included in the theoretical analysis. Relation description shows that the dominance of option value effect could be described with positive effect of the degree of market uncertainty at home and negative effect of risk aversion and wage-pulling effects. Conversely, the dominance of diversification effect have the opposite effects; additionally, the positive effect of number of family members is added.

Table 1.5. The role of risk aversion variable in relation to the option value and diversification effects on migration decision
(designed by the author in accordance with Anam et al., 2008)

Independent variables	Dominant effect and impact	
	Option value effect	Diversification effect
The degree or market uncertainty at home	(+)	(-)
Risk aversion	(-)	(+)
Wage-pulling effect	(-)	(+)
Number of family members		(+)

Note: (+) and (-) denote positive and negative effects, respectively

Risk as a predominant variable: risk attitudes under gamble conditions

Usually, one of the main reasons for identifying risk attitudes in migration decision is a lack of data. Some authors (e.g. Baláž, Williams, 2011; Nowotny, 2014) used risk estimation under gamble conditions and linked it with the migration decision, which can provide some insights into understand whether risk attitudes have an effect on the willingness to become a migrant or not. But the question is whether such an evaluation is significant and describes the migration decision well.

Baláž and Williams (2011) call risk and uncertainty as "central to individual migration behaviour" (Baláž, Williams, 2011, p. 2) in their research. The authors used the term of ambiguity aversion when risk is preferred more than uncertainty. In scientific literature this is often referred to as the Ellsberg paradox (Ellsberg, 1961, Fox, Tversky, 1995 in Baláž, Williams, 2011). They propose a trend of migrant and non-migrants behaviour when they face situations of risk and uncertainty.

Baláž and Williams (2011) carried out an experiment in the framework of Ellsberg paradox of ambiguity aversion which showed strong ambiguity aversion. Respondents were willing to pay a higher amount of money for known risk, i.e. the clear bet rather than for uncertainty when the bet is vague.

In addition to assessing the willingness to take risk in situations of risk and uncertainty, self-assessment of capabilities was included as well. Respondents were asked to compare themselves with their best friends by identifying their own abilities using a scale from 0 (certainly not) to 10 (certainly yes) in the following statements:

- "I am more flexible when adapting to new situations;
- I evaluate situations more correctly and take better decisions;
- I handle problems better;
- I have no problems with my studies;
- I am willing to take higher risks" (Baláž, Williams, 2011, p. 13).

Interestingly, authors marked their respondents as being overoptimistic and overconfident. Respondents evaluated themselves with rates higher than 5 points except for females with regards to the question about risk.

A summary of Baláž and Williams' (2011) research on migration factors with a highlighted risk role on migration decision is provided in Table 1.6.

Table 1.6. The role of willingness to take higher risks on migration decision (designed by the author in accordance with Baláž, Williams, 2011)

Variables	Gender	
	Female	Male
BETS WITHIN THE ELLSBERG PARADOX		
Clear bet, comparative	(-)**	(+)
Vague bet, comparative	(-)	(+)
Clear bet, non-comparative	(-)**	(+)
Vague bet, non-comparative	(-)**	(+)
SELF-ASSESSMENT OF CAPABILITIES		
More flexibility when adapting to new situations	(-)*	(+)
More correct evaluation of situations and better decision-making	(+)	(+)
Better handling of problems	(-)	(+)
No problems with studies	(-)	(-)**
Willingness to take higher risks	(-)***	(-)

Note: (-) shows a higher amount of bet money for people who had emigration experience, i.e. work or study abroad, than those who did not have // higher evaluation of abilities in comparison with best friends; (+) shows a higher amount of bet money for people who did not have emigration experience, i.e. work or study abroad, than those who had; *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively

Primary data collection under experimental conditions allowed Baláž and Williams (2011) to collect the data on risk attitudes between migrants and non-migrants. In addition, self-assessment of capabilities with such attributes as flexibility, ability to estimate situations more correctly, ability to manage their studies, ability to deal with problems and willingness to take risks were applied. Such characteristics as gender and migration experience were considered as well.

Nowotny (2014) analyses the roles of risk aversion and time preferences showing that risk aversion has a negative and highly significant effect for persons' willingness to migrate or commute, i.e. higher levels of risk aversion lower the mobility propensity, and the time preferences variable is used in its association with "expectations about the development of future wages in the home country and abroad" (Nowotny, 2014, p. 137).

The author takes an individual's willingness to migrate, commute or stay in the home country as a dependent variable, and one of the main independent factors is risk aversion which is the object of this chapter and needs to be reviewed more thoroughly. The data regarding risk attitudes were collected by performing individual-level surveys through personal face-to-face interviews. Nowotny (2014) provided the respondents with a hypothetical situation of a lottery where there are two equally possible situations – to win a certain amount of money immediately or to win nothing. In the interview, a respondent had to identify what amount of money they were willing to pay for a lottery ticket. From the reaction of each respondent to such lottery, the risk aversion value was calculated using a formula proposed in Equation (1.3).

$$r = 1 - \frac{l}{L}\,; \tag{1.3}$$

here r – risk aversion; l – the price a person is willing to pay for the lottery ticket; L – the total price.

After having the amount of money which people are willing to pay for the ticket, first insights about their characteristics can be identified. Nowotny (2014) distinguished three groups of respondents: (1) risk-neutral, who are willing to pay half of the price value, (2) risk-averse, who are willing to pay less than half of the price, and (3) risk-loving, who are willing to pay more than half of the price value. Finally, the author defines risk aversion as provided in Equation (1.3) and generalizes the variable by using the following values, which identify individuals' attitudes towards risk:

- risk-averse individuals, whose risk aversion value is more than 0.5 ($r > 0.5$);
- risk-neutral individuals, whose risk aversion value is equal to 0.5 ($r = 0.5$);
- risk-loving individuals, whose risk aversion value is less than 0.5 ($r < 0.5$).

Detailed effects of all other variables are provided in Annex 2. It is worth to mention that Nowotny's (2014) research identified statistically significant negative effects for willingness to migrate for such variables as the discount rate, risk aversion, age, children, home ownership, commuter, females, self-employment, and statistically significant positive effects for single, networks, previous mobility, knowing foreign languages, and a higher level of deprivation.

Nowotny's (2014) systematised research of migration factors with highlighted role of risk on migration decision is provided in Table 1.7.

Table 1.7. The role of risk aversion on migration decision
(designed by the author in accordance with Nowotny, 2014)

Independent variables	**Impact**	
	Stay	**Migrate**
The discount rate	(+)**	(-)*
Risk aversion	(+)***	(-)*
Age	(+)***	(-)***
Marital status (single)	(-)***	(+)***
Children	(+)***	(-)**
Network	(-)***	(+)***
Previous mobility	(-)***	(+)***
Car owner	(-)	(-)
Home ownership	(+)	(-)**
Commuter (commuting experience)	(+)	(-)*
Gender (female)	(+)***	(-)***
Educational attainment:		
• secondary education	(-)	(+)
• tertiary education	(+)	(+)
Foreign language:		
• English	(-)	(+)***
• German	(-)***	(+)***
• other	(-)***	(+)
Employment status:		

Independent variables	Impact	
	Stay	Migrate
• public sector	(+)**	(-)
• self-employed	(+)***	(-)***
• unemployed	(-)*	(+)
• out of labour force	(+)***	(-)***
Deprivation	(-)***	(+)**

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively; (+) and (-) denote positive and negative effects, respectively

Risk as a predominant variable: self-assessed risk attitudes in the general and migration-related context

The early works measuring the effects of risk attitudes towards migration with empirical proof began at the end of the first decade of the 21st century (Jaeger et al., 2007) with more research continuing till nowadays (Akgüç et al., 2016; Dustmann et al., 2015; Gibson, McKenzie, 2009, 2011; Williams, Baláž, 2014). It shows the necessity to further investigate the role of risk attitudes as a determinant of migration.

Jaeger et al. (2007) affirm that there is some history of an idea that migration propensities are dependent on the individuals' attitudes toward risk. But it is not easy to prove this statement empirically and most authors link the empirical research indirectly. Jaeger et al. (2007) suggest direct measurement. Their results proved that looking at factors such as age, gender, education, national origin, and other demographic characteristics, unemployment, income, marital status, education attainment, home ownership, those individuals who are more willing to take risks are also more likely to migrate.

Jaeger et al. (2007) used the general risk index in their model asking respondents whether they identify themselves as willing or trying to avoid risks in general with answers in an 11-point Likert scale ranging from 0 as completely unwilling to take risks to 10 as completely willing to take risks. The researchers also provided a method to measure the above mentioned index as a binary indicator naming it as risk indicator. The models were constructed dividing the risk index into two values: the range from 6 to 10 represented people who were relatively willing to take risks and the range from 0 to 5 represented those who were relatively unwilling to take risks.

Average numbers of risk index for stayers and movers for each characteristic showed a higher risk level for movers looking at:

- *general for all sample* (4.488 vs. 5.139), movers are additionally divided into those who moved one time – 5.042 and those who moved two or more times – 5.667;
- *gender*: men (4.965 vs. 5.449) and women (4.049 vs. 4.867);
- *age*: 18–25 (4.977 vs. 5.173), 26–35 (4.643 vs. 5.632), 36–45 (4.531 vs. 4.864), and 45+ (4.181 vs. 4.703);
- *years of education*: 1–9 (3.628 vs. 4.837), 10.5–11 (4.405 vs. 4.894), 11.5–13 (4.632 vs. 5.174), and 13.5+ (4.814 vs. 5.306);

- *marital status*: not married (4.807 vs. 5.309) and married (4.334 vs. 4.798);
- *reasons for moving*: family (5.418), jobs (5.259), housing (4.885) and other (4.951).

All six authors' probit models are statistically significant and provide information that those individuals who are more willing to take risks are also more likely to migrate (Jaeger et al., 2007).

An analysis of risk attitudes and the probability of migrating let Jaeger et al. (2007) state that "/.../ risk attitudes are an especially important determinant of moves that involve changing labor markets" (Jaeger et al., 2007, p. 12).

The effect of willingness to take risks on the probability of migrating was analysed in different risk contexts as well. Jaeger et al. (2007) looked at 6 different contexts besides the general risk attitude. Among the contexts of willingness to take risks in career, financial matters, driving, sport, health matters and trusting other people, risk-taking in one's career can be said to be the most strongly related to migration.

A summary of Jaeger et al.'s (2007) research of migration factors with highlighted risk role on migration decision is provided in Table 1.8.

Table 1.8. The role of risk index and risk indicators on migration decision (designed by the author in accordance with Jaeger et al., 2007)

Independent variables	**Impact**
Risk index	(+)
Age	(-)
Gender (female)	(+)
Marital status (married)	(-)
Years of education	(+)
Place of origin (Germany)	(+)
Place of origin (abroad)	(-)
Risk indicator	(+)
Unemployment status	(+)
Self-employment status	(+)
Gross monthly earnings	(-)
Home ownership / own dwelling	(-)
Number of children in household	(-)

Note: (+) and (-) denote positive and negative effects, respectively

Gibson and McKenzie (2011) carried out a survey of highly skilled persons, finding them by using the records of the top students from high school Their results prove that some elements of a consistent pattern of utility maximization are missing because Gibson and McKenzie (2011) found that income maximization has only a limited role in explaining the behaviour of highly skilled people in their choice of migration. Evidence from the Pacific countries shows that such economic variables as liquidity constraints and the extent of income gain are not strongly linked with the emigration decision. Conversely, such variables as risk aversion, patience and subjects studied in the secondary school were identified to the strongest link. In the

case of return migration, the strongest association was identified for family and lifestyle. Data shows that income opportunities are not ascribed to the variables with the strongest association.

Gibson and McKenzie (2011) consider variables which could be attributed to the costs or income gains due to emigration. They follow Grogger and Hanson (2011) (in Gibson, McKenzie, 2011) and present a linear utility model as a maximization framework shown in Equation (1.4).

$$U_{i,h}^{j} = \alpha\left(w_{i,h}^{j} - C_{i,h}^{j}\right) + \varepsilon_{i,h}^{j}; \tag{1.4}$$

here U – a linear utility, w – the wage, C – costs (C = 0 when location is home), h – work location, i – person, j – skill level, ε – error.

Thereby, the log odds of migration decision to leave origin country and move to destination country could be expressed as is provided in Equation (1.5).

$$\alpha\left(w_{i,d}^{j} - w_{i,h}^{j}\right) - \alpha C_{i,d}^{j}; \tag{1.5}$$

here h – home country, d - destination country.

Gibson and McKenzie (2011) define cost as costs encompassing the psychic, finance, as well as the risk and uncertainty associated with expectations about potential earnings abroad.

The risk preferences were evaluated identically to those in Jaeger's et al. (2007) research which was based on questions taken from the German Socio-Economic Panel. In addition, time preference was expressed with a patient variable.

On the basis of Jackson et al. (2005) analysis of expatriates (in Gibson, McKenzie, 2009), Gibson and McKenzie (2009) used 31 push-pull factors[1] which could have an effect on making the migration decision. Each respondent provided an answer in a five-point Likert scale with extreme values in the scale "draws me strongly towards my home country" and "draws me strongly towards overseas" (Gibson, McKenzie, 2009, p. 31). In all countries analysed by Gibson and McKenzie (2009) such factors as "salaries, job availability in their field, career opportunities in the next two years (short-term career), and possibilities for long-term career advancement" had an influence on the emigration decision (Gibson, McKenzie, 2009, p. 32). Researchers list such factors as tax rates on high incomes, regulations of becoming an entrepreneur, and student debt as having a strong effect on the decision to stay in country of origin or emigrate.

Table 1.9 provides a summary of Gibson and McKenzie (2009, 2011) research of migration factors with highlighted role of risk on migration decision.

[1] Short-term career, salaries, job availability, long-term career, cost of travelling, quality of colleagues, own education, jobs for spouse, cultural opportunities, ability to make a difference, job satisfaction, cultural attitudes towards success, information technology, location of spouse relatives, tax rates, relative income, ease of being an entrepreneur, opportunity to be a leader, extent to which jobs depend on who you know, student debt, visa for spouse, children's education, confidence in Government, quality of health care system, cost of living, home ownership, climate, safety and security, lifestyle, location of own relatives, bringing up children. (Gibson, McKenzie, 2009)

Williams and Baláž (2014) analyse a set of variables which potentially have an impact for decision to be stayer, aspirer, ex-migrant or roamer. All these variables are grouped into seven independent variables: (1) expertise in travel hazards, (2) mobility deterrents, (3) travel competences, (4) migration deterrents, (5) foreign country deterrents, (6) willingness to take everyday risks, (7) risk and uncertainty, and (8) foreign country allurement (see Annex 2).

Table 1.9. The role of being patient on migration decision
(designed by the author in accordance with Gibson, McKenzie, 2009, 2011)

Independent variables	**Impact**
Age	(+)***
Gender (female)	(+)/(-)
Parental education (mother has secondary school or less)	(-)
Birth place (born abroad)	(+)/(-)
Risk and time preferences:	
• risk seeking score	(+)***
• being patient	(+)**
Subjects studied in secondary school:	
• studied foreign languages	(+)***
• studied all three science subjects (biology, chemistry and physics)	(+)***
Macroeconomic variables:	
• real exchange rate	(-)/(+)
• GDP growth relative to destination	(-)
Family wealth:	
• two or more trips abroad while in school	(+)
• above average wealth in high school	(+)/(-)
• below average wealth in high school	(-)

Note: ** and *** indicate significance at the 5 percent and 1 percent levels, respectively; (+) and (-) denote positive and negative effects, respectively

Risk and uncertainty, measured using gamble and seen a factor of "pure risk", had statistically highly significant negative attitudes from the stayers' perspective (less tolerant towards risk and uncertainty) and statistically significant positive attitudes from the ex-migrants' and roamers' perspectives. Aspirers showed positive but insignificant association. A significant association was identified between general risk and uncertainty tolerance and these mobility profiles: stayers, ex-migrants and roamers. Risk tolerance was evaluated by the "willingness to take everyday risks" factor as well. As this factor includes such variables as driving and risky sports, it can be interpreted as a factor which combines attitudes of "pure risk" and competence-based risk. (Williams, Baláž, 2014, p. 1070)

The perception of mobility-related risks was identified by these factors: mobility, migration and foreign country deterrents, and foreign country allurement. The analysis showed that there is a significant association between these perceptions and mobility profiles. Higher income, better jobs and novelty-seeking variables were

identified as the "most important for Aspirers and Roamers, followed by Ex-migrants" (Williams, Baláž, 2014, p. 1071).

Perceived competences to manage travel-related risk was evaluated by researching the factors of travel hazards and travel competences. There is a "/.../ significant association between perceived competences to manage risks and mobility profile" (Williams, Baláž, 2014, p. 1066). Aspirers can be described as having medium expertise in travel hazards and a high level of travel competence.

There is a "/.../ significant association between risk-related socio-demographic characteristics and mobility profile" (Williams, Baláž, 2014, p. 1066) (see more detailed associations in Annex 2).

Logistic regression of all four mobility profiles with factors described above showed statistically significant associations for three mobility profiles: stayers, ex-migrants and roamers (Williams, Baláž, 2014).

Significant logistic regression model considering intending migrants with non-migrants showed that intending migrants are (a) more tolerant (10 percent) towards risk and uncertainty and have higher tolerance for general risk (the willingness to take everyday risks) (28.8 percent), (b) have strongly negative attitudes towards mobility, migration and foreign country deterrents and strongly positive attitudes towards foreign country allurement, (c) have higher expertise in travel hazards, travel competences, (d) have strong negative and positive associations with age and education, accordingly.

Williams and Baláž's (2014) research of migration factors with highlighted risk role on migration decision is summarised in Table 1.10.

Table 1.10. The role of general risk traits and pure risk variables on migration decision (designed by the author in accordance with Williams, Baláž, 2014)

Independent variables	Impact				
	Stayers	Aspirers	Ex-migrants	Roamers	M vs. N
Expertise in travel hazards	(-)***	(+)	(+)***	(+)***	(+)***
Mobility deterrents	(+)***	(-)	(-)***	(-)***	(-)***
Travel competences	(-)***	(+)***	(+)	(+)***	(+)***
Migration deterrents (crime, terrorism, health risks, weakening ties with family/friends, not suitable for children/family members)	(+)***	(-)***	(-)*	(-)***	(-)***
Foreign country deterrents (different culture/religion/legal system; different climate)	(+)***	(-)***	(+)	(-)***	(-)***
Willingness to take everyday risks ("general risk traits")	(-)***	(+)***	(+)	(+)***	(+)***
Risk and uncertainty ("pure risk")	(-)***	(+)	(+)**	(+)***	(+)***

Independent variables	Impact				
	Stayers	Aspirers	Ex-migrants	Roamers	M vs. N
Foreign country allurement	(-)***	(+)***	(+)*	(+)***	(+)***
Socio-demographic characteristics/variables:					
• age	(+)***	(-)***	(+)***	(-)***	(-)***
• gender	(-)*	(+)***	(+)***	(-)	(+)***
• education	(-)***	(+)	(+)*	(+)***	(+)***
Previous migration experience					(-)***

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively; (+) and (-) denote positive and negative effects, respectively; *M vs. N* – abbreviation meaning *"intending migrants vs. non-migrants"*

Dustmann et al. (2015) identify migration choices on two levels – individual and household, providing the terms of absolute and relative risk aversions. In the case of individual migration decision model, absolute risk aversion is used to show that "/.../ two individuals with identical risk aversion would, all else being equal, have the same probability of migrating /.../" (Dustmann et al., 2015, p. 10). In the case of household decision model, relative risk aversion is included as well, to show that in the same case of having two individuals, "/.../ probability will differ depending on the composition of the risk aversion of the other household members" (Dustmann et al., 2015, p. 10).

Dustmann et al. (2015) provide Equation (1.6) under which the individual migration decision with the main variable of willingness to take risks is constructed:

$$\Pr(M_{ihk} = 1) = \alpha_0 + \alpha_1 wtRisk_{ihk} + \mathbf{X'}_{ihk}\beta + \mathbf{W'}_{hk}\theta + \eta_k + \epsilon_{ihk}; \quad (1.6)$$

here i – individual; h – household; k – administrative county; M_{ihk} – "is an indicator of whether individuals have spent at least 3 months working outside their origin area during the previous year" (Dustmann et al., 2015, p. 21); $wtRisk_{ihk}$ – the willingness to take risks measured from the most risk-averse individuals (=0) to the least risk-averse individuals (=10); vectors $\mathbf{X'}_{ihk}$ – individual-level covariates, such as gender, age, marital status, number of children, years of education, number of siblings, birth order and $\mathbf{W'}_{hk}$ – family characteristics, such as household size and structure (number of family members under 16, in the work force, or older than 60), house value per capita; η_k – county fixed effects.

For more information of migration decision within a household and across household characteristics see Dustmann et al. (2015).

A recent migration study by Akgüç et al. (2016) involved the risk tolerance parameter in the analysis of decision to migrate along other commonly used individual and household characteristics (see Annex 2). To determine the effect of risk on the migration decision, Akgüç et al. (2016) use individuals' self-assessed risk level extracted from Rural Household Survey of the Database on Rural Urban Migration in China which allows to identify the relationship between risk level and migration decision, and look how risk attitudes are affected by changes in the

environment. The risk level was measured by asking respondents a general risk attitude question with answers in a 10-point scale ranging from 0 "never take risk" on one end to 10 "like to take risk" on the other.

Akgüç et al. (2016) provide a micro-econometric migration function given in Equation (1.7) including cumulative probability distribution function with individual variables, household variables and risk tolerance.

$$\Pr(M_i = 1) = \Phi\,(\alpha_0 + Z_1\alpha_1 + Z_2\alpha_2 + \alpha_3 \times Risk_i); \tag{1.7}$$

here Z_1 – individual variables, Z_2 – household variables, $Risk_i$ – risk tolerance.

Statistically significant positive effects on the probability to migrate were identified for risk level (risk tolerance), gender (male), education (junior middle school), household size, number of siblings, and mean household age.

Akgüç et al. (2016) research of migration factors with highlighted risk role on migration decision is summarised in Table 1.11.

Table 1.11. The role of risk level/risk tolerance on migration decision (designed by the author in accordance with Akgüç et al., 2016)

Independent variables	**Impact**
Individual characteristics:	
• gender (male)	(+)***
• age	(-)***
• education level (junior and senior middle schools)	(+)** and (-)
• marital status	(+)
• height	(+)
• weight	(+)
Household characteristics:	
• number of children	(-)
• number of siblings	(+)***
• family (household) size	(+)**
• the average land size	(+) / (-)
• the average age in the household	(+)***
• income level	(+)
Risk level/risk tolerance	(+)***

Note: ** and *** indicate significance at the 5 percent and 1 percent levels, respectively; (+) and (-) denote positive and negative effects, respectively

However, despite a variety of indicators in migration analysis, most extensively analysed factors have a strong linkage with standard economic theories. For example[2], research by Cattaneo (2008) was done using determinants identified by Harris-Todaro and human capital theories. The analysis involved differentials of wages, unemployment rates and personal characteristics, including differences between migrants and non-migrants. Van Der Gaag and Van Wissen (2008) and

[2] Further paragraphs of the sub-chapter's content are taken from an article published on dissertation topic (see Žičkutė, Kumpikaitė-Valiūnienė, 2015).

Kurunova (2013) supplement the analysis with financial, demographic and social variables. Turning to Jennissen's (2004) study, in addition to factors as wages and unemployment, Jennissen (2004) has drawn attention to factors proposed by dual labour market, new economics and relative deprivation theories as shortages at the bottom of the labour market and unemployment, the certainty of sufficient household income and the level of income inequality. Also, determinants from theories of international movement solvents are analyzed. (Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 875).

Bonasia and Napolitano (2012) rightly point out that the traditional model cannot explain the complexity of migration process (Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 875). In addition, a study by Tupa and Strunz (2013) shows the necessity of motivational theories' implication into the analysis of migration. According to Tupa (as cited in Tupa, Strunz, 2013), the pyramid distinguishing a migrant's motives by relation to migration type are given. Migration types can be listed as refugees with physiological needs, refugees with safety needs, migration with social needs, migrants with esteem needs and migrants with self-actualization needs. A list of motives is provided for each type of migration in the pyramid. Also, an algorithm of migration is given, identifying migration factors as individual expectations and desires, social groups and communities and societal factors based on theories of neoclassical microeconomic, new economics of labour migration, place, networks, neoclassical macroeconomic and dual labour markets. Tupa and Strunz (2013) have indicated that such dimensions as social, psychological and biological could be potentially affect migration decisions. (Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 876).

Few works which provide insights are related with behavioural economics are found in migration literature. Polgreen and Simpson (2011) implement the happiness variable in research of migration. The work of Polgreen and Simpson (2011) reveals that happiness has a U-shaped relationship with emigration, showing that people from very happy and unhappy countries are more prone to emigrate, while those from countries where the level of happiness is average tend to be less prone to migrate. Authors propose an explanation using prospect theory. Also, the aspect of optimism which explains the relationship between the level of happiness and migration decision is highlighted. The study of Czaika and Vothknecht (2014) indicates a framework of analysis based on individual's current and aspired future levels of well-being. The indication is therefore that an individual can be willing to migrate in order to achieve the aspired future level of well-being. Czaika (2015) extends the analysis based on economic prospects, outlining the migration prospect theory. The analysis consists of two main indicators about the future general economic and unemployment prospects. Also networks, income gap, unemployment rates and job vacancy ratio were analyzed. The analysis of Czaika (2015) shows that aspects of behavioural economics are valid in the context of migration processes. (Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 876).

Thus, the evidence seems to indicate that the explanation of migration decision is quite often based on an analysis of view of standard economics. Also, an analysis

on factors affecting migration decision shows the relevance of migration process analysis providing insights from behavioural economics. For instance, Czaika's (2015) research results reveals some evidence maintaining the implications of the migration prospect theory. The indications are therefore that future analysis should take count of behavioural economics aspects whereas it is a significant area of research understanding and moving several steps closer towards answering how people make decisions in reality. (Žičkutė, Kumpikaitė-Valiūnienė, 2015, p. 877).

1.2. A perspective of behavioural economics on migration decision

Kooreman and Prast (2010, p. 118) describe the field of behavioural economics as creating "/.../ more precise knowledge on how actual behavior deviates from full rationality." Tomer (2007) assesses the important "strands" of behavioural economics linked with H. Simon and the Carnegie school; G. Katona and the Michigan school; psychological economics; H. Leibenstein and X-efficiency theory; G. Akerlof and behavioural macroeconomics; R. Nelson, S. Winter and evolutionary theory; behavioural finance; V. Smith and experimental economics. The author identified and compared eight strands of behavioural economics with mainstream economics on such dimensions as narrowness, rigidity, intolerance, mechanicalness, separateness and individualism in the scale from high to low. Tomer's (2007) analysis shows that mainstream economics is distinctly different from behavioural economics when comparing the above-listed dimensions. Tomer (2007) concludes that behavioural economics "/.../ is a school of thought distinguished by the fact that it is much less narrow, rigid, intolerant, mechanical, separate, and individualistic than ME [mainstream economics]" and that behavioural economics "/.../ will one day end the dominance of ME [mainstream economics]" (Tomer, 2007, p. 478). Hargreaves Heap (2013) describes behavioural economics as concerned "/.../ with how people actually behave" (Hargreaves Heap, 2013, p. 985) in contrast with the expected utility model having criticism concerning the lack of explanatory power (Cohen, 2015).

Bocqueho, Jacquet and Reynaud (2014) elicited risk preferences by applying two different frameworks of expected utility and non-expected utility theory of cumulative prospect. They chose prospect theory as the most convincing and listing its two main features which allow to explain the expected utility anomalies: (1) reference dependence, which distinguishes the difference in behaviour under the domains of gains and losses and (2) probability weighting, which allows to evaluate how people perceive probabilities of outcomes. The authors conducted an experiment which validated that the application of cumulative prospect theory on decision-making allows to explain people behaviour more fully than the expected utility theory. Moreover, Glöckner and Pachur's (2012, p. 30) research results allowed to make a conclusion that "/.../ all implementations of CPT outperformed expected utility theory". More adequate policy instruments can be designed by understanding people's decisions better by applying advanced features of prospect theory. The prospect theory of behavioural economics is becoming a leading

alternative to expected utility theory explaining decision-making under risk (Levy, 1992; Li, Hensher, 2011; Rieger, 2014; Schmidt, Zank, 2008).

Thus, scientific literature analysis allows to identify two dominant theories in decision-making analysis, i.e. expected utility and prospect theory. The developments of decision theories are summarised in Figure 1.1 which identifies the main features and differences between the theories. After reviewing the development of decision theories, this research provides a historical implementation in explanation of decision making with the linkage to migration decision analysis.

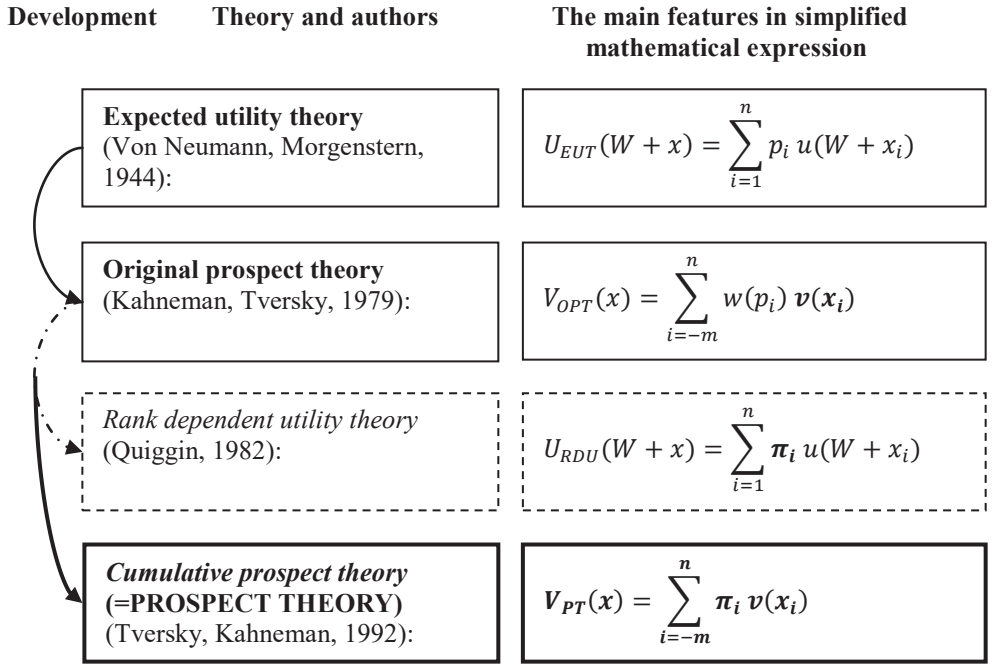


Figure 1.1. The development of decision theories
(designed by the author)

Expected utility theory was introduced by Von Neumann and Morgenstern (1944, 1947) (in Bocqueho et al., 2014; Cohen, 2015; Soukup, Maitah and Svoboda, 2014). It is based on the assumption that people tend to behave rationally even when the real data do not fit the assumption of rational behaviour (Gazioğlu, Çalışkan, 2011).

Broihanne et al. (2008) represent expected utility in the case of lottery. A person decides whether to play the lottery or not by computation provided in Equation (1.8), which expresses "/.../ weighted average of the utilities associated to the final wealth levels that can be reached when playing lottery" (Broihanne et al., 2008, p. 478).

$$U_{EUT}\,(W+x) = \sum_{i=1}^{n} p_i u(W+x_i)\,; \tag{1.8}$$

here U_{EUT} – utility by expected utility theory; $i = 1, ..., n$; x_i – the i-th outcome; p_i – probability; W – initial wealth; U – concave utility function (Broihanne et al., 2008, p. 478).

Blaug (1992) describes rationality as "maximising expected utility, which is a utility multiplied by the probability of the occurrence of a given outcome" (in Soukup et al., 2014, p. 3). Risk is expressed by using objective probabilities (Soukup et al., 2014).

Slovic's (1987) experimental findings prove that people tend to perceive probabilities differently which identifies the necessity to consider subjective characteristics of weighting probabilities (in Cohen, 2015). But expected utility framework does not encompass the subjective weighting of probabilities (Cohen, 2015).

Original prospect theory or ***separable prospect theory*** (Bocqueho et al., 2014, p. 138), i.e. the theory with an alternative approach of limited rationality, was presented by Kahneman and Tversky (1979).

In Figure 1.1, p is the perceived probability of outcome x, $w(p)$ is the probability-weighting function (Levy, 1992), which "directly converts probabilities into decision weights, low probabilities being over-weighted and high probabilities underweighted" (Bocqueho et al., 2014, p. 138). But such specification violates the *first-order stochastic dominance*. It is a drawback of the original prospect theory (Levy, Wiener, 2013).

Bocqueho et al. (2014) highlight the framing of outcomes relative to a *reference point* as the main contribution of original prospect theory into explaining people's decisions, i.e. *a two-part utility function captures the gain and loss domains*, where people tend to be risk-averse in the gain domain and risk-loving in the loss domain, demonstrating the *reflection effect* and the *S-shape utility function*. In addition, the *loss aversion concept* is presented due to different slopes between domains, i.e. usually people's decisions provide a steeper slope for losses than for gains. A graphical visualisation of the value function $v(x)$ is provided in Figure 1.2. For a more detailed explanation of value function and the probability-weighting function and its visualisation see Levy (1992).

Rank dependent utility or ***rank-dependent EU theory*** (Bocqueho et al., 2014, p. 139) developed by Quiggin (1982) represents "the idea of decision weights involving cumulative probabilities instead of single probabilities. Cumulative probabilities are first transformed through the probability weighting function and then combined into decision weights" (Bocqueho et al., 2014, p. 139). This development solved the drawback of first-order stochastic dominance violation in the original prospect theory.

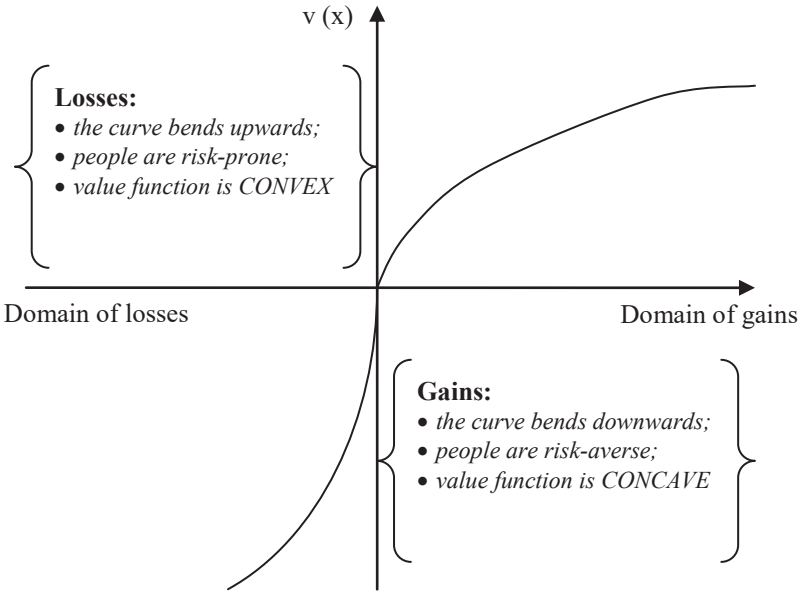


Figure 1.2. Preferences under prospect theory
(designed by the author in accordance with Kahneman, Tversky, 1979)

Thus Tversky and Kahneman (1992) developed the original prospect theory into **cumulative prospect theory** which becomes more and more relevant when dealing with the explanation of human behaviour (Neilson, Stowe, 2002). The authors have combined the *gain-loss framing* feature from original prospect theory and *cumulative decision weights* from rank-dependent expected utility theory, the equation of which is written in Equation (1.9). For more information of binary prospects see Vieider, Truong, Martinsson and Pham Khanh (2013), and for a visualisation of the differences and typical weighting functions of prospect theory and cumulative prospect theory see Fennema and Wakker (1997).

$$V_{PT}(x) = V(x^+) + V(x^-) = \sum_{i=m+1}^{n} \pi_i^+ \, v(x_i) + \sum_{i=1}^{m} \pi_i^- \, v(x_i); \tag{1.9}$$

here V_{PT} – value by prospect theory; $i = 1, ..., n$; $x^+ = \max(0, x)$; $x^- = -\max(0, -x)$; m – first outcomes are negative (losses); $(n - m)$ – positive (gains); π – cumulative decision weights, where "π^+ and π^- are decision weights for gains and losses, respectively, which result from a rank-dependent transformation of the outcomes' probabilities" (Glöckner, Pachur, 2012, p. 22); $v(.)$ – value function.

Broihanne et al. (2008) provide a standard formulation of prospect theory value function, which is written in Equation (1.10), i.e. a piece-wise power value function.

$$v(x) = \begin{cases} x^{\alpha} & if \;\; x \geq 0 \\ -\lambda(-x)^{\beta} & if \; x < 0 \end{cases}; \tag{1.10}$$

here *v(x)* – value function, $(0 < \alpha, \beta \leq 1)$ – diminishing sensitivity; $(\lambda > 1)$ – loss aversion.

Broihanne et al. (2008) emphasize that the value function of prospect theory is similar to expected utility theory. The difference is that prospect theory encompasses different value functions between the domains of gains and losses. Also, cumulative decision weights are calculated separately for the domains of gains with Equations (1.11) and losses with (1.12) (Broihanne et al., 2008, p. 480; Fehr-Duda, Epper, 2012, p. 571).

$$\boldsymbol{\pi_i^-} = \begin{cases} w^-(p_i) & for\ i = 1, \\ w^-\left(\sum_{j=1}^{i} p_j\right) - w^-\left(\sum_{j=1}^{i-1} p_j\right) & for\ 2 \leq i \leq m. \end{cases} \tag{1.11}$$

$$\boldsymbol{\pi_i^+} = \begin{cases} w^+(p_i) & for\ i = n, \\ w^+\left(\sum_{j=1}^{n} p_j\right) - w^+\left(\sum_{j=i+1}^{n} p_j\right) & for\ m \leq i \leq n. \end{cases} \tag{1.12}$$

here π^+ and π^- are decision weights for gains and losses, respectively; p – probabilities; *(w^+)* and *(w^-)* – the probability weighting function for gains and losses (Glöckner, Pachur, 2012, p. 23).

Following Broihanne et al. (2008), the main differences between cumulative prospect theory and expected utility theory could be listed as the advantages of cumulative prospect theory evaluating (1) changes in wealth relative to a reference point (domain of gains and losses); loss-aversion; (2) individuals' difference between domains, i.e. risk-averse in the domain of gains and risk seeking in the domain of losses; (3) decision weights instead of probabilities.

Lim and Morshed (2015) identify risk preference and loss aversion as the concepts of prospect theory. As it is seen in Figure 1.3, risk preference can be segmented into risk-seeking and risk-aversion. The authors define risk preference as "the extent to which people are comfortable with probabilistic gains or losses" (Lim, Morshed, 2015, p. 2).

Lim and Bruce (2015, p. 4) describe the risk preference parameter as providing "diminishing sensitivity (a discounting rate) to changes in value for the increase in absolute value". They distinguish meanings of ρ-values (equivalent to α and β in Equation (1.10)) larger and smaller than 1 as following:

- risk-seeking attitude, when $\rho > 1$, identifying "a preference for an uncertain option over a certain option" (Lim, Bruce, 2015, p. 4);
- risk-averse attitude, when $\rho < 1$, identifying "the reluctance to accept an uncertain option that may have an equal or higher expected payoff over a certain option." (Lim, Bruce, 2015, p. 4);
- risk neutrality or indifference, when $\rho = 1$.

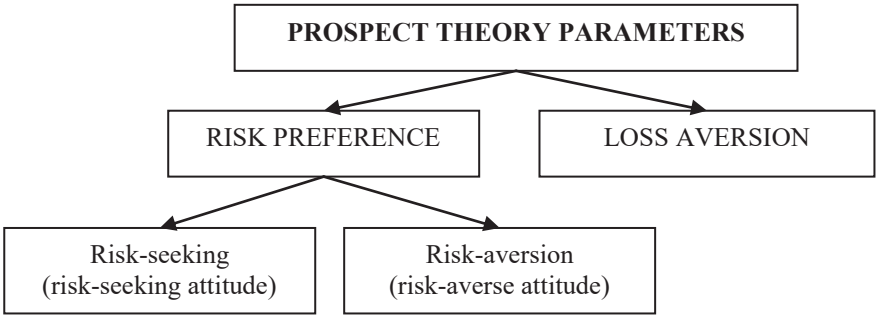


Figure 1.3. Identification of prospect theory parameters
(designed by the author in accordance with Lim, Morshed, 2015)

It can be seen that the part of the value function based on prospect theory (see Figure 1.2) in the loss domain has a steeper slope in comparison with the slope in the gain domain. It can be explained by the loss aversion parameter, the value of which is higher than 1, identifying a tendency to overemphasize, e.g. losing money relative to, e.g., earning money in subjective valuations of weight changes (Lim, Bruce, 2015).

Nguyen and Leung (2009) identify parameter α (equivalent to α and β in Equation (1.10)) as representing "concavity of the value function (risk aversion)" and λ as the degree of loss aversion (Nguyen, Leung, 2009, p. 524). The researchers also use the term of risk preferences but do not clarify the meaning of it in more detail.

Nguyen, Villeval and Xu (2012) provide the parameters of prospect theory, characterizing risk attitudes by (1) utility concavity, (2) probability weighting, and (3) loss aversion. A visualisation of prospect theory parameters is given in Figure 1.4.

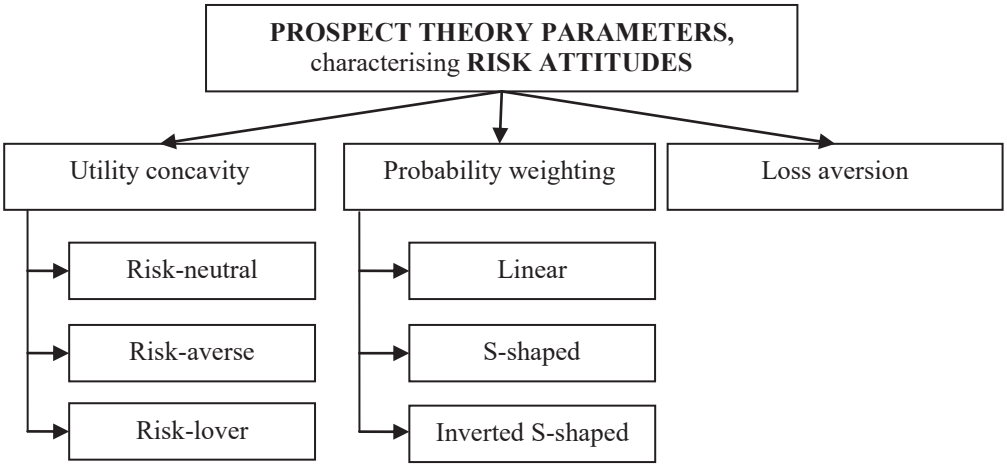


Figure 1.4. Identification of prospect theory parameters, characterizing risk attitudes
(designed by the author in accordance with Nguyen et al., 2012)

Nguyen, Villeval and Xu (2012) identify σ as the concavity of the power value function and describe people as:

- risk-neutral if $\sigma = 0$;
- risk-averse if $\sigma > 0$;
- risk-lover if $\sigma < 0$.

Additionally, the authors identify that higher values of λ represent higher loss aversion. They list the meaning of probability weighting function's parameter (α) values:

- if $\alpha = 1$, the probability weighting function is linear (the case of EU theory);
- "If $\alpha > 1$, the weighting function is S-shaped (the individual underweights small probabilities and overweighs large probabilities);
- If $\alpha < 1$, it is inverted S-shaped (s/he overweighs small probabilities and underweights large probabilities)" (Nguyen et al., 2012, p. 9).

In the case of EU theory, $\alpha = 1$ and $\lambda \neq 1$.

In Bromiley's (2010) paper, the extent of risk preference is described by positive values meaning risk-seeking and negative values denoting risk aversion. Moreover, they represent risk premium parameter which is defined in accordance with risk preference, i.e. positive values – risk-seeking and negative values – risk aversion.

When describing cumulative prospect theory, Neilson and Stowe (2002) reviewed the parameters naming (1) the risk attitude coefficient, (2) the loss aversion coefficient, and (3) the weighting function coefficient.

Laury and Holt (2005) use the terms of (1) risk preference, (2) risk aversion, and (3) risk neutrality when trying to explain human behaviour. Risk preference is a description of those people who are risk-seeking/risk-loving.

Trepel, Fox and Poldrack (2005) summarise the key elements of prospect theory, which are visualised in Figure 1.5.

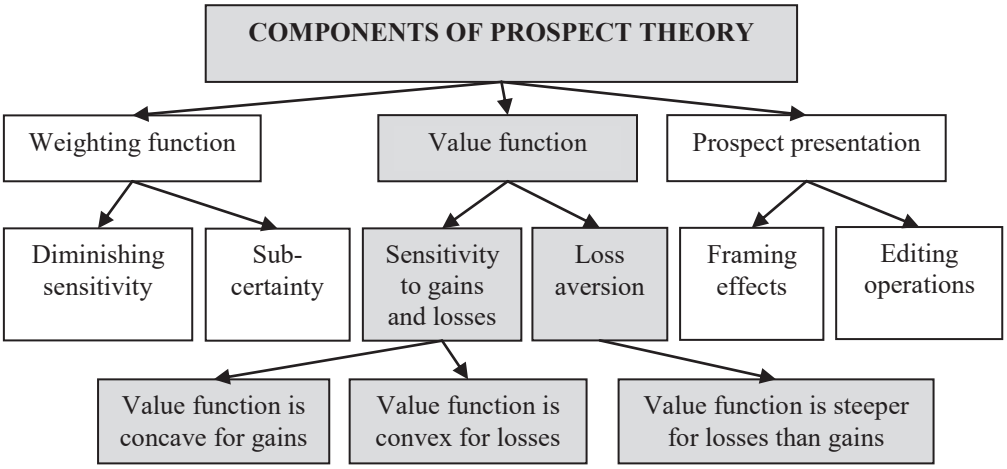


Figure 1.5. Identification of the main prospect theory components (designed by the author in accordance with Trepel et al., 2005)

The phenomenon of sensitivity to gains and losses provides the tendency that value function is concave in the domain of gains and convex in the domain of losses.

Kuhnen and Chiao (2009, p. 1) use the term of risk preferences and define it as "individuals' willingness to take or avoid risk". They describe individuals by using their risk-taking preferences to some extent of risk-averse or risk-seeking.

Tversky and Kahneman (1992, p. 297) identify the "fourfold pattern of risk attitudes: risk aversion for gains and risk seeking for losses of high probability; risk seeking for gains and risk aversion for losses of low probability".

Sokol-Hessner et al. (2009) describe the values of individual loss aversion coefficients (λ) as following:

- $\lambda < 1$, indicating people as gain-seeking;
- $\lambda = 1$, indicating people as gain-loss neutral;
- $\lambda > 1$, indicating people as loss-averse.

"The loss aversion coefficient λ represents relative (multiplicative) weighting of losses relative to gains" (Sokol-Hessner et al., 2009, p. 1).

The authors use terms of risk-aversion and loss-aversion generally. Further they clarify that the exponential function form encompasses "the empirical regularity of risk aversion (seeking) over gains (losses)". A comparison of smaller power value, marked as ρ, with a large (equivalent to α and β in Equation (1.10)) presents a higher rate of diminishing sensitivity, representing more risk-aversion. When (ρ) equals 1, it represents that there is no diminishing sensitivity, identifying risk-neutrality. Thus, authors describe that diminishing sensitivity "is equivalent to risk aversion in the gain domain and risk seeking in the loss domain /.../" (Sokol-Hessner et al., 2009, p. 1). The terms are visually identified in Figure 1.6.

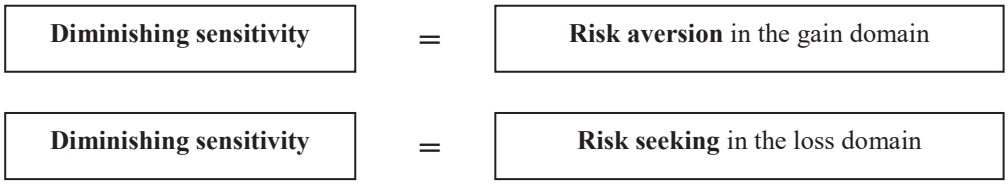


Figure 1.6. Identification of terms diminishing sensitivity, risk aversion and seeking (designed by the author in accordance with Sokol-Hessner et al., 2009)

Hillson (2006) provided a spectrum of risk attitude subdividing risk attitudes according to the response to uncertainty by (1) discomfort level and (2) comfort level. By the level of discomfort people are described as risk-averse or risk-paranoid and by the level of comfort level as risk-seeking or risk-addicted. Those who have a low discomfort or comfort level are described as risk-tolerant (see Figure 1.7). Whereas Weber and Johnson (2009) use the terms of risk attitude and risk tolerance as synonyms.

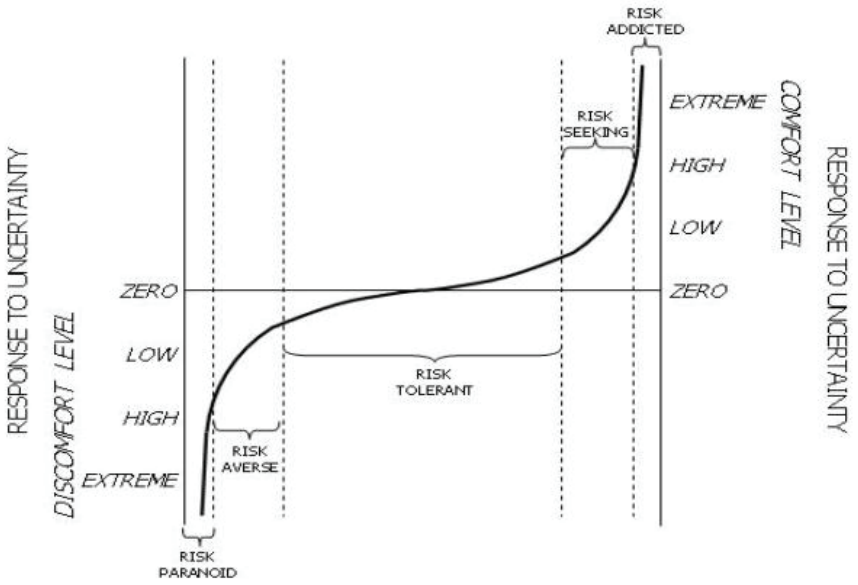


Figure 1.7. Risk attitude spectrum
(Hillson, Murray-Webster, 2006, p. 3)

Dominant contrasting theories can be visualised in a time frame, e.g. see the top part in Figure 1.8, where the neoclassical economic rationality approach is represented by expected utility theory and behavioural economics – bounded rationality approach by prospect theory.

Von Neumann and Morgenstern's (1944) expected utility theory was the dominant theory for decades; it is based on the neoclassical basis, representing rationality (Soukup et al., 2014). "/.../ Simon made a point of challenging key assumptions such as rationality and self-interest which neoclassical economics unquestionably accepts" (Tomer, 2007, p. 469). The 1978 Nobel laureate in economics, Simon (1953, 1955, 1957) coined the term *bounded rationality* (Berg, 2014; in Earl, 2005; in Kao, Velupillai, 2015; Levitt, List, 2008; Soukup et al., 2014) and used the term *"limited rationality"* or described human behaviour as "intendedly rational" (in Kao, Velupillai, 2015, p. 259). Simon was named as the predecessor of behavioural economics for his theoretical input (Soukup et al., 2014, p. 5). Simon's exploration was further developed by the most important theoreticians of behavioural economics, i.e. Kahneman and Tversky (Soukup et al., 2014), founders of behavioural economics representing prospect theory (Soukup et al., 2014, p. 5). The first version of prospect theory was presented in 1979 and the second version in 1992. Kahneman has been awarded the Nobel Prize in Economics in 2002 for his scientific input explaining human behaviour under risk. Behavioural economics challenged the neoclassical theory and necessitated its revision (Guala, Mittone, 2010). Authors maintain that the "/.../ ultimate goal of BE [behavioural

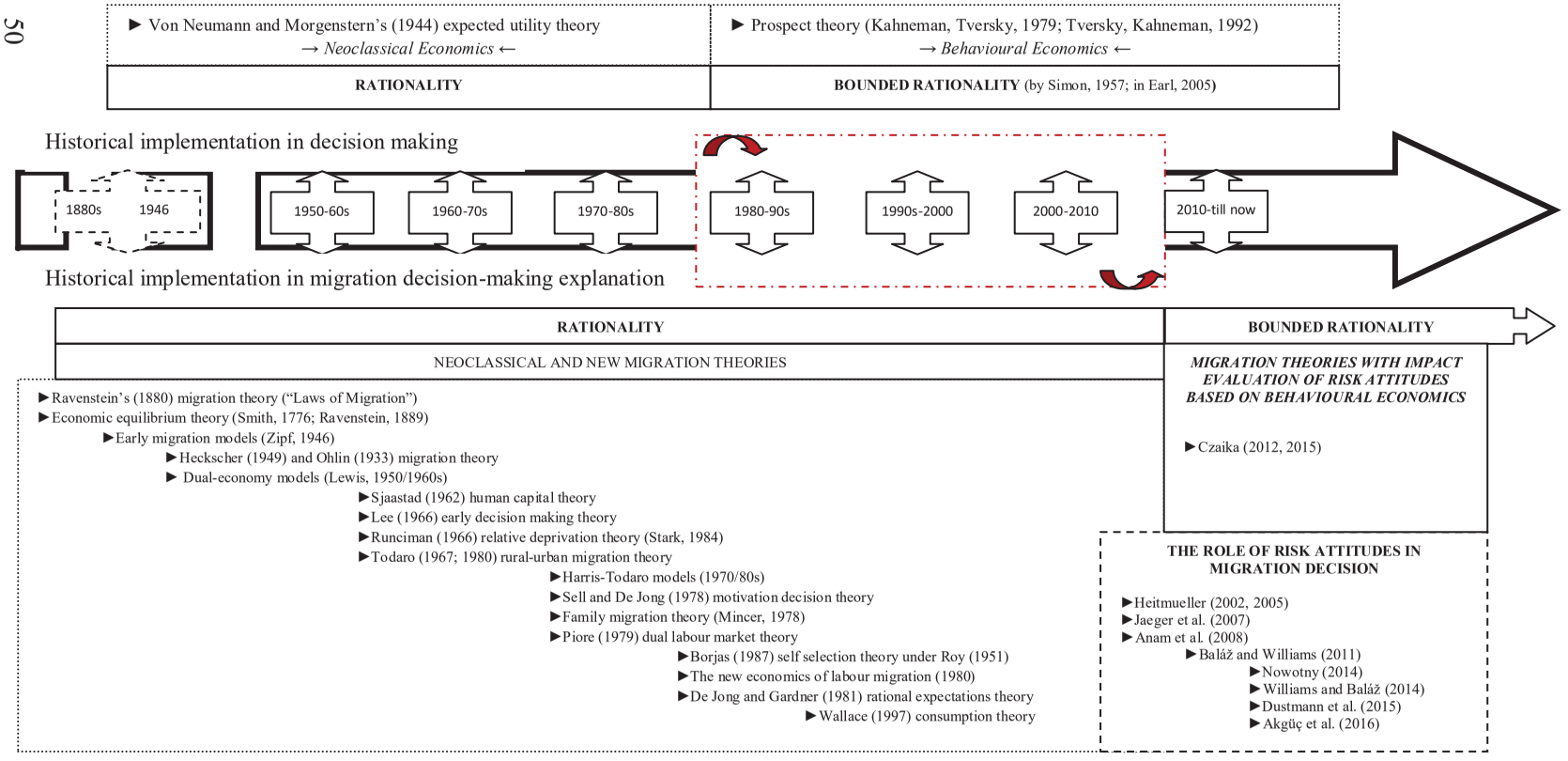


Figure 1.8. Historical implementation of explanation of decision-making (designed by the author)

economics] is the development of alternative theories able to predict in a wider domain and with more precision than standard neoclassical theory" (Guala, Mittone, 2010, p. 538). Prospect theory can be described as one of the most prominent behavioural theories assuming limited rationality (Rieger, 2014; Soukup et al., 2014).

The bottom part of Figure 1.8 provides historical background of explaining migration decision-making. Dashed time-block with arrows indicates the gap of behavioural economics' prospect theory features application into migration decision analysis. Most scientists still ignore behavioural anomalies[3] of neoclassical economics, e.g. non-standard attitudes toward risk which are represented by Kahneman and Tversky (1979) (Burnham, 2013, p. S117). The impact evaluation of future migration theories of risk attitudes based on behavioural economics are promising.

The criticism of restrictive lack of explanatory power using the expected utility model of decision under risk (Cohen, 2015) could be solved by considering the risk attitude variables of behavioural economics prospect theory in migration decision analysis. Table 1.12 presents an empirical estimation R-Squared of risk parameter in migration[4].

Table 1.12. Empirical estimation of risk parameter in migration research (designed by the author)

Author	Empirical estimation	Migration	R^2
Akgüç et al.(2016)	A micro-econometric model with a probit function/ probit model	i	McFadden's Pseudo R^2 = 0.0106-0.0970 *(0.097-0.362)*
Nowotny (2014)	A multinomial probit regression model	I/C	-
Jaeger et al. (2007)	Probit model; Multivariate regression	i	Pseudo R^2 = 0.0100-0.1084
Williams and Baláž (2014)	Logistic regression	I	Pseudo R^2 = 0.276 (Cox & Snell) and 0.369 (Nagelkerke)
Baláž and Williams (2011)	t tests; mixed-design Anova	I	-
Anam et al. (2008)	A correlation coefficient method (cross-autocorrelation)		-
Gibson and McKenzie (2009, 2011)	A probit model	I	-
Czaika (2012, 2015)	System dynamic panel estimation (GMM), the	I	-

[3] behavioural anomaly: "An empirical result qualifies as an anomaly, if it is difficult to 'rationalize,' or if implausible assumptions are necessary to explain it within the paradigm." (Thaler, 1988 in Burnham, 2013, p. S115)

[4] R-Squared can encompass models with more variables than just risk. For separate effect of risk attitude in migration research see the author's articles.

Author	Empirical estimation	Migration	R^2
	dynamic panel regression		
De Jong et al. (1983)	By means of regression models By multiple regression models with standardized regression coefficients using ordinary least squares (OLS) statistical tests	i, I	Adjusted R^2 = 0.025–0.239
Heitmueller (2002, 2005)	Certainty equivalents	I	-
Dustmann et al. (2015)	Probit and logit estimators	i	Probit: R^2 = 0.232 Logit: R^2 = 0.234

Note: i – internal migration; I – international migration; C – cross-border commuting

As it is identified in Table 1.12, the risk attitudes represented by the authors have a low R-Squared. One of the reasons could be the evaluation of risk attitude. They use general risk attitude variables (for detailed questions see Annex 2). But the same person may have different risk attitudes depending on the contexts of the decision (Cohen, 2015). It is in line with Weber, Blais and Betz (2002) who stating that risk attitudes are context-specific (in Vieider et al., 2015). Thus to better explain migration decision, risk attitudes should be measured in the context of migration and using features represented by the prospect theory of behavioural economics.

Thus the analysis of scientific literature proved the relevance of applying risk attitudes of the prospect theory in the migration context.

1.3. Theoretical model of the impact of migration factors on migration decision from the perspective of behavioural economics

The analysis of migration factors and the approach of behavioural economics on migration decision resulted in the identification of three broad groups of migration factors. This dissertation distinguishes migration factors which have an impact on migration decision under the approach of behavioural economics into groups of (1) socio-economic migration factors, and risk encompassing (2) migration risk attitudes and (3) general risk preference. Further the paper defines each of theoretical model constructs.

Socio-economic migration factors

A theoretical analysis of the impact of migration factors on migration decision provided a variety of migration factors which can be grouped into economic, social, political, demographical, cultural, psychological, geographical, etc. Nevertheless, the scope of this dissertation is restricted to the analysis of socio-economic migration factors, which are defined in the second part of the dissertation. The impact of migration factors on migration decision pointed out in the first chapter leads to the assumption that ***there is a correlation between the socio-economic situation of the origin country and migration decision***.

Migration risk attitudes: risk-preference and loss-aversion

Risk attitudes in a specific migration context are analysed from the perspective of behavioural economics taking prospect theory as one of the most widely applied theories of behavioural economics (Barker et al., 2017). As it was presented in the previous chapter, people estimate prospects under the domain of gains and losses differently. Losses are felt more intensively, leading people to the preference of avoiding losses. Under the domain of gains people tend to prefer the certainty of a lower gain than the chance of a larger gain, and people tend to prefer smaller outcome variance, i.e. people have risk-averse preferences. Thus, it leads to the assumption that ***there is a correlation between risk attitudes (risk-preference in the domain of gains and loss-aversion in the domain of losses) and migration decision.*** The role of the perspective of behavioural economics in risk attitude analysis of migration decision is visualised in Figure 1.9.

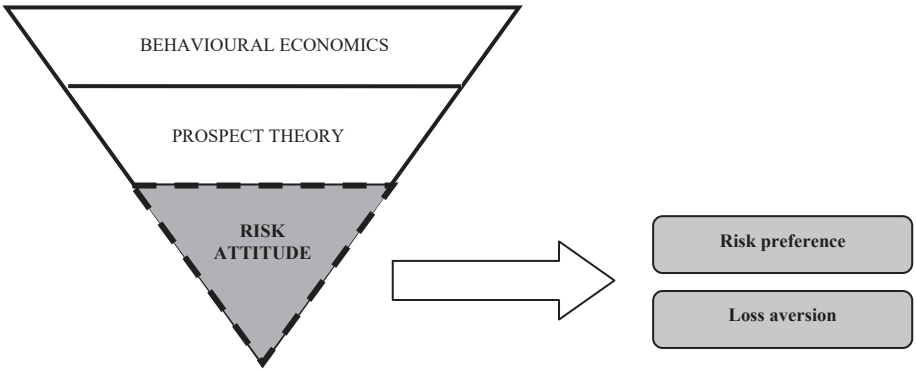


Figure 1.9. Identification of risk attitudes parameters (designed by the author)

A theoretical analysis of literature regarding risk and migration identifies a variety of risk terms and risk extent explanations which are systematised in Table 1.13. As the analysis of migration factors revealed the importance of incorporating risk attitudes of the prospect theory into migration decision analysis, risk attitudes need to be clarified in the theoretical model.

Table 1.13. A summary of risk terms and extents in risk and migration literature (designed by the author)

Author	Risk term	Risk extent
Akgüç et al. (2016)	• (Subjective) risk tolerance • Risk aversion • Subjective risk level • (Subjective) risk attitudes • Risk preference • Self-assessed risk (tolerance) • Willingness to take risk • Risk proclivity • Risk (tolerance) level	• (Less) risk-averse • Highly tolerant of risk • More or less risk-tolerant • (More) risk-loving • More willing to take risks • Above-average risk tolerance
Nowotny	• Risk aversion	• Risk-averse: $\Pi(r) > 0$

Author	Risk term	Risk extent
(2014)	• Risk attitudes • Risk premium (Π(r))	• Risk-neutral: Π(r) = 0 • Risk-loving: Π(r) < 0 • A higher level of risk aversion, less risk-averse, higher risk aversion • Higher risk premium
Jaeger et al. (2007)	• Risk attitudes • Willingness to take risk • Risk index • Risk indicator • Risk measures	• More (or less, lower) risk averse • Risk-friendly/averse
Williams and Baláž (2014)	• Risk tolerance/aversion • The willingness to take risks • Tolerance of risk and uncertainty • General risk/uncertainty tolerance • General risk-tolerance levels • "Pure risk" (tolerance, attitudes) • "General risk trait" • Attitudes to risk • Attitudes to risk vs. uncertainty • General trait risk aversion • General risk and uncertainty tolerance • Perceptions of risks • Risk preferences	• More risk than {...} • More risk-tolerant than {...} • Risk-tolerant, higher general risk-tolerance • (More) risk-averse • Generally very risk-tolerant • Higher risk-taking • More tolerant towards risk/tolerance • Less likely to tolerate risk and uncertainty than {...}
Baláž and Williams (2011)	• The willingness to take risks • Attitudes to risk/risk attitudes • Risk tolerance/aversion • Risk preference • Risk aversion and risk tolerance	• More or less likely to be risk tolerant • More averse to, or tolerant of, risk and uncertainty • Less risk-averse • Stronger risk taking propensities, higher propensity for risk taking • Higher risks • Risk is relatively stable • Higher risk tolerance levels • Stability of risk attitudes
Anam et al. (2008)	• Attitudes toward risk • Risk aversion/neutrality	• Low/small/high risk aversion • (More/moderately) risk-averse • Risk-neutral
Gibson and McKenzie (2009, 2011)	• Risk aversion • Risk-seeking score • Risk seeking • Risk preferences • Risk score • Attitudes towards risks	• Mean risk score
De Jong et al. (1983)	• Risk-taking	-
Heitmueller (2002, 2005)	• Risk aversion • Risk neutrality • Risk attitudes	• Low degree of risk aversion • High degree of risk aversion • (More/less) risk-averse

Author	Risk term	Risk extent
	• The level of risk aversion • Coefficient of risk aversion	• Higher degrees of risk aversion • Risk-loving/neutral
Dustmann et al. (2015)	• Risk aversion • Risk attitudes • Risk preference • Willingness to take risks • Absolute/relative risk aversion • Absolute risk preference • Level of risk aversion	• Risk-loving • Less risk-averse • Identical risk aversion • (A lower) average risk aversion • Low/lower/higher risk aversion • Degree of risk aversion • Most risk-loving/averse • Average less/least/more risk averse • Average risk preferences • Ranking in risk attitudes • Relatively less risk-averse than {...} • Most risk-loving • Lower risk aversion level

Thus, the terms which are used in this research of risk attitudes of the prospect theory are defined in Figure 1.10. As it is provided in Figure 1.10, this *dissertation encompasses two parameters of the prospect theory which are identified, following Lim and Morshed (2015), as risk preference and loss aversion. The parameters of risk preference and loss aversion are generalised as risk attitudes.*

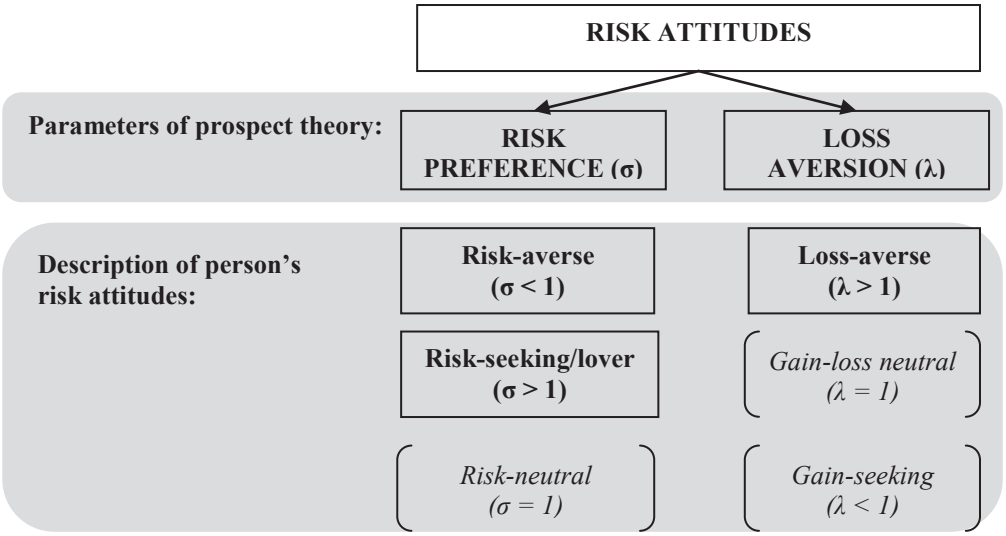


Figure 1.10. Identification of international migration risk attitudes (designed by the author)

Risk preference is marked by sigma (σ) and defined as "the extent to which people are comfortable with probabilistic gains or losses" (Lim, Morshed, 2015, p. 2), i.e. "individuals' willingness to take or avoid risk" (Kuhnen, Chiao, 2009, p. 1)

identifying a person's risk preferences by extent into risk-averse (σ < 1), risk-neutral (σ = 1) and risk-seeking/lover (σ > 1).

The loss aversion parameter is marked by lambda (λ) and represents "relative (multiplicative) weighting of losses relative to gains" (Sokol-Hessner et al., 2009, p. 1):

- *λ < 1, indicating people as gain-seeking;*
- *λ = 1, indicating people as gain-loss neutral;*
- *λ > 1, indicating people as loss-averse.*

General risk preference

The analysis of the impact of migration factors on migration decision disclosed the relevance of considering the general risk preference in migration decision analysis. It allows the assumption that ***there is a correlation between general risk preference and migration decision.*** Thus, in addition to the parameters of risk attitudes from the perspective of behavioural economics, the impact of general risk preference is analysed as well, seeking to decide which of the parameters are more relevant in migration decision analysis.

All previously described groups of independent migration factors are provided in the theoretical model of the impact of migration factors on migration decision from the perspective of behavioural economics in Figure 1.11.

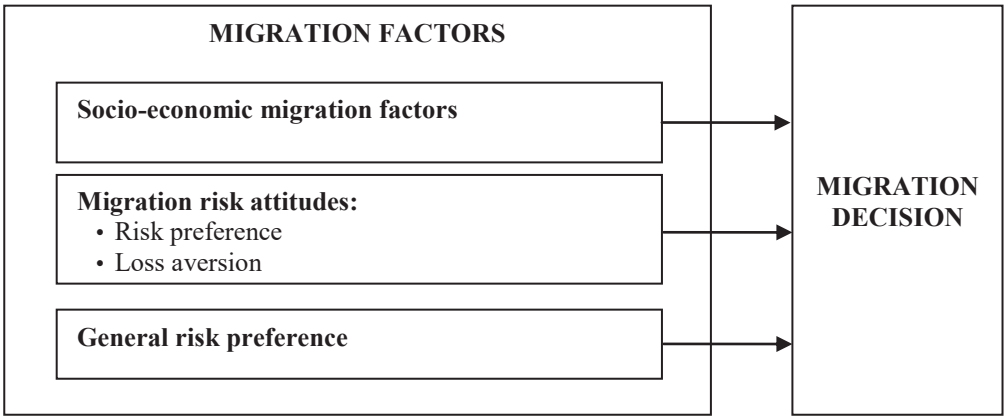


Figure 1.11. The theoretical framework of the impact of migration factors on migration decision from the perspective of behavioural economics (designed by the author)

Migration decision

Before analysing the impact of migration factors on dependent variable, it is necessary to clarify exactly what is meant by the definition of migration decision. Thus, the following paragraphs overview the migration decision terminology and identify the definition which is followed in the dissertation.

Nowotny (2014) defines mobility as modes of cross-border commuting and migration. The distribution of mobility in conjunction with the living and working countries is identified by such actions as: (1) "migrating", when a person lives and

works in a foreign country, (2) "cross-border commuting", when a person lives in their home country but works in a foreign country, and (3) "staying", when a person continues to live and work in their home country (see Figure 1.12).

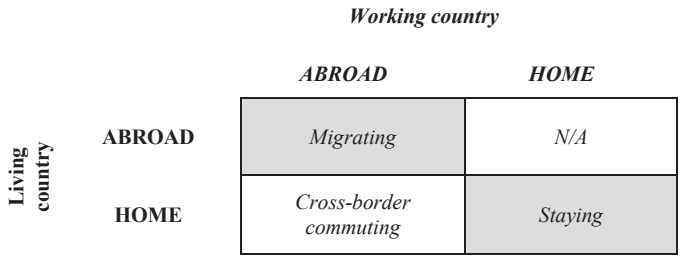


Figure 1.12. Mobility modes
(Nowotny, 2014)

Gibson and McKenzie (2011) define migration "as ever having worked or studied abroad after finishing secondary school" and do not restrict the time period but most of respondents' time abroad is identified as one year or longer (Gibson, McKenzie, 2011, p. 20). The authors' definition of migration involves not only people who move abroad for work but also those who move for studies. This interpretation is used in the brain drain literature and a strong interrelation of these two groups is validated by Parey and Waldinger (2008) who propose a strong positive effect of studies abroad for future employment abroad as well (in Gibson, McKenzie, 2011).

Identifying migrants, Dustmann et al. (2015) provided a question in a survey related with the number of months spent abroad during the previous year and the reason of living abroad. Authors define a labour migrant as "/.../ an individual who spent 3 or more months away from home in the previous year for work or business purposes" (Dustmann et al, 2015, p. 17). Baláž and Williams (2011) used a similar definition by supplementing studies with a migration reason: "/.../ migrant was defined as having spent at least 3 months working and/or studying outside /.../" of the origin country (Baláž and Williams, 2011, p. 5).

According to Hoppe and Fujishiro (2015), four phases of the migration decision can be distinguished which are presented in Figure 1.13. The first phase is identified as pre-decisional where intentions lie or not. Usually people have some expectations of which fulfilment or not can affect the rise or disappearance of migration intentions. Arising migration intentions influence the pre-actional phase where the potential migrant explores the situation and possibly compares the current situation with their expectations. Dissatisfactions can lead to the actional phase, meaning that an individual takes the specific actions followed by the result of actual migration.

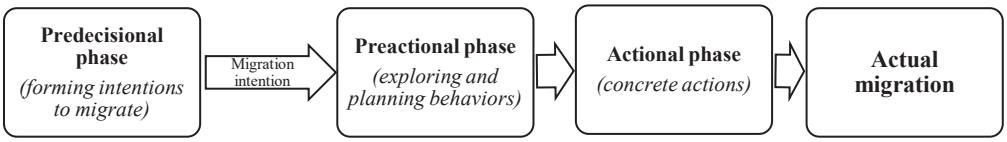


Figure 1.13. Decision phases in migration
(Hoppe, Fujishiro, 2015)

Heitmueller (2002) makes a remark that most of surveys use general migration potential level but do not try to classify according to the degree of migration potential. Heitmueller (2002) mentions Fassmann and Hintermann's (1997) research as an exception because they distribute the migration potential into 3 groups with regards to the preparation level: (1) general, where people do "/.../ not rule out migration at some point in the future", (2) likely, where people have "/.../ already undertaken concrete steps to prepare migration, such as gathering information or studying the language of the desired destination country", and (3) actual, which "/.../ embeds individuals who actually applied for working permits or visas" (Heitmueller, 2002, p. 5).

In scientific literature, authors usually use actual migration data, i.e. starting to analyse the migration reasons from the last phase, resulting in actual migration (e.g. Akgüç et al., 2016; Baláž, Williams, 2011; Czaika, 2012, 2015). The effects between migration rates (dependent variable) and migration variables (independent variables) provide useful information but lacks information which would explain why some people move and others do not, even if the economic and social situation abroad is much better. Generation of actual migration reasons relation do not explicitly identify the underlying reasons.

Therefore, the following presumption can be formulated: starting to understand the base where migration intentions occur, and the relation of intention variation influenced by the evaluation of current and/or future expected country's economic and social situation, effective guidelines for politicians seeking to manage the migration flow could be suggested.

The relevance of evaluating migration intentions, i.e. encompassing pre-decisional and pre-actional phases, is growing. The difficulties of such analysis can be identified as the lack of data and instruments which could evaluate the above-mentioned effects.

Some authors (e.g. Jong et al., 1983; Nowotny, 2014; Williams, Baláž, 2014) focus on the analysis of intentions. Jong et al. (1983) define migration intentions similarly but more broadly than Hoppe and Fujishiro (2015) as "/.../ an intermediate step to actual behavior" (De Jong et al., 1983, p. 471) and include this definition in the migration intentions evaluation of the aspects of perception of future local community development and ratio expression of value-expectancy. The influence of the latter variable on migration intentions was proved as statistically significant.

In the analysis of Williams and Baláž (2014), migration intentions are elaborated in conjunction with future migration intentions – whether the potential

migrant is intending or not intending, and previous international migration – whether the potential migrant was a migrant in the past or not. The four mobility profiles (roamer, ex-migrant, aspirer, and stayer) defined by Williams and Baláž (2014) are given in Figure 1.14.

Previous international migration	Future migration intentions: INTENDING	Future migration intentions: NOT INTENDING
MIGRANT	*Roamer*	*Ex-migrant*
NON-MIGRANT	*Aspirer*	*Stayer*

Figure 1.14. Mobility profiles
(Williams, Baláž, 2014)

Hoppe and Fujishiro (2015) provide empirical evidence that "/.../ pre-migration decision-making is highly predictive for actual migration within twelve months". Their data shows the migration decision of people from different migration phases within twelve months as follow:

- from the pre-decisional phase (42 respondents), one respondent migrated, i.e. 2 percent;
- from the pre-actional phase (83 respondents), 18 respondents migrated, i.e. 22 percent;
- from the actional phase (51 respondents), 24 respondents migrated, i.e. 47 percent.

Thus actual migration can be predicted at a rather high level for those respondents, who are in the pre-actional or actional phases. Each of the phases can provide useful information for migration decision analysis. Some examples of the decision phase as a dependent variable identification is systematised in Table 1.14.

In the dissertation, ***international migration decision*** *is defined as pre-migration decision-making attributing a person with some extent of willingness (1) to migrate to a foreign country for no less than twelve months or (2) to stay in the home country continuing to live without the restriction of work reason (in accordance with Nowotny's (2014) modes, Hoppe and Fujishiro's (2015) decision phases. Work is not a migration restriction as it is in Nowotny (2014) because other important migration factors can be identified in each respondent's case, e.g. studies abroad leading to employment abroad as well (Parey, Waldinger, 2008 – in Gibson, McKenzie, 2011).*

Table 1.14. A theoretical summary of decision phase identification as a dependent variable (designed by the author)

	Akgüç et al. (2016)	Nowotny (2014)	Jaeger et al. (2007)	Williams and Baláž (2014)	Baláž and Williams (2011)	Gibson and McKenzie (2009, 2011)	Czaika (2012, 2015)	De Jong et al. (1983)	Heitmueller (2002, 2005)	Dustmann et al. (2015)
Actual	Mover or stayer (i)		Whether migrated in the past (i)	Roamer, aspirer, ex-migrant, stayer (I)	(I)	Migrants, return-migrants and non-migrants (I)	(I)		(I)	
Willingness to migrate		Migrate, commute or stay (I, C)								
Intentions to migrate				(I)				Movers and non-movers (i, I)		
Propensity to migrate			(i)			(I)				(i)
Likelihood of migration						(I)			(I)	
Migration incentives									(I)	

Note: i – internal migration; I – international migration; C – cross-border commuting

2. RESEARCH METHODOLOGY OF THE IMPACT OF MIGRATION FACTORS ON INTERNATIONAL MIGRATION DECISIONS FROM THE PERSPECTIVE OF BEHAVIOURAL ECONOMICS

A combination of known theoretical and empirical patterns of traditional and modern theories with the insights of behavioural economics enables to build a model which better fits the observed reality. The cycle structure of research, which is given in Sequence (2.1), demonstrates that the impact of migration factors on the migration decision from the perspective of behavioural economics (see Figure 1.11) is tested by using the approach of **deductive research**.

$$\text{Theory} \rightarrow \textit{Test hypotheses} \rightarrow \text{Observations} \tag{2.1}$$

This dissertation uses positivist methods; the research methodology is based on a survey, applying the questionnaire as a method for data collection.

The first sub-chapter introduces the research sample and structure, while the second sub-chapter explains the design of empirical research methodology. Finally, the third sub-chapter presents the empirical model and methods for evaluating the impact of migration factors on international migration decision.

2.1. Research sample and structure

In this dissertation, the population is Lithuanian undergraduate students in universities and colleges. There are several reasons to choose this group for the purpose of this investigation.

Firstly, in accordance with Baláž and Williams (2011), who focused on university students, the advantages of the chosen migrant group were identified:

- a relatively homogeneous group in terms of age and education;
- a relatively homogeneous group in terms of migration experience, i.e. most students have been temporary migrants;
- young adults are described as the most mobile demographic group in Europe.

In socio-economic and socio-demographic terms, migrants can be described as a very heterogeneous group (Baláž, Williams, 2011) and it can be difficult to reveal the migration factors for such a broad group well.

Gibson and McKenzie (2011, p. 19) investigate the “brain drain” of academic high-achievers. Regarding “brain drain”, students should be a group of interest to policymakers. Williams and Baláž (2014) support students as a sample for research with the identification that students tend to be less deterred from migration due to family and friendship or health reasons. Also, Hoppe and Fujishiro (2015) found that the variable of young age predicted pre-migration into actual migration well.

The statistics of Lithuanian emigration in the age group from 20 to 24 years and from 25 to 29 years consist of 18.4 and 17.9 percent of total emigrants (44,533 emigrants) in 2015 (the newest data was extracted at the end of 2017 from Eurostat). A high migration rate among the young age group provides a convincing necessity to conduct a more detailed analysis (see Figure 2.1).

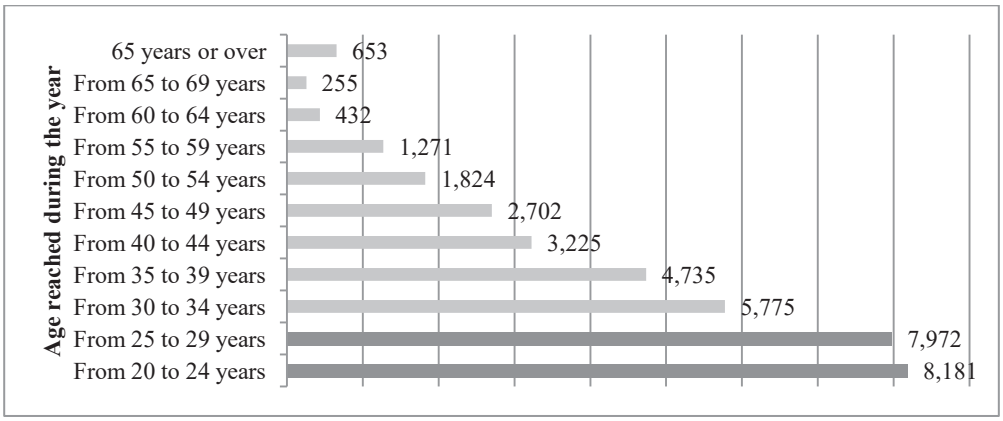


Figure 2.1. Lithuanian emigration with regards to age group in 2015 (designed by the author in accordance with Eurostat, 2016a)

Also, it is important to look at potential migrants not only from the perspective of their age; education can also be an important factor. At the end of their bachelor studies (in June, 2014), 8 percent of Lithuanian students were thinking to emigrate to a foreign country to work and 6 percent – to study (Kalinauskaitė, n.d.). Bachelor graduates were asked questions regarding their willingness to work abroad according to their occupation and qualification in 6 (in December, 2014) and 12 months (in July, 2015) after graduation. The results were the following:

- To the proposition "I am thinking about the possibility to work abroad by occupation (or familiar work to occupation)":
  - after 6 months of graduation (total of 801 respondents): 33 percent of bachelor graduates agreed, 10 percent were neutral and 57 percent did not agree;
  - after 12 months of graduation (total of 801 respondents): 34 percent of bachelor graduates agreed, 10 percent were neutral and 56 percent did not agree.
- To the proposition "I am thinking about the possibility to work abroad not necessarily work requiring high education":
  - after 6 months of graduation (total of 798 respondents): 18 percent of bachelor graduates agreed, 8 percent were neutral and 74 percent did not agree;
  - after 12 months of graduation (total of 798 respondents): 17 percent of bachelor graduates agreed, 8 percent were neutral and 75 percent did not agree.

Thus, the educated youth of Lithuania, who represent a relevant sample for a more in-depth analysis of migration research was chosen as the focus group. The sample size was calculated using Cochran's formula. Cochran's (1977) sample size for a finite population is given in Equation (2.2) (in Tejada, Raymond and Punzalan, 2012).

$$n = \frac{n_0}{1 + \frac{n_0}{N}} \quad ; \tag{2.2}$$

here n – sample size; N – population size; n_0 – component is described in Equation (2.3).

$$n_0 = \frac{z^2 p(1-p)}{e^2} \quad ; \tag{2.3}$$

here z – standard normal variable; p – degree of variability; e – margin of error.

Therefore, incorporating Equation (2.3) into (2.2), Cochran's formula can be written as the expression in Equation (2.4).

$$n = \frac{z^2 p(1-p)N}{z^2 p(1-p) + N(e)^2} \quad ; \tag{2.4}$$

Knowing the population, taking the confidence level of 95 percent, standard normal variable of 1.96 (value at 95 percent confidence level), margin of error of 0.05, degree of variability of 50 percent, the necessary sample size can be calculated. There were 108,083 Lithuanian students enrolled in bachelor's or equivalent level of education in 2015 (Eurostat, 2017). The calculation is given in Equation (2.5).

$$n = \frac{z^2 p(1-p)N}{z^2 p(1-p) + N(e)^2} = \frac{1.96^2 \times 0.5(1-0.5) \times 108{,}083}{1.96^2 \times 0.5(1-0.5) + 108{,}083(0.05^2)} = 383 \tag{2.5}$$

Cochran's formula proposes a sample of 383 students. Thus, the minimum sample of 383 students is required for this research.

Data collection was conducted by sending request to fill an online questionnaire to undergraduate students enrolled in Lithuanian universities and colleges.

The theoretical, research methodological and empirical analysis parts of this dissertation are combined in Figure 2.2. The theoretical part identifies two broad groups of international migration factors, i.e. socio-economic migration factors and risk, consisting of general risk preference and international migration risk attitudes, associated with the prospect theory of behavioural economics.

The main socio-economic migration factors for international migration decision were revealed by online questionnaires and grouped using principal components analysis, in which allowed to identify the independent variables of socio-economic migration factors for the further research of their impact on international migration decision.

The prospect theory of behavioural economics along with its components of risk attitudes were presented in sub-chapter 1.2. The eliciting method is described in sub-chapter 2.2.2

The variable of general risk preference, which was already analysed by other authors, is included in the analysis as well, enabling to compare the explanation power between potential migrants in general and migration-specific risk attitudes.

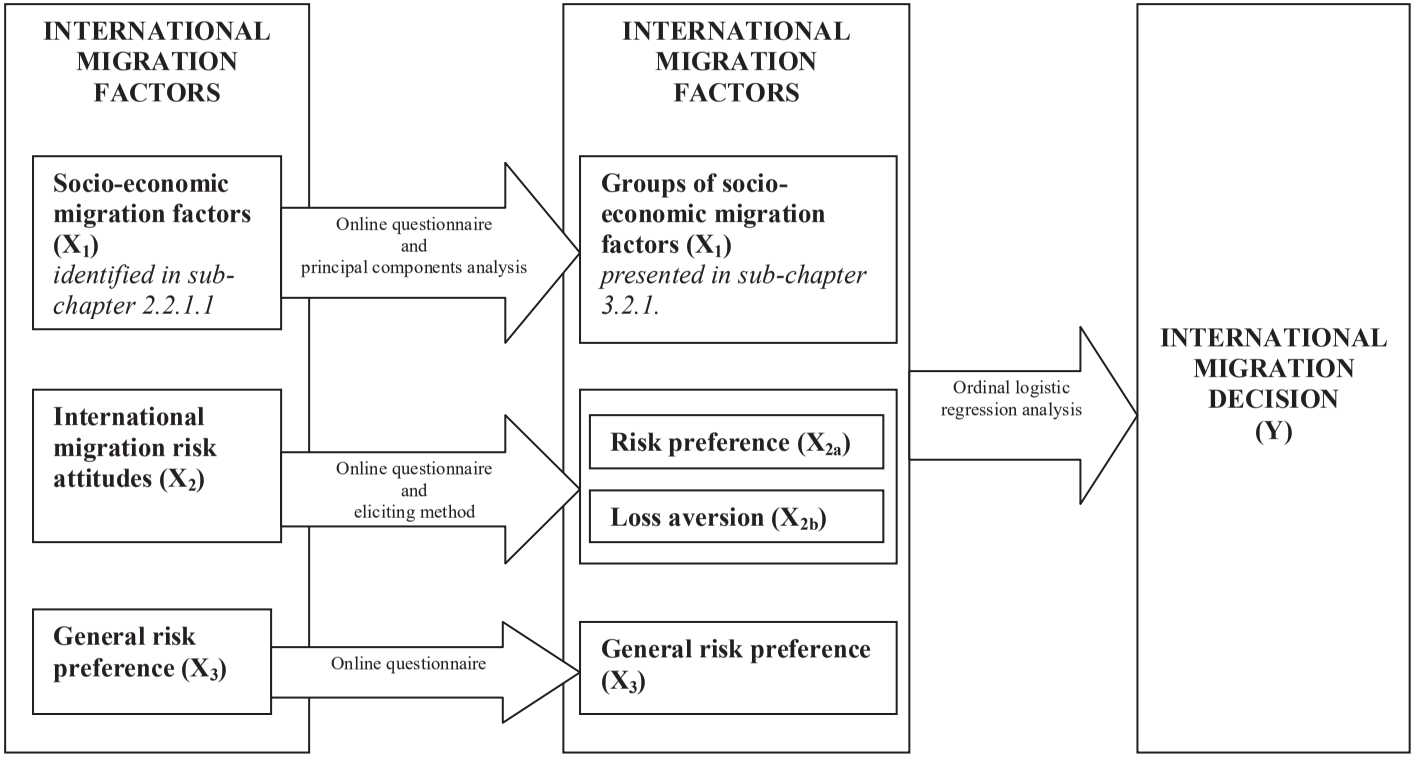


Figure 2.2. Structure of the theoretical, methodological and empirical parts of the dissertation (designed by the author)

2.2. The design of empirical research methodology for evaluating the impact of migration factors on international migration decision from the perspective of behavioural economics

2.2.1. Characterisation of socio-economic migration factors

2.2.1.1. Identification of socio-economic migration factors

The socio-economic factors were selected based on a previously conducted study (Kumpikaitė-Valiūnienė, Žičkutė, 2017) with the sample of 1,586 Lithuanian emigrants, 146 whereof had been students. The questionnaire included push and pull factors related with the economic and non-economic situation in the origin and destination countries. In the case of Lithuanian students, the results of push factors by importance can be listed with an indication of percentage of total sample of students, who chose the reason of emigration, as following: too low wages in Lithuania (43.8 percent), family reasons (32.2 percent), study and education system (28.8 percent), personal life conditions (25.3 percent), wage differences and income inequality (24.0 percent), wish for changes (22.6 percent), unemployment level and too low employment opportunities (19.2 percent), price politics of products (17.8 percent), political corruption in Lithuania (15.8 percent), a low level of Lithuania's economic development (11.6 percent), tax system and the burden of it (11.6 percent), not enough new work places (10.3 percent), person's unemployment (5.5 percent), environmental conditions (5.5 percent), intolerance of personal attitudes, discrimination (5.5 percent), social conditions (4.8 percent), the level of health care (4.1 percent), not enough cultural centres, museums (0.7 percent) and intention to spread culture and religion (0.0 percent). The graphical distribution and the importance of push factors is provided in Figure 2.3.

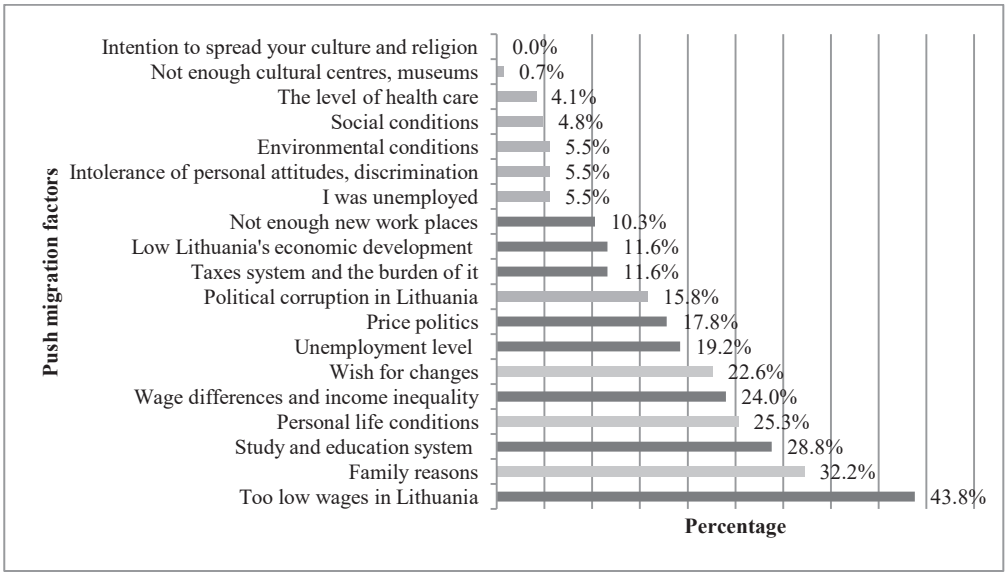


Figure 2.3. Push migration factors
(designed by the author)

Based on the described research results, this research only considered those migration factors which were chosen by at least 10.0 percent of respondents. The aforementioned study (see Figure 2.3) shows that economic and social factors are of highest importance to students (except for the political situation). Further, the study analyses the socio-economic migration factors in more detail, excluding family reasons, personal life conditions and wish for changes; these factors are important but due to many psychological aspects and for measurement in questionnaire modelling, the decision was made to not research them in the dissertation leaving their analysis for future research. The scope of this dissertation is the application of behavioural economics prospect theory's parameters in the analysis of international migration decision, i.e. risk preference and loss aversion. Thus, highlighted factors (see Figure 2.3, dark grey colour) were regrouped into five groups: (1) wages and their taxes, (2) inequality of income distribution, (3) costs of living, (4) economic development, and (5) labour market (see Table 2.1).

Table 2.1. Identified groups of socio-economic push migration factors (designed by the author)

Push migration factors	Generalized push migration factors
Low wages in Lithuania	Wages and their taxes
Tax system and the burden of it	
Wage differences and income inequality	Inequality of income distribution
Price politics	Costs of living
Study and education system	Economic development
Low economic development of Lithuania	
Unemployment level	Labour market
Not enough new work places	

Each general group of migration factors is further discussed in greater detail with the values of current situation.

Wages and their taxes

Wage is one of the most important factors when making the migration decision. It is important to analyse not only the level of wage because its taxation[5] plays an important role as well. The gross wage with the additional information of net wage is provided in Table 2.2.

The database in Karjera.lt (2016) provides the ***average wage*** of bachelor graduates which equals to EUR 508 after 6 months of graduation. As the data at the beginning of work is not provided, the approximate value of EUR 500 is taken. In addition, wage taxes were taken in consideration when providing the value of net wage.

[5] The main focus in this dissertation is on wage, i.e. the separate role of taxation is not analysed except when considering wage taxes, providing gross and net wage values.

Table 2.2. The statistics of gross and net wage indicators after graduation (designed by the author in accordance with Karjera.lt, 2016)

Indicators	The most current value
Gross wage	EUR 500 (2015)
Net wage*	EUR 417,50 (2017)

Note: * for calculations of net wage, the taxes up to 2017.02.19 are used

Income inequality

To measure income inequality, a S80/S20 ratio and percentage of middle class household was chosen. The S80/S20 ratio (or the income quintile share ratio) is calculated as a division between the top and bottom quintiles, i.e. between the population who receive 20 percent of the highest and 20 percent of the lowest income (Eurostat, 2016b). The definition of middle class is "the number of households with between 75.0% and 125% of median income" (Passport, 2017). Indicators with the most current available value are provided in Table 2.3.

Table 2.3. Income inequality indicators (designed by the author in accordance with Eurostat, 2016c; Passport, 2017)

Indicators	The most current value
S80/S20 ratio (less than 65 years old)	8.5 (2015)
Middle class households (% of total)	26.3 (2016)

The most recent value of ***S80/S20 ratio*** of people less than 65 years old is 8.5 (Eurostat, 2016c). The percentage statistics of country's ***middle class households*** equals to 26.3 percent (Passport, 2017).

Costs of living

The results of the previously described quantitative survey showed the importance of product price politics as a migration factor (17.8 percent). This migration reason can be measured by various indicators; understandably, the most easily understandable indicator of different expenditure categories was chosen. The percentage of consumer expenditure on food and non-alcoholic beverages, housing, and leisure and recreation is provided in Table 2.4 and a more detailed list of consumer expenditures and calculations is given in Annex 3.

Table 2.4. Consumers' expenditure on food and non-alcoholic beverages, housing, leisure and recreation indicators (designed by the author in accordance with Consumer Expenditure, 2016, see Annex 3)

Indicators	The most current value
Consumer expenditure on food and non-alcoholic beverages, and on housing	39% (2015)
Consumer expenditure on leisure and recreation	8% (2015)

Yearly consumer expenditure is divided into twelve categories: food and non-alcoholic beverages, alcoholic beverages and tobacco, clothing and footwear, housing, household goods and services, health goods and medical services,

transport, communications, leisure and recreation, education, hotels and catering, and miscellaneous goods and services. Firstly, the categories of basic necessity such as food and housing was chosen and secondly, the possibility of expenditure on leisure and recreation. Consumer Expenditure (2016) provides the amount of expenditure per capita of an average person who has disposable income equal to EUR 672. The average ***spending on housing, food and non-alcoholic beverages*** from total spending equals to 39 percent while ***consumer expenditure on leisure and recreation*** equals to 8 percent in 2015 (see Annex 3).

Labour market

As the results of the previously discussed survey of migration reasons present, approximately every fifth student identifies the unemployment level and limited employment opportunities as a reason for migration (19.2 percent) and one in ten students named not enough new work places (10.3 percent) as cause for migration. Considering the importance of these reasons, it is especially important look at not only the general situation in the labour market in the country but to analyse quality of it as well. Therefore, as it is provided in Table 2.5, along with such general labour market indicators as unemployment rate and proportion of high-school graduates who are registered in the territorial labour exchange one year after graduation, employed individuals who are at risk of poverty, employment in knowledge-intensive activities and self-employed people were additionally considered for a more comprehensive understanding of individual migration choices.

Table 2.5. Labour market indicators
(designed by the author in accordance with *2016–2018 metų strateginis veiklos planas*, 2016, *At-risk-of-poverty rate of persons aged 18 and older*, 2017, *Lietuvos inovacijų plėtros 2014-2020 metų programa*, 2013, Statistics Lithuania, 2016a, 2016b, 2017)

Indicators	The most current value
Unemployment rate	7.9% (2016)
Proportion of high-school graduates who are registered in territorial labour exchange one year after graduation	5.8% (2015)
At–risk-of-poverty rate of employed persons aged 18 and older	9.9% (2015)
Employment in knowledge-intensive activities (business industries) as percentage of total employment	9.3% (2015)
Self-employed people (in comparison with all employed inhabitants)	11.1% (2015)

Unemployment rate is taken of the entire year of 2016 which is equal to 7.9 percent (Statistics Lithuania, 2017). ***The proportion of high-school graduates who are registered in territorial labour exchange one year after graduation*** is equal to 5.8 percent (*2016−2018 metų strateginis veiklos planas*, 2016, p. 15). According to data provided by Statistics Lithuania***, at–risk-of-poverty rate of employed persons aged 18 and older*** equals to 9.9 percent (*At-risk-of-poverty rate of persons aged 18 and older*, 2017).

Employment in knowledge-intensive activities in business industries as a percentage of total employment is calculated by the formula provided in Equation (2.6).

$$E_{KIA\_BI} = \frac{Employed\ persons_{KIA\_BI}}{Total\ employment} \times 100\%\,, \tag{2.6}$$

here $_{KIA\_BI}$ – knowledge-intensive activities in business industries; for a list of activities see Annex 4.

According to the EU Labour Force Survey data, knowledge-intensive activities can be described as "all NACE Rev.2 industries at 2-digit level where at least 33% of employment has a higher education degree (ISCED 5-8)" (Hugo, Es-Sadki and Kanerva, 2016, p. 93). The value equals to 9.3 percent in 2015 (*Lietuvos inovacijų plėtros 2014–2020 metų programa*, 2013, p. 22).

Self-employed people in comparison with all employed inhabitants equals to 11.1 percent of people working independently (calculated by the author in accordance with Statistics Lithuania, 2016a, 2016b).

Economic development

The group of migration factors linked to economic development is elaborated in the country's priority to create a favourable environment for economic growth and a high added value-oriented and integral economy. Each economy can be categorised into one of three development stages or transition period between the stages: (1) factor-driven economy, (2) efficiency-driven economy, and (3) innovation-driven economy (Schwab, 2014). At each stage of development, the key factors are identified. The Global Competitiveness Index identifies Lithuania's economy at the transition stage of development from an efficiency-driven to an innovation-driven economy (Schwab, 2014). The third stage of development, i.e. the innovation-driven economy leads the country towards the possibility to sustain high wages and standard of living. To achieve this purpose, companies need to be able to compete in the market producing new goods, which requires to satisfy the conditions of (1) business sophistication, and (2) innovation. The indicator for business sophistication was chosen as an evaluation of ***nature of competitive advantage*** and for innovation – ***universities-industries collaboration in R&D*** were taken from the global competitiveness index (Schwab, 2014).

A number of enterprises per 1,000 population is chosen as an indicator of expressing the results of promotion of favourable conditions for entrepreneurship and business development. In accordance with the National Progress Programme for Lithuania for the period 2014–2020, a high added-value oriented and integral economy is identified as the priority. The first objective is to create the value oriented networking towards the global market. The task to create cooperation between science, studies and business was chosen and expressed with an indicator of university-industry collaboration in R&D. The second objective is formulated as to promote business productivity and development of innovative business with the task to create the demand of innovations and to promote the creation of products and services.

A brief explanation of the chosen indicators of economic development is provided below with the summary of the most current values in Table 2.6.

Table 2.6. Economic development indicators
(designed by the author in accordance with Schwab, 2014; Statistics Lithuania, 2016c, 2016d)

Indicators	Current value
A number of enterprises per 1,000 population	28 (2016)
University-industry collaboration in R&D	4.6 (2014)
Nature of competitive advantage	3.5 (2014)

A number of enterprises per 1,000 population equals to 28 (calculated by the author in accordance with Statistics Lithuania (2016c, 2016d).

The data regarding the ***nature of competitive advantage [Business sophistication]*** was taken from an executive opinion survey asking the question "What is the competitive advantage of your country's companies in international markets based upon?" A 7-point Likert scale was used, where 1 describes "the low-cost labor or natural resources" and 7 denotes "unique products and processes". The newest survey results showed a Lithuanian value of 3.5 in 2014 (Schwab, 2014, p. 523).

The extent of ***university-industry collaboration in R&D [Innovation]*** was measured by an executive opinion survey asking the question "In your country, to what extent do people collaborate and share ideas in between companies and universities/research institutions?" (Schwab, 2014). A 7-point Likert scale was used where 1 means "not at all" and 7 means "to a great extent". The current known value for the situation of universities-industries collaboration in R&D equaled to 4.6 in 2014 (Schwab, 2014, p. 533).

In accordance with identified tasks of the country's socio-economic situation in Figure 2.4, the importance each task for respondents' life quality was measured using a 7-point Likert scale (see question No. 16 in Annex 5). Then, the respondents were asked to evaluate the current socio-economic situation of Lithuania and their expectations of future socio-economic situation in Lithuania in 2020 (see questions No. 17 and 18 in Annex 5). Factors used in the mentioned questions are the same but, additionally to the country's current situation, more detailed information was provided seeking to equal the knowledge of respondents who are not very familiar with the current situation in Lithuania. Also, the below-listed 13 socio-economic factors are analysed by using principal component analysis. Respondents measured each proposition using a 7-point Likert scale:

Wages and their taxes were measured as gross wage value taken from Table 2.2. As some respondents might be unfamiliar with the tax deductions, the net wage amount was provided additionally (see Table 2.2):

MIGRATION FACTORS	COUNTRY'S SOCIO-ECONOMIC SITUATION		EVALUATION INDICATORS
	PRIORITY	PURPOSES/TASKS	
Wages and their taxes	Security of inhabitants' welfare through the wage and its proper taxation	○ To embody appropriate conditions to get a sufficient wage	○ Gross and net wage
Income inequality	Security of social coverage of inhabitants' welfare	○ To reduce inequality of income distribution ○ To enhance the amount of middle-class households	○ S80/S20 ratio (less than 65 years old) ○ Middle class households (% of total)
Costs of living	Creation of conditions for proper expenses distribution between necessity and leisure/recreation products and services	○ To lower consumers' expenditure on food and housing ○ To enhance financial possibilities for consumer expenditure on leisure and recreation	○ Consumer expenditure on food and non-alcoholic beverages, and housing ○ Consumer expenditure for leisure and recreation
Labour Market	Enlargement of involvement in labour market and encouragement of labour force demand for high quality labour places	○ To reduce the unemployment level ○ To provide opportunities for each inhabitant to find a job by his qualification ○ To reduce the number of inhabitants who are employed but are in risk of poverty ○ To enhance employment in knowledge-intensive activities ○ To increase self-employment	○ Unemployment rate ○ Proportion of high-school graduates who are registered in territorial labour exchange one year after graduation ○ At-risk-of-poverty rate of employed persons aged 18 and older ○ Employment in knowledge-intensive activities (business industries) as percentage of total employment ○ Self-employed people (in comparison with all employed inhabitants)
Economic development	Favourable environment for economic growth and of the high added value-oriented, integral economy	○ To create favourable conditions for entrepreneurship and business development ○ To create cooperation between science, studies and business ○ To become an innovation-driven economy	○ A number of enterprises per 1,000 population ○ University-industry collaboration in R&D ○ Nature of competitive advantage (low-cost labour or natural resources vs. unique products and processes)

Figure 2.4. Socio-economic migration factors and indicators (designed by the author)

X_W = *"17.1. After graduation, an employed bachelor earns approximately EUR 500 (after taxes deduction – EUR 418)".*

Income inequality consists of two indicators which are shown in Table 2.3:

X_{IE} = *"17.2. The income of 20 percent of richest people is 8.5 times higher in comparison with 20 percent of poorest people";*

X_{MCH} = *"17.3. The middle-class households consist of 26.3 percent country's population".*

Costs of living consist of two indicators which given in Table 2.4:

X_{EF} = *"17.9. A person spends approximately 39 percent of his/her earnings on food and housing";*

X_{EL} = *"17.10. A person spends approximately 8 percent of his earnings for leisure and relaxation".*

Labour market consists of five indicators with statistics explained in Table 2.5:

X_{UL} = *"17.4. Unemployment level is 7.9 percent";*

X_{ULG} = *"17.5. After one year of graduation, 5.8 percent of bachelors are registered in labour exchange";*

X_{RP} = *"17.6. There is 9.9 percent of working people under poverty risk";*

X_{KIA} = *"17.7. Employment level in knowledge-intensive business activities equals to 9.3 percent";*

X_{SE} = *"17.8. Self-employed people comprise 11.1 percent of all working people".*

And the last group of factors – **Economic development** – consists of three indicators with quantification provided in Table 2.6:

X_{NE} = *"17.11. There are 28 of enterprises per 1,000 people";*

X_{UIC} = *"17.12. Science, studies and business collaboration is evaluated by 4.6 point (7-point Likert scale was used, where 1 = any collaboration and 7 = high collaboration");*

X_{CA} = *"17.13. Nature of country's competitive advantage is evaluated by 3.5 point (7-point Likert scale was used, where 1 = competitive advantage is cheap labour force and 7 = unique//innovative services and products development and manufacture").*

2.2.1.2. Describing the stages of grouping and reliability of socio-economic migration factors

Qualitative research provided in the previous subchapter allowed to identify the most relevant socio-economic migration factors. In order to avoid correlation between the distinguished independent factors in the regression analysis, principal component analysis can reduce the number of independent variables, grouping them into appropriate similarity groups. Thus, the stages of grouping socio-economic migration factors are presented and Cronbach's alpha application testing the reliability of each set of variables is explained.

Janilionis, Morkevičius and Rauleckas (2008) distinguish two types of factor analysis methods: (1) investigative and (2) supporting. From the one side, preliminary migration factor groups are already presented in the previous chapter

indicating the need of solving the supporting task. From the other side, the investigative study can show a relationship between some factors which was not distinguished in the theoretical part thus it was not considered by the author that the factors can be grouped differently. Therefore, an investigative factor analysis is conducted, following the stages presented in Figure 2.5.

Following Janilionis et al. (2008), there are 7 stages of factorial analysis.

Research planning stage

Research planning consists of descriptions of variables and sample.

The verification of data suitability for factor analysis

The verification of data suitability for factor analysis consists of (1) Kaiser-Meyer-Olkin statistics (KMO), (2) R-matrix, and (3) measure of sampling adequacy (MSA).

KMO statistics provides information on whether the analysed variables can be grouped into factor groups. Janilionis et al. (2008) identify that factorial analysis is not suitable for variables which KMO is less than 0.6.

Bartlett's test of sphericity shows if the analysed variables have significant correlation. Thus the null and alternative hypotheses need to be tested:

H_0: *"All observed variables are not correlated"*

H_a: *"Between observed variables there are variables which correlate significantly"* (Janilionis et al., 2008).

Janilionis et al. (2008) recommend that the suitability of each independent factor for factorial analysis should be tested using MSA statistics the value of which should be no less than 0.5. Otherwise, factorial analysis cannot be used for analysis.

The selection of factors contradistinction method

Janilionis et al. (2008) separate factorial analysis methods into two groups. The first group of methods (principal axis factoring, least-squares, maximum-likelihood, etc.) have the assumption that only a part of total variance can be explained by analysed factors. Conversely, factors which are identified by the principal components method explain total variance of the observed variables. As this dissertation is filling the gap of the impact of migration factors in relation with prospect theory, there is no need to analyse the specificity of each socio-economic variable. Therefore, the principal components method is applied. Each distinguished component can be written in the form provided in Equation (2.7).

$$C_i = a_{i1}X_1 + a_{i2}X_2 + \cdots + a_{in}X_n; \tag{2.7}$$

here C_i – i-component; a_{ij} – the weight of i-component for j-variable, i.e. correlation coefficient between j-variable and i-component; X_l – j-variable value.

The estimation of components quantity

The quantity of factors is identified using Eigenvalues which are higher than 1 ($\lambda > 1$) by Kaiser criterion. An interpretation of component weights is given in Table 2.7.

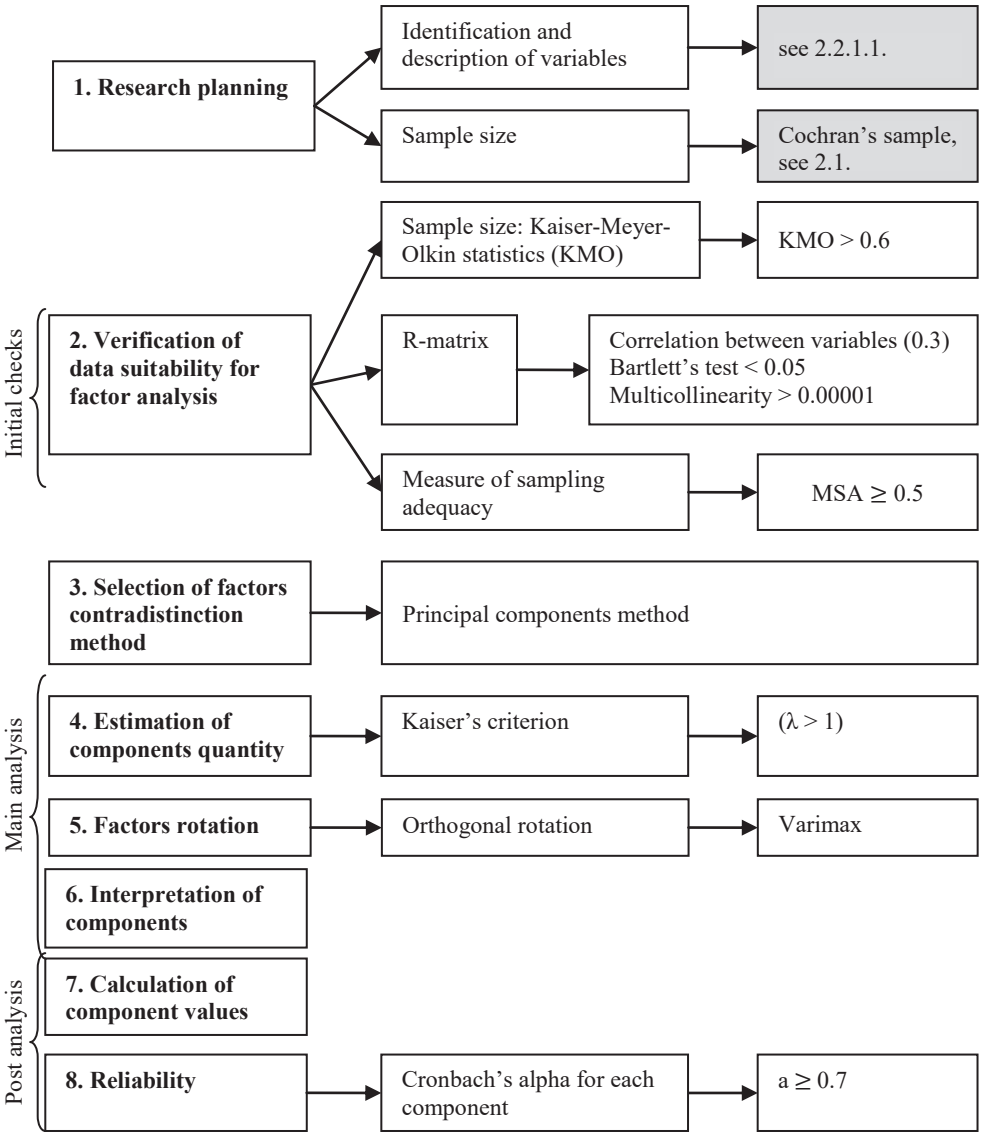


Figure 2.5. Stages of factorial analysis
(designed by the author in accordance with Field, 2013, Janilionis et al., 2008)

The stage of factors rotation

More apparent variables attribution to components can be obtained by rotation. In order to guarantee the condition that there was no correlation between components, factors need to be rotated by 90 degrees. Therefore, the orthogonal Varimax rotation was chosen for analysis.

Table 2.7. An interpretation of component weights (Janilionis et al., 2008)

Component weight, a_{ij}	Interpretation
$\lvert a_{ij} \rvert \geq 0.6$	Component C_i and variable X_i are related with strong connection
$0.3 \leq \lvert a_{ij} \rvert < 0.6$	Component C_j and variable X_i are related with connection
$\lvert a_{ij} \rvert < 0.3$	No connection identified between component C_i and variable X_i

Components interpretation

Components are described in the 3rd part of this dissertation after attributing the variables to different components.

Calculation of component values

In the last stage of analysis, the mean values of components are calculated for further research, i.e. the impact of migration factors on the international migration decision. In addition, ***reliability analysis*** using Cronbach alpha is conducted, allowing to check the internal consistency reliability. Cronbach's alpha estimation formula is provided in Equation (2.8).

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K} \sigma_{Y_i}^2}{\sigma_X^2}\right); \tag{2.8}$$

here K – the number of items in the measure; σ_X^2 – the variance (square of standard deviation) of the observed total scores; $\sigma_{Y_i}^2$ – the observed variance for item i (Bhattacherjee, 2012, pp. 57–58).

The reliability of internal consistency is suitable when Cronbach alpha value is higher than 0.7 (Pakalniškienė, 2012).

2.2.2. Characterisation of risk attitudes

2.2.2.1. Description of methodology for the quantification of risk attitudes

The steps of building methodology to quantify the parameters of risk attitudes are summarised in Figure 2.6. As the first step, Tanaka, Camerer and Nguyen's (2010) elicitation instrument framework was chosen as the base for designing the instrument for quantifying risk attitudes because the authors proposed an experimental design which allows to obtain the parameters of prospect theory (Campos-Vazquez, Cuilty, 2014). The second step encompasses a redesign of eliciting method of Tanaka et al. (2010) for the context of international migration. Finally, the last step provides the guidelines of risk attitude parameter elicitation. The dissertation provides a more detailed review regarding the application of the

eliciting method created by Tanaka et al. (2010) into international migration context as well as the elicitation of risk attitude parameters.

The application of eliciting method in the international migration context

The application of eliciting method created by Tanaka et al. (2010) in the international migration context can be divided into three sub-steps: (1) design of framework structure, (2) parameter identification, including probabilities and wage values of origin and destination countries, and (3) if necessary, consideration of other important circumstances.

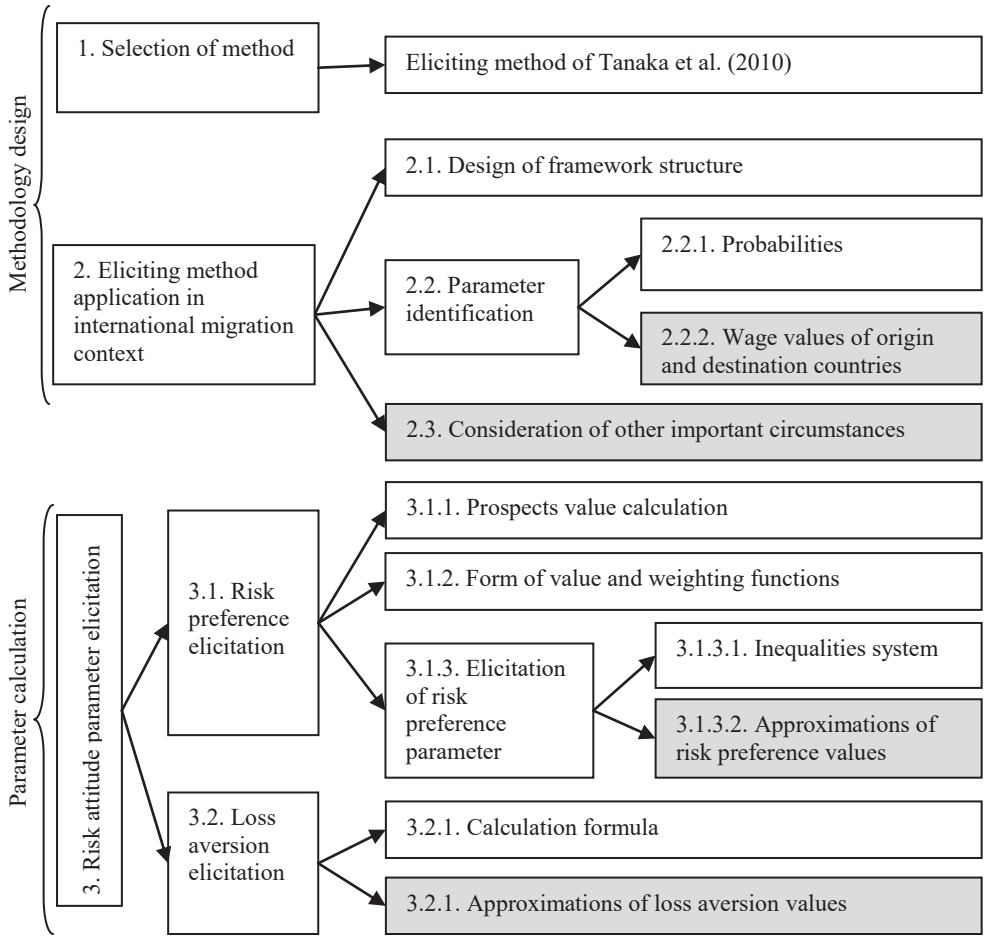


Figure 2.6. Steps of risk attitude quantification by applying an eliciting method (designed by the author)

Original Tanaka et al. (2010) framework consists of two lottery choices with three different series and two different components of choices in each series, i.e. (1) riskless component and (2) risky component. Meanwhile, the framework redesigned by the author of this dissertation for migration research, which is provided in Table 2.8, consists of two options as well, i.e. to stay in the origin region/country (decision A) or to migrate to other region/country (decision B).

Table 2.8. Three series of pair-wise migration decision choices (designed by the author)

No. (=n)	Decision A: staying				Decision B: migrating			
	(1)	OR	(2)		(1)	OR	(2)	
	p_A, %	x_A, €	q_A, %	y_A, €	p_B, %	x_B, €	q_B, %	y_B, €
Series 1 (=S1)								
	$\boldsymbol{p_{S1:A}}$	$\boldsymbol{x_{S1:A}}$	$\boldsymbol{q_{S1:A}}$	$\boldsymbol{y_{S1:A}}$	$\boldsymbol{p_{S1:B}}$	$\boldsymbol{x_{S1:B}}$	$\boldsymbol{q_{S1:B}}$	$\boldsymbol{y_{S1:B}}$
1.	$p_{S1:A}$	$x_{S1:A}$	$q_{S1:A}$	$y_{S1:A}$	$p_{S1:B}$	$(x_{S1:B})_{n=1}$	$q_{S1:B}$	$y_{S1:B}$
2.	$p_{S1:A}$	$x_{S1:A}$	$q_{S1:A}$	$y_{S1:A}$	$p_{S1:B}$	$(x_{S1:B})_{n=2}$	$q_{S1:B}$	$y_{S1:B}$
...	$p_{S1:A}$	$x_{S1:A}$	$q_{S1:A}$	$y_{S1:A}$	$p_{S1:B}$	$(x_{S1:B})_{n=\cdots}$	$q_{S1:B}$	$y_{S1:B}$
n_{n-1}	$p_{S1:A}$	$x_{S1:A}$	$q_{S1:A}$	$y_{S1:A}$	$p_{S1:B}$	$(x_{S1:B})_{n=n_{n-1}}$	$q_{S1:B}$	$y_{S1:B}$
n_n	$p_{S1:A}$	$x_{S1:A}$	$q_{S1:A}$	$y_{S1:A}$	$p_{S1:B}$	$(x_{S1:B})_{n=n_n}$	$q_{S1:B}$	$y_{S1:B}$
Series 2 (=S2)								
	$\boldsymbol{p_{S2:A}}$	$\boldsymbol{x_{S2=S1:A}}$	$\boldsymbol{q_{S2:A}}$	$\boldsymbol{y_{S2:A}}$	$\boldsymbol{p_{S2:B}}$	$\boldsymbol{x_{S2:B}}$	$\boldsymbol{q_{S2:B}}$	$\boldsymbol{y_{S2=S1:B}}$
1.	$p_{S2:A}$	$x_{S2:A}$	$q_{S2:A}$	$y_{S2:A}$	$p_{S2:B}$	$(x_{S2:B})_{n=1}$	$q_{S2:B}$	$y_{S2:B}$
2.	$p_{S2:A}$	$x_{S2:A}$	$q_{S2:A}$	$y_{S2:A}$	$p_{S2:B}$	$(x_{S2:B})_{n=2}$	$q_{S2:B}$	$y_{S2:B}$
...	$p_{S2:A}$	$x_{S2\,A}$	$q_{S2:A}$	$y_{S2:A}$	$p_{S2:B}$	$(x_{S2:B})_{n=\cdots}$	$q_{S2:B}$	$y_{S2:B}$
n_{n-1}	$p_{S2:A}$	$x_{S2:A}$	$q_{S2:A}$	$y_{S2:A}$	$p_{S2:B}$	$(x_{S2:B})_{n=n_{n-1}}$	$q_{S2:B}$	$y_{S2:B}$
n_n	$p_{S2:A}$	$x_{S2:A}$	$q_{S2:A}$	$y_{S2:A}$	$p_{S2:B}$	$(x_{S2:B})_{n=n_n}$	$q_{S2:B}$	$y_{S2:B}$
Series 3 (=S3)								
	$\boldsymbol{p_{S3:A}}$	$\boldsymbol{x_{S3:A}}$	$\boldsymbol{q_{S3:A}}$	$\boldsymbol{-y_{S3:A}}$	$\boldsymbol{p_{S3:B}}$	$\boldsymbol{x_{S3:B}}$	$\boldsymbol{q_{S3:B}}$	$\boldsymbol{-y_{S3}}$
1.	$p_{S3:A}$	$(x_{S3:A})_{n=1}$	$q_{S3:A}$	$-(y_{S3:A})_{n=1}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=1}$
2.	$p_{S3:A}$	$(x_{S3:A})_{n=2}$	$q_{S3:A}$	$-(y_{S3:A})_{n=2=1}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=2=1}$
3.	$p_{S3:A}$	$(x_{S3:A})_{n=3}$	$q_{S3:A}$	$-(y_{S3:A})_{n=3=2}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=3=2}$
4.	$p_{S3:A}$	$(x_{S3:A})_{n=4=3}$	$q_{S3:A}$	$-(y_{S3:A})_{n=4=3}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=4}$
5.	$p_{S3:A}$	$(x_{S3:A})_{n=5}$	$q_{S3:A}$	$-(y_{S3:A})_{n=5}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=5=4}$
6.	$p_{S3:A}$	$(x_{S3:A})_{n=6=5}$	$q_{S3:A}$	$-(y_{S3:A})_{n=6=5}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=6=5}$
7.	$p_{S3:A}$	$(x_{S3:A})_{n=7=6}$	$q_{S3:A}$	$-(y_{S3:A})_{n=7=6}$	$p_{S3:B}$	$x_{S3:B}$	$q_{S3:B}$	$-(y_{S3:B})_{n=7=6}$

Prospect combination (x, p; y, q) identifies two prospects, i.e. (1) income increase by amount x with probability p and (2) y with probability q (Kahneman, Tversky, 1979).

For choices presentation, an additional pie chart visualisation is used (see Abdellaoui, Bleichrodt and L'Haridon, 2008, p. 262; Abdellaoui, Bleichrodt and Paraschiv, 2007, p. 1672; Booij, Van Praag and Van De Kuilen, 2009, pp. 13, 38–43; Bougherara, Gassmann and Piet, 2011, p. 7; He, Guan, Kong, Cao and Peng, 2014, p. 900).

Probabilities providing riskless and risky choices are left the same as in the original framework of Tanaka et al. (2010), i.e.:

- in Series 1: ($p_{S1:A}$) = 30 percent and ($q_{S1:A}$) = 70 percent for decision A and ($p_{S1:B}$) = 10 percent and ($q_{S1:B}$) = 90 percent for decision B in Series 1;

- in Series 2: ($p_{S2:\,A}$) = 90 percent and ($q_{S2:\,A}$) = 10 percent for decision A and ($p_{S2:\,B}$) = 70 percent and ($q_{S2:\,B}$) = 30 percent for decision B in Series 2;
- in Series 3: ($p_{S3:\,A}$) = 50 percent and ($q_{S3:\,A}$) = 50 percent for decision A and ($p_{S3:\,B}$) = 50 percent and ($q_{S3:\,B}$) = 50 percent for decision B in Series 3.

The increase in wages is needed to be carefully designed encompassing a particular combination of parameter intervals in each decision row. Also, income values need to satisfy the following relationship of wage increase:

- in Series 1: ($x_{S1:\,A}$) > ($y_{S1:\,A}$) in origin country and ($x_{S1:\,B}$) > ($y_{S1:\,B}$) in country abroad ($x_{S1:\,B}$) > ($x_{S1:\,A}$);
- in Series 2: ($x_{S2:\,A}$) = ($x_{S1:\,A}$) > ($y_{S2:\,A}$) in origin country and ($x_{S2:\,B}$) > ($y_{S2:B}$) = ($y_{S1:\,B}$) in country abroad;
- in Series 3: ($x_{S3:\,A}$) > ($-y_{S3:\,A}$) in origin country and ($x_{S3:\,B}$) > ($-y_{S3:\,B}$) in country abroad.

When finalising the application of this eliciting method in the international migration context, other important circumstances should be considered. For example, the destination country, differences in prices and taxes between countries, employment, language discomfort, emigration costs, etc.

After designing the framework, it is possible to distinguish steps for eliciting risk attitude parameters.

Elicitation of risk attitude parameters

Series 1 and Series 2 (see Table 2.8) enable to calculate the value of risk preference. When the sum of probabilities is equal to 1 (or 100 percent) and the prospects are strictly positive or strictly negative (in this case strictly positive meaning an increase of income), the prospects evaluation can be represented by Equation (2.9).

$$V(x, p; y, q) = v(y) + \pi(p)*(v(x) - v(y)); \tag{2.9}$$

here $V(x, p; y, q)$ – the value of prospects; $v(x)$ and v(y) – subjective value of outcomes x and y; $\pi(p)$ – decision weight, reflecting the impact of p on the overall value of the prospect (Kahneman, Tversky, 1979).

The subjective value of outcomes is measured by a piecewise power function, which is indicated as most suitable (Bui, 2009; Stott, 2006). Equations of the piecewise power function for values in the domain of gains and losses were already presented in Equation (1.10). Al-Nowaihi, Bradley and Dhami (2008, p. 337) state that "loss aversion implies that, not only λ > 1, but also $\alpha = \beta$" (see (1.10)). Thus, one parameter was left for risk preference measurement in the domain of gains and losses. The value function with one risk preference parameter is provided in Equation (2.10).

$$v(x) = \begin{cases} x^{\sigma} & if\ \ x \geq 0 \\ -\lambda(-x)^{\sigma} & if\ x < 0 \end{cases}; \tag{2.10}$$

here $v(x)$ – value function; σ – risk preference; λ – loss aversion.

The decision weight is expressed by using a weighting function provided in Equation (2.11) (Fehr-Duda, Epper, 2012, p. 578). Following the empirical evidence, the probability weighting function is taken with the same parameter for losses and gains (Al-Nowaihi et al., 2008) and the function form presented by Prelec (1998) due to the best fitting in models (Bui, 2009; in Stott, 2006).

$$\pi(p) = \exp\left(-(-\ln(p))^{\alpha}\right); \tag{2.11}$$

here $\pi(p)$ – probability weighting function; α – the degree of non-linearity in the probability weighting.

In line with Glöckner and Pachur (2012) who state that for relatively homogeneous population it is enough to choose one common risk preference parameter (σ) across gain and losses, a loss aversion parameter and a one-parameter weighting function were selected because adding more parameters in cumulative prospect theory does not provide higher predictive power. As the dissertation sample is relatively homogenous, i.e. students, this is one more reason for applying Equations (2.10) and (2.11).

Thus, the data collected using the framework visualised in Table 2.8, risk preference (σ) parameter can be calculated from the switching points of Series 1 and Series 2. Using the formula of prospects value calculation (see Equation (2.9)), consisting of a value function (see Equation (2.10)) and a weighting function (see Equation (2.11)), the inequalities system provided in Equation (2.12) needs to be satisfied.

In general, p_A, x_A, q_A, y_A, p_B, x_B, q_B, y_B are changeable parameters which could be applied for different migration contexts using the methodology presented in this chapter. However, the parameters need to be changed carefully following the satisfying combinations for particular intervals.

The values of risk preference (σ) which satisfy the inequalities system (see (2.12)) were calculated using the MATLAB software. Approximations of each possible value or risk preference (σ) by switching preference to Series 1 and Series 2 can be filled with values in the form provided in Table 2.9.

$$\begin{cases} (y_{S1:A})^{\sigma} + \exp(-(-\ln(p_{S1:A}))^{a})\left((x_{S1:A})^{\sigma} - (y_{S1:A})^{\sigma}\right) \\ \qquad > (y_{S1:B})^{\sigma} + \exp\left(-(-\ln(p_{S1:B}))^{a}\right)\left((x_{S1:B_{(n-1)}})^{\sigma} - (y_{S1:B})^{\sigma}\right) \\ (y_{S1:A})^{\sigma} + \exp\left(-(-\ln(p_{S1:A}))^{a}\right)\left((x_{S1:A})^{\sigma} - (y_{S1:A})^{\sigma}\right) \\ \qquad < (y_{S1:B})^{\sigma} + \exp\left(-(-\ln(p_{S1:B}))^{a}\right)\left((x_{S1:B_{(n)}})^{\sigma} - (y_{S1:B})^{\sigma}\right) \\ (y_{S2:A})^{\sigma} + \exp\left(-(-\ln(p_{S2:A}))^{a}\right)\left((x_{S2:A})^{\sigma} - (y_{S2:A})^{\sigma}\right) \\ \qquad > (y_{S2:B})^{\sigma} + \exp\left(-(-\ln(p_{S2:B}))^{a}\right)\left((x_{S2:B_{(n-1)}})^{\sigma} - (y_{S2:B})^{\sigma}\right) \\ (y_{S2:A})^{\sigma} + \exp\left(-(-\ln(p_{S2:A}))^{a}\right)\left((x_{S2:A})^{\sigma} - (y_{S2:A})^{\sigma}\right) \\ \qquad < (y_{S2:B})^{\sigma} + \exp\left(-(-\ln(p_{S2:B}))^{a}\right)\left((x_{S2:B_{(n)}})^{\sigma} - (y_{S2:B})^{\sigma}\right) \end{cases} \tag{2.12}$$

here $(y_{S1:\,A})$ and $(x_{S1:\,A})$ – wage increase in the origin country (from Series 1); $(p_{S1:\,A})$ – probability of wage increase in the origin country (from Series 1); $(y_{S1:\,B})$, $(x_{S1:\,B(n-1)})$ and $(x_{S1:\,B(n)})$ – wage increase abroad (from Series 1); $(p_{S1:\,B})$ – probability of wage increase abroad (from Series 1); $(y_{S2:\,A})$ and $(x_{S2:\,A})$ – wage increase in the origin country (from Series 2); $(p_{S2:\,A})$ – probability of wage increase in the origin country (from Series 2); $(y_{S2:\,B})$, $(x_{S2:\,B(n-1)})$ and $(x_{S2:\,B(n)})$ – wage increase abroad (from Series 2); $(p_{S2:\,B})$ – probability of wage increase abroad (from Series 2); σ – parameter of the curvature of power value function, i.e. risk preference; α – probability sensitivity parameter in Prelec's weighting function.

Table 2.9. Approximations of risk preference by switching preference to Series 1 and Series 2 (designed by the author)

		SERIES 1					
		1.	2.	...	n_{n-1}	n_n	N
SERIES 2	1.						
	2.						
	...						
	n_{n-1}						
	n_n						
	N						

Note: N - never switching decision

Eliciting the loss aversion parameter (λ), the data in Series 3 which encompasses the possibility of wage decrease is needed. Formula (2.13) is applied to calculate loss aversion.

$$\lambda = \frac{((x_{S3:A})_n \times \sigma) - \left((x_{S3:B}) \times \sigma\right)}{((y_{S3:A})_n \times \sigma) - ((y_{S3:B})_n \times \sigma)}\ ; \tag{2.13}$$

here λ – loss aversion parameter; $(x_{S3:\,A})_n$ – wage increase in the origin country; $(y_{S3:A})_n$ – wage decrease in the origin country; $(x_{S3:\,B})$ – wage increase abroad; $(y_{S3:\,B})_n$ – wage decrease abroad; σ – risk preference.

The results of loss aversion (λ) calculations by switching preference to Series 3 can be filled with values in the form provided in Table 2.10. The median value for further analysis can be calculated using the interval.

In summary, the general design of the methodology was presented, which can be applied for analysing internal or international migration in each country. The coloured steps in Figure 2.6 need to be reviewed and applied for the situation of each country. Thus, the next sub-chapter presents the methodology designed specifically for examining the case of Lithuanian youth, explaining the details of coloured steps in Figure 2.6.

Table 2.10. Approximations of loss aversion by switching preferences (designed by the author)

Switching question		σ =0.05		σ =0.10		σ =...		σ =1.50	
	interval	min	max	min	max	min	max	min	max
	value	median		median		median		median	
1	interval	-		-		-		-	
	value								
...	interval								
	value								
7	interval								
	value								
N	interval		-		-		-		-
	value								

Note: N – never switching decision

2.2.2.2. Identifying risk attitudes with a questionnaire

Wage values of origin and destination countries

Firstly, a simulation requires to provide the initial wage which can be expected in employment after graduation and the forming increase of the wage in a few years.

The task of choosing the wage interval needs to meet the reality as much as possible in order to get the most precise evaluation of risk attitudes from students. As there are no data regarding the expected wage for students to earn in their employment after graduation, the approximate value of EUR 500 is taken. In prospect theory, instead "/.../ of defining preferences over wealth, preferences are defined over changes with respect to a *flexible* reference point /.../" (Booij et al., 2009, p. 2).

Table 2.11. Changes of average monthly wage of bachelor graduates (designed and calculated by the author in accordance with *Absolventų, baigusių studijas 2011–2014 metais, karjeros stebėsenos lyginamoji analizė*, 2015, p. 10; Grigas, Leiputė, Ozolinčiūtė, Repečkaitė and Bužinskas, 2015; Karjera.lt, 2016)

	after 6 months, EUR	after 12 months, EUR	after 36 months, EUR	Δ in year, percent*	Δ in duration, percent* 6–12 months	1–3 year
2011	439	441	492	-	+0.5	+11.6
2012	435	444	509	-0.9	+2.1	+14.6
2013	447	462	541	+2.8	+3.4	+17.1
2014	471	491	589*	+5.4	+4.2	+19.9**
2015	508	532	652*	+7.9	+4.7	+22.6**

Note: * calculated by the author; ** by assumption that wage increase is similar to the previous year; - no data

Identifying the increase of wage in several years and making the assumption that it will keep increasing by similar percent as in previous years (see the last column in Table 2.11), the wage increase up to around EUR 652 could be expected. A change of approximately EUR 150 is taken when designing Series 1 and Series 2 in Table 2.8. Also, the change is reasonable when analysing average earnings in

Lithuania, where the total average earnings vary between EUR 627–681 comparing the age group including people younger than 30 years and total by age (see Figure 2.7). The remaining increase of EUR 38 in Series 1 and EUR 113 in Series 2 when a person stays in Lithuania are chosen to fit the requirements of framework intervals, i.e. the framework intervals were calculated in accordance with the value of EUR 150.

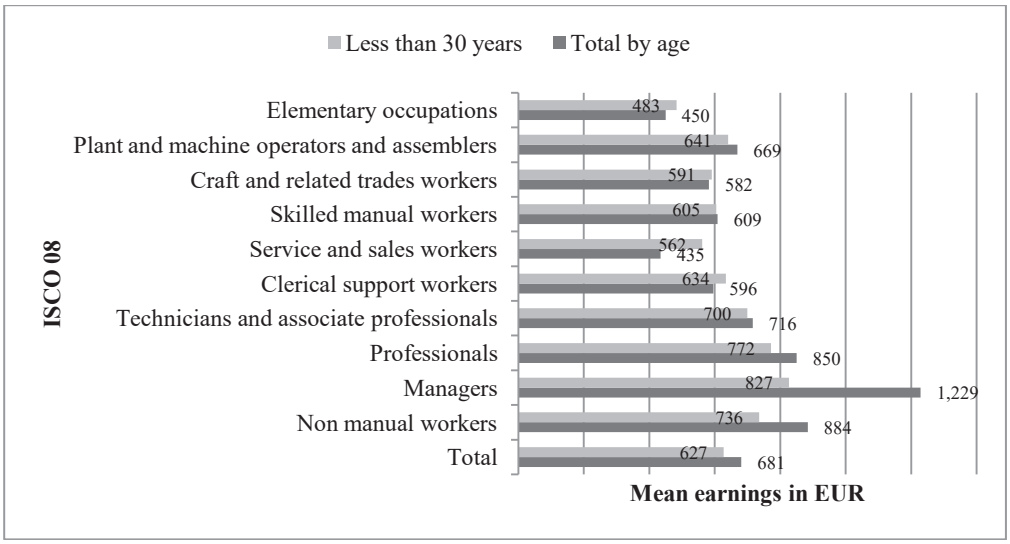


Figure 2.7. Lithuanian monthly earnings in 2014
(designed by the author in accordance with Eurostat, 2016d)

When modelling possible wage abroad, firstly, the baseline is needed, i.e. collecting the statistics of the foreign country. As it is seen in Figure 2.8, the main Lithuanians' destination countries are United Kingdom, Germany, Ireland and Norway. For the simulation, the statistics from the United Kingdom are taken due to the highest number of emigrants.

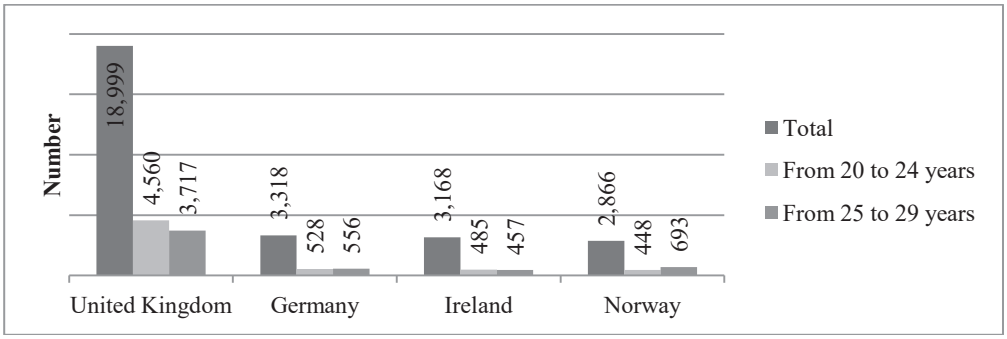


Figure 2.8. Emigration from Lithuania by age group and country of next usual residence in 2015 (designed by the author in accordance with Eurostat, 2016a)

The monthly earnings in the United Kingdom by occupations are visualised in Figure 2.9, distinguishing the earnings total by age and less than 30 years old.

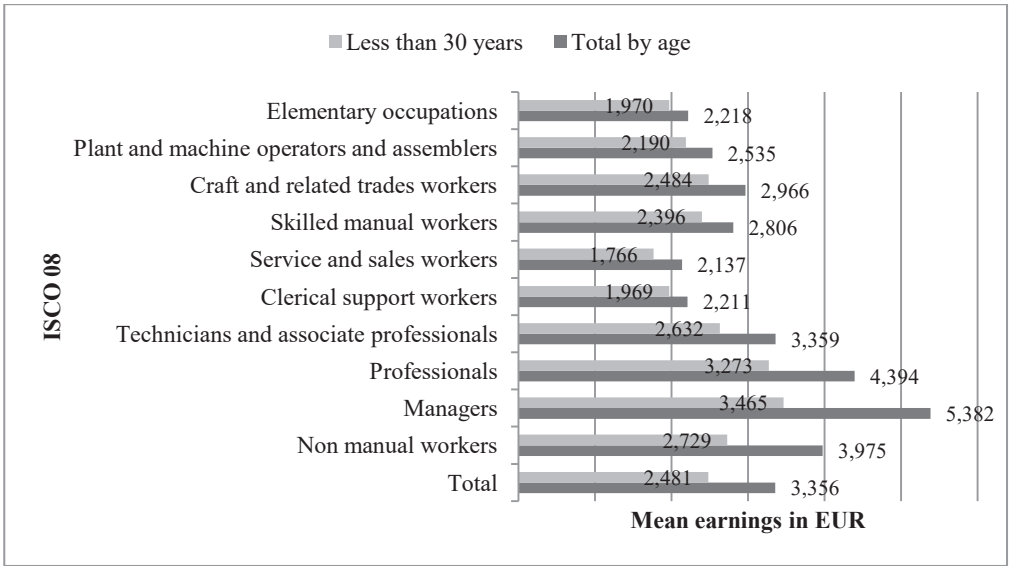


Figure 2.9. United Kingdom's monthly earnings in 2014
(designed by the author in accordance with Eurostat, 2016d)

Depending on the occupation, the earnings of youth can vary between EUR 1,766 and 3,465 and by total age – between EUR 2,137 and 5,382. Considering the situation that a person emigrating abroad might not necessarily have a full-day job or get a job by their occupation as well as strict framework of interval when choosing the wage amount, i.e. the probabilities were provided in the questionnaire in written form and visualised by pie charts (see Figure 2.10, Figure 2.11, Figure 2.12 and Annex 5).

Consideration of other important circumstances

Also, before respondents were asked to answer questions No.21–23 (see Figure 2.10, Figure 2.11 and Figure 2.12 or Annex 5), additional information was presented. When considering the decision to stay in their native country or emigrate abroad, respondents were asked to disassociate their decision from a particular country and comply with the following assumptions:

- tax deductions from salary are similar between countries;
- it is more likely that the job will be by occupation or similar to the occupation in Lithuania than in the foreign country;
- any language difficulties abroad;
- emigration costs would be very low;
- the price differences between countries would be 1.64 time (for example, spending EUR 100 for products and services in Lithuania, the same amount of products and services abroad would cost EUR 164).

As the respondents were asked to disassociate their decision from a particular country, the United Kingdom was not identified; the data was just taken for visualisation. Since the destination country was not identified, the price differences need to be provided.

The differences of cost of living were identified using a cost of living calculator (Numbeo, 2016a) and information of living comparison (Numbeo, 2016b) between the second biggest cities in Lithuania (Kaunas) and United Kingdom (Birmingham) seeking avoid a high wage gap between the capital and other cities in the country, which could distort the wage differences between the origin and destination countries. The purchasing power index was considered. Assuming that a person would pay rent in both cities and expressing information in an example: if you spend EUR 100 in Lithuania, how much additional money you would need to spend in order to maintain the same standard of life abroad.

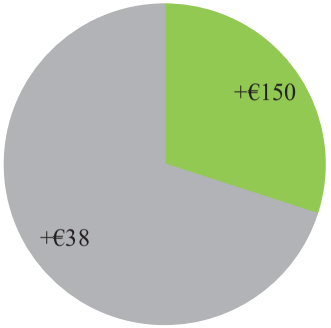
Approximations of risk preference and loss aversion values

Depending on which row respondents switched or did not switched their decision in Series 1 and Series 2 questions (see Figure 2.10 and Figure 2.11) and applying (2.12) calculations, the risk preference parameter could be calculated. The calculated values are given in Annex 8 where each respondent can be attributed to specific risk preference value. Risk preference can obtain values between 0.05 and 1.50.

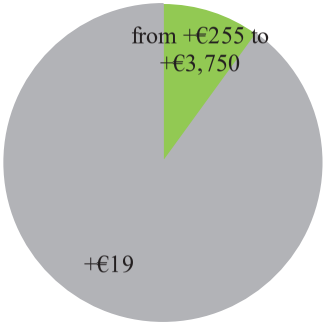
Similarly, depending on which row respondent switched or did not switched their decision in Series 3 question (see Figure 2.12) and applying formula (2.13), loss aversion parameter can be calculated. The calculated values are provided in Annex 9 and Annex 10, where each respondent can be attributed to a specific loss aversion value. Loss aversion can obtain values between 0.116 and 11.787.

21. Suppose that after graduation your wage would be EUR 500 and over several working years the following changes can be expected:

If you stay in Lithuania, the wage would **increase** by EUR 150 (probability of 30%) **or** EUR 38 (probability of 70%):



If you emigrate abroad, the wage would **increase** by EUR 255–3,750 (probability of 10%) **or** EUR 19 (probability of 90%):



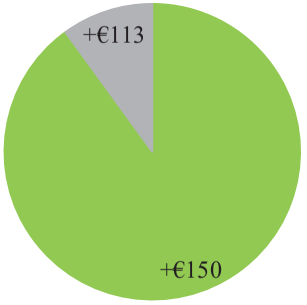
Please mark in each row, which decision would you accept with a particular probability of wage change:

	I would stay in Lithuania	I would emigrate abroad	
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€255 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€281 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€311 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€349 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€398 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€469 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€563 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€694 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€825 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€1,125 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€1,500 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€2,250 (10%) or +€19 (90%)
If stay in Lithuania: +€150 (30%) or +€38 (70%)	○	○	If emigrate abroad: +€3,750 (10%) or +€19 (90%)

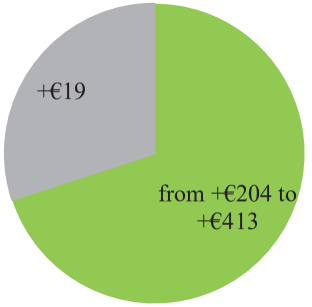
Figure 2.10. Pair-wise international migration decision visualisation for Series 1 choices (designed by the author)

22. Suppose that after graduation your wage would be EUR 500 and over several working years the following changes can be expected:

If you stay in Lithuania, the wage would **increase** by EUR 150 (probability of 90%) **or** EUR 113 (probability of 10%):



If you emigrate abroad, the wage would **increase** by EUR 204–413 (probability of 70%) **or** EUR 19 (probability of 30%):



Please mark in each row, which decision would you accept with a particular probability of wage change:

	I would stay in Lithuania	I would emigrate abroad	
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€204 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€210 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€218 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€225 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€233 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€244 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€255 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€270 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€289 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€311 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€338 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€375 (70%) or +€19 (30%)
If stay in Lithuania: +€150 (90%) or +€113 (10%)	○	○	If emigrate abroad: +€413 (70%) or +€19 (30%)

Figure 2.11. Pair-wise international migration decision visualisation for Series 2 choices (designed by the author)

23. Suppose that after graduation your wage would be EUR 500 and over several working years the following changes can be expected:

If you stay in Lithuania, the wage would **either increase** by EUR 10–250 (probability of 50%) **or decrease** by EUR 40–80 (probability of 50%):

If you emigrate abroad, the wage would **either increase** by EUR 300 (probability of 50%) **or decrease** by EUR 110–210 (probability of 50%):

Please mark in each row, which decision would you accept with a particular probability of wage change:

	I would stay in Lithuania	I would emigrate abroad	
If stay in Lithuania: +€250 (50%) or -€40 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€210 (50%)
If stay in Lithuania: +€40 (50%) or -€40 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€210 (50%)
If stay in Lithuania: +€10 (50%) or -€40 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€210 (50%)
If stay in Lithuania: +€10 (50%) or -€40 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€160 (50%)
If stay in Lithuania: +€10 (50%) or -€80 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€160 (50%)
If stay in Lithuania: +€10 (50%) or -€80 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€140 (50%)
If stay in Lithuania: +€10 (50%) or -€80 (50%)	○	○	If emigrate abroad: +€300 (50%) or -€110 (50%)

Figure 2.12. Pair-wise international migration decision visualisation for Series 3 choices (designed by the author)

2.3. Empirical model and analysis methods for evaluating the impact of migration factors on international migration decision from the perspective of behavioural economics

2.3.1. Presentation of the empirical model

The research question of this dissertation was defined as *what impact do migration factors have on international migration decision from the perspective of behavioural economics?* Migration factors were presented in the theoretical part and particular migration factors were identified for the case of Lithuania. The significance of the identified factors on international migration decision is tested empirically and their impact is presented. To begin with, the empirical model is reviewed and visualized in Figure 2.13.

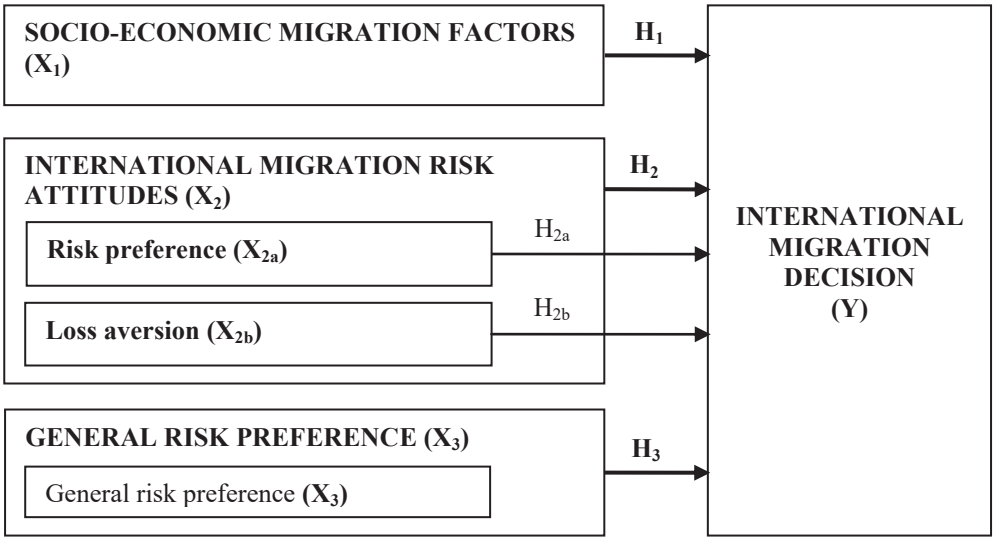


Figure 2.13. Empirical model for evaluating the impact of migration factors on international migration decision from the perspective of behavioural economics (designed by the author)

When operationalizing the migration factors, the independent migration factors were firstly grouped into three dimensions: (1) socio-economic migration factors, (2) international migration risk attitudes, and (3) general risk preference. Further socio-economic migration factor are operationalized by the person's evaluation of Lithuania's current socio-economic situation, and the factors groups using principal component analysis are presented in sub-chapter 3.2.1. International migration risk attitudes are operationalized by the level of risk aversion or risk-seeking in the gain and loss domain and loss aversion in the loss domain. General risk preference is operationalized by the risk level. For a detailed description methods of variable quantification see sub-chapter 2.2.

The dependent research variable is international migration decision, the operational definition of which has already been reviewed in the theoretical part of this dissertation (see sub-chapter 1.3) and is defined as follows:

International migration decision *– pre-migration decision-making attributing a person with some extent of willingness (1) to migrate to a foreign country for no less than twelve months or (2) to stay in their home country continuing to live without the restriction of work.*

The definition was defined in accordance with Nowotny's (2014) modes and Hoppe and Fujishiro's (2015) decision phases. Nowotny (2014) does not define work as a restricting migration because other important migration factors can be identified in each respondent's case, e.g. studies abroad leading to employment abroad (Parey, Waldinger, 2008 in Gibson, McKenzie, 2011).

Figure 2.13 visually presents three hypotheses which are formulated below:

H_1 *– the more satisfying is the socio-economic situation in the origin country, the lower is the likelihood of international migration decision;*

H_2 *– the lower is risk preference (H_{2a}) and the higher is loss aversion (H_{2b}), the lower is the likelihood of international migration decision;*

H_3 *– the higher is the level of general risk preference, the higher is the likelihood of international migration decision.*

Before examining the impact of migration factors on international migration decision from the perspective of behavioural economics, it is necessary to present the method for relation analysis between independent and dependent variables.

2.3.2. An application of regression analysis

The dependent variable of international migration decision is an ordinal variable measured in a 7-point Likert scale. Respondents provide their attitudes towards emigration considering Lithuania's economic and social situation: (1) "completely disagree", (2) "disagree", (3) "somewhat disagree", (4) "neither agree nor disagree", (5) "somewhat agree", (6) "agree" and (7) "completely agree" (see question No. 20 in Annex 5).

Ordinal logistic regressions are widely applied in analysing the impact of risk parameter on migration decision, e.g. Akgüç et al. (2016), Dustmann et al. (2015), Gibson and McKenzie (2009, 2011), Jaeger et al. (2007), Nowotny (2014), Williams and Baláž (2014). The ordinal logistic regression was chosen for measuring the impact of socio-economic factors and risk attitudes on international migration decision in this dissertation as well. The process of applying a logistic regression model is visualised in Figure 2.14.

The steps structuring the process of applying a logistic regression were composed by the author of the dissertation mainly in accordance with Čekanavičius (2011) and estimating some additional parameters, such as odd ratios which are not calculated automatically by the software IBM SPSS Statistics 23.

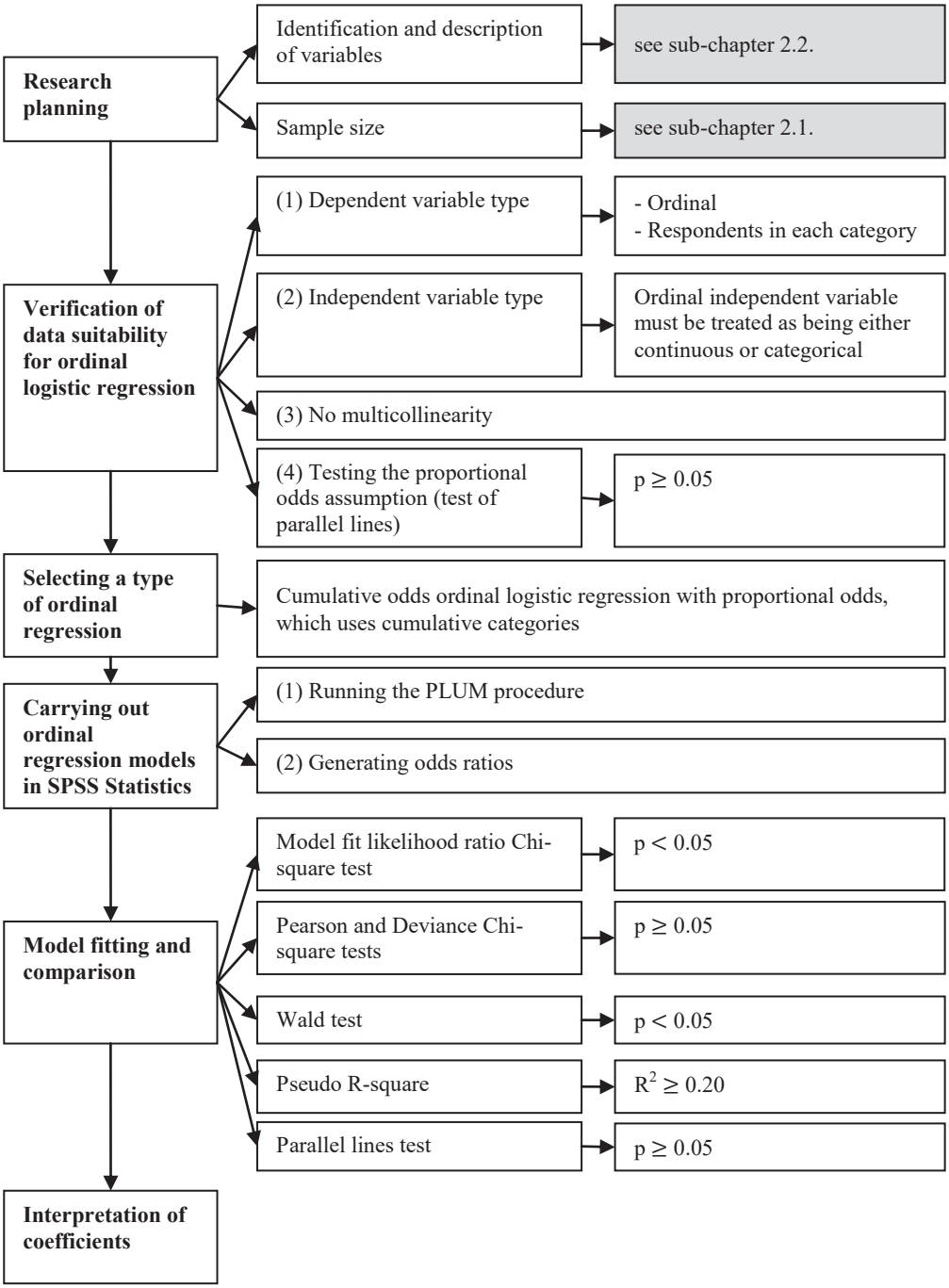


Figure 2.14. The process of applying a logistic regression model (designed by the author in accordance with Čekanavičius, 2011)

Research started from ***planning***, i.e. identifying variables and finding the minimum requires sample size for analysis. Socio-economic migration factor groups, which are identified in sub-chapter 3.2.1 using socio-economic migration factors characterised in sub-chapter 2.2.1, are applied in the ordinal regression analysis as independent variables. Risk attitude variables were presented in sub-chapter 2.2.2. The required sample size equals to 383 respondents (see sub-chapter 2.1).

When verifying the suitability of data for ordinal logistic regression, four specifications should be checked: (1) whether the dependent variable appertains to ordinal type and whether each the distribution of respondents is sufficient across all categories, (2) the type of independent variable, i.e. ordinal independent variable must be treated as being either continuous or categorical, (3) whether the variables do not present the problem of multicollinearity, (4) proportional odds assumption ($p \geq 0.5$).

After initial check of the data and the type of ordinal logistic regression is selected, the PLUM procedure can be carried out. Also, odd ratios using syntax can be additionally calculated.

Finally, the generated model fittings are tested and the best models which satisfy the requirements are interpreted. Model fittings are described with the following conditions: (1) fit the likelihood ratio Chi-square test with $p < 0.05$, (2) Pearson and Deviance Chi-square tests with $p \geq 0.05$, (3) Wald test with $p < 0.05$, (4) pseudo R-square ≥ 0.20, and (5) parallel lines test with $p \geq 0.05$.

Expected values can be found when interpreting the models. Cumulative predicted probabilities from the ordinal logistic model for each case are calculated by the formula provided in (2.14). The estimated probabilities of individual scores are calculated by subtraction, using the data of estimated cumulative probabilities. The formula is provided in Equation (2.15) (Norušis, 2012, p. 75).

$$prob(event\ j) = \frac{1}{1 + e^{-(\alpha_j - \beta_x)}}; \tag{2.14}$$

here *prob(event j)* – cumulative predicted probability for each case; e – mathematical constant, approximately equal to 2.71828.

$$\begin{aligned} prob(score = j) \\ = prob(score\ less\ than\ or\ equal\ to\ j) \\ - prob(score\ less\ than\ j); \end{aligned} \tag{2.15}$$

here *prob(score = j)* – estimated probability of an individual score.

3. EMPIRICAL RESEARCH AND THE IMPACT OF MIGRATION FACTORS ON INTERNATIONAL MIGRATION DECISIONS FROM THE PERSPECTIVE OF BEHAVIOURAL ECONOMICS

Data collection consists of (1) a pilot study conducted on 19–20 December 2016 with 14 respondents, and after minor corrections of the simulation part of the presentation, (2) the final data was collected during the period of 22 February–18 April 2017.

Reaching the sample of bachelor students, all 19 Lithuanian universities of (1) Aleksandras Stulginskis University, (2) European Humanities University, (3) Faculty of Economics and Informatics of the University of Bialystok, (4) ISM University of Management and Economics, (5) Kaunas University of Technology, (6) Kazimieras Simonavičius University, (7) Klaipėda University, (8) LCC International University, (9) Lithuanian Academy of Music and Theatre, (10) Lithuanian Sports University, (11) Lithuanian University of Educational Sciences, (12) Lithuanian University of Health Sciences, (13) Mykolas Romeris University, (14) Šiauliai University, (15) the General Jonas Žemaitis Military Academy of Lithuania, (16) Vilnius Academy of Arts, (17) Vilnius Gediminas Technical University, (18) Vilnius University, (19) Vytautas Magnus University and 21 colleges of (1) Alytus College, (2) Graičiūnas Higher School of Management, (3) International School of Law and Business, (4) Kaunas College, (5) Kaunas College of Forestry and Environmental Engineering, (6) Kaunas Technical College, (7) Klaipėda State College, (8) Kolping College, (9) Lithuania Business University of Applied Sciences, (10) Lithuanian Maritime Academy, (11) Marijampolė College, (12) Panevėžys College, (13) Šiauliai State College, (14) Social Sciences College, (15) St. Ignatius of Loyola College, (16) Utena College, (17) Vilnius Business College, (18) Vilnius College, (19) Vilnius College of Design, (20) Vilnius College of Technologies and Design, (21) Vilnius Cooperative College were considered, excluding a few of higher education institutions, e.g. those where the majority of students are foreigners because the content of the questionnaire was designed exclusively for Lithuanians. Requests for the students' possibility to fill the questionnaire were send by contacting faculties, vice-deans, studies coordinators, studies administrators, the presidents and chairpersons of students' societies. Most of higher education institutions agreed to share the questionnaire with bachelor students via the intranet, sending emails or sharing students groups' emails allowing to contact the students individually. Several institutions did not agree to share the questionnaire with bachelor students because of their inner policy.

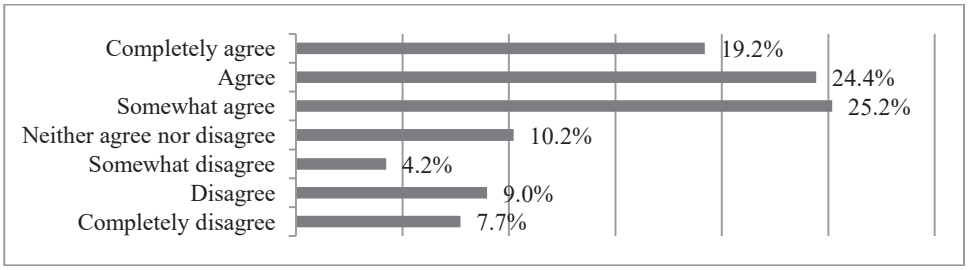
The questionnaire was reviewed by 896 respondents, whereof the entire questionnaire was filled by 474 respondents. The latter were analysed in detail filtering from the analysis those respondents who answered questions not carefully or mainly did not understand the simulation which resulted in 401 respondents for further analysis. Considering Lithuanian students enrolled in bachelor or equivalent level of education, the Cochran formula proposes a sample of 383 students (see sub-chapter 2.1), thus, the required amount of sample is satisfied (see Equation (2.5)).

The third chapter of this dissertation is devoted to empirical research and the results of the impact of migration factors on international migration decision from the perspective of behavioural economics. The first part of the chapter presents the empirical research of risk attitudes on international migration decision encompassing (1) the representation of elicitation of international migration risk attitudes and (2) presentation of the impact of risk attitudes on international migration decision. The second part provides the empirical research of socio-economic migration factor and risk attitudes on international migration decision consisting of (1) grouping and reliability of socio-economic migration factors and (2) the impact of socio-economic migration factors and risk attitudes on international migration. The third part summarises and discusses the empirical research results regarding the impact of migration factors on international migration decision.

3.1. Empirical research of risk attitudes on international migration decision

3.1.1. Elicitation of international migration risk attitudes

Following the steps of risk attitude parameters quantification which resulted in the approximation of risk preference and loss aversion values (see sub-chapter 2.2.2), each respondent's risk attitudes were calculated. The complex eliciting method has advantages encompassing more features in the analysis. On the other hand, the rich set of framework application influence its disadvantages, i.e. presentation of simulation can be misunderstood by the respondents who are not familiar enough with the visualisation of choices in percentages. To avoid this problem, two actions were taken. Firstly, data was visualised in pie charts for better clarity (see Figure 2.10, Figure 2.11, and Figure 2.12 in sub-chapter 2.2.2.2.) and secondly, each respondent's decision was carefully analysed, leaving only the respondents who understood the question and filled it carefully for further analysis. The format of choices determine that a person who understood the question and filled it carefully would choose (1) stay in origin country (not switching from choice A to choice B) or (2) emigrate (switch from choice A to choice B once). If a person switched more than one time per series, it was assumed that the person did not understand the question or did not fill it carefully, hence the questionnaire was excluded from the analysis. After clearing the data, 401 respondents' questionnaires were left for further analysis. The distribution of willingness to emigrate abroad is provided in Figure 3.1.



Note: N=401

Figure 3.1. Willingness to emigrate abroad (designed by the author)

Descriptive statistics or risk preference, loss aversion and emigration willingness is provided in Figure 3.2.

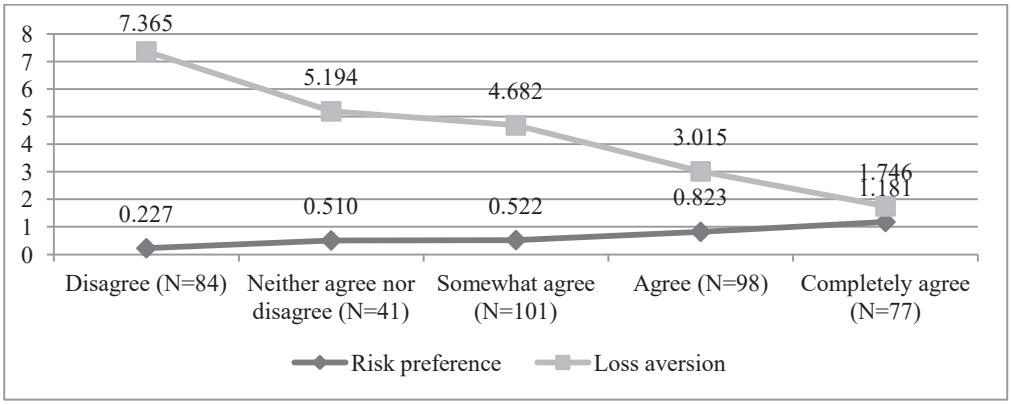


Figure 3.2. Descriptive statistics of risk preference, loss aversion and emigration willingness (designed by the author in accordance with Annex 11)

The dynamics of variables visualised in Figure 3.2 leads to the hypothesis outlined in the sub-chapter of the empirical model, i.e. the lower are risk preference and the higher loss aversion, the lower is the likelihood of international migration decision. Further, the results of the indicated relationships are tested empirically by using ordinal logistic regression.

3.1.2. The impact of risk attitudes on international migration decision

Firstly, the relevance of the new measurement of risk attitudes in the analysis of international migration decision needs to be proved. A description of variables for such an analysis is summarised in Table 3.1.

Thus, three independent variables are taken: (1) general risk preference, (2) risk preference, and (3) loss aversion. All independent variables are in a scale measure and interpreted as covariates in ordinal logistic regression. General risk preference is measured using a 7-point Likert scale from (1) "completely disagrees" to (7) "completely agrees". Risk preference and loss aversion are calculated by the author and can vary between 0.05–1.50 and 0.116–11.787 accordingly.

Dependent variable of international migration decision is measured as an ordinal. The original 7-point Likert scale was modified to 5 categories: (1) "disagree", (2) "neither agree nor disagree", (3) "somewhat agree" (4) "agree", (5) "completely agree". The reason is that in the original classification, the disagreement categories have a very low number of respondents, i.e.: "completely disagree" (7.7 percent), "disagree" (9.0 percent), and "somewhat disagree" (4.2 percent). Thus, these three categories were merged together, representing the position "disagree" and describing 20.9 percent of respondents.

The results obtained from the analysis of general risk preference and risk attitudes in the migration context are presented in Table 3.2.

Table 3.1. Description of variables for the impact analysis of risk attitudes on international migration decision (designed by the author)

Variable name	Description	Measure
Dependent variable		
International migration decision	1 – Disagree 2 – Neither agree nor disagree 3 – Somewhat agree 4 – Agree 5 – Completely agree	Ordinal
Independent variables		
General risk preference	From (1) "completely disagree" to (7) "completely agree"	Scale (as covariate in logistic regression)
Risk preference	Calculated by the author, values vary between 0.05 and 1.50	Scale (as covariate in logistic regression)
Loss aversion	Calculated by the author, values vary between 0.116 and 11.787	Scale (as covariate in logistic regression)

Model fitting information shows that overall Model I is statistically significant, meaning that the independent variable "General risk preference" significantly affects the consideration of emigration decision at the 0.001 significance level. But the pseudo R-Square value do not provide a good size effect and the assumption of parallel lines is not met. These findings lead to the argument that the general risk preference does not show satisfying association and the implications of a new parameter allowing to measure the impact of risk attitudes on people's migration decision need to be considered.

The methodology presented in this dissertation allows to quantify the parameters of *risk preference* and *loss aversion.* These parameters provide the information regarding risk attitudes which people have when making a migration decision, – whether they are risk-averse or risk-seeking. Loss aversion can provide a more detailed explanation when people are confronted with possibilities of losses. Therefore, international migration risk attitudes in the domain of gains can be expressed by the risk preference parameter, where sigma < 1 means that the person is risk-averse and sigma > 1 denotes risk-seeking in the domain of gains and the opposite in the domain of losses, i.e. when sigma < 1 – risk-seeking and sigma > 1 – risk-averse. As people tend to behave more sensitively when facing losses, the loss-aversion parameter (lambda) is included as well.

The results of ordinal logistic regression analysis are provided in Model II and Model III. Both models show that the overall model is statistically significant, i.e. both independent parameters – risk preference and loss aversion significantly affect the consideration of emigration decision at the 0.001 significance level. The strength of association between the variables in the value of pseudo R-Square exceed the minimum requirement of value 0.20. It should be noted that in Model II the assumption of parallel lines is not met but after adding both parameters i.e. risk preference and loss aversion, Model III satisfies all the assumptions. Graphical visualisation is provided in Figure 3.3.

Table 3.2. Model characteristics of risk preference and loss aversion on international migration decision (designed by the author, see Annex 12, Annex 13 and Annex 14)

Independent Variables	Parameter estimates			Exp(B) of parameter estimates (Odds Ratios)		
	Model I	**Model II**	**Model III**	**Model I**	**Model II**	**Model III**
General risk preference	0.226***			1.254***		
Risk preference		2.571***	2.069***		13.077***	7.919***
Loss aversion			-0.126***			0.882***
Model-Fitting	15.005***	173.710***	190.991***			
Pearson	0.280	0.270	0.936			
Pseudo R-Square	0.038	0.367	0.396			
Parallel Lines	0.028	0.039	0.273			
Observations	401	401	401			

Note: *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively

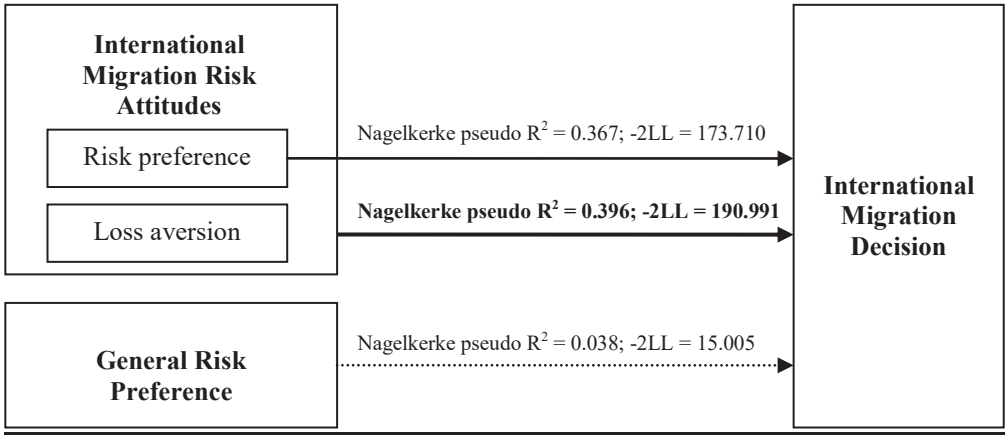


Figure 3.3. The impact of risk preference and loss aversion on international migration decision (designed by the author)

Results provided in Figure 3.3 further support the hypothesis that the impact on a person's decision to emigrate should be analysed in accordance with the parameter of international migration risk attitudes considering behaviour in the domains of gain and loss, i.e. people tend to be risk-averse in the gain domain and loss-averse in the loss domain.

Analysing the Model III, both parameters provide a significant association with the dependent variable "Consideration of emigration" which was originally measured in a 7-point Likert scale. As much less respondents who considered the current economic and social situation in Lithuania expressed willingness to not emigrate, some categories were combined following answer description as (1) "do not consider to emigrate", (2) "neither consider nor do not consider to emigrate", (3) "somewhat consider to emigrate", (4) "consider to emigrate", and (5) "highly consider to emigrate". The slope of risk preference parameter estimate is positive indicating that higher values on risk preference, identified by sigma, are associated with higher willingness to emigrate. A one-unit increase in sigma can cause a 2.069 ($p < 0.001$) increase in the log odds of being more willing to emigrate, given that all of the other variables in the model are held constant.

With regards to loss aversion, measured by the lambda parameter, the slope is negative, indicating that a higher score on lambda is associated with lower willingness to emigrate. Odds ratio in Table 3.2 shows that higher emigration willingness is 1.13 times less likely when lambda increases by 1 unit.

These results raise the possibility of explaining the migration decision analysis. The next paragraph moves on to an analysis of risk attitudes incorporating the evaluation of the current economic and social situation in Lithuania.

3.2. Empirical research of socio-economic migration factors and risk attitudes on international migration decision

3.2.1. Grouping and reliability of socio-economic migration factors

The grouping and reliability of the socio-economic migration factors are analysed following the stages of factorial analysis presented in Figure 2.5. Firstly, initial checks verifying data suitability for factor analysis should be done using (1) Kaiser-Meyer-Olkin (KMO) statistics, (2) R-matrix, and (3) a measure of sampling adequacy.

KMO and Bartlett's test results are summarised in Table 3.3. The value of KMO equals to 0.873 which is much higher than 0.6, proving that principal component analysis is suitable for the given sample and the variables can be grouped into components.

Table 3.3. KMO and Bartlett's test (calculated by the author, using IBM SPSS Statistics 23)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.873**
Bartlett's Test of Sphericity	Approx. Chi-Square	2892.348
	df	78
	Sig.	**.000**

The correlation of analysed factors significance is tested by using Bartlett's test of sphericity, which reveals p = 0.000... < 0.05, proving that there are variables which correlate significantly among the observed variables (the null hypothesis that all observed variables are not correlated is denied).

R-matrix results, which are provided in Annex 15, show acceptable correlation between variables for further analysis. Also, the determinant is equal to 0.018 > 0.00001 proving that the problem of multicollinearity does not exist.

Measure of sampling adequacy is shown in Table 3.4. The MSA statistics of independent variables vary between 0.824 and 0.906 (> 0.5). Thus, these statistics show that each independent variable is suitable for factorial analysis.

Table 3.4. Anti-image correlation matrix (designed by the author, see Annex 15)

	17.1.	17.2.	17.3.	17.4.	17.5.	17.6.	17.7.	17.8.	17.9.	17.10.	17.11.	17.12.	17.13.
17.1.	**.901**[a]	-.168	-.185	-.009	-.070	.048	-.026	.032	-.082	-.142	-.018	.005	-.077
17.2.	-.168	**.903**[a]	-.253	-.014	-.105	-.065	-.037	-.078	-.117	.043	-.012	-.032	.004
17.3.	-.185	-.253	**.898**[a]	-.087	.072	-.087	-.057	-.045	-.001	-.066	-.062	-.012	-.077
17.4.	-.009	-.014	-.087	**.855**[a]	-.380	-.133	.034	-.105	-.046	.089	-.036	-.009	-.040
17.5.	-.070	-.105	.072	-.380	**.824**[a]	-.328	-.110	.037	-.027	-.033	.050	-.159	.039
17.6.	.048	-.065	-.087	-.133	-.328	**.862**[a]	-.145	.054	-.103	-.108	-.035	.126	-.108
17.7.	-.026	-.037	-.057	.034	-.110	-.145	**.895**[a]	-.348	-.027	-.042	-.081	-.029	-.039
17.8.	.032	-.078	-.045	-.105	.037	.054	-.348	**.884**[a]	-.070	-.101	-.100	-.110	-.057
17.9.	-.082	-.117	-.001	-.046	-.027	-.103	-.027	-.070	**.901**[a]	-.305	.003	-.060	-.010
17.10.	-.142	.043	-.066	.089	-.033	-.108	-.042	-.101	-.305	**.870**[a]	-.137	-.009	.010
17.11.	-.018	-.012	-.062	-.036	.050	-.035	-.081	-.100	.003	-.137	**.906**[a]	-.292	-.099
17.12.	.005	-.032	-.012	-.009	-.159	.126	-.029	-.110	-.060	-.009	-.292	**.825**[a]	-.448
17.13.	-.077	.004	-.077	-.040	.039	-.108	-.039	-.057	-.010	.010	-.099	-.448	**.859**[a]

Note: a. Measures of Sampling Adequacy (MSA)

Secondly, after the initial checks have verified data suitability, the main results of analysis can be presented (1) identifying the quantity of components by using Kaiser's criterion, (2) using orthogonal factors rotation, and (3) interpreting components.

Kaiser's criterion suggests three components (see Table 3.5).

Table 3.5. Total variance explained (calculated by the author, using IBM SPSS Statistics 23)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.863	37.411	37.411	4.863	37.411	37.411	2.630	20.231	20.231
2	1.267	9.744	47.156	1.267	9.744	47.156	2.444	18.797	39.028
3	1.090	8.387	55.543	1.090	8.387	55.543	2.147	16.515	55.543
4	.925	7.113	62.656						
5	.812	6.245	68.902						
6	.635	4.887	73.789						
7	.624	4.800	78.588						
8	.591	4.544	83.132						
9	.555	4.271	87.403						
10	.483	3.713	91.116						
11	.439	3.378	94.495						
12	.397	3.053	97.548						
13	.319	2.452	100.000						

Note: extraction method is principal component analysis

Factors rotation was applied for the analysis. A rotated component matrix is provided in Table 3.6. Factors are strongly related if their weight is more than 0.6. A decision was made to exclude the factors which weight is less than indicated above from the analysis.

Table 3.6. Rotated component matrix[a] (calculated by the author, using IBM SPSS Statistics 23)

	Component		
	1	2	3
17.1.	.108	**.710**	.072
17.2.	.142	**.607**	.293
17.3.	.228	**.619**	.168
17.4.	.194	.086	**.781**
17.5.	.186	.184	**.813**
17.6.	.117	.297	**.715**
17.7.	**.483**	.313	.328
17.8.	**.597**	.297	.180
17.9.	.204	**.611**	.216
17.10.	.261	**.638**	.060
17.11.	**.728**	.223	.067
17.12.	**.817**	.133	.154
17.13.	**.751**	.155	.164

Note: extraction method is principal component analysis; rotation method – Varimax with Kaiser Normalization.[a];
a. Rotation converged in 5 iterations

The rotated component matrix with excluded variables is provided in Table 3.7, systematizing variables into three groups with strong relation.

Table 3.7. Rotated component matrix[a] (calculated by the author, using IBM SPSS Statistics 23)

	Component		
	1	2	3
17.1.	**.705**	.116	.072
17.2.	**.608**	.113	.299
17.3.	**.624**	.212	.174
17.4.	.093	.180	**.794**
17.5.	.194	.169	**.817**
17.6.	.307	.086	**.713**
17.9.	**.629**	.161	.224
17.10.	**.662**	.212	.067
17.11.	.262	**.729**	.086
17.12.	.172	**.842**	.177
17.13.	.187	**.786**	.183

Note: extraction method is principal component analysis; rotation method – Varimax with Kaiser Normalization.[a];
a. Rotation converged in 5 iterations

Variables can be divided into three components: (1) income and costs of living, (2) economic development, and (3) labour market. This corresponds with the previously identified migration groups (see Figure 2.4).

Thirdly, after identifying the component groups, it is necessary to follow the post-analysis steps which consist of (1) calculating new values of the identified components and (2) checking the reliability of each component. Reliability statistics are provided in Table 3.8.

Table 3.8. Reliability statistics (designed by the author)

	Scale Items	**Cronbach's Alpha if Item Deleted**	**Scale's Cronbach Alpha**	**Number of Items**
Income and costs of living	17.1.	0.689	0.729	5
	17.2.	0.672		
	17.3.	0.684		
	17.9.	0.675		
	17.10.	0.694		
Labour market	17.4.	0.707	0.771	3
	17.5.	0.624		
	17.6.	0.726		
Economic development	17.7.	0.772	0.794	5
	17.8.	0.756		
	17.11.	0.759		
	17.12.	0.739		
	17.13.	0.750		

After checking the grouping and reliability of socio-economic migration factors, the part of empirical model of socio-economic migration factors can be discussed in detail (see Figure 3.4).

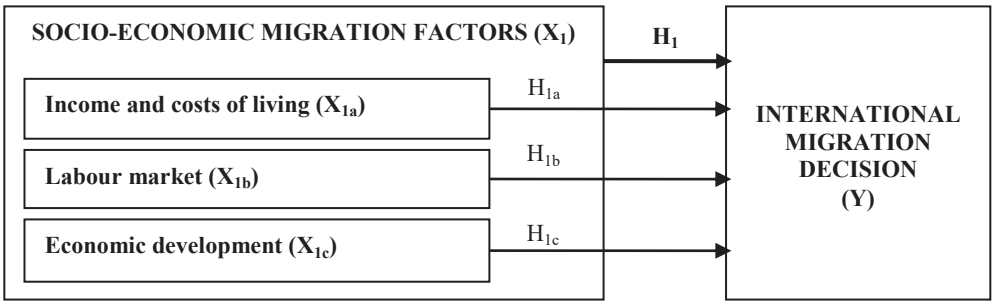


Figure 3.4. Empirical model of socio-economic migration factors (designed by the author)

Thus, socio-economic migration factors are operationalized by the person's evaluation of the current socio-economic situation of income and costs of living, labour market and economic development in Lithuania.

After conducing principal component analysis, the first hypothesis formulated in sub-chapter 2.3.1, can be detailed:

> ***H1*** *– the more satisfying is the socio-economic situation in the origin country (of income and costs of living, H_{1a}; labour market, H_{1b}; economic development, H_{1c}), the lower is the likelihood of international migration decision.*

3.2.2. The impact of socio-economic migration factors and risk attitudes on international migration decision

The impact of general socio-economic situation of a country and risk attitudes on international migration decision

In terms of significant associations of risk preference and loss aversion with the migration decision, current general socio-economic situation variable was added to the analysis. The description of variables for the impact analysis of general socio-economic situation of a country and risk attitudes on international migration decision analysis is summarised in Table 3.9.

The independent variable of current general socio-economic situation originally consisted of 7 categories. However, after the verification of data suitability for ordinal logistic regression, the representative number of respondents in each category, the categories of "completely satisfied", "satisfied", "somewhat satisfied", and "neither satisfied nor dissatisfied" were merged into one category "satisfied", resulting into the category of 24.2 percent. The distribution of remaining respondents is "somewhat unsatisfied" (20.7 percent), "unsatisfied" (34.2 percent), and "completely unsatisfied" (20.9 percent). The variable is interpreted as nominal in ordinal logistic regression (as a factor in logistic regression).

Table 3.9. A description of variables for the impact analysis of general socio-economic situation of a country, risk preferences and loss aversion on international migration decision analysis (designed by the author)

Variable name	Description	Measure
Dependent variable		
International migration decision	1 – Disagree 2 – Neither agree nor disagree 3 – Somewhat agree 4 – Agree 5 – Completely agree	Ordinal
Independent variables		
Current general socio-economic situation	Whether the respondent is satisfied or not with the current socio-economic situation in Lithuania: 1 – Completely unsatisfied 2 – Unsatisfied 3 – Somewhat unsatisfied 4 – Satisfied	Nominal (as factor in logistic regression)
General risk preference	From (1) "completely disagree" to (7) "completely agree"	Scale (as covariate in logistic regression)
Risk preference	Calculated by the author, values vary between 0.05 and 1.50	Scale (as covariate in logistic regression)
Loss aversion	Calculated by the author, values vary between 0.116 and 11.787	Scale (as covariate in logistic regression)

The results of variable associations are systematised in Table 3.10. All four ordinal logistic regression models are statistically significant at the 0.001 significance level and the assumptions of parallel lines are met. The first two models satisfy the minimum value of pseudo R-Square which equals 0.210 for the model with one independent variable of current economic and social situation and very low improvement of pseudo R-Square – 0.226 – after adding the second independent variable of general risk preference. Again, as it was mentioned above, general risk preference is not sufficiently appropriate for the migration decision analysis. In contrast, the remaining models (Model III and Model IV) show a great extent improvement of the overall model and the pseudo R-Square value for the strength of association between the current economic and social situation and international migration risk attitudes quantified by risk preference and loss aversion from 0.226 to 0.423 and 0.450. Pseudo R-Square value size effect increased almost twice as well as the model fitting characteristics. A graphical visualisation is provided in Figure 3.5.

Table 3.10. Model characteristics of risk preferences, loss aversion and general socio-economic situation of a country on international migration decision (designed by the author in accordance with Annex 17, Annex 18, Annex 19 and Annex 20)

Independent Variables	Parameter estimates				Exp(B) of parameter estimates (Odds Ratios)			
	Model I	Model II	Model III	Model IV	Model I	Model II	Model III	Model IV
Current economic and social situation								
completely unsatisfied	2.628***	2.552***	1.790***	1.808***	13.852***	12.827***	5.991***	6.098***
unsatisfied	1.468***	1.442***	.752**	.722**	4.339***	4.228***	2.121**	2.058**
somewhat unsatisfied	0.867**	0.87**	.562*	.603*	2.380**	2.388**	1.755*	1.827*
satisfied	0[a]	0[a]	0[a]	0[a]	1.000	1.000	1.000	1.000
General risk preference		0.168**				1.183**		
Risk preference			2.275***	1.773***			9.724***	5.891***
Loss aversion				-0.130***				0.878***
Model-Fitting	90.004***	97.917***	207.768***	226.075***				
Pearson	0.270	0.219	0.420	0.928				
Nagelkerke Pseudo R-Square	0.210	0.226	0.423	0.450				
Parallel Lines	0.244	0.076	0.103	0.341				
Observations	401	401	401	401				

Note: [a] parameter is set to 0 because it is redundant; *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively

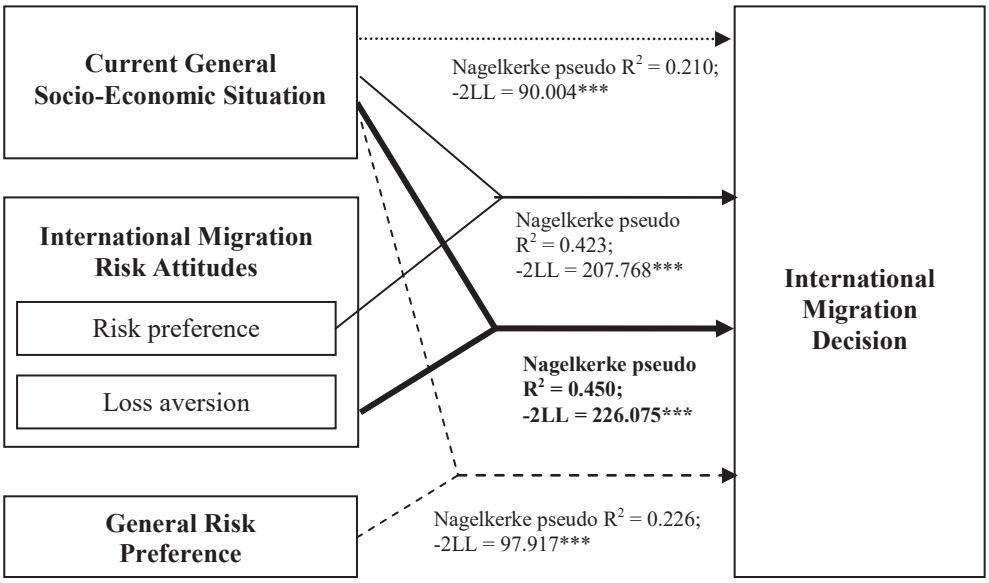


Figure 3.5. The impact of risk preferences, loss aversion and general socio-economic situation in a country on international migration decision (designed by the author)

Both, risk preference and loss aversion are important and provide some explanation power. After replacing the independent variable of general risk preference with variables of risk preference and loss aversion, the odds ratios (see Model IV) demonstrate that students who evaluate the current economic and social situation as (1) "completely unsatisfied", (2) "unsatisfied", and (3) "somewhat unsatisfied" were respectively 6.1, 2.1 and 1.8 times more likely to consider emigration than those who were satisfied with the current economic and social situation in the country. As expected, risk preference has a positive slope, indicating that the higher is the risk preference parameter score, the more people tend to be willing to consider emigration. In contrast, loss aversion has a negative relationship. Loss aversion odds ratios equal to 0.878 ($p < 0.001$), indicating that emigration consideration is 1.14 times less likely when loss aversion, i.e. lambda, increases by 1 unit. A mathematical expression of the model can be written in the form provided in Equation (3.1).

$$ln\frac{P(E_5 > i)}{P(E_5 \leq i)} = 1.773RiskPreference - 0.130LossAversion + \\ + \begin{cases} -0.613, \text{if i} = 1 \\ 0.112, \text{if i} = 2 \\ 1.654, \text{if i} = 3 \\ 3.453, \text{if i} = 4 \end{cases} + \begin{cases} 1.808, \text{if C}_{\text{socio-economic situation}} = 1, \\ 0.722, \text{if C}_{\text{socio-economic situation}} = 2, \\ 0.603, \text{if C}_{\text{socio-economic situation}} = 3, \\ 0, \text{if C}_{\text{socio-economic situation}} = 4. \end{cases} \quad (3.1)$$

The impact of socio-economic migration factors and risk attitudes on international migration decision

The impact of socio-economic migration factors and risk attitudes on international migration decision can be discussed by separating it into two parts: the current and future economic and social situation of Lithuania. Theoretical analysis in the dissertation systematised the most analysed migration factors and the most influential factors on Lithuanians making a decision to emigrate were distinguished by empirical research. The factors were grouped into three groups as follows: (1) income and costs of living, (2) labour market, and (3) economic development. Originally, a 7-point Likert scale was used to identify students' evaluation of current and their expectations of economic and social situation in Lithuania. In order to provide significant conclusions about behaviour, the responses were taken as binary, dividing them into Lithuania's situation as bad and good. It allows further to analyse ordinal logistic regression and measure the influence of changing economic and social situation in Lithuania and a person's expectations in consideration with their risk preference attitudes and loss aversion attitudes when facing with gains and/or losses.

A description of variables for analysing the impact of socio-economic migration factors and risk attitudes on international migration decision is summarised in Table 3.11.

Table 3.11. A description of variables for analysing the impact of socio-economic migration factors and risk attitudes on international migration decision (designed by the author)

Variable name	Description	Measure
Dependent variable		
International migration decision	1 – Disagree 2 – Neither agree nor disagree 3 – Agree	Ordinal
Independent variables		
Current situation of income and costs of living	How a respondent evaluates the current situation of income and costs of living in Lithuania: 1 – Bad situation 2 – Good situation	Nominal (as factor in logistic regression)
Current situation of labour market	How a respondent evaluates the current situation of labour market in Lithuania: 1 – Bad situation 2 – Good situation	Nominal (as factor in logistic regression)
Future situation of income and costs of living	How a respondent evaluates the future situation of income and costs of living in Lithuania: 1 – Bad situation 2 – Good situation	Nominal (as factor in logistic regression)
Future situation of	How a respondent evaluates the future	Nominal (as factor in

Variable name	Description	Measure
labour market	situation of labour market in Lithuania: 1 – Bad situation 2 – Good situation	logistic regression)
Future situation of economic development	How a respondent evaluates the future situation of economic development in Lithuania: 1 – Bad situation 2 – Good situation	Nominal (as factor in logistic regression)
Risk preference	Calculated by the author, values vary between 0.05 and 1.50	Scale (as covariate in logistic regression)
Loss aversion	Calculated by the author, values vary between 0.116 and 11.787	Scale (as covariate in logistic regression)

All five ordinal logistic regression models which are presented in Table 3.12 and Table 3.13 fit the criteria of likelihood Chi-Square, Pearson and Deviance Chi-Square, Nagelkerke pseudo R-Square and predicted classification. More detail is provided in the explanation of each model.

Models in Table 3.12 (Model I and Model II) were analysed with the variables of current income, costs of living and labour market situation in Lithuania. The odds ratios for both models demonstrate that students who evaluate the current situation of income, costs of living and labour market situation as bad were 1.8 times more likely to consider emigration than those who were satisfied with the current situation in Lithuania. For one unit increase in sigma (risk preference parameter), a 2.103 ($p < 0.001$) in Model I and 2.108 ($p < 0.001$) in Model II increase in the log odds of considering emigration can be expected or 8.2 times more likely to consider emigration, given that all other variables in the model are constant. Differently, lambda (loss aversion) has a negative slope, indicating that for one unit of increase in lambda, people are 1.15 times less likely to consider emigration.

In the remaining models (see Table 3.13), the variable of current situation in Lithuania was switched with students' expectations of future economic and social situation. Again, all assumptions of the model fit are satisfied. Because of its relevancy, each model of future expectation impact is analysed in more details.

Model III with evaluated parameters is shown in Equation (3.2), where i = 1, 2:

$$ln\frac{P(E_{Vid3} > i)}{P(E_{Vid3} \leq i)} = 1.917RiskPreference - 0.148LossAversion + \\ + \begin{cases} -1.075, \text{if i} = 1 \\ 1.641, \text{if i} = 2 \end{cases} + \begin{cases} 1.041, \text{if F}_{\text{income and costs of living}} = 1, \\ 0, \text{if F}_{\text{income and costs of living}} = 2. \end{cases} \quad (3.2)$$

Equation (3.2) can be used to calculate the probability of how people tend to consider emigration behaviour in different expectations of future situation of income and costs of living in Lithuania. In general, the calculated data expressed by the odds ratios demonstrate that students who expect the future situation of income and costs

Table 3.12. Model characteristics of risk attitudes, current situation of labour market, current situation of income and costs of living on international migration decision (designed by the author, see Annex 21 and Annex 22)

Independent Variables	Parameter estimates		Exp(B) of parameter estimates (Odds Ratios)	
	Model I	Model II	Model I	Model II
Risk preference	2.103***	2.108***	8.192***	8.233***
Loss aversion	-0.136***	-0.139***	0.873***	0.870***
Current situation of income and costs of living				
bad situation	0.612(0.057)		1.843	
good situation	0[a]		1.000	
Current situation of labour market				
bad situation		0.569(0.055)		1.767
good situation		0[a]		1.000
Model-Fitting	175.629***	175.610***		
Pearson	0.997	0.998		
Nagelkerke Pseudo R-Square	0.407	0.407		
Parallel Lines	0.336	0.349		
Observations	401	401		

Note: [a] parameter is set to 0 because it is redundant; *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively

Table 3.13. Model characteristics of risk attitudes, future expectations of income and costs of living situation, future expectation of labour market situation and future expectation of economic development situation on international migration decision (designed by the author, see Annex 23, Annex 24 and Annex 25)

Independent Variables	Parameter estimates			Exp(B) of parameter estimates (Odds Ratios)		
	Model III	Model IV	Model V	Model III	Model IV	Model V
Risk preference	1.917***	1.951***	2.02***	6.800***	7.036***	7.542***
Loss aversion	-0.148***	-0.140***	-0.139***	0.863***	0.869***	0.870***
Future situation of income and costs of living						
bad situation	1.041***			2.833***		
good situation	0[a]			1.000		
Future situation of labour market						
bad situation		0.888***			2.431***	
good situation		0[a]			1.000	
Future situation of economic development						
bad situation			0.985***			2.679***
good situation			0[a]			1.000
Model-Fitting	194.640***	188.440***	192.022***			
Pearson	0.999	0.973	0.999			
Nagelkerke Pseudo R-Square	0.441	0.430	0.436			
Parallel Lines	0.340	0.301	0.374			
Observations	401	401	401			

Note: [a] parameter is set to 0 because it is redundant; *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively

of living to be bad were 2.833 times more likely to consider emigration than those who evaluated it positively. Comparing the evaluation of current and future situations, it can be noticed that people are more sensitive to future expectations, as students are more likely to consider emigration in a bad situation than evaluating current income and costs of living situation, i.e. 1.843 vs. 2.833 times.

Equation (3.3) of Model IV (see Table 3.13) can be used to calculate the probability of how people consider emigration behaviour in different expectations of future situation of labour market in Lithuania.

$$ln\frac{P(E_{Vid3} > i)}{P(E_{Vid3} \leq i)} = 1.951RiskPreference - 0.140LossAversion + \\ + \begin{cases} -1.080, \text{if i} = 1 \\ 1.600, \text{if i} = 2 \end{cases} + \begin{cases} 0.888, \text{if F}_{\text{labour market}} = 1, \\ 0, \text{if F}_{\text{labour market}} = 2. \end{cases} \quad (3.3)$$

In general, Model IV calculated data expressed by the odds ratios demonstrate that students who expect the future situation of labour market to bad were 2.431 times more likely to consider emigration than those who evaluated the future positively. In comparison, future situation of income and costs of living had odds ratio equal to 2.833. Moreover, when comparing the evaluation of current and future situations, it can be noticed that people are more sensitive to future expectations, as students are more likely to consider emigration in a bad situation than evaluating the current labour market situation, i.e. 1.767 vs. 2.431 times.

In Equation (3.4), the evaluated parameters of Model V are given, indicating the significant impact of future situation of economic development which was not significant in the model with current economic development situation in Lithuania (due its insignificance, the details of the model are not included in Table 3.12).

$$ln\frac{P(E_{Vid3} > i)}{P(E_{Vid3} \leq i)} = 2.020RiskPreference - 0.139LossAversion + \\ + \begin{cases} -1.174, \text{if i} = 1 \\ 1.522, \text{if i} = 2 \end{cases} + \begin{cases} 0.985, \text{if F}_{\text{economic development}} = 1, \\ 0, \text{if F}_{\text{economic development}} = 2. \end{cases} \quad (3.4)$$

The odds ratios of Model V demonstrate that students who did not expect a favourable future situation of economic development were 2.679 ($p < 0.001$) times more likely to consider emigration than those who evaluated future economic development as favourable. Odds ratio of risk preference is higher than 1, indicating that higher scores of risk preference are associated with higher emigration intention, i.e. one unit increase in risk preference denotes a 7.5 times greater possibility that a person is willing to choose emigration. Loss aversion odds ratio is less than one, showing that a higher emigration intention is 1.15 times less likely when loss aversion increases by one unit. Students who do not see a favourable future in Lithuania's economic development are 2.7 times more likely to consider emigration than those who see more positive perspectives.

3.3. Summary and discussion of empirical research results of migration factors impact on international migration decision

Even scientific literature highlights the importance and found relation between risk attitudes and migration decision, but risk attitudes based on international migration decision context and behavioural economics prospect theory background were ignored. This sub-chapter (1) systematizes dissertation findings, (2) indicates the scientific and practical implications, (3) provides recommendations, (4) identifies limitations, and (5) implications for future research.

Results of hypothesis testing

A summary of empirical research results of the impact of migration factors on international migration decision is provided in Table 3.14. All hypotheses were confirmed.

Table 3.14. Summary of hypotheses testing results (designed by the author)

Hypotheses	Results of testing hypothesis	Model fitting requirements*
H1: the more satisfying is the socio-economic situation in the origin country, the lower is the likelihood of international migration decision.	Confirmed	Satisfied
H2: the lower is risk preference (H_{2a}) and the higher is loss aversion (H_{2b}), the lower is the likelihood of international migration decision.	Confirmed	Satisfied
H3: the higher is the level of general risk preference, the higher is the likelihood of international migration decision.	Confirmed	Not-satisfied

Note: * model fit likelihood ratio Chi-square test, Pearson and Deviance Chi-square tests, Wald test, pseudo R-Square and parallel lines test (see Figure 2.14)

The role of incorporating international migration risk attitudes (risk preference and loss aversion) in the analysis of international migration decision was tested empirically, enabling to reveal the impact of migration factors on international migration decision more precisely. The mean value of risk preference equals to 0.659 and loss aversion – 4.325. It corresponds to the shape of value function of preferences under prospect theory visualised in Figure 1.2.

The impact of risk preference and loss aversion changes on international migration decision is visualised in Figure 3.6 and Figure 3.7. The lower is the risk preference, the lower is the likelihood of international migration (see Figure 3.6). Such behaviour can be explained by people's risk-averse preferences leading to decisions of smaller outcome variance and preference of certainty of a lower gain than the chance of a larger gain i.e. they prefer safe choices to risky ones.

The higher is the loss aversion, the lower is the likelihood of international migration (see Figure 3.7). Loss aversion points out that people are more sensitive to

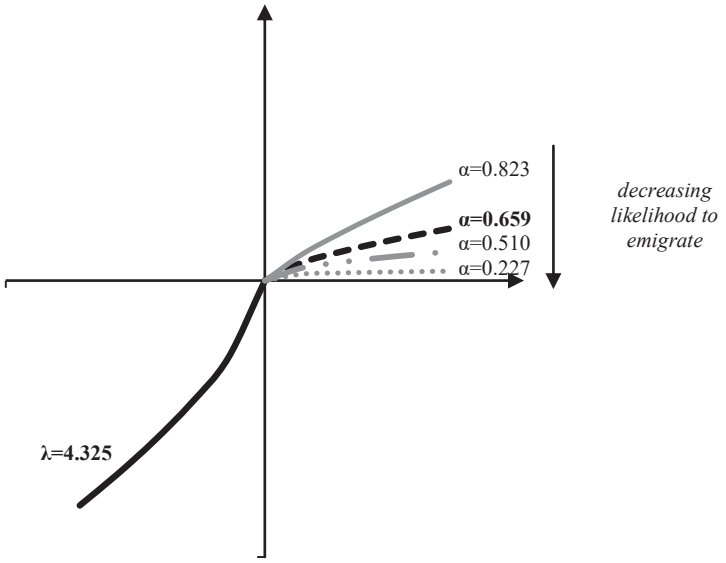


Figure 3.6. The impact of risk preference on international migration decision (designed by the author)

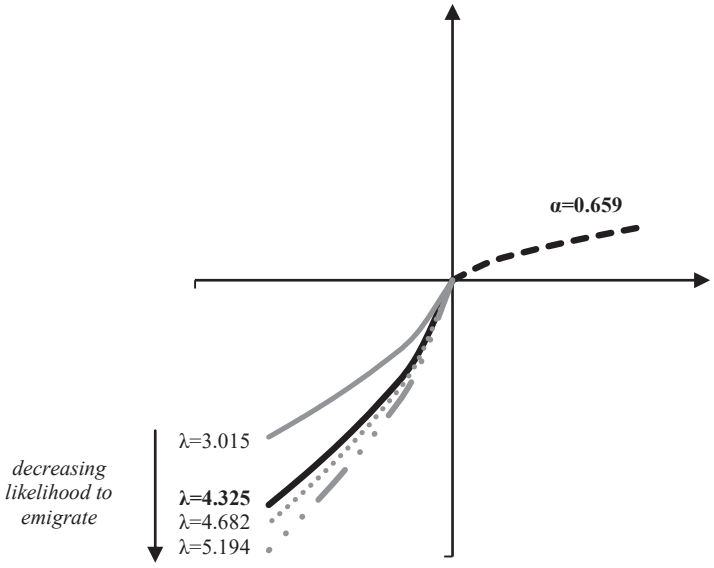


Figure 3.7. The impact of loss aversion on international migration decision (designed by the author)

losses than gains. It can be seen from the value function as well, i.e. the function is steeper for losses than it is for gains. The degree of likelihood to emigrate can be explained of people's willingness to try to minimize losses because "/.../ losses loom larger than gains" (Kahneman, Tversky, 1979, p. 279).

Further taking the mean values of risk preference (0.659) and loss aversion (4.325), the impact of changes in the socio-economic situation in the country of origin are reviewed. The probability that a person would not consider (Y = 1), neither consider nor do not consider (Y = 2), somewhat consider (Y = 3), consider (Y = 4), completely consider (Y = 5) emigration under different levels of current socio-economic situation in the country of origin are provided in Table 3.15. Probability changes correspond with the tendency that the more satisfying is the socio-economic situation in the country of origin, the lower is the likelihood of international migration decision.

Scientific and practical implications

Previous findings of incorporating the risk parameter in the analysis migration decision provides especially low pseudo R-Square value, e.g. 0.0106 (Akgüç et al., 2016), 0.0100–0.0105 (Jaeger et al., 2007). In comparison with the result of this dissertation, the impact of risk measured in the migration context of migration decision equals 0.273. Also, in relation with other characteristics, a new instrument shows better explanatory power.

Thus, the results of this dissertation show that the constructed instrument based on prospect theory is appropriate in the migration context and allows to measure migration decision. This is the scientific and practical novelty and input of this dissertation. Moreover, the presented methodology could be used with other groups of respondents as well as to be developed in other countries. It is especially important to countries which face high emigration rates, such as Lithuania, Latvia, or Poland. It allows to understand the phenomenon of making the decision to migrate from the scientific and practical points of view. In addition, the results reveal the risks and reasons why students decide to migrate. This is an important issue for policy makers to better understand migration reasons and those seeking to forecast and prevent/regulate migration flows.

Recommendations

The incorporation of risk attitudes in migration decision analysis from the perspective of behavioural economics was tested empirically. Scientific results could result in practical implications analysing and applying for policy design. Government designing policy decisions should consider migration behaviour considering the risk attitudes. It would allow to more precisely identify the effect of changes in socio-economic situation.

In addition to the existing research, which measures the willingness of emigration, migration risk attitudes could be added. For example, a study called "SPS: Monitoring of Lithuanian Social Problems" (Krupavičius et al., 2017) examines the attitudes of Lithuanian population towards social policy consisting of such areas as evaluation of social policy, attitudes towards social problems, self-

Table 3.15. The probability of migration likelihood (designed by the author)

Socio-economic situation evaluation	The probabilities of international migration decision willingness
completely unsatisfied	$prob(Y=5)=1-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+1.808}}\right)=0.26$
	$prob(Y=4)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+1.808}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+1.808}}\right)=0.42$
	$prob(Y=3)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+1.808}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.808}}\right)=0.23$
	$prob(Y=2)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.808}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+1.808}}\right)=0.04$
	$prob(Y=1)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+1.808}}\right)=0.05$
unsatisfied	$prob(Y=5)=1-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+0.722}}\right)=0.11$
	$prob(Y=4)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+0.722}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+0.722}}\right)=0.31$
	$prob(Y=3)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+0.722}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.722}}\right)=0.35$
	$prob(Y=2)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.722}}\right)-\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+0.722}}\right)=0.10$
	$prob(Y=1)=\left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+0.722}}\right)=0.12$

Note: *prob (Y = 1, 2, 3, 4, 5)* – the probability that a person would not consider (Y = 1), neither consider nor do not consider (Y = 2), somewhat consider (Y = 3), consider (Y = 4), completely consider (Y = 5) emigration

Table 3.15. The probability of migration likelihood (designed by the author)

Socio-economic situation evaluation	The probabilities of international migration decision willingness
somewhat unsatisfied	$prob(Y=5) = 1 - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+0.603}}\right) = 0.10$
	$prob(Y=4) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+0.603}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+0.603}}\right) = 0.29$
	$prob(Y=3) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654+0.603}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.603}}\right) = 0.36$
	$prob(Y=2) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112+0.603}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+0.603}}\right) = 0.11$
	$prob(Y=1) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)+0.603}}\right) = 0.14$
satisfied	$prob(Y=5) = 1 - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453+0.722}}\right) = 0.05$
	$prob(Y=4) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-3.453}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654}}\right) = 0.20$
	$prob(Y=3) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-1.654}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112}}\right) = 0.36$
	$prob(Y=2) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-0.112}}\right) - \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)}}\right) = 0.15$
	$prob(Y=1) = \left(\frac{1}{1+e^{1.773\times0.659+(-0.130)\times4.325-(-0.613)}}\right) = 0.23$

Note: *prob (Y = 1, 2, 3, 4, 5)* – the probability that a person would not consider (Y = 1), neither consider nor do not consider (Y = 2), somewhat consider (Y = 3), consider (Y = 4), completely consider (Y = 5) emigration

evaluation of respondents' social position; education, labour market, etc. As the study already consists of the emigration willingness question and evaluation of important migration factors, supplementing the questionnaire with additional questions for measuring migration risk attitudes, could provide valuable insights for international migration monitoring and more precise forecast. Also, the collected data of migration risk attitudes can be valuable for policy makers considering the effect of the implementation of different programs which allow to manage emigration flow in advance, i.e. when the emigration decision is in the willingness phase. It can be a valuable additional instrument outlining the most important indicators in such national strategy documents as "Lithuania 2030".

Limitations

Nevertheless, regardless of the current instrument's readiness for usage, limitations need to be identified. The following can be listed as the main limitations:

- ***The international migration decision phase***
  Dependent variable, i.e. international migration decision, consists of all pre-migration decision-making phases and actual migration decision is not analysed.
- ***Reference point***
  Reference point is one feature of the prospect theory, which in accordance with Kahneman and Tversky (1979) can be described as "/.../ one's current asset level, but sometimes it can be an expectation, from where the gains and losses are coded, which may differ from the current asset level" (in Virlics, 2013, p. 1013). This dissertation identifies the reference point as the average of graduates' salary after graduating. Other reference points were not in the scope of this dissertation which can have some influence on risk attitudes.
- ***Migration destination country and consideration of other important circumstances***
  Respondents were asked to disassociate their migration decision from a particular country. Modelling situations, wages and price differences between the origin and destination counties were taken using data of the United Kingdom. But since the destination country can have a meaningful impact as well, it can be considered a limitation that such effects were not evaluated. Also it was disassociated from such factors as differences between countries' tax deduction from salary, more detailed effects of occupation and emigration costs.
- ***Socio-economic migration factors***
  The impact of rather broad groups of socio-economic migration factors was taken in the analysis due to the number of respondents and the complexity of new instrument. The consideration of narrower socio-economic factors could provide more concrete actions for policy makers.
- ***Complexity of designed methodology***
  One of the main advantages of eliciting methods is the identified availability of parameters estimation (Charness, Gneezy and Imas, 2013). But due to the complexity of the designed methodology, some limitations of sample can emerge, i.e. because of the complexity in simulation question, some groups of

society cannot understand the question properly (e.g. people who have lower education and are not familiar with such terms as probability, etc.).

But such limitations as reference point, migration destination country and other important circumstances, socio-economic migration factors can be easily avoided.

Implications for future research

Implications for future research are shortly represented as the following:

- ***Actual migration analysis***
  In addition to the analysis of respondents' willingness to emigrate, the questionnaire was supplemented with the inquiry of agreement to be contacted in future with the question of whether the person emigrated or not. It will allow to collect the data of concrete actions and analyse the data of migration risk attitudes and actual migration decision after approximately 4 years.
- ***Observation of people's migration risk attitudes changes***
  For long-period analysis, it is relevant to observe people's migration risk attitudes and link them with the changes in country's socio-economic environment.
- ***Value function application***
  The collected data allows to further work on the value function analysis and its application on international migration decision forecast in accordance with various additional variables, such as socio-economic indicators, individuals' characteristics, etc.
- ***An elaborated analysis of migration factors and migration risk attitudes on migration decision***
  Though the models supplemented by risk attitudes (risk preference and loss aversion) describe people's emigration willingness more precisely, but it cannot completely explain people's migration decision because there are other factors which have significant impact on migration decision. Therefore, it needs to be studied in more detail including such factors as family reasons, personal life conditions, and wish for changes, etc., to reveal irrational individuals' behaviour. Such analysis would provide more detailed guidelines for policy makers.
- ***The impact of expectations satisfaction***
  Additional parts of the questionnaire enable to analyse the impact of respondents' expectations on migration decision formation. Also, it would provide a rich pattern analysing the impact of expectations after the fact action will be known in approximately 4 years. Then the possibilities of using the expectation data in advance will be known, i.e. how precisely can the expectations' variables predict migration behaviour.
- ***Analysis of other group and/or countries analysis***
  The application of the instrument methodology can be expanded to other groups of respondents. Also, cluster analysis of differences between some regions, e.g. European Union countries, can be identified.

- ***Instrument redesign for emigrants' return analysis***
  Migration risk attitudes can provide valuable insights, resulting in guidelines for policy makers, analysing the case of emigrants return. There is a potential to redesign the current version of the methodology.

CONCLUSIONS

1. Migration factors which have an impact on migration decision were revealed from the analysis of migration theories developed since 1776 up to nowadays. The main migration factors were highlighted as (1) too low wages, (2) wage differences and income inequality, (3) low level of origin country's economic development, (4) price politics of products, (5) person's unemployment, (6) level of unemployment in a country, (7) too low employment opportunities, (8) not enough new work places, (9) tax system and the burden of it, (10) personal life conditions, (11) study and education system, (12) cultural life (access to cultural centres, museums, etc.), (13) social conditions, (14) the level of health care, (15) environmental conditions, (16) family reasons, (17) political corruption in origin country, (18) intolerance of personal attitudes, discrimination, (19) intention to spread culture and religion, (20) wish for changes, (21) willingness to take risks.

2. The impact of risk attitudes on migration decision was highlighted by applying the approach of prospect theory of behavioural economics, investigating the evaluation of risk attitudes in the migration context and in the domains of gains and losses. It explains the tendency of preference that people are more likely to avoid losses than seek gains, addresses the issue of people's irrational behaviour; an important role can be played by loss aversion, a concept of behavioural economics concept associated with prospect theory.

3. The theoretical model of evaluating the impact of migration factors on migration decision from the perspective of behavioural economics were proposed, encompassing the constructs of (1) migration decision as a dependent variable, (2) socio-economic migration factors, (3) migration risk attitudes and (4) general risk preference as an independent variables.
   In this dissertation, the dependent variable, i.e. ***international migration decision*** was defined as *pre-migration decision-making attributing a person with some extent of willingness (1) to migrate to foreign country for no less than twelve months or (2) to stay in their home country*.
   Socio-economic migration factors were defined by considering push migration factors which were systematized from an analysis of scientific literature.
   Risk was defined by two groups of parameters, i.e. (1) risk attitudes in the migration context in accordance with the parameters of prospect theory, consisting of risk preference and loss aversion, and (2) general risk preference, revealing the willingness to take everyday risks.

4. The methodology for evaluating the impact of migration factors on international migration decision from the perspective of behavioural economics was designed by considering each independent variable of (1) socio-economic migration factors, (2) general risk preference, and (3) international migration risk attitudes. For the latter variable, encompassing risk preference and loss aversion, the

eliciting framework based on behavioural economics prospect theory was redesigned, which enabled to quantify the parameters of risk attitudes in the domain of gains and losses directly linked to international migration context. The comprehensive steps of quantifying risk attitudes by applying the eliciting method were provided. Whereas socio-economic migration factors were grouped using principal component analysis, and general risk preference was measured by the willingness to take everyday risks.

In accordance with the results of empirical study, designed methodology of migration factors on international migration decision from the perspective of behavioural economics was proved as relevant. Ordinal logistic regression analysis provided the marked role of international migration risk attitudes usage on international migration decision.

5. Based on the results of the empirical study, the following impact of socio-economic migration factors and risk attitudes on international migration decision from the perspective of behavioural economics using ordinal regression analysis in the case of youth in Lithuania was identified as (1) the more satisfying are the general socio-economic situation, income and costs of living, labour market, economic development in origin country, the lower is the likelihood of international migration decision and (2) the lower are the risk preference and the higher is loss aversion, the lower is the likelihood of international migration decision.

   In accordance with the prospect theory of behavioural economics, the tendency that the lower is the risk preference, the lower is the likelihood of international migration decision can be explained by people's risk-averse preferences under the domain of gains leading to decisions of smaller outcome variance and preference of certainty of a lower gain than the chance of a larger gain, i.e. prefer safe choices to risky ones. The tendency that the higher loss aversion is, the lower is the likelihood of international migration decision points out that people are more sensitive to losses than gains leading to decisions minimizing losses.

   It is evident that risk preference and loss aversion cannot completely explain people's migration decision because there are other factors which have a significant impact on the migration decision as well. Nevertheless, migration models developed by using the parameters of the prospect theory of behavioural economics (risk preference and loss aversion) would enable to reveal the impact on international migration decision more precisely, i.e. describe and predict people's behaviour better.

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ANNEXES

Annex 1. Migration factors
(designed by the author)

	Authors		
	Cooray and Schneider (2016)	**Deluna and Darius (2014)**	**Bonasia and Napolitano (2012)**
Dependent variable	Emigration rate of high (H), medium (M) and low-skilled (L) migrants	Migration	Unskilled (U) and skilled (S) migration flow
Independent variables and impact	• Corruption: H(+)**; M(+)***; L(+)*** • Per capita income: H(-)***; M(+)***; L(+)*** • Government expenditure on education: H(-); M(-)**; L(-)* • Institutions: H(-)**; M(-)**; L(-) • Gini index: H(-); M(-)***; L(-)*** • Unemployment rate: H(+)***; M(+)**; L(+)** • Wages: H(-)***; M(-)***; L(-)*** • Visa restrictions index: H(+)*; M(+); L(+)	Pull factors: • GDP per capita: (+) • population: (+)*** • distance: (-) • unemployment rate: (+) • consumer price index: (-) • freedom from corruption (+)*** • fiscal freedom: (+) • cross exchange rate: (+) • religion: (+) • language: (+)*** • OECD: (+)	• Net migration flow: U(+)***; S(+)*** • Difference ratio of per capita GDP: U(+)*; S(-) • Difference ratio of employment rate: U(+)***; S(+)** • Difference ratio of house prices index: U(-)***; S(-)**

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively

	Authors		
	Ivlevs (2014)	**Nivalainen (2004)**	**Mayda (2010)**
Dependent variable	Intentions to move abroad (M) and willingness to work abroad (W)	Migration	Emigration rate

Independent variables and impact	• Life satisfaction: M(-)*/***; W(-)/***
	• Female: M(-)***; W(-)***
	• Age group:
	  ○ 18-24&25-34 (+)***/**
	  ○ 45-54&55-64(-)***
	• Marital status:
	  ○ single M(+)***; W(+)***
	  ○ divorced/separated: M(+)***; W(+)***
	  ○ widow: M(+); W(-)/*
	• Has children: M(-); W(-)*
	• Linguistic minority: M(+)***; W(+)**
	• Education:
	  ○ primary: M(-); W(-)***
	  ○ tertiary: M(-); W(-)***
	• Wealth index: M(+)***; W(+)***
	• Perceived income decile: M(-); W(-)***
	• Satisfied with financial situation: M(-)*; W(-)***
	• Employed: M(-); W(+)***
	• Type of settlement:
	  ○ rural: M(-); W(-)***
	  ○ metropolitan: M(-); W(+)
	• Health
	  ○ bad: M(-)/*; W(+)
	  ○ good: M(+); W(+)
	• Migrant networks: M(+)***; W(+)***
	• Family member in communist party before 1991: M(+); W(+)***
		Family characteristics:
		• age: (-)***
		• children:
		  ○ all under 7 years: (+)
		  ○ 0-17 years: (-)***
		  ○ all 7-17 years: (-)***
		• husband's education:
		  ○ upper level of upper secondary: (+)**
		  ○ higher: (+)
		• wife has higher education: (+)
		• wife in the labour force: (-)***
		• migrated 1990-1993: (+)***
		• migrated into province 1993: (+)***
		• home owner: (-)***
		• commuting: (+)***
		• unemployment experience: (+)***
		• family income: (+)**
		Regional characteristics:
		• area unemployment rate: (-)***
		• size of municipality: (+)**/***
		• share of agriculture: (-)**
		• share of industry: (-)*
			• Per worker GDP (destination): (+)***
			• Per worker GDP (origin): (+)
			• Origin country's relative inequality: (+)*
			• Unemployment rate (destination): (-)
			• Unemployment rate (origin): (+)
			• Emigration rate (t - 1): (+)***
			• Distance: (-)***
			• Common language: (+)*

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively

	Authors		
	Vernazza (2013)	**Zaiceva and Zimmermann (2008)**	**Bertocchi and Strozzi (2008)**
Dependent variable	Migration propensity	Migration abroad intentions	Migration. The non-institutional determinants of migration (N) and the impact of institutions on migration (I)
Independent variables and impact	• Individual income: (-)* • Migrant income (-)*** • Average income: (+) • Unemployed: (+)*** • Age: (-)*** • College degree: (+)* • Married: (-)*** • Children: (-)*** • Price level: (+)*** • Unemployment rate: (+)**	• Female: (-)*** • Age: (-)*** • Single: (+)** • Divorced/separated/widowed: (+)*** • Years of schooling: (+)*** • Blue-collar: (-)* • Self-employed: (+)* • Unemployed: (-) • Inactive: (-) • Homeowner: (-)* • Rural: (-)*** • Small town: (-)** • Have children: (-)*** • Household size: (-) • Moved abroad before: (+)*** • Satisfied with salary: (-)** Macroeconomic determinants: • GDP per capita: (-)*** • unemployment rate: (-)*	• Wage gap: N(+)*; I(+)* • Agricultural share: N(-)**; I(-)** • Share of young: N(-)**; I(-)* • Institutional quality index: I(+)* • Political institutions index: I(+)** • Migration institutions index: I(+)*

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively

	Authors		
	Lim and Morshed (2015)	**Cai et al. (2014)**	**Hyll and Schneider (2014)**
Dependent variable	Migration	National average international migration desires in poor (P) and rich (R) countries	Migration intention (very low; low; high; very high)

Independent variables and impact	• Home income: (-)**
	• Migrant stock: (+)***
	• Partner's income: (+)**
		• Subjective well-being: P(-)***; R(-)***
		• Household income: P(+); R(-)**
			• Aversion to relative deprivation:
			  ○ some: (+)***
			  ○ high: (+)***
			• West contact:
			  ○ not close: (+)***
			  ○ close: (+)***
			• Relative income: (+)
			• Economic situation: (-)*

Note: *, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively

	Authors	
	Hoppe and Fujishiro (2015)	**Etzo (2011)**
Dependent variable	Migration decision-making by predecisional (I), preactional (II), and actional phase (III)	Migration flow, gross migration flows
Independent variables and impact	• Age: I(-)***; II(-)*; III(-)*** • Network (German & Spanish): I(+); II(+); III(+)*** • Unemployed: I(+)**; II(+)***; III(+)*** • Job benefits: I(+)***; II(+)***; III(+)* • Career aspiration: I(+)**; II(+)***; III(+)*** • Self-efficacy: I(+); II(+)*; III(+)*	• Opop: (+)*** • Dpop (population size): (+)*** • Aerial distance (in km) between the main city in the sending region and the main city in the destination region: (-)*** • Per capita GDP in the origin region: (-) • Per capita GDP in the destination region: ((+)*** • Eta: (+)*** • Regional unemployment rate in region i: (+)*** • Regional unemployment rate in region j: (-)*** • Cons: (-)***

Note: *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels respectively

	Authors	
	Hadler (2006)	**Van Der Gaag and Van Wissen (2008)**
Dependent variable	Migration intention	The crude migration rate
Independent variables and impact	Objective individual characteristic: • *age 15 to 24: (+)* • age 25 to 34: (+) • age 35 to 44 (REF) • gender: (-) • education: (-) Household characteristics: • *income of household: (+)* • household size: (+) • *number of children: (-)* Previous moves: • *previous distance: (+)* • foreigner: (+) • *number of previous moves: (+)* Occupation: • worker: REF • *student: (+)* • retired: (-) • *unemployed: (+)* • *housewife/man: (+)* • *white collar: (+)* • manager: (+) • self employed: (-) Motives: • *career: (+)* • finance: (+) • social benefits: (+) • public services: (-) • *social life: (+)* • none of these: (-) • *other: (+)* • do not know: (-) Contextual characteristics: • *size of community: (+)* • *GDP country: (+)* • *GDP-gap of region: (+)*	ECONOMIC VARIABLES Labour market indicators: • GDP per capita: • unemployment • employment Financial indicators: • inflation • lending interest • real interest Structural indicators: • female labour force participation • employment in services Ageing of the labour force

Note: *italic* denotes significant effects in Hadler (2006)

	Authors		
	Cattaneo (2008)	**Jennissen (2003, 2004)**	**Polgreen and Simpson (2011)**
Dependent variable	Propensity to migrate	Net migration rates	Emigration
Independent variables and impact	• Unemployment differential: (-)* • Wage differential: (+)**	Economic variables: • GDP per capita: (+)*/** • unemployment: (-)/**	• Happiness: (-)** • GDP: (+)** • GDP^2: (-)** • GDP growth: (+)**

Note: * and ** indicate significance at the 5 percent and 1 percent levels respectively in Cattaneo (2008) and Jennissen (2003, 2004); * and ** indicate significance at the 10 percent and 5 percent levels respectively in Polgreen and Simpson (2011)

Annex 2. Risk and migration factors
(designed by the author)

		Authors		
		Akgüç et al. (2016)	**Nowotny (2014)**	**Jaeger et al. (2007)**
Short description		"/.../ the effect of risk tolerance and other determinants on the probability to migrate /.../" (Akgüç et al., 2016, p. 168)	The effects of time preference and risk aversion on the willingness to become internationally mobile (migration & cross-border commuting)	"/.../ the first direct evidence that individuals' risk attitudes affect their migration propensities" (Jaeger et al., 2007, p. 18)
Rational/irrational		More rational	No	Directly no
Whether prospect theory was applied?		No	No	No
Preferences/ utility		It is not identified, just expected utility maximisation is mentioned in theoretical part	Time preference	No, stable preferences are mentioned theoretically
Empirical		Yes	Yes	Yes
Migration		Internal migration (rural-urban migration)	International migration and cross-border commuting	Internal migration ("movers" and "stayers"[6]) Author uses the terms: - propensity to migrate - probability of migrating
Decision phase		Actual decision (mover or stayer)[7]	Willingness (propensity, intentions) to migrate	Propensity
Model	Empirical estimation/test	A micro-econometric model with a probit function/probit model	A multinomial probit regression model	Probit model; multivariate regression
	Base of theoretical framework	It is not identified	It is not identified	It is not identified
	Country(-ies)	China (economy in transitions)	Czech Republic, Slovakia, and Hungary	Germany

[6] Movers – "individuals who changed region at least once between 2000 and 2005"
Stayers – "individuals who did not change region in that period" (Jaeger et al., 2007, p. 7)
[7] "Movers (N = 1,670) are rural household members who migrated for work at least once before 2008. Stayers (N = 6,968) are rural household members who never migrated for work before 2008."

		Authors		
		Akgüç et al. (2016)	**Nowotny (2014)**	**Jaeger et al. (2007)**
	N (quantity, age)	8,638 individuals (movers - 1,670 and stayers - 6,968)	5,252 (Czech Republic - 2,114, Slovakia - 1,412, and Hungary - 1,726); 25-54 years of age	10,967 (adults, 18-65)
	Year	2009 (question on risk attitude)	September-November 2010	2000-2005
	Data source	Rural household survey of the database on rural urban migration in China (RUMiC): data of stayers and migrants (cross-sectional data, survey data)	Individual-level survey data collected through personal face-to-face interviews	German socio-economic panel survey (SOEP)
Variables of migration	**RISK (specification, source and results)**	Subjective measure of risk was obtained by asking a general risk attitude question (self-assessed risk tolerance): "Generally, some people prefer to take risk, and others try to avoid any risk. If it is to rank the risk from low to high as 0 to 10 (as shown by the following chart), 0 is "never take risk," 10 is "like to take risk," which level do you belong to? (choose a number from 0 to 10)." (Akgüç et al., 2016, p. 168)	• Risk aversion (r): Hypothetical situation: "Suppose you are being offered a lottery ticket that either wins you {a monetary amount} in cash immediately or nothing at all. Both events are equally probable. What is the most that you are willing to pay for such a lottery ticket?" (Nowotny, 2014, p. 145) (r>0.5 - risk-averse, r=0.5 - risk-neutral, and r<0.5 - risk-loving). • l=L/2 (risk-neutral) • l<L/2 (risk-averse) • l>L/2 (risk-loving) --> Author defines risk aversions as "one minus proportion of the lottery prize that the individual would be willing to pay for the lottery ticket (r = 1-l/L)" (Nowotny, 2014, p. 147) (here l - the price person is willing to pay for the lottery ticket; L - the total prize):	• Index of willingness to take risks (Risk index, in general)[8] 0 ("unwilling to take risks" - complete unwillingness to take risks) ↔ 10 ("very willing to take risks", - complete willingness to take risks) • Risk indicator (a binary indicator) 6-10 (equal 1): "relatively willing to take risks", "relatively unwilling to take risks" It was provided index on the willingness to take risks in different contexts on the same 11-points scale as the general risk (2004): - careers - financial matters - driving - sports - health matters - trusting others

[8] "How do you see yourself: Are you generally a person who is fully willing to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: "unwilling to take risks" and the value 10 means: "very willing to take risks"." (in Jaeger et al., 2007, p. 4)

		Authors		
		Akgüç et al. (2016)	**Nowotny (2014)**	**Jaeger et al. (2007)**
			• r > 0.5 (risk-averse) • r = 0.5 (risk-neutral) • r < 0.5 (risk-loving) Time preference is used as well	
	OTHER	DEPENDENT VARIABLE • The decision to migrate/probability to migrate INDEPENDENT VARIABLES[9] (McFadden's Pseudo $R^2 = 0.178$[10]) Individual characteristics: • gender, male: (+)*** • age&age^2/100: (-)***&(+) • education level: junior middle school: (+)** senior middle school: (-) • marital status: (+) • height: (+) • weight: (+) Household characteristics: • number of children: (-) • number of siblings: (+)*** • family (household) size: (+)** • the average land size: (+) / (-)[11] • the average age in the household: (+)*** • income level: (+)	DEPENDENT VARIABLE • Individual's willingness to migrate, commute or stay ("Would it be conceivable for you to work abroad?" (Nowotny, 2014, p. 144)). Answers: "yes" or "no". If yes: "/.../ whether they would prefer "daily commuting", "weekly commuting", "monthly commuting", or "living and working abroad". INDEPENDENT VARIABLES (S - stay; M - migrate; for commute see Nowotny (2014, p. 150)) Model 1: • time preferences. The discount rate: S(+)***; M(-)*** • risk aversion: S(+)***; M(-)** • age: S(+)***; M(-)*** Model 2: • the discount rate: S(+)**; M(-)* • risk aversion: S(+)***; M(-)* • age: S(+)***; M(-)***	DEPENDENT VARIABLE • Whether the individual migrated between 2000 and 2005 INDEPENDENT VARIABLES[13] The case with risk index: • risk index: (+) **Pseudo-R^2=0.0100** • age: (-) • gender (female): (+) **Pseudo-R^2=0.0746** • marital status (married): (-) • years of education (+) • place of origin (Germany): (+) • place of origin (abroad): (-) **Pseudo-R^2=0.1067** The case with risk indicator: • risk indicator: (+) **Pseudo-R^2=0.0105** • age: (-) • gender (female): (+) **Pseudo-R^2=0.0758** • marital status (married): (-)

[9] Marginal effects are provided in the case of "Everyone at home". Author provides case for "Household head", "Spouse", and "Other members" as well. Years of education and monthly income attribute to human capital and labour market

[10] The case for "Everyone at home"

[11] In the case for household head

[13] Authors do not provide the significance levels

	Authors		
	Akgüç et al. (2016)	**Nowotny (2014)**	**Jaeger et al. (2007)**
	Risk: • risk level/risk tolerance: (+)*** There are five incremental regressions of the decision to move of household head presented in the article. Here is the list of significant variables in the models (value of McFadden's Pseudo R^2 is provided in the models'[12] brackets): • Model I (0.0106): - risk level: (+)*** • Model II & III (0.0775 & 0.0785): - risk level: (+)*** - male: (+)*** - education (senior middle school): (-)* • Model IV (0.0786): - risk level: (+)*** - male: (+)*** - number of children: (-)* • Model V (0.0970): - risk level: (+)*** - male: (+)***	• marital status (single): S(-)***; M(+)*** • kids: S(+)***; M(-)** • network: S(-)***; M(+)*** • previous mobility: S(-)***; M(+)*** • car owner: S(-); M(-) • home owner: S(+); M(-)** • commuter (commuting experience): S(+); M(-)* • gender (Female): S(+)***; M(-)*** Skill levels and possibilities of earnings abroad (educational attainment: primary; secondary or tertiary education, and foreign language: English; German and other foreign language): • secondary education: S(-); M(+) • tertiary education: S(+); M(+) • English: S(-); M(+)*** • German: S(-)***; M(+)*** • other foreign language: S(-)***; M(+) Employment status (private sector employee; public sector employee; self-employed; unemployed; out of labour force): • public sector: S(+)**; M(-) • self-employed: S(+)***; M(-)*** • unemployed: S(-)*; M(+) • out of labour force: S(+)***; M(-)*** • deprivation ("/.../ is measured as the difference between the respondents'	• years of education (+) • place of origin (Germany): (+) • place of origin (abroad): (-) **Pseudo-R^2=0.1084** Other factors which were analysed (Random effects by probit): • unemployment status (+) • self-employment status (+) • gross monthly earnings (-) • home ownership / own dwelling (-) • number of children in household: (-) • years of education: (+) • marital status (married): (-) • place of origin - Germany: (+ - abroad: (-) Reasons for migration were considered as well: - family - job - housing - other

[12] for detailed information of all variables included in the model see Akgüç et al. (2016)

		Authors		
		Akgüç et al. (2016)	Nowotny (2014)	Jaeger et al. (2007)
			assessments of their friends' and relatives' living conditions on a 11-point Likert scale and their own perceived living conditions" (Nowotny, 2014, p. 148)): S(-)***; M(+)** • regional dummies "/.../ to capture regional differences in the costs of migration and commuting such as distances from potential workplaces, accessibility and transport infrastructure characteristics" (Nowotny, 2014, p. 148)	

Note: (+/-)***p<0.01, (+/-)**p<0.05, and (+/-)*p<0. 1: statistically significant positive/negative effect and number of the asterisks show the significance level; (+/-) positive/negative effect, no statistically significant

	Authors		
	Williams and Baláž (2014)	**Baláž and Williams (2011)**	**Anam, Chiang and Hua (2008)**
Short description	4 profiles, risk and competences	Migration, risk and uncertainty (risk vs. uncertainty)	Optimum timing of migration
Rational/irrational	Rational and bounded rational is mentioned. "Socio-economic characteristics identified which groups were more likely to migrate, but failed to predict which individuals within these groups became migrants. In part, this is because traditional economic approaches assumed a rational decision-making framework, wherein the costs and benefits of migration were evaluated." (Williams, Baláž, 2014, p. 3) Authors emphasize that other authors use rational cost-benefits approach though few of them involve the risk	Yes because authors consider the aspects as "[i]ndividuals do not possess all the information required for optimal decision making, and therefore cannot maximize their utilities. Instead, a satisfying rather than optimal decision is taken" (Baláž, Williams, 2011, p. 6)	More rational
Whether prospect theory was applied?	No, but Kahnemen and Tversky is mentioned	No, but Kahneman and Tversky is mentioned (risk aversion, tolerance, etc.)	No
Preferences/utility	It is not mentioned directly, behaviouralist approaches are identified	"/.../ cannot maximize their utilities" (Baláž, Williams, 2011, p. 6)	Assumption that family preference is based on the Von Neumann-Morgenstein utility
Empirical	Yes	Yes	Theoretical model was not tested empirically
Migration	International mobility: "/.../ relationships between risk and four different types of international mobility profiles /.../" (roamers, aspirers, ex-migrants, stayers) (Williams, Baláž, 2014, p. 4)	International migration (migrants and non-migrants)	International
Decision phase	Respondents identify themselves in one of 4 groups by previous behaviour (migrant or non-migrant, where migrant is defined as moved for at least 6 months during the last 10 years) vs. future migration	Fact (difference between people who had and did not have migration experience)	Indirectly of already migrated (for calculations of average waiting time) but insights is more based on potential migrants/migrants' families

		Authors		
		Williams and Baláž (2014)	**Baláž and Williams (2011)**	**Anam, Chiang and Hua (2008)**
		intentions (intending, not intending) The willingness to take risk in mobility; intentions to migrate		
Model	Empirical estimation/test	Logistic regression	"Impact of gender and migration on willingness to take risks and self-assessed capabilities: t tests" (Baláž, Williams, 2011, p. 13); "willingness to take risk is analysed using mixed-design Anova" (Baláž, Williams, 2011, p. 2)	A correlation coefficient method (cross-autocorrelation) for estimation of the average migration time lag / average waiting period; most part - intuitions
	Base of theoretical framework	The framework of risk tolerance/aversion and competence to manage risk	The methodology of experiment developed by Fox and Tversky (1995) is used	The real options and portfolio theories
Data and Sample	**Country (-ies)**	UK	Slovakia	Migrants from Hong Kong to Canada
	N (quantity, age)	5,200 individuals (final - 4,528) , 18 years old and over	539 Slovak students at Bratislava Economics University, 20 - 26 years old	276
	Year	10 days in July 2011	2008	1980-1997 and 1997-2002
	Data source	By online survey sample (questionnaire) (ordered by authors)	Primary data collection by authors	Aggregate data: • immigrant visas issuance ("records of immigration visas issued by representative consulate in the source country"); • subsequent landing data ("records of individuals physically landed in the destination country as immigrants") (Anam et al., 2008, p. 249)
Variables of migration	**RISK (specification, source and results)**	3 types of risk-taking: "1) "pure risk" taking 2) domain-specific perceptions of risks associated with mobility 3) competence-based risk-taking"	The willingness to take risks: - risk situation - uncertainty situation Also, self-assessment of capabilities is measured where the question of	Uncertainty parameters: - risk aversion and - income volatility $R_a(I)$: the Arrow-Pratt absolute risk

		Authors		
		Williams and Baláž (2014)	**Baláž and Williams (2011)**	**Anam, Chiang and Hua (2008)**
		(Williams, Baláž, 2014, p. 1074)	willingness to take higher risks is provided. "Attitudes to risk were assessed under experimental conditions, which measured their willingness to take risks on hypothetical gambles under different conditions" (Baláž, Williams, 2011, p. 1). Risks are measured in more general context using game with balls with known and unknown probability.	aversion index. Assumption of risk neutrality or risk aversion
	OTHER	DEPENDENT VARIABLE • actual migration[14] • intended migration[15] **I.** 4 profiles: Stayers (=S), Aspirers (=A), Ex-migrants (=E), Roamers (=R) **II.** Intending migrants & non-migrants INDEPENDENT VARIABLES • (F1) expertise in travel hazards[16]: S(-)***; A(+); E(+)***; R(+)*** • (F2) mobility deterrents[17]: S(+)***; A(-); E(-)***; R(-)***	(indirectly) DEPENDENT VARIABLE • gender (F - females and M - males) and migration experience including migrants (=Y) and non-migrants (=N) (indirectly) INDEPENDENT VARIABLES • willingness to take risks measured by bets within the Ellsberg paradox in Euro; (-) shows the higher amount of bet money for people who had an	Theoretical insights: *Option value effect > Diversification effect --> the level of migration decreases* DEPENDENT: option value effect INDEPENDENT: • the degree of market uncertainty at home (+) • risk aversion: (-) • wage-pulling effect: (-) *Option value effect < Diversification effect --> the level of migration increases*

[14] "Please tell us about your migration movements in the last 10 years. This is about moving between cities, regions or country of residence, and not about moving house locally (tick one only)": (a) I did not change my permanent place of residence in the last 10 years, (b) I changed at least once my permanent place of residence in the UK, (c) I lived/worked abroad for more than 6 months. Choices: "I decided this" or "I followed family or had no choice"

[15] "Please tell us about your intentions to live or work abroad in future (tick one only)": (a) I have never considered this, (b) I considered this but dropped the idea, (c) I am considering this but have not yet made any arrangements, (d) I am firmly determined to do so and have already made arrangements (e.g. looking for information on jobs, housing abroad, applying for visa)." (Williams, Baláž, 2014, p. 1088)

[16] "/.../. Please estimate the share of each cause /.../" and "/.../. What is your estimate of the number of deaths for air, bicycle and motorcycle travel". The 9-point scale on knowledge was provided where 1 – "none" and 9 – "expert". Types of claim: *arrests; deaths; hospitalisation; passports lost/stolen; other assistance, and deaths per billion kilometres by air; bicycle and motorcycle.*

		Authors		
		Williams and Baláž (2014)	**Baláž and Williams (2011)**	**Anam, Chiang and Hua (2008)**
		• (F3) travel competences[18]: S(-)***; A(+)***; E(+); R(+)*** • (F4) migration deterrents[19] (crime, terrorism; health risks; weakening ties with family/friends; not suitable for children/family members): S(+)***; A(-)***; E(-)*; R(-)*** • (F5) foreign country deterrents (different culture/religion/legal system; different climate): S(+)***; A(-)***; E(+); R(-)*** • (F6) willingness to take everyday risks ("general risk traits")[20]: S(-)***; A(+)***; E(+); R(+)*** • (F7) risk and uncertainty ("pure risk")[21]: S(-)***; A(+); E(+)**; R(+)***	emigration experience and (+) - conversely - Risk (clear bet) Comparative: F(-)**; M(+) Non-comparative: F(-)**; M(+) - Uncertainty (vague bet) Comparative: F(-); M(+) Non-comparative: F(-)**; M(+) • self-assessment of capabilities[22]: - "I am more flexible when adapting to new situations": F(-); M(+) - "I evaluate situations more correctly and take better decisions": F(+); M(+) - "I handle problems better": F(-); M(+) - "I have no problems with my	DEPENDENT: diversification effect INDEPENDENT: • the degree of market uncertainty at home: (-) • risk aversion: (+) • wage-pulling effect: (+) • number of family members: (+)

[17] "Please tell us how important these risks would be in deterring you from travelling there?" (Williams, Baláž, 2014, p. 37) The 9-point scale was provided where 1 – "absolutely not" and 9 – "absolutely yes"
Factors: poor hygiene; health concerns; weather; crime/terrorism; poor accommodation; political unrest; local customs/religion; natural disasters
[18] "Please compare yourself to your best friends /.../" and 9-points scale was used where 1 – "certainty not" and 9 – "certainty yes". Sentences for evaluation: (a) adapt more flexible to new situations than my friends, (b) I manage my problems better than my friends, (c) I am able solve problems related to travelling abroad better than my friends, (d) I would adapt better to living abroad than my friends, and (e) I am willing to take more risk than my friends (Williams, Baláž, 2014, p. 1087)
[19] "Please evaluate the following as motives for you to stay in the UK vs. living/working abroad?" The 9-point scale was provided where 1 – "absolutely unimportant" and 9 – "absolutely important".
Motives to go: "(a) higher income/better job, (b) family/friends living there, (c) novelty seeking: new people, countries, cultures".
Motives not to go: "(d) different culture/religion/legal system, (e) different climate, (f) crime, terrorism, (g) health risks, (h) weakening ties with family/friends, (i) not suitable for children/family members" (Williams, Baláž, 2014, p. 1087)
[20] How do you rate your willingness to take risks in other areas of your life? The 9-point scale was provided where 1 – "absolutely not" and 9 – "absolutely yes". Statements: (a) I often drive too fast, (b) I often smoke too much, (c) I often do risky sports, (d) I often drink too much

		Authors		
		Williams and Baláž (2014)	**Baláž and Williams (2011)**	**Anam, Chiang and Hua (2008)**
		• (F8) foreign country allurement: S(-)***; A(+)***; E(+)*; R(+)*** Socio-demographic characteristics/ variables (ordinal scale): • age: S(+)***; A(-)***; E(+)***; R(-)*** • gender: S(-)*; A(+); E(+)***; R(-) • education: S(-)***; A(+); E(+)*; R(+)*** Intending migrants vs. non-migrants (R^2=0.276): • F1: (+)*** • F2: (-)*** • F3: (+)*** • F4: (-)*** • F5: (-)*** • F6: (+)*** • F7: (+)*** • F8: (+)*** • age: (-)*** • gender: (+)*** • education: (+)*** • previous migration experience: (-)***	studies": F(-); M(-)** - "I am willing to take higher risks": F(-)***; M(-) (Baláž, Williams, 2011, p. 13)	

[21] with known and unknown probability

[22] Question provided to respondents: "Please compare yourself to your best friends and rate your abilities on a scale from 0 – certainty not to 10 – certainty yes with respect to each of the following statements" (Baláž, Williams, 2011, p. 13)

		Authors		
		Gibson and McKenzie (2009, 2011)	**Czaika (2012, 2015)**	**Jong et al. (1983)**
Short description		The determinants of highly-skilled emigration	"/.../ a particular focus on the role of expectation adjustments about the general economic and labour market situation" (Czaika, 2015, p. 6)	Migration intentions based on a value-expectancy approach
Rational/irrational		Directly no but authors state that "/.../ income maximization framework does not seem to be the most appropriate model /.../" and attention should be made "/.../ on the non-income components of the utility maximization /.../" (Gibson, McKenzie, 2011, p. 28)		No Authors use subjective, anticipatory weighting; subjective expectations
Whether prospect theory was applied?		No		No
Preferences/utility		The utility maximization framework "/.../ strongly associated with preference variables, such as risk aversion and patience /.../" (risk and time preference) (Gibson, McKenzie, 2011, p. 19)		No
Empirical		Yes	Yes	Yes
Migration		Emigration, non-migration and return migration	Intra-European migration flows towards Germany	International and internal migration
Decision phase		Fact: respondents are migrants, return-migrants and non-migrants	Fact (inflow): Foreign annual inflow in Germany German annual inflow in Germany (Bundesamt Fuer Statistik, 2011 in Czaika, 2012, 2015).	Intentions; "potential migrants"
Model	Empirical estimation/test	A probit model	System dynamic panel estimation (GMM) The dynamic panel regression	By means of regression models; By multiple regression models with standardized regression coefficients using ordinary least squares (OLS) statistical tests

		Authors		
		Gibson and McKenzie (2009, 2011)	**Czaika (2012, 2015)**	**Jong et al. (1983)**
	Base of theoretical framework	The utility maximization framework but authors state that income maximisation framework does not reflect		A value-expectancy approach to migration intentions
Data and Sample	**Country (-ies)**	Three Pacific countries: Tonga, Papua New Guinea (PNG) and New Zealand	"/.../ inflows from 26 EU member states to the 16 German Federal States separately for foreigners and German citizens" (Czaika, 2015, p. 67)	From Ilocos Norte (a largely rural province in the Philippines) to Manila (internal migration) and to Hawaii, U.S.A. (international migration)
	N (quantity, age)	Very highly skilled (top students): New Zealand = 371 Tonga = 193 PNG = 236	Foreign migrants: 3122-3138 German migrants: 2863-2879	Adults (18-64 years old) 1,744: 1,403 (non-movers) and 341 (intended movers)
	Year	Top students who graduated high school between the period of 1976-2004	2001-2010	June -August, 1980
	Data source	Survey by authors	• The migration flow data: the German population register system • Expectations about the future economic situation in all EU member states at the micro-level: monthly EU business and consumer survey run by the European Commission • Job vacancies and foreign employment: German Federal Employment Agency	Interview data (individual and household level)
Variables of migration	**RISK (specification, source and results)**	Risk preferences (in probit risk seeking score is taken): question was taken from the German Socio-Economic Panel; 11 point-scale used: an individual state if he generally is a person who is fully prepared to take risks or tries to avoid. In Jaeger et al. (2010) used as well		Risk taking is one of component in personal trait

		Authors		
		Gibson and McKenzie (2009, 2011)	**Czaika (2012, 2015)**	**Jong et al. (1983)**
	OTHER	DEPENDENT VARIABLE • the likelihood of ever having migrated INDEPENDENT VARIABLES • age: (+)*** • gender (female): (+/-) "/.../ no difference in migration rates of male and female top students" (Gibson, McKenzie, 2011, p. 25) **Parental education:** • mother has secondary school or less: (-) **Birth place:** • born abroad: (+/-) "/.../ no difference in the migration rates of top students who were born abroad from those who are born in the home country" (Gibson, McKenzie, 2011, p. 25) **Risk and time <u>PREFERENCES</u>:** • risk seeking score: (+)*** "Risk seeking individuals are more likely to have ever migrated /.../" (Gibson, McKenzie, 2011, p. 25) • dummy for being patient: (+)/(+)** "More patient individuals are /.../ more likely to have ever migrated" (Gibson, McKenzie, 2011, p. 25). Patience were measured giving value equal to 1 "/.../ if an individual	DEPENDDENT VARIABLE annual bilateral inflow, quarterly bilateral inflow INDEPENDENT VARIABLES ➢ general economic situation ➢ unemployment • Economic prospect indicator (European Commission, 2011 in Czaika, 2015) 1. future general economic prospects "How do you expect the general economic situation in this country to develop over the next 12 months?" (Czaika, 2015, p. 79) ○ get a lot better ○ get a little better ○ stay the same ○ get a little worse ○ get a lot worse ○ don't know *Negative economic prospect (origin) and positive economic prospect (Germany) converted into binary* 2. future unemployment prospects "How do you expect the number of people unemployed in this country to develop over the next 12 months?" ○ increase sharply ○ increase slightly ○ remain the same ○ fall slightly	DEPENDENT VARIABLE • intentions (dichotomous variable divided into intended movers and non-movers) INDEPENDENT VARIABLES Intentions to move to Hawaii (international migration)[25]: • value-expectancy ○ value-expectancy (Ilocos): (+) ○ value-expectancy (Manila): (-)*** ○ value-expectancy (Hawaii): (+)*** • personal efficacy and risk taking ○ getting ahead matter of luck (disagree): (+)** **Adjusted R^2= 0.020** **(Model 1)** • personal efficacy and risk taking ○ risk taking: (+) ○ getting ahead matter of luck (disagree): (+) **Cumulative Adj. R^2=0.025** **(Model 2)** • migration norms and experience ○ perception of norms for permanent migration: (+)*** ○ prior migration experience: (+) ○ number of times visited Manila: (+)***

[25] see results for the case of the internal migration in Jong et al. (1983)

	Authors		
	Gibson and McKenzie (2009, 2011)	**Czaika (2012, 2015)**	**Jong et al. (1983)**
	would accept $1100 in one year's time compared to $1000 today" (Gibson, McKenzie, 2011, p. 25). **Subjects studied in secondary school:** • studied a foreign language: (+)*** a strong positive association (19% higher likelihood of migrating) • studied all three science subjects (biology+chemistry+physics): (+)*** a strong positive association (21% higher likelihood of migrating) **Macroeconomic variables:** • real exchange rate: (-/+) "A high real effective exchange rate means that foreign earnings have less purchasing power in the home country, which we would expect to lead to less migration."[23] (Gibson, McKenzie, 2011, p. 25) • GDP growth relative to destination[24]: (-) **Family wealth:** • two or more trips abroad while in school (encompassing network): (+) "/.../ have a higher incidence of	o fall sharply o don't know *Negative unemployment prospect (origin) and positive unemployment prospect (Germany)* • Other control variables: - the effect of the free movement principle (EU membership): Eurostat **EU member** - migration networks (the stock of employment by nationality) -> employment related network effect; foreign employment: Bundesagentur fur Arbeit, 2011 in Czaika, 2015 **Foreign employment** - absolute differences in living standards (income per capita gaps -> in GDP per capita, in 1000 Euro considering PPS): *Eurostat, 2011 in* Czaika, 2015 **Income gap (Germany-origin)** - actual labour market effects: 1. Unemployment rate *(Bundesagentur fur Arbeit, 2011 in* Czaika, 2015)	**Cumulative Adj. R^2=0.058** **(Model 3)** • Contacts, constrains, facilitators o no. of former household members living outside local village *(=family network)*: (+)*** o Place to live and help with job search in Manila: (+) o Place to live and help with job search in Hawaii *(=family network)*: (+)*** o Money to move to Manila: (+) o Money to move to Hawaii: (+)*** o Perception of future local community development: (+) **Cumulative Adj. R^2=0.239** (**Model 4** without significant component of "Perception of norms for permanent migration" from the previous model) • individual demographic and human capital characteristics o years of school completed: (+) o marital status (not married): (-) o age: (-) **Cumulative Adj. R^2=0.239**

[23] "For example, migration for work should be more attractive to New Zealanders who were at the key age for deciding on an initial migration in 2001 when the real exchange rate index was 98 (and when $1US=$2.46NZ) than in 2007 when it was 137 (and $1US=$1.30NZ)." (Gibson, McKenzie, 2011, p. 25)

[24] "/.../ the difference in GDP growth per capita in the home country relative to the average GDP per capita growth in the main destination countries /.../. We should expect a negative relationship of this variable with migration - the better is growth at home relative to abroad the less likely migration should be" (Gibson, McKenzie, 2011, p. 25)

		Authors		
		Gibson and McKenzie (2009, 2011)	**Czaika (2012, 2015)**	**Jong et al. (1983)**
		migrating, but not significantly so" (Gibson, McKenzie, 2011, p. 26) • above average wealth in high school: (+/-) • below average wealth in high school: (-)	2. The Job Vacancy ratio: Bundesagentur fur Arbeit, 2011 in Czaika, 2015) RESULTS: • EU member: (+)*** • foreign employment (GER, log): (+)*** • income gap (GER-origin): (+)*** • unemployment rate (GER): (-)*** • unemployment rate (origin): (+)*** • vacancy ratio (GER, state level): (+)*** • negative economic prospect (origin): (+)*** • positive economic prospect (GER): (+)** • negative unemployment prospect (origin): (+)*** • positive unemployment prospect (GER): (+)*	**(Model 5)** • Household characteristics o years of school completed by household head: (+) o number of children 18 and under at home: (+) o adequacy of household financial situation: (-) o electricity in home: (-) **Cumulative Adj. R^2=0.239** **(Model 6)**

		Authors	
		Heitmueller (2002, 2005)	**Dustmann, Fasani, Meng and Minale (2015)**
Short description		Unemployment benefits, risk aversion, and migration incentives	Risk attitudes & Household migration decision
Rational/irrational		No	Not mentioned
Whether prospect theory was applied?		No	No
Preferences/utility		More expected utility	"We assume that household members differ only in their degree of risk aversion *k*, have a mean-variance utility function, and jointly maximize the sum of their utilities to act as a coherent unit" (Dustmann et al., 2015, p. 7)
Empirical		Yes	Yes
Migration		International migration	Internal migration (rural to urban)
Decision phase		• (in 2002&2005): Migration incentives; likelihood of emigration • (in 2002): Past decision (data of emigration flow, aggregate data)	Fact
Model	Empirical estimation/test	• (in 2002&2005): Calibration which is based on actual data (more theoretical insights); speculative framework • (in 2002): regression; a panel time-series; a log-linear fixed-effects model	Probit and logit estimators
	Base of theoretical framework	Paper "/.../ will develop a framework to study the impact of unemployment benefits on labour migration" (Heitmueller, 2005, p. 1)	"/.../ framework for the relation between individual risk aversion and the household decision of whether to send a migrant and whom to send /.../" (Dustmann et al., 2015, p. 5)
Data and Sample	**Country (-ies)**	• (in 2002&2005): From the Czech Republic, Hungary and Poland to Germany or France • (in 2002): emigration rate in Greece, Spain and Portugal towards the northern European Members States (EU-12) (South-North)	China
	N (quantity, age)	(in 2002): 234-329	6,332 individuals; 2,961 households Labour force (16-60 years old)

		Authors	
		Heitmueller (2002, 2005)	**Dustmann, Fasani, Meng and Minale (2015)**
	Year	• (in 2002&2005): 1996 and 1999 • (in 2002): 1990-1999	March-June, 2009
	Data source	EUROSTAT (New Cronos) and the World Bank (World Development Indicators)	Rural Household Survey (RHS) from the Rural-Urban migration in China (RUMiC) project
Variables of migration	**RISK (specification, source and results)**	• (in 2002&2005): The coefficient of risk aversion (from (-3) to 7, where 0 - risk neutrality)	• Subjective rating of willingness to take risks • Own rating of attitudes towards risk: "In general, some people like to take risks, while others wish to avoid risk. If we rank people's willingness to take risks from 0 to 10, where 0 indicates "never take risk" and 10 equals "like to take risk very much," which level do you think you belong to?" (Dustmann et al., 2015, p. 17) • "/.../ measure of willingness to take risk, which ranges between 0 (highest level or risk aversion) and 10 (lowest risk aversion) /.../" (Dustmann et al., 2015, p. 20) • "Our main variable of interest is the willingness to take risks, ..., measured on a scale from 0 (most risk averse) to 10 (least risk averse)" (Dustmann et al., 2015, p. 21) Argumentation, why such risk self-evaluation is better than lotteries is provided.
	OTHER	(in 2002&2005): • hourly earnings of manual workers in industry (PPPs) and (current exchange rates, US Dollars) • hourly wages as a gap (gap to Germany and France) • net income position of a single unemployed person • level of risk aversion • employment probabilities	DEPENDENT VARIABLE: • the probability of being a migrant, {or the probability that a household sends a migrant}[26] INDEPENDENT VARIABLE: • individual willingness to take risk: (+)***[27]

[26] The case of individual migration decision is provided. For the household model see Dustmann et al. (2015).

[27] With other controls as basic individual controls (age, a dummy for male, yeas of education, a dummy for married), additional individual controls (relation with HH head dummies, order of birth, member of siblings, and number of children), household controls (household size, structure – number of family members under 16, in the work force, and older than 60; per capita house value), and county fixed effects. Full specification of variables association see Dustmann et al. (2015, p. 60).

		Authors	
		Heitmueller (2002, 2005)	**Dustmann, Fasani, Meng and Minale (2015)**
		(in 2002): DEPENDENT VARIABLE: • emigration rate INDEPENDENT VARIABLES (in PPP): • the ratio of real GDP per capita (in both countries): (-)** • unemployment ratio (in both countries): (+)** • migration stock: (+) • unemployment benefits ratio (in both countries): (-) / (+) • social protection expenditures ratio (as share of GDP in both countries): (-)** 7 regression models are given with R-square varying from 0.1227 to 0.3660	

Annex 3. Consumer expenditure
(designed by the author in accordance with "Consumer Expenditure," 2016)

Categories of consumer expenditure	2015		
	Yearly	Monthly	%
	EUR per capita		
Food and Non-Alcoholic Beverages	1,867	156	23
Housing	1,288	107	16
Transport	1,258	105	16
Leisure and Recreation	612	51	8
Miscellaneous Goods and Services	602	50	7
Alcoholic Beverages and Tobacco	557	46	7
Household Goods and Services	514	43	6
Clothing and Footwear	487	41	6
Health Goods and Medical Services	390	32	5
Hotels and Catering	226	19	3
Communications	216	18	3
Education	45	4	1
Total	8,062	672	100

Annex 4. Knowledge intensive activities based on detailed structure of NACE Rev.2 (designed by the author in accordance with "Aggregation of Knowledge Intensive Activities based on NACE Rev.2," n.d.; Eurostat, 2008; Statistikos departamentas prie Lietuvos Respublikos Vyriausybės, 2008)

NO.	ACTIVITIES	KIA[28]	KIABI[29]
SECTION A	AGRICULTURE, FORESTRY AND FISHING	-	-
SECTION B	MINING AND QUARRYING		
05-08	Mining of coal and lignite; Extraction of crude petroleum and natural gas; Mining of metal ores; Other mining and quarrying	-	-
09	**Mining support service activities**	✓	✓
SECTION C	MANUFACTURING		
10-17	Manufacture of food products; beverages; tobacco products; textiles; wearing apparel; leather and related products; wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; paper and paper products	-	-
18	Printing and reproduction of recorded media	-	-
19	**Manufacture of coke and refined petroleum products**	✓	✓
20	Manufacture of chemicals and chemical products	-	-
21	**Manufacture of basic pharmaceutical products and pharmaceutical preparations**	✓	✓
22-25	Manufacture of rubber and plastic products; other non-metallic mineral products; basic metals; fabricated metal products, except machinery and equipment	-	-
26	**Manufacture of computer, electronic and optical products**	✓	✓
27-33	Manufacture of electrical equipment; machinery and equipment n.e.c.; motor vehicles, trailers and semi-trailers; other transport equipment; furniture; Other manufacturing; Repair and installation of machinery and equipment	-	-
SECTION D	ELECTRICIT Y, GAS, STEAM AND AIR CONDITIONING SUPPLY	-	-
SECTION E	WATER SUPPLY;SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	-	-
SECTION F	CONSTRUCTION	-	-
SECTION G	WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	-	-
SECTION H	TRANSPORTATION AND STORAGE		
49-50	Land transport and transport via pipelines; Water transport	-	-

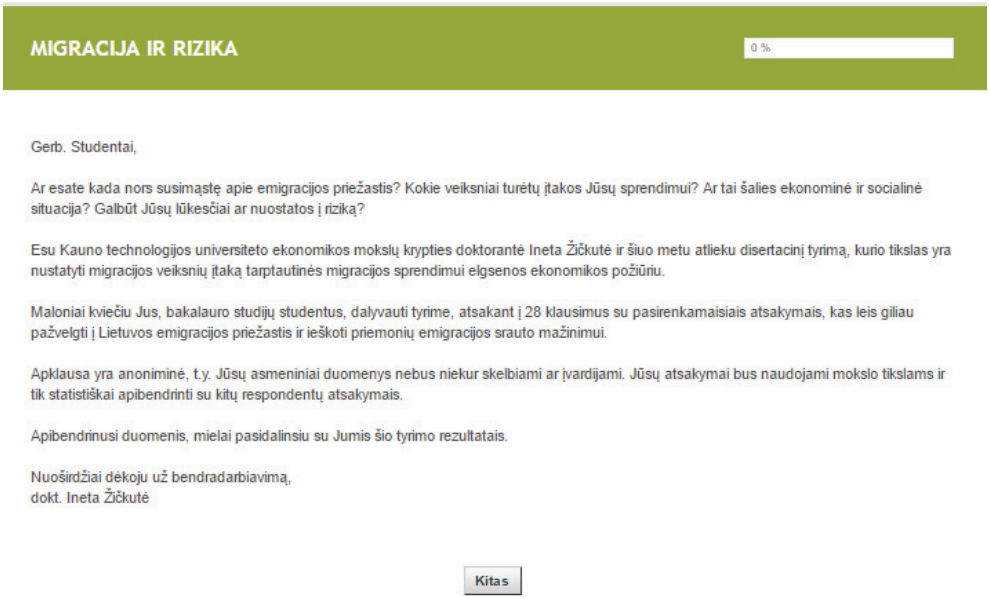
[28] Total Knowledge Intensive Activities
[29] Total Knowledge Intensive Activities – Business Industries

NO.	ACTIVITIES	KIA[28]	KIABI[29]
51	**Air transport**	✓	✓
52-53	Warehousing and support activities for transportation; Postal and courier activities	-	-
SECTION I	ACCOMMODATION AND FOOD SERVICE ACTIVITIES	-	-
SECTION J	INFORMATION AND COMMUNICATION		
58	**Publishing activities**	✓	✓
59	**Motion picture, video and television programme production, sound recording and music publishing activities**	✓	✓
60	**Programming and broadcasting activities**	✓	✓
61	**Telecommunications**	✓	✓
62	**Computer programming, consultancy and related activities**	✓	✓
63	**Information service activities**	✓	✓
SECTION K	FINANCIAL AND INSURANCE ACTIVITIES		
64	**Financial service activities, except insurance and pension funding**	✓	✓
65	**Insurance, reinsurance and pension funding, except compulsory social security**	✓	✓
66	**Activities auxiliary to financial services and insurance activities**	✓	✓
SECTION L	REAL ESTATE ACTIVITIES	-	-
SECTION M	PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES		
69	**Legal and accounting activities**	✓	✓
70	**Activities of head offices; management consultancy activities**	✓	✓
71	**Architectural and engineering activities; technical testing and analysis**	✓	✓
72	**Scientific research and development**	✓	✓
73	**Advertising and market research**	✓	✓
74	**Other professional, scientific and technical activities**	✓	✓
75	**Veterinary activities**	✓	✓
SECTION N	ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES		
77	Rental and leasing activities	-	-
78	**Employment activities**	✓	✓
79	**Travel agency, tour operator reservation service and related activities**	✓	✓
80	Security and investigation activities	-	-
81	Services to buildings and landscape activities	-	-

NO.	ACTIVITIES	KIA[28]	KIABI[29]
82	Office administrative, office support and other business support activities	-	-
SECTION O	PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY		
84	**Public administration and defence; compulsory social security**	✓	-
SECTION P	EDUCATION		
85	**Education**	✓	-
SECTION Q	HUMAN HEALTH AND SOCIAL WORK ACTIVITIES		
86	**Human health activities**	✓	-
87	Residential care activities	-	-
88	Social work activities without accommodation	-	-
SECTION R	ARTS, ENTERTAINMENT AND RECREATION		
90	**Creative, arts and entertainment activities**	✓	✓
91	**Libraries, archives, museums and other cultural activities**	✓	-
92-93	Gambling and betting activities; Sports activities and amusement and recreation activities	-	-
SECTION S	OTHER SERVICE ACTIVITIES		
94	**Activities of membership organisations**	✓	-
95-96	Repair of computers and personal and household goods; Other personal service activities	-	-
SECTION T	ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS-AND SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	-	-
SECTION U	ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES		
99	**Activities of extraterritorial organisations and bodies**	✓	-

Note: (-) not included; (✓) included

Annex 5. Questionnaire filled by respondents
(https://www.esurveycreator.com/s/MigracijaIrRizika)



MIGRACIJA IR RIZIKA

0 %

Gerb. Studentai,

Ar esate kada nors susimąstę apie emigracijos priežastis? Kokie veiksniai turėtų įtakos Jūsų sprendimui? Ar tai šalies ekonominė ir socialinė situacija? Galbūt Jūsų lūkesčiai ar nuostatos į riziką?

Esu Kauno technologijos universiteto ekonomikos mokslų krypties doktorantė Ineta Žičkutė ir šiuo metu atlieku disertacinį tyrimą, kurio tikslas yra nustatyti migracijos veiksnių įtaką tarptautinės migracijos sprendimui elgsenos ekonomikos požiūriu.

Maloniai kviečiu Jus, bakalauro studijų studentus, dalyvauti tyrime, atsakant į 28 klausimus su pasirenkamaisiais atsakymais, kas leis giliau pažvelgti į Lietuvos emigracijos priežastis ir ieškoti priemonių emigracijos srauto mažinimui.

Apklausa yra anoniminė, t.y. Jūsų asmeniniai duomenys nebus niekur skelbiami ar įvardijami. Jūsų atsakymai bus naudojami mokslo tikslams ir tik statistiškai apibendrinti su kitų respondentų atsakymais.

Apibendrinusi duomenis, mielai pasidalinsiu su Jumis šio tyrimo rezultatais.

Nuoširdžiai dėkoju už bendradarbiavimą,
dokt. Ineta Žičkutė

Kitas

1. Ar esate bakalauro studijų studentas?

- ○ Taip
- ○ Ne
- ○ Kita (įrašykite):

2. Jūsų studijų metai:

- ○ 1 kurso studentas
- ○ 2 kurso studentas
- ○ 3 kurso studentas
- ○ 4 kurso studentas
- ○ Kita (įrašykite):

3. Jūsų studijų sritis:

- ○ Biomedicinos mokslų
- ○ Fizinių mokslų
- ○ Humanitarinių mokslų
- ○ Meno
- ○ Socialinių mokslų
- ○ Technologijos mokslų
- ○ Kita (įrašykite):

4. Jūsų studijų kryptis:
(jei nėra tinkamo atsakymo, pasirinkite sąrašo pabaigoje esantį "Kita") *

Pasirinkite... ▼

5. Jūsų aukštoji mokykla:
(jei nėra tinkamo atsakymo, pasirinkite sąrašo pabaigoje esantį "Kita") *

Pasirinkite... ▼

6. Ar Jūs mokate už mokslą?

- ○ Taip
- ○ Ne
- ○ Kita (įrašykite):

7. Ką planuojate veikti, kai baigsite dabartines studijas?

- ○ Įsidarbinti Lietuvoje
- ○ Kurti savo paties verslą Lietuvoje
- ○ Tęsti studijas Lietuvoje
- ○ Tęsti studijas užsienyje
- ○ Dirbti užsienyje pagal specialybę (artimą specialybę)
- ○ Dirbti užsienyje nebūtinai aukštojo mokslo reikalaujamą darbą
- ○ Kita (įrašykite):

Ankstesnis Kitas

8. Jūsų lytis: *

- Moteris
- Vyras

9. Jūsų gimimo metai: *

Pasirinkite... ▼

10. Su esamomis bendromis Jūsų namų ūkio* pajamomis Jūs:

(*namų ūkis - tai atskirai gyvenantis vienas asmuo arba grupė viename būste gyvenančių asmenų, kurie dalijasi išlaidas ir bendrai apsirūpina gyventi būtinomis priemonėmis)

- Nejaučiate nepritekliaus
- Išsiverčiate
- Sunkiai verčiatės
- Labai sunkiai verčiatės
- Kita (įrašykite):

11. Kokios MINIMALIOS pinigų sumos Jums asmeniškai reikėtų per mėnesį per pirmuosius 3 darbo metus po studijų baigimo visaverčiam gyvenimo lygiui palaikyti? *

Pasirinkite... ▼

12. Vertinant apskritai, Jūs ... *

	Visiškai nesutinku	Nesutinku	Šiek tiek nesutinku	Nei sutinku, nei nesutinku	Šiek tiek sutinku	Sutinku	Visiškai sutinku
... esate patenkintas/-a savo dabartiniu gyvenimu	○	○	○	○	○	○	○
... esate patenkintas/-a dabartine Lietuvos ekonomine situacija	○	○	○	○	○	○	○
... esate patenkintas/-a dabartine Lietuvos socialine situacija	○	○	○	○	○	○	○
... priskirtumėte save kaip asmenį visiškai pasirengusį rizikuoti	○	○	○	○	○	○	○

Ankstesnis Kitas

13. Ar buvote išvykę į užsienį gyventi, dirbti, atlikti praktiką ar studijuoti?

- ○ Taip
- ○ Ne
- ○ Kita (įrašykite):

14. Jeigu buvote išvykę į kitą valstybę gyventi, dirbti, atlikti praktiką ar studijuoti, trumpai pakomentuokite:

(jeigu nebuvote išvykę, praleiskite šį klausimą)

Išvykos pobūdį (darbas, praktika ar studijos?):

Laikotarpį (apytikslis mėnesių skaičius):

Šalį(-is):

15. Ar Jūs planuojate išvykti gyventi ar dirbti į kitą valstybę ne trumpesniam nei 12 mėn. laikotarpiui?

- ○ Tikrai taip ir jau ėmiausi konkrečių veiksmų (pvz., bilietų išvykai įsigijimas, darbo pasiūlymo priėmimas ir pan.)
- ○ Greičiau taip ir jau esu pradėjęs domėtis apie išvykimo galimybes (pvz., renkama informacija iš draugų, organizacijų ir kt.) ar mokomasi šalies kalbos ir pan.
- ○ Turiu minčių išvykti, bet dar nesiėmiau jokių konkrečių veiksmų
- ○ Neturiu minčių išvykti
- ○ Kita (įrašykite):

Ankstesnis Kitas

16. Ties kiekvienu teiginiu pažymėkite, kiek Jūsų asmeninio gyvenimo kokybei svarbu, jog valstybėje būtų ... *

	Ypatingai nesvarbu	Nesvarbu	Šiek tiek nesvarbu	Nei nesvarbu, nei svarbu	Šiek tiek svarbu	Svarbu	Ypatingai svarbu
... sudaromos sąlygos po studijų įsidarbinusiam bakalaurui uždirbti pakankamą darbo užmokestį	◯	◯	◯	◯	◯	◯	◯
... mažinama pajamų nelygybė	◯	◯	◯	◯	◯	◯	◯
... didinama vidurinė visuomenės klasė	◯	◯	◯	◯	◯	◯	◯
... mažinamas nedarbo lygis	◯	◯	◯	◯	◯	◯	◯
... siekiama, jog kiekvienas bakalauras galėtų rasti turimą kvalifikaciją atitinkantį darbą	◯	◯	◯	◯	◯	◯	◯
... mažinamas patiriančių skurdo riziką dirbančiųjų skaičius	◯	◯	◯	◯	◯	◯	◯
... didinamas užimtumo lygis žinioms imliose verslo veiklose	◯	◯	◯	◯	◯	◯	◯
... skatinamas savarankiškai dirbančių asmenų skaičiaus didėjimas	◯	◯	◯	◯	◯	◯	◯
... siekiama, jog pinigų suma, kurią reikia skirti maistui ir būstui, sudarytų kuo mažesnę atlyginimo dalį	◯	◯	◯	◯	◯	◯	◯
... didinamos gyventojų finansinės galimybės laisvalaikiui ir pramogoms	◯	◯	◯	◯	◯	◯	◯
... kuriamos palankios sąlygos verslumui ir verslo vystymui	◯	◯	◯	◯	◯	◯	◯
... skatinamas mokslo, studijų ir verslo bendradarbiavimas	◯	◯	◯	◯	◯	◯	◯
... siekiama tapti inovatyvios ekonomikos šalimi, kur vyraujantis konkurencinis šalies pranašumas būtų ne pigi darbo jėga, o unikalių/inovatyvių paslaugų ir produktų kūrimas ir gamyba	◯	◯	◯	◯	◯	◯	◯

Ankstesnis Kitas

17. Įvertinkite DABARTINĘ Lietuvos ekonominę ir socialinę situaciją: *

	Ypatingai bloga situacija	Bloga situacija	Labiau bloga nei gera situacija	Nei bloga nei gera situacija	Labiau gera nei bloga situacija	Gera situacija	Ypatingai gera situacija
Po studijų įsidarbinęs bakalauras uždirba apie 500 Eur (atskaičius mokesčius - 418 Eur)	◯	◯	◯	◯	◯	◯	◯
20% turtingiausiųjų pajamos yra 8,5 karto didesnės nei 20% neturtingiausiųjų	◯	◯	◯	◯	◯	◯	◯
Vidurinę visuomenės klasę sudaro 26,3% šalies gyventojų	◯	◯	◯	◯	◯	◯	◯
Nedarbo lygis yra 7,9%	◯	◯	◯	◯	◯	◯	◯
Po metų nuo studijų baigimo, 5,8% bakalaurų yra registruoti darbo biržose	◯	◯	◯	◯	◯	◯	◯
Patiriančių skurdo riziką dirbančiųjų lygis yra 9,9%	◯	◯	◯	◯	◯	◯	◯
Užimtumo lygis žinioms imliose verslo veiklose yra 9,3%	◯	◯	◯	◯	◯	◯	◯
Savarankiškai dirbančių asmenų yra 11,1% nuo visų dirbančiųjų	◯	◯	◯	◯	◯	◯	◯
Asmuo maistui ir būstui išleidžia apie 39% atlyginimo	◯	◯	◯	◯	◯	◯	◯
Asmuo laisvalaikiui ir pramogoms skiria apie 8% atlyginimo	◯	◯	◯	◯	◯	◯	◯
1000 šalies gyventojų tenka 28 įmonės	◯	◯	◯	◯	◯	◯	◯
Mokslo, studijų ir verslo bendradarbiavimas vertinamas 4,6 balo (naudota 7 balų skalė, kur 1 = visiškai nėra bendradarbiavimo, o 7 = ženklaus masto bendradarbiavimas)	◯	◯	◯	◯	◯	◯	◯
Konkurencinis šalies pranašumas vertinamas 3,5 balo (naudota 7 balų skalė, kur 1 = konkurencinis pranašumas yra pigi darbo jėga, o 7 = unikalių/inovatyvių paslaugų ir produktų kūrimas ir gamyba)	◯	◯	◯	◯	◯	◯	◯

Ankstesnis Kitas

18. Jūsų požiūriu, kokia bus 2020 m. Lietuvos ekonominė ir socialinė situacija? Apibūdinkite: *

	Ypatingai bloga situacija	Bloga situacija	Labiau bloga nei gera situacija	Nei bloga nei gera situacija	Labiau gera nei bloga situacija	Gera situacija	Ypatingai gera situacija
Po studijų įsidarbinusio bakalauro darbo užmokesčio dydis	◯	◯	◯	◯	◯	◯	◯
Pajamų skirtumai tarp 20% turtingiausių ir 20% neturtingiausių šalies gyventojų	◯	◯	◯	◯	◯	◯	◯
Vidurinės visuomenės klasės dydis	◯	◯	◯	◯	◯	◯	◯
Nedarbo lygis	◯	◯	◯	◯	◯	◯	◯
Bakalaurų dalis, kurie po metų nuo studijų baigimo yra registruoti darbo biržose	◯	◯	◯	◯	◯	◯	◯
Patiriančių skurdo riziką dirbančiųjų skaičius	◯	◯	◯	◯	◯	◯	◯
Užimtumo lygis žinioms imliose verslo veiklose	◯	◯	◯	◯	◯	◯	◯
Savarankiškai dirbančių asmenų dalis	◯	◯	◯	◯	◯	◯	◯
Atlyginimo dalis, kurią reikia skirti maistui ir būstui	◯	◯	◯	◯	◯	◯	◯
Atlyginimo dalis, kurią būtų galima skirti laisvalaikiui ir pramogoms	◯	◯	◯	◯	◯	◯	◯
Įmonių skaičius, tenkantis 1000 šalies gyventojų	◯	◯	◯	◯	◯	◯	◯
Mokslo, studijų ir verslo bendradarbiavimo lygis	◯	◯	◯	◯	◯	◯	◯
Konkurencinis šalies pranašumas (siekis būti ne pigia darbo jėga, o unikalių/inovatyvių paslaugų ir produktų kūrėja ir gamintoja)	◯	◯	◯	◯	◯	◯	◯

Ankstesnis Kitas

19. Žvelgiant bendrai, Jūsų požiūriu, kokia yra populiariausių lietuvių emigruoti pasirinktų šalių (pvz., Didžioji Britanija, Airija, Norvegija, Vokietija) ekonominė ir socialinė situacija? Apibūdinkite: *

	Ypatingai bloga situacija	Bloga situacija	Labiau bloga nei gera situacija	Nei bloga nei gera situacija	Labiau gera nei bloga situacija	Gera situacija	Ypatingai gera situacija
Po studijų įsidarbinusio bakalauro darbo užmokesčio dydis	◯	◯	◯	◯	◯	◯	◯
Pajamų skirtumas tarp 20% turtingiausių ir 20% neturtingiausių gyventojų	◯	◯	◯	◯	◯	◯	◯
Vidurinės visuomenės klasės dydis	◯	◯	◯	◯	◯	◯	◯
Nedarbo lygis	◯	◯	◯	◯	◯	◯	◯
Bakalaurų dalis, kurie po metų nuo studijų baigimo yra registruoti darbo biržose	◯	◯	◯	◯	◯	◯	◯
Patiriančių skurdo riziką dirbančiųjų skaičius	◯	◯	◯	◯	◯	◯	◯
Užimtumo lygis žinioms imliose verslo veiklose	◯	◯	◯	◯	◯	◯	◯
Savarankiškai dirbančių asmenų dalis	◯	◯	◯	◯	◯	◯	◯
Atlyginimo dalis, kurią reikia skirti maistui ir būstui	◯	◯	◯	◯	◯	◯	◯
Atlyginimo dalis, kurią būtų galima skirti laisvalaikiui ir pramogoms	◯	◯	◯	◯	◯	◯	◯
Įmonių skaičius, tenkantis 1000 gyventojų	◯	◯	◯	◯	◯	◯	◯
Mokslo, studijų ir verslo bendradarbiavimo lygis	◯	◯	◯	◯	◯	◯	◯
Konkurencinis pranašumas (siekis būti ne pigia darbo jėga, o unikalių/inovatyvių paslaugų ir produktų kūrėja ir gamintoja)	◯	◯	◯	◯	◯	◯	◯

Ankstesnis Kitas

20. Įvertinkite žemiau pateiktą teiginį, kur emigracija apibrėžiama kaip išvykimas į kitą valstybę, ketinant apsigyventi naujoje gyvenamojoje vietoje nuolat arba ne trumpiau kaip 12 mėn.: *

	Visiškai nesutinku	Nesutinku	Šiek tiek nesutinku	Nei sutinku, nei nesutinku	Šiek tiek sutinku	Sutinku	Visiškai sutinku
Atsižvelgiant į Lietuvos ekonominę ir socialinę situaciją, Jūs svarstytumėte emigruoti:	◯	◯	◯	◯	◯	◯	◯

Ankstesnis Kitas

Liko 8 klausimai. Labai ačiū už kantrybę!

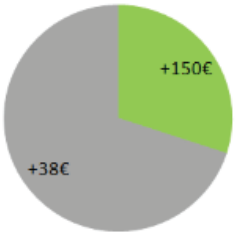
Toliau atsakydami į klausimus su SKRITULINĖMIS DIAGRAMOMIS atsiribokite nuo konkrečios šalies, į kurią reikėtų emigruoti, ir laikykitės šių prielaidų:

- Lietuvoje ir užsienio šalyje atskaitomi mokesčiai nuo darbo užmokesčio yra panašūs;
- labiau tikėtina, jog Lietuvoje Jūsų darbas būtų pagal specialybę arba artimesnis specialybei nei kad užsienio šalyje;
- užsienio šalyje nejaustumėte kalbos barjero;
- emigravimo kaštai labai maži;
- kainų lygis tarp šalių skirtųsi 1,64 karto (pavyzdžiui, jei Lietuvoje tam tikroms prekėms ir paslaugoms įsigyti išleistumėte 100 Eur, tai užsienio šalyje tam pačiam kiekiui prekių ir paslaugų įsigyti reikėtų apie 164 Eur).

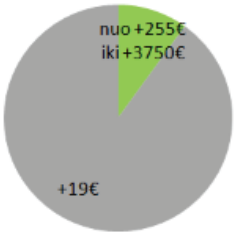
Ankstesnis Kitas

21. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **padidės** 150 Eur (30% tikimybė) **arba** 38 Eur (70% tikimybė):



Emigravus į kitą šalį darbo užmokestis **padidės** nuo 255 iki 3750 Eur (10% tikimybė) **arba** 19 Eur (90% tikimybė):



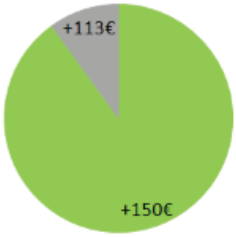
Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +255€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +281€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +311€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +349€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +398€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +460€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +563€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +694€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +825€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +1125€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +1500€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +2250€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +3750€ (10%) arba +19€ (90%)

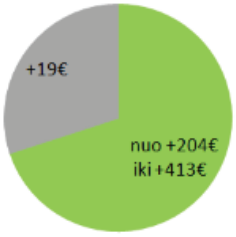
Ankstesnis Kitas

22. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **padidės** 150 Eur (90% tikimybė) **arba** 113 Eur (10% tikimybė):



Emigravus į kitą šalį darbo užmokestis **padidės** nuo 204 iki 413 Eur (70% tikimybė) **arba** 19 Eur (30% tikimybė):



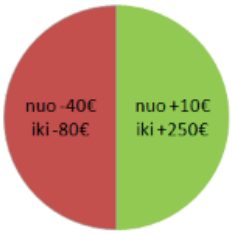
Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +204€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +210€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +218€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +225€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +233€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +244€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +255€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +270€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +289€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +311€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +338€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +375€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +413€ (70%) arba +19€ (30%)

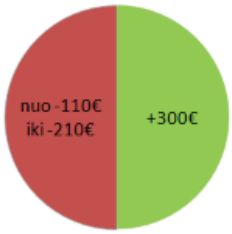
Ankstesnis Kitas

23. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **arba padidės** nuo 10 iki 250 Eur (50% tikimybė) **arba sumažės** nuo 40 iki 80 Eur (50% tikimybė):



Emigravus į kitą šalį darbo užmokestis **arba padidės** 300 Eur (50% tikimybė) **arba sumažės** nuo 110 iki 210 Eur (50% tikimybė):



Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +250€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +40€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +10€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +10€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -160€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -160€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -140€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -110€ (50%)

Ankstesnis Kitas

Liks tik 3 klausimai. Labai ačiū!

24. Tarkime, 2020 m. Lietuvos ekonominę ir socialinę situaciją atspindės žemiau pateikti teiginiai. Įvertinkite šią situaciją:

	Ypatingai bloga situacija	Bloga situacija	Labiau bloga nei gera situacija	Nei bloga nei gera situacija	Labiau gera nei bloga situacija	Gera situacija	Ypatingai gera situacija
Po studijų įsidarbinęs bakalauras uždirbs 898 Eur (atskaičius mokesčius - 690 Eur)	○	○	○	○	○	○	○
20% turtingiausiųjų pajamos bus 5,2 karto didesnės nei 20% neturtingiausiųjų	○	○	○	○	○	○	○
Vidurinę visuomenės klasę sudarys 26,1% šalies gyventojų	○	○	○	○	○	○	○
Nedarbo lygis bus lygus 7,4%	○	○	○	○	○	○	○
Po metų nuo studijų baigimo, 5% bakalaurų bus registruoti teritorinėse darbo biržose	○	○	○	○	○	○	○
Patiriančiųjų skurdo riziką dirbančiųjų lygis bus 6,2%	○	○	○	○	○	○	○
Užimtumo lygis žinioms imliose verslo veiklose bus 13,6%	○	○	○	○	○	○	○
Savarankiškai dirbančių asmenų bus 13% nuo visų dirbančiųjų	○	○	○	○	○	○	○
Asmuo maistui ir būstui turės skirti apie 39% atlyginimo	○	○	○	○	○	○	○
Asmuo laisvalaikiui ir pramogoms skirs apie 8% atlyginimo	○	○	○	○	○	○	○
1000 šalies gyventojų teks 23 įmonės	○	○	○	○	○	○	○
Mokslo, studijų ir verslo bendradarbiavimas bus vertinamas 4,9 balo (naudojant 7 balų skalę, kur 1 = visiškai nėra bendradarbiavimo, o 7 = ženklaus masto bendradarbiavimas)	○	○	○	○	○	○	○
Konkurencinis šalies pranašumas bus vertinamas 4,6 balo (naudojant 7 balų skalę, kur 1 = konkurencinis pranašumas yra pigi darbo jėga, o 7 = unikalių/inovatyvių paslaugų ir produktų kūrimas ir gamyba)	○	○	○	○	○	○	○

25. Įvertinkite žemiau pateiktą teiginį, kur emigracija apibrėžiama kaip išvykimas į kitą valstybę, ketinant apsigyventi naujoje gyvenamojoje vietoje nuolat arba ne trumpiau kaip 12 mėn.:

	Visiškai nesutinku	Nesutinku	Šiek tiek nesutinku	Nei sutinku, nei nesutinku	Šiek tiek sutinku	Sutinku	Visiškai sutinku
Atsižvelgiant į 2020 m. prognozuojamą Lietuvos ekonominės ir socialinės situacijos pokyčius, Jūs svarstytumėte emigruoti:	○	○	○	○	○	○	○

Ankstesnis Kitas

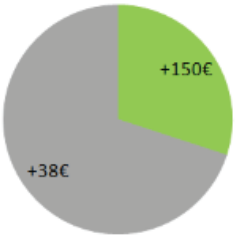
Toliau, atsakydami į paskutinius klausimus, remkitės PO 3 METŲ PROGNOZUOJAMAIS LIETUVOJE ĮVYKSIANČIAIS EKONOMINIAIS IR SOCIALINIAIS POKYČIAIS, kurie buvo pristatytI prieš tai buvusiame klausime, ir atsiribokite nuo konkrečios šalies, į kurią reikėtų emigruoti, bei laikykitės tų pačių prielaidų, kaip ir ankstesniuose klausimuose su skritulinėmis diagramomis.

PRIMENAMOS PRIELAIDOS:
- Lietuvoje ir užsienio šalyje atskaitomi mokesčiai nuo darbo užmokesčio yra panašūs;
- labiau tikėtina, jog Lietuvoje Jūsų darbas būtų pagal specialybę arba artimesnis specialybei nei kad užsienio šalyje;
- užsienio šalyje nejaustumėte kalbos barjero;
- emigravimo kaštai labai maži;
- kainų lygis tarp šalių skirtųsi 1,64 karto (pavyzdžiui, jei Lietuvoje tam tikroms prekėms ir paslaugoms įsigyti išleistumėte 100 Eur, tai užsienio šalyje tam pačiam kiekiui prekių ir paslaugų įsigyti reikėtų apie 164 Eur).

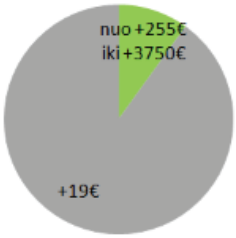
Ankstesnis Kitas

26. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **padidės** 150 Eur (30% tikimybė) **arba** 38 Eur (70% tikimybė):



Emigravus į kitą šalį darbo užmokestis **padidės** nuo 255 iki 3750 Eur (10% tikimybė) **arba** 19 Eur (90% tikimybė):



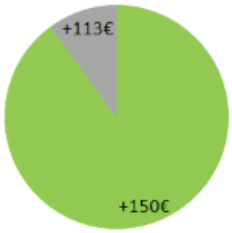
Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +255€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +281€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +311€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +349€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +398€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +469€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +563€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +694€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +825€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +1125€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +1500€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +2250€ (10%) arba +19€ (90%)
Likus Lietuvoje: +150€ (30%) arba +38€ (70%)	○	○	Emigravus į kitą šalį: +3750€ (10%) arba +19€ (90%)

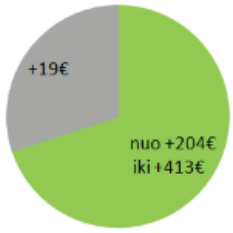
Ankstesnis Kitas

27. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **padidės** 150 Eur (90% tikimybė) **arba** 113 Eur (10% tikimybė):



Emigravus į kitą šalį darbo užmokestis **padidės** nuo 204 iki 413 Eur (70% tikimybė) **arba** 19 Eur (30% tikimybė):



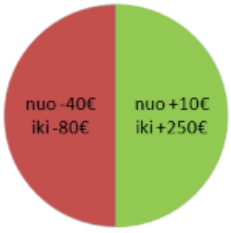
Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +204€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +210€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +218€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +225€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +233€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +244€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +255€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +270€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +289€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +311€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +338€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +375€ (70%) arba +19€ (30%)
Likus Lietuvoje: +150€ (90%) arba +113€ (10%)	○	○	Emigravus į kitą šalį: +413€ (70%) arba +19€ (30%)

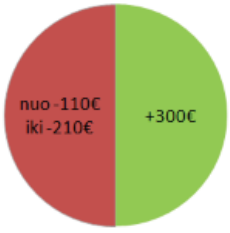
Ankstesnis Kitas

28. Tarkime, įsidarbinus po studijų Jūsų atlyginimas yra 500 Eur ir per artimiausius kelerius darbo metus galimi šie pokyčiai:

Likus Lietuvoje darbo užmokestis **arba padidės** nuo 10 iki 250 Eur (50% tikimybė) **arba sumažės** nuo 40 iki 80 Eur (50% tikimybė):



Emigravus į kitą šalį darbo užmokestis **arba padidės** 300 Eur (50% tikimybė) **arba sumažės** nuo 110 iki 210 Eur (50% tikimybė):



Kiekvienoje iš eilučių pažymėkite, kokį sprendimą Jūs priimtumėte, jei su tam tikra tikimybe atlyginimo pokytis būtų: *

	Likčiau Lietuvoje	Emigruočiau į kitą šalį	
Likus Lietuvoje: +250€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +40€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +10€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -210€ (50%)
Likus Lietuvoje: +10€ (50%) arba -40€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -180€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -180€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -140€ (50%)
Likus Lietuvoje: +10€ (50%) arba -80€ (50%)	○	○	Emigravus į kitą šalį: +300€ (50%) arba -110€ (50%)

Ankstesnis Kitas

KLAUSIMYNO PABAIGA

---> Ar ateityje norėtumėte gauti informaciją apie šio tyrimo rezultatus?

- ◯ Taip
- ◯ Ne

---> Ar sutinkate, jog ateityje Jūsų būtų pasiteirauta, ar emigravote ar ne?

- ◯ Sutinku
- ◯ Nesutinku

---> Jeigu prieš tai buvusiuose klausimuose pažymėjote "Taip" ir/arba "Sutinku", parašykite savo el. paštą (ne Universiteto, o individualų, kuriuo būtumėte pasiekiamas/-a po studijų):

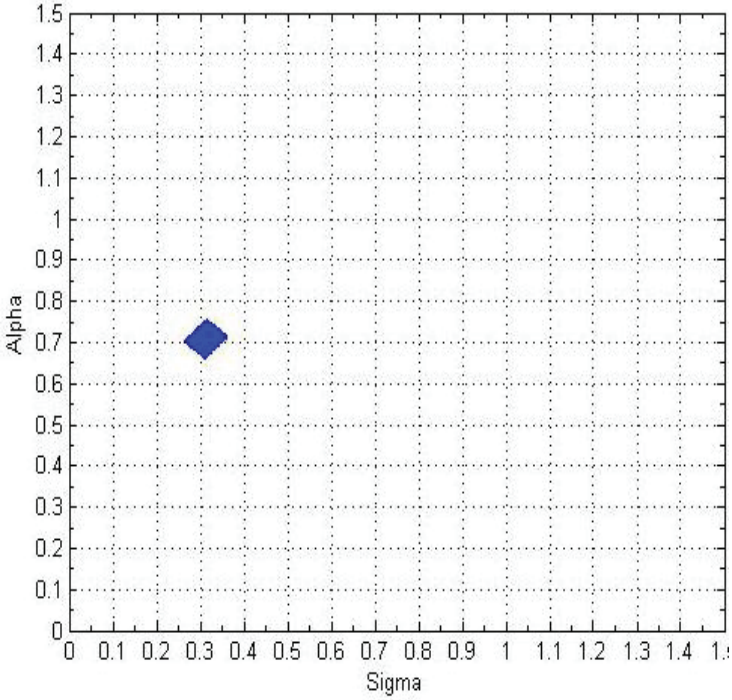
@

Labai ačiū už Jūsų skirtą laiką,
dokt. Ineta Žičkutė

LinkedIn: https://www.linkedin.com/in/ineta-žičkutė-30b10b101
ResearchGate: https://www.researchgate.net/profile/Ineta_Zickute
El. paštas: ineta.zickute@ktu.lt

Ankstesnis | Atlikta

Annex 6. Framework of probabilities and wages connection (design stage)



Annex 7. Data for simulation of pair-wise migration decision choices (designed by the author in accordance with Tanaka et al., 2010)

	Decision 1: stay				Decision 2: migrate			
	Option A		Option B		Option A		Option B	
	%	€	%	€	%	€	%	€
Series 1								
1.	30	+150	70	+38	10	+255	90	+19
2.	30	+150	70	+38	10	+281	90	+19
3.	30	+150	70	+38	10	+311	90	+19
4.	30	+150	70	+38	10	+349	90	+19
5.	30	+150	70	+38	10	+398	90	+19
6.	30	+150	70	+38	10	+469	90	+19
7.	30	+150	70	+38	10	+563	90	+19
8.	30	+150	70	+38	10	+694	90	+19
9.	30	+150	70	+38	10	+825	90	+19
10.	30	+150	70	+38	10	+1,125	90	+19
11.	30	+150	70	+38	10	+1,500	90	+19
12.	30	+150	70	+38	10	+2,250	90	+19
13.	30	+150	70	+38	10	+3,750	90	+19
Series 2								
1.	90	+150	10	+113	70	+204	30	+19
2.	90	+150	10	+113	70	+210	30	+19
3.	90	+150	10	+113	70	+218	30	+19
4.	90	+150	10	+113	70	+225	30	+19
5.	90	+150	10	+113	70	+233	30	+19
6.	90	+150	10	+113	70	+244	30	+19
7.	90	+150	10	+113	70	+255	30	+19
8.	90	+150	10	+113	70	+270	30	+19
9.	90	+150	10	+113	70	+289	30	+19
10.	90	+150	10	+113	70	+311	30	+19
11.	90	+150	10	+113	70	+338	30	+19
12.	90	+150	10	+113	70	+375	30	+19
13.	90	+150	10	+113	70	+413	30	+19
Series 3								
1.	50	+250	50	-40	50	+300	50	-210
2.	50	+40	50	-40	50	+300	50	-210
3.	50	+10	50	-40	50	+300	50	-210
4.	50	+10	50	-40	50	+300	50	-160
5.	50	+10	50	-80	50	+300	50	-160
6.	50	+10	50	-80	50	+300	50	-140
7.	50	+10	50	-80	50	+300	50	-110

Annex 8. Risk preference values
(calculated by the author)

		SERIES 1													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**N**
SERIES2	**1**	1.50	1.40	1.35	1.25	1.15	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.65	0.50
	2	1.40	1.30	1.25	1.20	1.10	1.05	0.95	0.90	0.85	0.80	0.70	0.65	0.60	0.50
	3	1.30	1.20	1.15	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.65	0.60	0.55	0.45
	4	1.20	1.15	1.10	1.05	0.95	0.90	0.85	0.80	0.75	0.70	0.60	0.55	0.50	0.40
	5	1.15	1.10	1.05	1.00	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.45	0.35
	6	1.10	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.35
	7	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.30
	8	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.25
	9	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.20
	10	0.85	0.75	0.70	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20
	11	0.80	0.70	0.65	0.60	0.55	0.50	0.45	0.45	0.40	0.35	0.30	0.30	0.25	0.15
	12	0.75	0.65	0.60	0.55	0.50	0.45	0.40	0.40	0.35	0.30	0.25	0.25	0.20	0.10
	13	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.30	0.25	0.25	0.20	0.15	0.05
	N	0.60	0.55	0.50	0.45	0.40	0.40	0.35	0.30	0.25	0.20	0.20	0.15	0.10	0.05

Annex 9. Loss aversion values
(calculated by the author)

	σ = 0.05		σ = 0.10		σ = 0.15		σ = 0.20		σ = 0.25		σ = 0.30		σ = 0.35		σ = 0.40		σ = 0.45		σ = 0.50	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
1		0.116		0.123		0.129		0.136		0.144		0.151		0.159		0.167		0.176		0.185
2	0.116	1.226	0.123	1.238	0.129	1.250	0.136	1.262	0.144	1.275	0.151	1.288	0.159	1.302	0.167	1.316	0.176	1.331	0.185	1.346
3	1.226	2.001	1.238	1.955	1.250	1.914	1.262	1.878	1.275	1.845	1.288	1.816	1.302	1.791	1.316	1.769	1.331	1.750	1.346	1.734
4	2.001	2.410	1.955	2.372	1.914	2.339	1.878	2.311	1.845	2.288	1.816	2.270	1.791	2.256	1.769	2.246	1.750	2.240	1.734	2.239
5	2.410	4.738	2.372	4.585	2.339	4.447	2.311	4.323	2.288	4.212	2.270	4.113	2.256	4.026	2.246	3.948	2.240	3.880	2.239	3.822
6	4.738	5.888	4.585	5.717	4.447	5.564	4.323	5.428	4.212	5.307	4.113	5.201	4.026	5.108	3.948	5.028	3.880	4.960	3.822	4.903
7	5.888	10.409	5.717	10.169	5.564	9.958	5.428	9.775	5.307	9.617	5.201	9.484	5.108	9.374	5.028	9.286	4.960	9.218	4.903	9.171
N	10.409		10.169		9.958		9.775		9.617		9.484		9.374		9.286		9.218		9.171	

	σ = 0.55		σ = 0.60		σ = 0.65		σ = 0.70		σ = 0.75		σ = 0.80		σ = 0.85		σ = 0.90		σ = 0.95		σ = 1.00	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
1		0.194		0.204		0.214		0.224		0.235		0.246		0.257		0.269		0.281		0.294
2	0.194	1.362	0.204	1.379	0.214	1.396	0.224	1.413	0.235	1.431	0.246	1.450	0.257	1.469	0.269	1.488	0.281	1.509	0.294	1.529
3	1.362	1.720	1.379	1.710	1.396	1.702	1.413	1.696	1.431	1.693	1.450	1.692	1.469	1.692	1.488	1.695	1.509	1.700	1.529	1.706
4	1.720	2.241	1.710	2.247	1.702	2.256	1.696	2.269	1.693	2.285	1.692	2.305	1.692	2.328	1.695	2.354	1.700	2.384	1.706	2.417
5	2.241	3.771	2.247	3.729	2.256	3.694	2.269	3.666	2.285	3.644	2.305	3.629	2.328	3.620	2.354	3.616	2.384	3.618	2.417	3.625
6	3.771	4.856	3.729	4.819	3.694	4.792	3.666	4.774	3.644	4.764	3.629	4.763	3.620	4.769	3.616	4.783	3.618	4.805	3.625	4.833
7	4.856	9.143	4.819	9.133	4.792	9.141	4.774	9.167	4.764	9.210	4.763	9.269	4.769	9.344	4.783	9.436	4.805	9.543	4.833	9.667
N	9.143		9.133		9.141		9.167		9.210		9.269		9.344		9.436		9.543		9.667	

	σ = 1.05		σ = 1.10		σ = 1.15		σ = 1.20		σ = 1.25		σ = 1.30		σ = 1.35		σ = 1.40		σ = 1.45		σ = 1.50	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
1		0.307		0.321		0.335		0.349		0.364		0.379		0.395		0.412		0.428		0.446
2	0.307	1.551	0.321	1.573	0.335	1.596	0.349	1.619	0.364	1.643	0.379	1.667	0.395	1.692	0.412	1.718	0.428	1.745	0.446	1.772
3	1.551	1.714	1.573	1.723	1.596	1.735	1.619	1.747	1.643	1.761	1.667	1.777	1.692	1.793	1.718	1.811	1.745	1.831	1.772	1.851
4	1.714	2.453	1.723	2.492	1.735	2.534	1.747	2.579	1.761	2.627	1.777	2.679	1.793	2.733	1.811	2.791	1.831	2.852	1.851	2.916
5	2.453	3.637	2.492	3.654	2.534	3.675	2.579	3.701	2.627	3.732	2.679	3.767	2.733	3.806	2.791	3.849	2.852	3.896	2.916	3.947
6	3.637	4.869	3.654	4.912	3.675	4.961	3.701	5.017	3.732	5.079	3.767	5.148	3.806	5.224	3.849	5.305	3.896	5.394	3.947	5.489
7	4.869	9.806	4.912	9.961	4.961	10.131	5.017	10.318	5.079	10.521	5.148	10.740	5.224	10.976	5.305	11.229	5.394	11.499	5.489	11.787
N	9.806		9.961		10.131		10.318		10.521		10.740		10.976		11.229		11.499		11.787	

Annex 10. Median of loss aversion values
(calculated by the author)

	σ = 0.05	σ = 0.10	σ = 0.15	σ = 0.20	σ = 0.25	σ = 0.30	σ = 0.35	σ = 0.40	σ = 0.45	σ = 0.50	σ = 0.55	σ = 0.60	σ = 0.65	σ = 0.70	σ = 0.75
1	0.116	0.123	0.129	0.136	0.144	0.151	0.159	0.167	0.176	0.185	0.194	0.204	0.214	0.224	0.235
2	0.671	0.680	0.689	0.699	0.709	0.720	0.731	0.742	0.753	0.766	0.778	0.791	0.805	0.818	0.833
3	1.613	1.596	1.582	1.570	1.560	1.552	1.546	1.542	1.540	1.540	1.541	1.544	1.549	1.555	1.562
4	2.205	2.164	2.127	2.094	2.067	2.043	2.023	2.007	1.995	1.986	1.981	1.978	1.979	1.983	1.989
5	3.574	3.478	3.393	3.317	3.250	3.192	3.141	3.097	3.060	3.030	3.006	2.988	2.975	2.967	2.965
6	5.313	5.151	5.006	4.876	4.760	4.657	4.567	4.488	4.420	4.362	4.314	4.274	4.243	4.220	4.204
7	8.149	7.943	7.761	7.602	7.462	7.343	7.241	7.157	7.089	7.037	6.999	6.976	6.967	6.970	6.987
N	10.409	10.169	9.958	9.775	9.617	9.484	9.374	9.286	9.218	9.171	9.143	9.133	9.141	9.167	9.210

	σ = 0.80	σ = 0.85	σ = 0.90	σ = 0.95	σ = 1.00	σ = 1.05	σ = 1.10	σ = 1.15	σ = 1.20	σ = 1.25	σ = 1.30	σ = 1.35	σ = 1.40	σ = 1.45	σ = 1.50
1	0.246	0.257	0.269	0.281	0.294	0.307	0.321	0.335	0.349	0.364	0.379	0.395	0.412	0.428	0.446
2	0.848	0.863	0.879	0.895	0.912	0.929	0.947	0.965	0.984	1.003	1.023	1.044	1.065	1.086	1.109
3	1.571	1.580	1.592	1.604	1.618	1.632	1.648	1.665	1.683	1.702	1.722	1.743	1.765	1.788	1.811
4	1.998	2.010	2.025	2.042	2.061	2.083	2.107	2.134	2.163	2.194	2.228	2.263	2.301	2.341	2.384
5	2.967	2.974	2.985	3.001	3.021	3.045	3.073	3.105	3.140	3.180	3.223	3.270	3.320	3.374	3.432
6	4.196	4.194	4.200	4.211	4.229	4.253	4.283	4.318	4.359	4.406	4.457	4.515	4.577	4.645	4.718
7	7.016	7.057	7.110	7.174	7.250	7.337	7.436	7.546	7.667	7.800	7.944	8.100	8.267	8.446	8.638
N	9.269	9.344	9.436	9.543	9.667	9.806	9.961	10.131	10.318	10.521	10.740	10.976	11.229	11.499	11.787

Annex 11. Descriptive statistics
(calculated by the author using IBM SPSS Statistics 23)

Descriptive statistics of risk preference, loss aversion and emigration willingness (disagree)

	N	Minimum	Maximum	Mean	Std. Deviation
21-22.No1	84	.05	1.50	.2274	.27380
23.No1	84	.20	9.29	7.3651	3.02293
Valid N (listwise)	84				

Descriptive statistics of risk preference, loss aversion and emigration willingness (neither agree nor disagree)

	N	Minimum	Maximum	Mean	Std. Deviation
21-22.No1	41	.05	1.50	.5098	.46331
23.No1	41	.12	11.50	5.1937	3.97517
Valid N (listwise)	41				

Descriptive statistics of risk preference, loss aversion and emigration willingness (somewhat agree)

	N	Minimum	Maximum	Mean	Std. Deviation
21-22.No1	101	.05	1.50	.5223	.44201
23.No1	101	.19	9.54	4.6822	3.71611
Valid N (listwise)	101				

Descriptive statistics of risk preference, loss aversion and emigration willingness (agree)

	N	Minimum	Maximum	Mean	Std. Deviation
21-22.No1	98	.05	1.50	.8230	.49001
23.No1	98	.19	11.50	3.0148	3.33038
Valid N (listwise)	98				

Descriptive statistics of risk preference, loss aversion and emigration willingness (completely agree)

	N	Minimum	Maximum	Mean	Std. Deviation
21-22.No1	77	.25	1.50	1.1805	.39596
23.No1	77	.12	9.81	1.7461	2.87679
Valid N (listwise)	77				

Annex 12. PLUM ordinal regression with independent variable of general risk preference
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	139.700			
Final	124.695	15.005	1	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	26.451	23	.280
Deviance	25.327	23	.334

Link function: Logit.

Pseudo R-Square

Cox and Snell	.037
Nagelkerke	.038
McFadden	.012

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	124.695			
General	115.576	9.119	3	.028

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	-.441	.260	2.879	1	.090
Threshold	[E_N5 = 2]	.100	.257	.152	1	.697
Threshold	[E_N5 = 3]	1.176	.264	19.890	1	.000
Threshold	[E_N5 = 4]	2.396	.284	71.310	1	.000
Location	GeneralRiskAttittude	.226	.059	14.909	1	.000

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-.951	.068	.643	.387	1.071
Threshold	[E_N5 = 2]	-.403	.604	1.105	.668	1.829
Threshold	[E_N5 = 3]	.659	1.693	3.241	1.933	5.434
Threshold	[E_N5 = 4]	1.840	2.953	10.983	6.297	19.154
Location	GeneralRiskAttittude	.111	.341	1.254	1.118	1.406

Link function: Logit.

Annex 13. PLUM ordinal regression with independent variable of risk preference (calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	461.532			
Final	287.822	173.710	1	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	115.516	107	.270
Deviance	128.133	107	.080

Link function: Logit.

Pseudo R-Square

Cox and Snell	.352
Nagelkerke	.367
McFadden	.138

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	287.822			
General	279.471	8.352	3	.039

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	-.095	.158	.357	1	.550
Threshold	[E_N5 = 2]	.564	.155	13.321	1	.000
Threshold	[E_N5 = 3]	1.962	.182	115.601	1	.000
Threshold	[E_N5 = 4]	3.624	.250	210.592	1	.000
Location	Sigma	2.571	.213	145.167	1	.000

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-.405	.216	.910	.667	1.241
Threshold	[E_N5 = 2]	.261	.867	1.758	1.299	2.381
Threshold	[E_N5 = 3]	1.605	2.320	7.115	4.975	10.175
Threshold	[E_N5 = 4]	3.134	4.113	37.475	22.971	61.135
Location	Sigma	2.153	2.989	13.077	8.608	19.868

Link function: Logit

Annex 14. PLUM ordinal regression of independent variables of risk preference and loss aversion
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	897.004			
Final	706.013	190.991	2	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	749.632	810	.936
Deviance	613.769	810	1.000

Link function: Logit.

Pseudo R-Square

Cox and Snell	.379
Nagelkerke	.396
McFadden	.152

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	706.013			
General	698.465	7.548	6	.273

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
							Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-1.021	.274	13.859	1	.000	-1.558	-.483	.360	.210	.617
Threshold	[E_N5 = 2]	-.326	.265	1.510	1	.219	-.845	.194	.722	.430	1.214
Threshold	[E_N5 = 3]	1.130	.267	17.881	1	.000	.606	1.654	3.096	1.834	5.228
Threshold	[E_N5 = 4]	2.803	.309	82.035	1	.000	2.196	3.409	16.489	8.991	30.240
Location	Sigma	2.069	.240	74.472	1	.000	1.599	2.539	7.919	4.950	12.671
Location	Lambda	-.126	.030	17.590	1	.000	-.185	-.067	.882	.831	.935

Var1	Var2	Estimate	Std. Error	Wald	df	Sig	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
							Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-1.021	.274	13.859	1	.000	-1.558	-.483	.360	.210	.617
Threshold	[E_N5 = 2]	-.326	.265	1.510	1	.219	-.845	.194	.722	.430	1.214
Threshold	[E_N5 = 3]	1.130	.267	17.881	1	.000	.606	1.654	3.096	1.834	5.228
Threshold	[E_N5 = 4]	2.803	.309	82.035	1	.000	2.196	3.409	16.489	8.991	30.240
Location	Sigma	2.069	.240	74.472	1	.000	1.599	2.539	7.919	4.950	12.671
Location	Lambda	-.126	.030	17.590	1	.000	-.185	-.067	.882	.831	.935

Link function: Logit

Annex 15. Factors analysis' outputs of correlation matrix and anti-image matrices with all included variables (calculated by the author using IBM SPSS Statistics 23)

Correlation Matrix[a]

		17.1.	17.2.	17.3.	17.4.	17.5.	17.6.	17.7.	17.8.	17.9.	17.10.	17.11.	17.12.	17.13.
Correlation	17.1.	1.000	.368	.378	.210	.265	.221	.252	.224	.306	.323	.242	.252	.276
	17.2.	.368	1.000	.440	.283	.347	.325	.316	.313	.335	.246	.260	.289	.273
	17.3.	.378	.440	1.000	.278	.250	.308	.318	.310	.281	.293	.306	.297	.324
	17.4.	.210	.283	.278	1.000	.551	.420	.277	.290	.262	.168	.240	.282	.275
	17.5.	.265	.347	.250	.551	1.000	.539	.367	.274	.313	.261	.243	.345	.286
	17.6.	.221	.325	.308	.420	.539	1.000	.378	.252	.344	.315	.249	.224	.291
	17.7.	.252	.316	.318	.277	.367	.378	1.000	.523	.315	.320	.362	.360	.343
	17.8.	.224	.313	.310	.290	.274	.252	.523	1.000	.326	.334	.393	.414	.369
	17.9.	.306	.335	.281	.262	.313	.344	.315	.326	1.000	.465	.278	.305	.277
	17.10.	.323	.246	.293	.168	.261	.315	.320	.334	.465	1.000	.342	.285	.262
	17.11.	.242	.260	.306	.240	.243	.249	.362	.393	.278	.342	1.000	.528	.440
	17.12.	.252	.289	.297	.282	.345	.224	.360	.414	.305	.285	.528	1.000	.618
	17.13.	.276	.273	.324	.275	.286	.291	.343	.369	.277	.262	.440	.618	1.000
Sig. (1-tailed)	17.1.		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.2.	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.3.	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.4.	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.5.	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	17.6.	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	17.7.	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	17.8.	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	17.9.	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	17.10.	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	17.11.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	17.12.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	17.13.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .018

Anti-image Matrices

		17.1.	17.2.	17.3.	17.4.	17.5.	17.6.	17.7.	17.8.	17.9.	17.10.	17.11.	17.12.	17.13.
Anti-image Covariance	17.1.	.747	-.120	-.133	-.006	-.044	.032	-.018	.021	-.059	-.101	-.013	.003	-.050
	17.2.	-.120	.682	-.173	-.010	-.063	-.042	-.024	-.051	-.080	.029	-.008	-.018	.003
	17.3.	-.133	-.173	.684	-.058	.043	-.056	-.037	-.029	-.001	-.045	-.041	-.007	-.047
	17.4.	-.006	-.010	-.058	.642	-.222	-.083	.021	-.066	-.030	.059	-.023	-.005	-.024
	17.5.	-.044	-.063	.043	-.222	.533	-.186	-.063	.021	-.016	-.020	.029	-.082	.021
	17.6.	.032	-.042	-.056	-.083	-.186	.606	-.089	.033	-.066	-.069	-.021	.069	-.063
	17.7.	-.018	-.024	-.037	.021	-.063	-.089	.618	-.215	-.018	-.027	-.051	-.016	-.023
	17.8.	.021	-.051	-.029	-.066	.021	.033	-.215	.617	-.045	-.066	-.062	-.061	-.033
	17.9.	-.059	-.080	-.001	-.030	-.016	-.066	-.018	-.045	.679	-.207	.002	-.035	-.006
	17.10.	-.101	.029	-.045	.059	-.020	-.069	-.027	-.066	-.207	.678	-.090	-.005	.006
	17.11.	-.013	-.008	-.041	-.023	.029	-.021	-.051	-.062	.002	-.090	.636	-.164	-.059
	17.12.	.003	-.018	-.007	-.005	-.082	.069	-.016	-.061	-.035	-.005	-.164	.496	-.237
	17.13.	-.050	.003	-.047	-.024	.021	-.063	-.023	-.033	-.006	.006	-.059	-.237	.563
Anti-image Correlation	17.1.	.901[a]	-.168	-.185	-.009	-.070	.048	-.026	.032	-.082	-.142	-.018	.005	-.077
	17.2.	-.168	.903[a]	-.253	-.014	-.105	-.065	-.037	-.078	-.117	.043	-.012	-.032	.004
	17.3.	-.185	-.253	.898[a]	-.087	.072	-.087	-.057	-.045	-.001	-.066	-.062	-.012	-.077
	17.4.	-.009	-.014	-.087	.855[a]	-.380	-.133	.034	-.105	-.046	.089	-.036	-.009	-.040
	17.5.	-.070	-.105	.072	-.380	.824[a]	-.328	-.110	.037	-.027	-.033	.050	-.159	.039
	17.6.	.048	-.065	-.087	-.133	-.328	.862[a]	-.145	.054	-.103	-.108	-.035	.126	-.108
	17.7.	-.026	-.037	-.057	.034	-.110	-.145	.895[a]	-.348	-.027	-.042	-.081	-.029	-.039
	17.8.	.032	-.078	-.045	-.105	.037	.054	-.348	.884[a]	-.070	-.101	-.100	-.110	-.057
	17.9.	-.082	-.117	-.001	-.046	-.027	-.103	-.027	-.070	.901[a]	-.305	.003	-.060	-.010
	17.10.	-.142	.043	-.066	.089	-.033	-.108	-.042	-.101	-.305	.870[a]	-.137	-.009	.010
	17.11.	-.018	-.012	-.062	-.036	.050	-.035	-.081	-.100	.003	-.137	.906[a]	-.292	-.099
	17.12.	.005	-.032	-.012	-.009	-.159	.126	-.029	-.110	-.060	-.009	-.292	.825[a]	-.448
	17.13.	-.077	.004	-.077	-.040	.039	-.108	-.039	-.057	-.010	.010	-.099	-.448	.859[a]

a. Measures of Sampling Adequacy(MSA)

Annex 16. Factors analysis' outputs of correlation matrix, KMO and Bartlett's Test, anti-image matrices and total variance explained with excluded variables
(calculated by the author using IBM SPSS Statistics 23)

Correlation Matrix[a]

		17.1.	17.2.	17.3.	17.4.	17.5.	17.6.	17.9.	17.10.	17.11.	17.12.	17.13.
Correlation	17.1.	1.000	.368	.378	.210	.265	.221	.306	.323	.242	.252	.276
	17.2.	.368	1.000	.440	.283	.347	.325	.335	.246	.260	.289	.273
	17.3.	.378	.440	1.000	.278	.250	.308	.281	.293	.306	.297	.324
	17.4.	.210	.283	.278	1.000	.551	.420	.262	.168	.240	.282	.275
	17.5.	.265	.347	.250	.551	1.000	.539	.313	.261	.243	.345	.286
	17.6.	.221	.325	.308	.420	.539	1.000	.344	.315	.249	.224	.291
	17.9.	.306	.335	.281	.262	.313	.344	1.000	.465	.278	.305	.277
	17.10.	.323	.246	.293	.168	.261	.315	.465	1.000	.342	.285	.262
	17.11.	.242	.260	.306	.240	.243	.249	.278	.342	1.000	.528	.440
	17.12.	.252	.289	.297	.282	.345	.224	.305	.285	.528	1.000	.618
	17.13.	.276	.273	.324	.275	.286	.291	.277	.262	.440	.618	1.000
Sig. (1-tailed)	17.1.		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.2.	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	17.3.	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	17.4.	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	17.5.	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	17.6.	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	17.9.	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	17.10.	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	17.11.	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	17.12.	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	17.13.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .041

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.843
Bartlett's Test of Sphericity	Approx. Chi-Square	2297.403
	df	55
	Sig.	.000

Anti-image Matrices

		17.1.	17.2.	17.3.	17.4.	17.5.	17.6.	17.9.	17.10.	17.11.	17.12.	17.13.
Anti-image Covariance	17.1.	.748	-.121	-.134	-.004	-.047	.030	-.058	-.102	-.012	.004	-.050
	17.2.	-.121	.690	-.182	-.015	-.067	-.046	-.088	.020	-.019	-.027	-.003
	17.3.	-.134	-.182	.689	-.062	.040	-.063	-.006	-.054	-.052	-.014	-.053
	17.4.	-.004	-.015	-.062	.649	-.225	-.082	-.036	.053	-.031	-.012	-.028
	17.5.	-.047	-.067	.040	-.225	.540	-.202	-.018	-.023	.025	-.086	.019
	17.6.	.030	-.046	-.063	-.082	-.202	.619	-.070	-.075	-.030	.070	-.068
	17.9.	-.058	-.088	-.006	-.036	-.018	-.070	.684	-.220	-.007	-.043	-.011
	17.10.	-.102	.020	-.054	.053	-.023	-.075	-.220	.689	-.108	-.016	-.001
	17.11.	-.012	-.019	-.052	-.031	.025	-.030	-.007	-.108	.652	-.183	-.069
	17.12.	.004	-.027	-.014	-.012	-.086	.070	-.043	-.016	-.183	.505	-.248
	17.13.	-.050	-.003	-.053	-.028	.019	-.068	-.011	-.001	-.069	-.248	.567
Anti-image Correlation	17.1.	.890[a]	-.168	-.186	-.005	-.073	.044	-.081	-.142	-.017	.007	-.077
	17.2.	-.168	.884[a]	-.265	-.023	-.110	-.071	-.127	.030	-.029	-.046	-.004
	17.3.	-.186	-.265	.875[a]	-.093	.066	-.096	-.009	-.078	-.077	-.023	-.085
	17.4.	-.005	-.023	-.093	.842[a]	-.381	-.130	-.054	.080	-.048	-.021	-.047
	17.5.	-.073	-.110	.066	-.381	.798[a]	-.350	-.030	-.038	.042	-.165	.035
	17.6.	.044	-.071	-.096	-.130	-.350	.842[a]	-.108	-.116	-.047	.125	-.115
	17.9.	-.081	-.127	-.009	-.054	-.030	-.108	.876[a]	-.320	-.011	-.073	-.018
	17.10.	-.142	.030	-.078	.080	-.038	-.116	-.320	.840[a]	-.161	-.026	-.001
	17.11.	-.017	-.029	-.077	-.048	.042	-.047	-.011	-.161	.874[a]	-.318	-.114
	17.12.	.007	-.046	-.023	-.021	-.165	.125	-.073	-.026	-.318	.782[a]	-.464
	17.13.	-.077	-.004	-.085	-.047	.035	-.115	-.018	-.001	-.114	-.464	.825[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.170	37.910	37.910	4.170	37.910	37.910	2.363	21.484	21.484
2	1.236	11.236	49.146	1.236	11.236	49.146	2.070	18.817	40.302
3	1.085	9.864	59.010	1.085	9.864	59.010	2.058	18.708	59.010
4	.908	8.257	67.267						
5	.655	5.953	73.220						
6	.615	5.592	78.812						
7	.569	5.175	83.987						
8	.551	5.012	88.999						
9	.476	4.327	93.325						
10	.414	3.767	97.092						
11	.320	2.908	100.000						

Extraction Method: Principal Component Analysis.

Annex 17. PLUM ordinal regression of independent variable of general socio-economic country's situation
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
1+2+3+(4+5+6+7)	Completely disagree	84	20.9%
	Disagree	137	34.2%
	Somewhat disagree	83	20.7%
	Agree or neither agree nor disagree	97	24.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	167.908			
Final	77.904	90.004	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	11.089	9	.270
Deviance	11.482	9	.244

Link function: Logit.

Pseudo R-Square

Cox and Snell	.201
Nagelkerke	.210
McFadden	.072

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	77.904			
General	66.422	11.482	9	.244

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	-.337	.192	3.074	1	.080
Threshold	[E_N5 = 2]	.259	.191	1.840	1	.175
Threshold	[E_N5 = 3]	1.485	.207	51.365	1	.000
Threshold	[E_N5 = 4]	2.886	.237	147.877	1	.000
Location	[PatEkoIrSoc4=1]	2.628	.295	79.368	1	.000
Location	[PatEkoIrSoc4=2]	1.468	.248	34.957	1	.000
Location	[PatEkoIrSoc4=3]	.867	.272	10.189	1	.001
Location	[PatEkoIrSoc4=4]	0[a]	.	.	0	.

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-.714	.040	.714	.490	1.041
Threshold	[E_N5 = 2]	-.115	.634	1.296	.891	1.886
Threshold	[E_N5 = 3]	1.079	1.891	4.414	2.941	6.625
Threshold	[E_N5 = 4]	2.420	3.351	17.913	11.251	28.520
Location	[PatEkoIrSoc4=1]	2.050	3.207	13.852	7.769	24.698
Location	[PatEkoIrSoc4=2]	.981	1.954	4.339	2.667	7.058
Location	[PatEkoIrSoc4=3]	.335	1.399	2.380	1.397	4.053
Location	[PatEkoIrSoc4=4]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 18. PLUM ordinal regression of independent variables of general socio-economic country's situation and general risk preference
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
1+2+3+(4+5+6+7)	Completely disagree	84	20.9%
	Disagree	137	34.2%
	Somewhat disagree	83	20.7%
	Agree or neither agree nor disagree	97	24.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	425.156			
Final	327.239	97.917	4	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	114.885	104	.219
Deviance	127.416	104	.059

Link function: Logit.

Pseudo R-Square

Cox and Snell	.217
Nagelkerke	.226
McFadden	.078

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	327.239			
General	307.704	19.536	12	.076

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	.314	.300	1.096	1	.295
Threshold	[E_N5 = 2]	.911	.302	9.089	1	.003
Threshold	[E_N5 = 3]	2.151	.319	45.523	1	.000
Threshold	[E_N5 = 4]	3.576	.345	107.198	1	.000
Location	GeneralRiskAttittude	.168	.059	8.029	1	.005
Location	[PatEkoIrSoc4=1]	2.552	.295	74.706	1	.000
Location	[PatEkoIrSoc4=2]	1.442	.249	33.510	1	.000
Location	[PatEkoIrSoc4=3]	.870	.272	10.224	1	.001
Location	[PatEkoIrSoc4=4]	0[a]	.	.	0	.

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-.274	.903	1.369	.760	2.466
Threshold	[E_N5 = 2]	.319	1.504	2.487	1.375	4.497
Threshold	[E_N5 = 3]	1.526	2.776	8.592	4.600	16.048
Threshold	[E_N5 = 4]	2.899	4.253	35.738	18.160	70.331
Location	GeneralRiskAttittude	.052	.285	1.183	1.053	1.330
Location	[PatEkoIrSoc4=1]	1.973	3.130	12.827	7.192	22.878
Location	[PatEkoIrSoc4=2]	.954	1.930	4.228	2.595	6.888
Location	[PatEkoIrSoc4=3]	.337	1.404	2.388	1.401	4.072
Location	[PatEkoIrSoc4=4]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 19. PLUM ordinal regression of independent variables of general socio-economic country's situation and risk preference
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
1+2+3+(4+5+6+7)	Completely disagree	84	20.9%
	Disagree	137	34.2%
	Somewhat disagree	83	20.7%
	Agree or neither agree nor disagree	97	24.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	745.696			
Final	537.927	207.768	4	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	352.707	348	.420
Deviance	350.119	348	.458

Link function: Logit.

Pseudo R-Square

Cox and Snell	.404
Nagelkerke	.423
McFadden	.165

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	537.927			
General	519.478	18.449	12	.103

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	.332	.207	2.572	1	.109
Threshold	[E_N5 = 2]	1.017	.209	23.592	1	.000
Threshold	[E_N5 = 3]	2.501	.242	107.096	1	.000
Threshold	[E_N5 = 4]	4.277	.304	198.133	1	.000
Location	Sigma	2.275	.222	104.524	1	.000
Location	[PatEkoIrSoc4=1]	1.790	.312	33.018	1	.000
Location	[PatEkoIrSoc4=2]	.752	.258	8.516	1	.004
Location	[PatEkoIrSoc4=3]	.562	.277	4.123	1	.042
Location	[PatEkoIrSoc4=4]	0[a]	.	.	0	.

		95% Confidence Interval			95% Confidence Interval*	
Var1	Var2	Lower Bound	Upper Bound	Exp_B*	Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-.074	.738	1.394	.929	2.092
Threshold	[E_N5 = 2]	.607	1.427	2.765	1.834	4.167
Threshold	[E_N5 = 3]	2.027	2.974	12.193	7.593	19.579
Threshold	[E_N5 = 4]	3.682	4.873	72.052	39.718	130.709
Location	Sigma	1.839	2.711	9.724	6.288	15.040
Location	[PatEkoIrSoc4=1]	1.180	2.401	5.991	3.253	11.033
Location	[PatEkoIrSoc4=2]	.247	1.257	2.121	1.280	3.514
Location	[PatEkoIrSoc4=3]	.020	1.105	1.755	1.020	3.019
Location	[PatEkoIrSoc4=4]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 20. PLUM ordinal regression of independent variables of general socio-economic country's situation, risk preference and loss aversion (calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2+3)+4+5+6+7	Disagree	84	20.9%
	Neither agree nor disagree	41	10.2%
	Somewhat agree	101	25.2%
	Agree	98	24.4%
	Completely agree	77	19.2%
1+2+3+(4+5+6+7)	Completely disagree	84	20.9%
	Disagree	137	34.2%
	Somewhat disagree	83	20.7%
	Agree or neither agree nor disagree	97	24.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1023.776			
Final	797.702	226.075	5	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	938.397	1003	.928
Deviance	723.674	1003	1.000

Link function: Logit.

Pseudo R-Square

Cox and Snell	.431
Nagelkerke	.450
McFadden	.180

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	797.702			
General	781.072	16.630	15	.341

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_N5 = 1]	-.613	.304	4.055	1	.044
Threshold	[E_N5 = 2]	.112	.299	.139	1	.709
Threshold	[E_N5 = 3]	1.654	.310	28.480	1	.000
Threshold	[E_N5 = 4]	3.453	.354	95.415	1	.000
Location	Sigma	1.773	.249	50.845	1	.000
Location	Lambda	-.130	.030	18.401	1	.000
Location	[PatEkoIrSoc4=1]	1.808	.313	33.344	1	.000
Location	[PatEkoIrSoc4=2]	.722	.260	7.735	1	.005
Location	[PatEkoIrSoc4=3]	.603	.279	4.653	1	.031
Location	[PatEkoIrSoc4=4]	0[a]	.	.	0	.

		95% Confidence Interval			95% Confidence Interval*	
Var1	Var2	Lower Bound	Upper Bound	Exp_B*	Lower Bound	Upper Bound
Threshold	[E_N5 = 1]	-1.209	-.016	.542	.299	.984
Threshold	[E_N5 = 2]	-.475	.698	1.118	.622	2.010
Threshold	[E_N5 = 3]	1.046	2.261	5.226	2.847	9.592
Threshold	[E_N5 = 4]	2.760	4.146	31.596	15.803	63.173
Location	Sigma	1.286	2.261	5.891	3.618	9.591
Location	Lambda	-.189	-.071	.878	.828	.932
Location	[PatEkoIrSoc4=1]	1.194	2.422	6.098	3.301	11.264
Location	[PatEkoIrSoc4=2]	.213	1.231	2.058	1.238	3.423
Location	[PatEkoIrSoc4=3]	.055	1.150	1.827	1.057	3.159
Location	[PatEkoIrSoc4=4]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 21. PLUM ordinal regression of independent variables of risk preference, loss aversion and current situation of income and costs of living (calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2)+(3+4+5)+(6+7)	Disagree	67	16.7%
	Neither agree nor disagree	159	39.7%
	Agree	175	43.6%
Income and costs of living[1+2+3+9+10]	Bad situation	356	88.8%
	Good or neither bad nor good situation	45	11.2%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	594.142			
Final	418.513	175.629	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	344.521	421	.997
Deviance	354.800	421	.992

Link function: Logit.

Pseudo R-Square

Cox and Snell	.355
Nagelkerke	.407
McFadden	.213

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	418.513			
General	415.131	3.383	3	.336

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_Vid3 = 1]	-.912	.415	4.829	1	.028
Threshold	[E_Vid3 = 2]	1.704	.414	16.971	1	.000
Location	Sigma	2.103	.279	56.659	1	.000
Location	Lambda	-.136	.033	16.441	1	.000
Location	[C2_W_IE_MCH_EF_EL=1]	.612	.321	3.636	1	.057
Location	[C2_W_IE_MCH_EF_EL=2]	0[a]	.	.	0	.

		95% Confidence Interval			95% Confidence Interval*	
Var1	Var2	Lower Bound	Upper Bound	Exp_B*	Lower Bound	Upper Bound
Threshold	[E_Vid3 = 1]	-1.726	-.099	.402	.178	.906
Threshold	[E_Vid3 = 2]	.893	2.514	5.493	2.443	12.355
Location	Sigma	1.556	2.651	8.192	4.738	14.165
Location	Lambda	-.201	-.070	.873	.818	.932
Location	[C2_W_IE_MCH_EF_EL=1]	-.017	1.240	1.843	.983	3.456
Location	[C2_W_IE_MCH_EF_EL=2]	.	.	1.000		

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Annex 22. PLUM ordinal regression of independent variables of risk preference, loss aversion and current situation of labour market
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2)+(3+4+5)+(6+7)	Disagree	67	16.7%
	Neither agree nor disagree	159	39.7%
	Agree	175	43.6%
Labour market[4+5+6]	Bad situation	346	86.3%
	Good or neither bad nor good situation	55	13.7%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	594.766			
Final	419.156	175.610	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	345.245	425	.998
Deviance	355.209	425	.994

Link function: Logit.

Pseudo R-Square

Cox and Snell	.355
Nagelkerke	.407
McFadden	.213

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	419.156			
General	415.868	3.288	3	.349

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_Vid3 = 1]	-.976	.392	6.185	1	.013
Threshold	[E_Vid3 = 2]	1.640	.390	17.684	1	.000
Location	Sigma	2.108	.279	56.937	1	.000
Location	Lambda	-.139	.033	17.398	1	.000
Location	[C2_UL_ULG_RP=1]	.569	.297	3.668	1	.055
Location	[C2_UL_ULG_RP=2]	0[a]	.	.	0	.

		95% Confidence Interval			95% Confidence Interval*	
Var1	Var2	Lower Bound	Upper Bound	Exp_B*	Lower Bound	Upper Bound
Threshold	[E_Vid3 = 1]	-1.745	-.207	.377	.175	.813
Threshold	[E_Vid3 = 2]	.876	2.404	5.155	2.400	11.072
Location	Sigma	1.561	2.656	8.233	4.762	14.237
Location	Lambda	-.205	-.074	.870	.815	.929
Location	[C2_UL_ULG_RP=1]	-.013	1.152	1.767	.987	3.165
Location	[C2_UL_ULG_RP=2]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 23. PLUM ordinal regression of independent variables of risk preference, loss aversion and future situation of income and costs of living (calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2)+(3+4+5)+(6+7)	Disagree	67	16.7%
	Neither agree nor disagree	159	39.7%
	Agree	175	43.6%
[(1+2+3)+(4+5+6+7)]	Bad	246	61.3%
	Neither or good	155	38.7%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	628.962			
Final	434.322	194.640	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	364.782	457	.999
Deviance	381.119	457	.996

Link function: Logit.

Pseudo R-Square

Cox and Snell	.385
Nagelkerke	.441
McFadden	.236

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	434.322			
General	430.963	3.359	3	.340

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_Vid3 = 1]	-1.075	.318	11.401	1	.001
Threshold	[E_Vid3 = 2]	1.641	.317	26.828	1	.000
Location	Sigma	1.917	.283	45.808	1	.000
Location	Lambda	-.148	.034	19.379	1	.000
Location	[F2_W_IE_MCH_EF_EL=1]	1.041	.222	22.074	1	.000
Location	[F2_W_IE_MCH_EF_EL=2]	0[a]	.	.	0	.

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_Vid3 = 1]	-1.699	-.451	.341	.183	.637
Threshold	[E_Vid3 = 2]	1.020	2.262	5.162	2.774	9.606
Location	Sigma	1.362	2.472	6.800	3.903	11.846
Location	Lambda	-.213	-.082	.863	.808	.921
Location	[F2_W_IE_MCH_EF_EL=1]	.607	1.476	2.833	1.835	4.374
Location	[F2_W_IE_MCH_EF_EL=2]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 24. PLUM ordinal regression of independent variables of risk preference, loss aversion and future situation of labour market
(calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2)+(3+4+5)+(6+7)	Disagree	67	16.7%
	Neither agree nor disagree	159	39.7%
	Agree	175	43.6%
[(1+2+3)+(4+5+6+7)]	Bad	247	61.6%
	Neither or good	154	38.4%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	631.954			
Final	443.514	188.440	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	400.391	457	.973
Deviance	390.841	457	.989

Link function: Logit.

Pseudo R-Square

Cox and Snell	.375
Nagelkerke	.430
McFadden	.229

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	443.514			
General	439.858	3.656	3	.301

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_Vid3 = 1]	-1.080	.321	11.337	1	.001
Threshold	[E_Vid3 = 2]	1.600	.318	25.379	1	.000
Location	Sigma	1.951	.283	47.609	1	.000
Location	Lambda	-.140	.034	17.531	1	.000
Location	[F2_UL_ULG_RP=1]	.888	.221	16.137	1	.000
Location	[F2_UL_ULG_RP=2]	0[a]	.	.	0	.

		95% Confidence Interval			95% Confidence Interval*	
Var1	Var2	Lower Bound	Upper Bound	Exp_B*	Lower Bound	Upper Bound
Threshold	[E_Vid3 = 1]	-1.709	-.451	.340	.181	.637
Threshold	[E_Vid3 = 2]	.978	2.223	4.954	2.658	9.233
Location	Sigma	1.397	2.505	7.036	4.043	12.247
Location	Lambda	-.206	-.075	.869	.814	.928
Location	[F2_UL_ULG_RP=1]	.455	1.322	2.431	1.576	3.750
Location	[F2_UL_ULG_RP=2]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

Annex 25. PLUM ordinal regression of independent variables of risk preference, loss aversion and future situation of economic development (calculated by the author using IBM SPSS Statistics 23)

Case Processing Summary

		N	Marginal Percentage
20.(1+2)+(3+4+5)+(6+7)	Disagree	67	16.7%
	Neither agree nor disagree	159	39.7%
	Agree	175	43.6%
[(1+2+3)+(4+5+6+7)]	Bad	175	43.6%
	Neither or good	226	56.4%
Valid		401	100.0%
Missing		0	
Total		401	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	623.264			
Final	431.241	192.022	3	.000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	365.261	457	.999
Deviance	375.564	457	.998

Link function: Logit.

Pseudo R-Square

Cox and Snell	.381
Nagelkerke	.436
McFadden	.233

Link function: Logit.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	431.241			
General	428.126	3.115	3	.374

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

Parameter Estimates

Var1	Var2	Estimate	Std. Error	Wald	df	Sig
Threshold	[E_Vid3 = 1]	-1.174	.317	13.709	1	.000
Threshold	[E_Vid3 = 2]	1.522	.310	24.088	1	.000
Location	Sigma	2.020	.283	50.866	1	.000
Location	Lambda	-.139	.034	17.105	1	.000
Location	[F2_NE_UIC_CA=1]	.985	.224	19.365	1	.000
Location	[F2_NE_UIC_CA=2]	0[a]	.	.	0	.

Var1	Var2	95% Confidence Interval		Exp_B*	95% Confidence Interval*	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
Threshold	[E_Vid3 = 1]	-1.795	-.553	.309	.166	.576
Threshold	[E_Vid3 = 2]	.914	2.130	4.582	2.495	8.414
Location	Sigma	1.465	2.576	7.542	4.329	13.141
Location	Lambda	-.205	-.073	.870	.814	.929
Location	[F2_NE_UIC_CA=1]	.547	1.424	2.679	1.727	4.155
Location	[F2_NE_UIC_CA=2]	.	.	1.000		

Link function: Logit.
a. This parameter is set to zero because it is redundant.

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