

Summary of the PhD thesis

Main Findings and its Specific Contribution of the Current State of Knowledge

Thesis title: “An Evaluation of Tax-Benefit Systems Impact on the Welfare of Frontier Workers: The Case of Luxembourg and Belgium”

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Thesis contribution to the current state of knowledge

The current PhD thesis aims at researching the implications of the differences in social security and fiscal systems on the welfare of frontier workers from Belgium and Luxembourg. The current state of knowledge in the field of cross-border research consists of multitude dimensions, the most abundant mass of studies stem from: law and macro/regional economics. In the following section, the author will provide a series of arguments on how the discussed PhD thesis contributes to a significantly less explored realm in cross-border research, namely to: applied social policy (welfare) and cross-border mobility. The author also argues why it is important to support and expand cross-border research in this particular area.

Free movement of work, in the European Union, is regulated by a set of legal instruments that derive especially from the “social security coordination” (SSC) principle and is based on the Regulation (EC) 883/2004. This explains why a large part of literature on cross-border work stems from the legal domain (Craig & De Burca, 2011; Verschueren, (2012), Pennings, (2014)). Frequent topics are: obstacles in cross-border taxation, the right or abuse of social security entitlements¹. Due to their different residence and work location, frontier workers (or often known as cross-border workers) are an exceptional group in the European regulation and thus, separate rules on free movement for work and social security benefits apply. It is important to emphasise that particularly from this field the “equality of treatment” debate arises. This principle lays at the foundation of decision making in case laws and helps law specialists to find solutions to different problems the frontier workers face. As we can see from this brief description, the question of welfare of frontier workers is approached through legal lenses, by application of equality of treatment praxis. Yet few major limitations of legal analysis can be identified. The case-based approach does not allow for generalization on overall level of cross-border population

¹ Illustrative cases are: Case C-85/96, *Sala* [1998]¹; Case C 36/96, *Gilly* [1998]¹; Case C-258/04, *Ioannidis* [2005]¹; Case C-212/05, *Hartmann* [2007]¹; Case C527/06, *Renneberg* [2008]¹; or other cases as Case C-184/99, *Grzelczyk* [2001]¹; Case C-224/98, *D'Hoop*, [2002]¹; Case C-209/03, *Bidar*, [2004]¹.

(e.g. no segregation by income groups, by different occupational background, by household structure). Next to that, it does not abstract from one particular case with parameters specific to one or two countries only that does not apply to other cases (e.g. the case of a Belgian former frontier worker in Luxembourg who is unemployed after working half of its career in the neighbouring country became disabled in the meanwhile and is a household head of a family of four and the spouse is also unemployed). Moreover, the parameters (e.g. benefit length, conditions) vary widely across countries because these are defined by national law, but the cases of infringement or abuse of social benefits are solved by the national or European Court of Justice, thus the individual is a subject of EU law in the first place, that does not offer common parameters in taxation for example (no European tax law exists). An applied social policy analysis perspective that the discussed PhD thesis regards covers this disadvantage by utilizing the rule of equality of treatment and assessment of its impact on an entire population or sub-population, providing with detailed data by different types of structures.

Moreover, most of the comparative studies both in legal and social policy refer to the individuals in a single or cross-country context rather than individuals as part of two or more systems at the same time.

Abstracting from legal complexities, frontier workers operate in the Cross-Border Regions and these have important implications for the national and regional economy. Thus another important branch in cross-border research stems from macro-economic implications of labour mobility and refers to investments in infrastructures and cross-border region developments. Few of the major studies on Cross-Border Regions are (also see Table 1, Chapter 1 of the thesis): Matthai, (2004); Weerepas & Pennings, (2006); Perkmann, (2007); Pierrard, (2008); Hall, (2008) and others wrote on the following CBRs: Euregio Liege-Maastricht-Aachen (Belgium-Netherlands-Germany); Saar-Lor-Lux (Luxembourg-Germany-France), Frankfurt/Oder-Slubice (Germany-Poland); Saarland-Lorraine (Germany-France); Tyrol Euro-region (Austria-Italy); Øresund Region around the Sound (Sweden and Denmark); the twin region Uusimaa-Harjuma (Finland-Estonia); Vienna-Bratislava (Austria-Slovak Republic); Geneva-(Switzerland-France). This arena is characterized by more pragmatic and policy oriented studies that provide with immediate solutions on how to improve the economic situation of cross-border regions and as a consequence to facilitate the frontier workers' life. Many cross-border organizations prioritize on their policy agenda topics such as: transport network, economic development of the border, climate change and risk management (e.g. a flood that can affect all cross-border area), tourism and sport, etc. Such organizations are rich resources for policy makers on cross-border areas.

Although these types of studies provides with general statistics on employment and unemployment of frontier workers (e.g. see the case of studies provided by MOT cross-border organization, France²) of a particular country, it does not offer researchers with more insights and instruments (e.g. data) on how policies affect various aspects of frontier workers' wellbeing or welfare.

Theoretical contribution

This dissertation offers an innovative analytical and methodological approach in free movement for work and cross-border labour mobility assessment. It combines the simultaneous examination of legal impact (national and EU-supra national legal rules) and social policy conditions to identify its effect on individuals' welfare and focuses on labour mobility as this raises new challenges to both, the welfare state and individuals. The motivation for carrying out such study is well summarized by Ferrera (2010): *“For responding to the big social risks of the life-cycle, the broad-based national insurance schemes remain today the most efficient and equitable institutions at our disposal. But these schemes need to be updated and modernized”*. The current *“patchwork of EU social policies”* does not sufficiently address the differences between fiscal and social systems across the Member States. Welfare states prioritize differently their policy objectives in line with their pressing population needs. This complicates the coordination efforts, as each state has different designs of social security systems. On one hand, when ‘mobile’ individuals are subjects to two or more tax and social security systems due to their current or previous place of work, they are exposed to different legislations and conditions of benefits and taxes.

Although it originates from legal realm, the equality of treatment question has high social policy relevance. The thesis is part of the larger discussion of increasing importance in social policy: the place of mobile earners in national social policy designs due to territoriality principles. The equality of treatment of mobile earners is not solely a legal dilemma; it is strongly embedded in the social policy realm (Sainsbury, 2006). Regardless of employment status, individuals can face various life-cycle risks (e.g. unemployment or poverty). The analytical challenge that we must thus address is how frontier and domestic workers face life events such as unemployment, child birth, or retirement.

Moreover, due to fiscal and social administrative complexities related to identifying and tracing the records of individuals who work in more than one country, the arena of research on the impact of cross-border labour mobility and welfare is limited. Currently, relatively little data is available on cross-border workers as most micro datasets ignore this dimension. National

² MOT: <http://www.espaces-transfrontaliers.org/ressources/themes/>

statistics focus primarily on the place of residence rather than the place of work. To disentangle the impact of cross-national policy, this PhD thesis applies hypothetical data are used to assess the impact and interaction of cross-border policy regimes on welfare. There is a growing literature on comparative policy analysis (Gornick J.C. and Meyers M.K., 2004; Boje T. And Ejrnaes A., 2008), particularly utilising the EUROMOD research infrastructure (O'Donoghue, C. and Sutherland H., 1999).

One of the most recent and illustrative works in a related domain is of Guild, Carrera & Eisele (Eds.) (2013) who raise the topic question of access to social benefits of EU migrants. Raymer et al., (2011) present an Integrated Modelling of European Migration model and argue that international migration data are currently collected by individual countries, fact which can create problems when trying to understand and predict populations' movements between the countries. Although, using international labour migration amongst EU's countries and European Free Trade Association example, this is dimension remains valid for cross-border work as well. Nowrasteh & Cole (2013) look at the US example. Burgoon, Koster & Egmond (2012) affirm that immigration directly influences the politics of inequality in complex ways a country. Against the common view in political economy that immigration might be bad news for redistribution in a country, the authors hypothesize and find arguments that occupational rather than national exposure to immigrants can have different, even opposite implications for support for redistribution. A series of analysis refers to welfare distribution and world location from a spatial perspective, the work of Puga (2002) is suggestive.

Benefit and taxation obligations, entitlements, and values vary greatly across European Union countries due to differences in legislation and welfare systems. In the European Union, approximately 780.000 out of 10 million of mobile earners are frontier workers (Bonin et al., 2008). Residing in one country and commuting to another country for work is a task that a relatively small group of people undertake every day in Europe, yet these *frontier workers* present a special challenge to social policy due to their daily interactions with two different social and fiscal systems.

This thesis focuses on a particular group of mobile earners that is frontier workers and examines the country cases of Luxembourg and Belgium due to their long tradition of cross-border cooperation and similarities in social security systems. Also, Luxembourg and Belgium were selected due to their relevance to the current study. Luxembourg is the receiving country with the highest number cross-border workers, while Belgium has the highest rate of cross-border sending countries (Bonin et al., 2008).

This study aims at contributing to the literature in the field of applied comparative social policy by incorporating also an important legal dimension, such as the equality of treatment praxis. It offers an innovative methodology in measuring the welfare outcomes in a two-country setting, by investigating simultaneous impacts of Luxembourgish and Belgian taxes and social security on the income of frontier versus domestic workers.

Methodological contribution

The originality of the proposed thesis consists also in its methodology. “BeLu” cross-border tax-benefit model provides:

1. with a comprehensive model in which: Luxembourgish, Belgian and EU-supranational social security policies are included along with applied taxation for both countries. To our knowledge the “BeLu” model is the first cross-border tax-benefit model in Europe and elsewhere built for a cross-border area. Separate tax-benefit models are built across countries (e.g. EUROMOD models), yet rarely two-country systems are overlapped and combined with EU Regulation (EC 883/2004) to examine their multiple effects on the income of frontier workers, as in the case of “BeLu”.
2. One of its kinds in the area of labour mobility by utilizing tax-benefit microsimulation modeling with hypothetical data. This analysis replaces to a large extent the need for using micro-data, survey data. The originality of the methodology raised particular interest to the organizers at the World Statistics Congress 2015 that focus on a newly arising field called “transborder statistics” that deal with statistics exchange and data build in the border areas.
3. Welfare measurements address both domestic workers as well as frontier workers. Analysis in the area of migration/work mobility and cross-border work focuses either on the migrants or cross-border areas or the effect of mobility on the domestic workers, whereas this study investigates the impact of policies on the welfare of the Luxembourgish domestic workers, Luxembourgish frontier workers as well as Belgian domestic workers and Belgian frontier workers. A separate paper that can be found in the thesis was published two years ago to explain the rationale behind the comparison of the domestic and frontier workers that reside in the same country (e.g. Belgium) rather than comparing the frontier workers of one country (e.g. Belgium) with the domestic workers from their country of work (Luxembourg).
4. Separate models have been built to address short and long-term benefits: working age and pension age static tax-benefit models. This aspect confers the research a more holistic

approach on the impact of differences in taxes and social security on welfare. Examination of labour mobility and social entitlements from this perspective raised high interest at the World Sociology Congress in 2014, where the pension model paper has been accepted in 2 consecutive panels. The working age model has been nominated for the Best Paper Prize FISS in 2012.

In the past, welfare systems were primarily designed for the needs of the population residing in the state or region to which the system applied. Based on this ‘territoriality principle’, individuals living within a particular territory would be protected from external shocks with previous contributions they had made to the domestic welfare system (Mei, 2003; Dougan, 2009; Pennings, 2010). Yet in the “age of migration” (Castles, 2009), an increasing number of individuals contribute to the social benefit systems of one or more states where they do not necessarily reside.

Outline of the dissertation

Work mobility across countries raise questions related to the protection of mobile earners at various stage of the life-cycle (e.g. reduced income during unemployment or retirement or poverty due to low income). Both, domestic and mobile earners face similar life-cycle risks, yet the first ones are subjects of the country where they reside, while the mobile earners’ are subjects of two countries. In the case of frontier workers, the welfare state of the country of residence is the main provider and risk smoother for mobile earners, but to what extent the country of employment interferes with helping or reducing the welfare of frontier workers by providing different rules than the country of residence is a question explored in the thesis. Although legal framework requires for equal treatment of domestic and frontier workers of the same country, we assume that due to variation in welfare systems and taxes, mobility brings asymmetric fluctuation in income of frontier workers, despite the application of the same legal framework to all frontier workers. Therefore, we try to provide empirical evidences on the effect of mobility on frontier workers’ income, by examining how the objectives of the welfare state of the country of residence and of employment are attained on the welfare of frontier and domestic earners. Barr (2014) suggests three classical welfare state objectives: income smoothing, vertical redistribution and horizontal redistribution. Thus, the core research question particularly addresses various aspects of mobility questioning how mobile earners are protected at various stages of life-cycle, thus to what extent the welfare state covers the needs of domestic workers as it does for frontier workers. Following research questions are investigated in this study:

Research question 1: To what extent does the welfare state achieve its insurance objective on the welfare of frontier and domestic workers (and mobile and domestic pensioners)?

Research question 2: To what extent does the welfare state achieve its vertical redistribution objective on the welfare of frontier and domestic workers (and mobile and domestic pensioners)?

Research question 3: To what extent does the welfare state achieve its horizontal redistribution objective on the welfare of frontier and domestic workers (and mobile and domestic pensioners)?

First objective is attained when the state intervenes in compensating the income lost due to unemployment, health care problems or retirement; that is by providing unemployment benefits, or other types of benefits. Second objective measures how well the income has been redistributed through taxes from rich to poor. Lastly, the third objective refers to the income redistribution through taxes, among various types of families with different types of needs.

As stated above, we assume that individuals commute for work to another country to boost their income. At the same time, we hypothesize that when market income ceases to be provided due to economic crisis, health problem, etc. the welfare state remains the main absorber of deficiencies. The null hypothesis is that frontier workers are equally protected and insured as domestic workers. The alternative hypothesis is that due to differences in taxes and benefits, frontier workers are asymmetrically disadvantaged compared to domestic workers.

Theoretical approach & methodology

This thesis addresses the issues that frontier workers face as a consequence of interacting with two welfare and fiscal systems by questioning to what extent the objectives of the welfare state are achieved through the welfare outcomes of frontier workers compared to those of domestic workers. Three welfare state objectives are investigated: income smoothing, vertical redistribution, and horizontal redistribution. We assume that welfare state objectives do not differ across countries but that the way these objectives are translated into policy is a major factor in determining the income of mobile earners. We argue that due to differences in social security benefit conditions (e.g. duration, eligibility criteria, amounts) and taxes (rates, allowances, deductions) between countries of work and of residence, frontier workers face inequality and are sanctioned for commuting to a country in which they do not reside for work. The results of our analysis illustrate, however, that in some cases, frontier workers are actually highly advantaged if commuting to a neighbouring country for work (e.g. a Belgian frontier work couple in Luxembourg) while in other cases, they can be highly disadvantaged (e.g. some family types of Luxembourgish frontier workers).

We simultaneously investigate the effects of two types of policy rules regarding short-term and long-term benefits on the income of frontier workers in two countries with long traditions of cross-border work (such as Belgium and Luxembourg), first at the level of the EU social security coordination law and then at the level of national social security law. Tax-benefit microsimulation modeling is used to this end. Two hypothetical models are built for working-age and pension-age frontier workers with incomes ranging from low to high. Eight comparison groups are subsequently constructed and discussed: Luxembourgian and Belgian domestic and frontier workers and Luxembourgian and Belgian domestic and mobile pensioners.

Main findings

The empirical findings show an asymmetrical impact of national and EU law on the incomes of frontier workers. The outcomes of EU coordination regulation and national social security systems differ, resulting in both disincentives and incentives for mobile earners. The redistributive measures and income smoothing objectives of the welfare state correspond to strong incentives for Belgian frontier workers to remain mobile, while for both Luxembourgian frontier workers and Belgian mobile pensioners, these objectives would represent a strong disincentive for mobility. The equality of treatment praxis is therefore not evenly applied to domestic and frontier workers. Our expectation that frontier workers are uniformly disadvantaged due to differences in welfare and legislative systems held true only in certain cases, however.

From a policy perspective, we argue that while coordination regulation has supremacy over the national social security law, the national social security and tax law are more important and decisive in calculating social benefits and taxes (and thus in impacting the incomes of frontier workers) than is the coordination regulation. Apart from the usually discussed policy instruments, such as national social security law and the EU coordination regulation, the results highlight the importance of taxation. The thesis identifies the following challenges frontier workers face:

- Insufficient synergy between EU coordination law and national social security law: The equality of treatment principle involves asymmetry in application of a single coordination law on the same type of earners – frontier workers.
- Lack of synergy between taxation and social security legislation at EU and national law.
- Lack of definition of frontier workers in tax legislation.

- Insufficient micro-data on frontier workers in the European Union and limited available cross-country social and fiscal data.
- Insufficient empirical proofs of economic advantages that cross-border workers can bring to a cross-border region.

Main findings are:

- Despite the superiority of EU supra-national law on social security coordination, the national social security schemes play a decisive role in the welfare of frontier workers, as it is national structures that define the conditions of eligibility and amounts of social benefits.
- A more standard structure of benefits (for example, equal duration of benefits across countries) would greatly ease the calculation of social entitlements for frontier workers.
- The European labour market can be strengthened by fostering lucrative and straightforward taxation and benefit schemes for cross-border workers. If the structure of benefits (e.g. duration of the benefit) would be made more standard across countries, this would not only help improve the benefit calculation process but could also contribute to more equitable distribution of income among the population of the country of work and of residence.
- Taxation instruments, such as mobility tax credits present important policy instruments that facilitate mobility of non-resident earners.
- Cross-border mobility or mobility of earners' statistics requires better reflection in national statistics and in the national designs of social security schemes.

The dissertation carries innovative methodological, theoretical and analytical value. The application of hypothetical data as a tool to compensate for missing data, as a way to stimulate research in area with continuous fluctuations in data, such as migration is new in migration studies.

The combination of the impact of taxation and social security benefits as a measure for the impact of these policies on individuals' welfare has scarcely or never been applied in the context of cross-border work. The thesis contains the first tax-benefit microsimulation model for two simultaneous countries, namely in a cross-border situation.

The structure of the thesis

The thesis is organized in ten chapters, which are divided into four parts. Part 1 contains four chapters: Chapter 1 describes the problem statement; Chapter 2 provides a topical introduction and develops the theoretical framework; Chapter 3 describes the methodological tools used and offers a general overview of tax-benefit microsimulation, how it can be used, and why it focuses on the hypothetical model technique, and; Chapter 4 offers the core methodological support that takes the reader through all the procedural steps of model construction.

Part 2, which contains Chapters 5 and 6, focuses on the analysis of working age models. In investigating the impact of differential social security schemes and taxes on workers, we look at three widely acknowledged welfare state objectives. Chapter 5 addresses the first objective of income smoothing objective, which insures individuals against unexpected decreases in income. We take the situations of unemployed Belgian and Luxembourgian frontier workers and compare them with the situations of unemployed domestic workers in the same countries. In Chapter 6, we examine the vertical redistribution objective, which indicates how much has been redistributed from rich to poor through taxation. This question becomes particularly relevant for frontier workers because they operate in countries with different personal income tax schedules.

Part 3 assesses welfare state objectives through pension models. Chapter 7 focuses on the income smoothing objective for former frontier workers, while Chapter 8 analyses the vertical and horizontal redistribution among pensioners.

Part 4 concludes the dissertation with Chapter 9, where we aim to integrate the outcomes of the working-age and pension-age models in one single model. On a scale from 1 to 7, where 1 is the lowest and 7 is the highest, the model evaluates the performance of welfare state objectives on both target groups. One of the major conclusions of this chapter is that a careful assessment of welfare state objectives requires separate investigation of pension schemes compared to employment-related benefits. Chapter 10 summarizes the results of the research.

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