





Transnational skills development in post-industrial knowledge economies: the case of Luxembourg and the Greater Region

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ABSTRACT

Luxembourg exhibits strong transnational traits within its skills regime, defying any neat fit with existing educational typologies. It is characterised by its high-skill economy, cross-cultural characteristics, and central location within the European Union. As such, Luxembourg has developed a hybrid strategy of responding to labour market challenges, and by that, to skills development. Our institutionalist analysis finds that Luxembourg is involved in transnational skills development in three complementary ways: (a) employers in Luxembourg extensively recruit skilled workers at the European and global levels, but also (b) heavily rely on the distinct skills sets of cross-border commuters from the neighbouring regions of Belgium, France, and Germany (the Greater Region). Furthermore, (c) Luxembourg combines institutional elements of these neighbouring countries – representing distinct models of capitalism and welfare – within its own education system. In combining the specific strengths of different national skills regimes, institutional bricolage represents a core feature of Luxembourg's highly stratified system of skill formation. Our analytical framework refers to two major comparative political economy perspectives, namely the welfare state and varieties of capitalism approaches, to analyse how Luxembourg has responded to deindustrialisation by creating a domestic transnational labour market.

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Introduction

This paper discusses Luxembourg's education and skill formation system with reference to two major strands in comparative social science research, namely the welfare state (WS) and Varieties of Capitalism (VoC) approaches.¹ Luxembourg, a small open economy located centrally in the European Union (EU) and in the Greater Region – composed of Luxembourg, Lorraine (France), Wallonia (Belgium), Rhineland-Palatine (Germany) and Saarland (Germany)² – exhibits enduring transnational traits within its skills regime, i.e. system of education and training. However, instead of applying the WS and VoC typologies in a traditional sense, this study employs a more flexible and pragmatic perspective. That is, we focus on the bricolage (or composition) of diverse characteristics and institutional elements found in dominant national models (see Weick 2001; Campbell 2004) and typically associated with distinct models of capitalism and welfare.

As Brown (1999, 238) observes, 'skill formation cannot be isolated from questions of political economy', as 'these [questions] will shape national skill formation strategies'. However, major political economy approaches, like WS and VoC, have traditionally been embedded in the national frame (e.g. Esping-Andersen 1990; Hall and Soskice 2001). Thus, these theories have been criticised for their strong focus on the national domain and for their neglect of different social groups within the nation state (e.g. Crouch and Voelzkow 2009; Trampusch 2010; Lauder, Brown, and Ashton 2017), as well as for their somewhat inflexible and static typologies (e.g. Blyth 2003; Howell 2003); a situation which is further challenged and conditioned by the process of Europeanisation, its spatial and social mobility concepts, and their interaction (Powell, Bernhard, and Graf 2012; Powell and Finger 2013).

In Europe, Luxembourg is a prime example of a post-industrial nation that can neither be classed as consisting of a single cultural space nor as an independent national production model (see Blommaert 1999; Banting and Kymlicka 2006). In Luxembourg, 44.5% of the population has been classed as non-nationals (European Commission 2014), forming the highest share of foreigners in one country within the EU. In this context, more generally, Lenz and Rohstock (2012, 108) assert that 'Luxembourg epitomizes the ideal of Europe' in the sense of there probably being no other nation in the EU where 'the transfer of ideas and policies between states' (109) is so evident in practice. One of the founding members of the EU, Luxembourg has also been transforming due to a rapid economic transnationalisation, diversification and financialisation in the post-WWII era. The country's GDP per capita currently ranks the highest within the countries of the Organisation for Economic Co-operation and Development (OECD 2014), demonstrating an exceptionally successful transformation from an industrial society to a human capital economy with a high-skill strategy (on the latter, see Lloyd and Payne 2002) – vital for its innovative capacity and international competitiveness – since at least the mid-1960s (e.g. Gardin 2016).

Crucially, multilingualism is a defining feature of Luxembourg's education and skill formation system. In pre-school the main language of instruction is Luxembourgish, while in primary education this changes to German. From there onwards, French dominates in general academic education, while German is more common in vocational training. This setup is problematic especially for those pupils whose first language is none of these languages, such as for the large number of pupils with a migrant background (MEN 2015). At the secondary level, Luxembourg exhibits a clear institutional divide between general academic schooling and vocational education and training, with the latter being further separated into full-time vocational schooling and apprenticeship training (Backes 2015). With regard to the tertiary level, it is notable that the University of Luxembourg was only founded in 2003, while previously Luxembourgers were mainly sent abroad to acquire academic degrees and intercultural competences (see Powell 2012, 2014).

Not only is Luxembourg an interesting case study because of its historically mixed cultural characteristics related to post-national self-identity (Heller 2011; Gardin, Barbu, and Rothmüller 2015), but also because the country exhibits exceptionally strong social and occupational hierarchies regarding the supply of its international labour force (OECD 2010, 61–99). Further, our flexible application of the WS and VoC approaches to education in Luxembourg – i.e. a hitherto unexplored case in the political economy of skills – is particularly revealing in a nation state of just around 550,000 inhabitants that has so clearly developed a transnational approach in responding to post-industrial labour market challenges (Schuller 2002). Thus, Luxembourg has created a hybrid system of economic and societal co-ordination characterised by transnational labour market mobility, which in turn has been enabled by supranational conventions at the EU level (Hartmann-Hirsch 2008). In this setting, today's Luxembourg can be classed as a dual system in which the local population tends to dominate the public sector whereas the foreign employees (including cross-border commuters) work mainly in the private sector (Lawson 2010; Matha, Porpiglia, and Ziegelmeyer 2012), blurring the boundaries between the national and the international. Educated, for instance, in the neighbouring countries of France, Germany and Belgium, the foreign knowledge workers tend to be more skilled than their Luxembourgish counterparts, while those migrants who dominate the lower level service jobs and industry tend to be less skilled. We argue that these groups are largely complimentary in terms of the adaptability of the educational sector vis-à-vis the labour market, gaining the country a comparative institutional advantage.

Recent research on small (and micro) states points out that these ‘cannot insulate themselves from global economic pressures individually’ (Jules 2015, 202), which ‘calls for greater flexibility in the approach of small states to the development and utilisation of their own human resources’ (Bacchus 2008, 127), with people being ‘the greatest resource of many small states’ (Crossley 2008, 251). Here, Luxembourg is of substantive conceptual interest given its above-mentioned socio-economic characteristics. How can we make sense of the strong transnational elements in Luxembourg’s small state skills regime from a comparative political economy perspective? In this context, we are particularly interested in combining the relevant theoretical concepts from the WS and VoC approaches with empirical illustrations from Luxembourg and the Greater Region.

Thus, the first part of this paper draws flexibly on the ‘twin’ theoretical frame under which we operate. We outline contemporary research trends in WS and VoC – using a pragmatic approach with reference to relevant phenomena, developments, critique and findings in the field – and clarify their relationship to education and skill formation as well as transnationalisation in Luxembourg. The second part focuses specifically on the case study. The paper concludes with a findings section and an outlook, which emphasise Luxembourg as a transnational skills regime, raising some profound questions for future comparative research. By contributing to the critical discussion of the nation state as the epicentre for the WS and VoC approaches (see also Crouch et al. 2001; Blyth 2003; Lauder, Brown, and Ashton 2008, 2017), we further explore some grounds for extending our transnational perspective regarding the cases of other hybrid, multicultural nation states and/or regions.

Research design: a flexible institutional approach to analysing skills development

Skills feature prominently in comparative political economy research. In the VoC approach, which puts the firm at the centre of socio-economic cooperation, education and training is often seen as one of the four core institutional spheres in capitalist economies (Crouch, Finegold, and Sako 1999; Hall and Soskice 2001) and, in fact, forms a key factor in structuring capitalist diversity (Thelen 2004). The WS approach, in which the state plays a more dominant role, increasingly also focusses on skill formation, not least due to the rise of the knowledge economy and the social investment state paradigm (see Lauder, Brown, and Ashton 2008; Solga 2014). As Lauder, Brown, and Ashton (2008, 23) state: ‘Some have argued that the shift to a “knowledge economy” has triggered a change in social welfare priorities and objectives, from social protection to education to improve national competitiveness’. In our institutionalist analysis, we argue that the WS and VoC perspectives, in each of which skill represents a key variable (Lauder, Brown, and Ashton 2008, 25), are both needed to capture the multifaceted institutional embeddedness of Luxembourg’s transnationalised skills regime. Our explorative study relies on an extensive review of the available literature and document analysis on the Luxembourgish case. In the following, the WS and VoC approaches are shortly introduced and compared.

Comparing the WS and VoC literatures

Recent contributions to the WS literature have considered education as an integral part of the welfare state (Allmendinger and Leibfried 2003; West and Nikolai 2013; Busemeyer 2015). For example, by arguing that ‘education forms a crucial part of the welfare package’, West and Nikolai (2013, 484–485) insist that ‘Given the paucity of research on education and welfare regimes, further comparative work is warranted’. Although we acknowledge that numerous alternative WS typologies have been developed since the 1990s (for a review, see Schröder 2013), we here draw flexibly on Esping-Andersen’s (1990) traditional classification of WS regimes, i.e. Social Democratic, Conservative and Liberal, with a particular focus on the policy field of education (Table 1).

In Social Democratic WS regimes, social policy and education are intertwined, for education is regarded as a citizenship right (Kettunen and Petersen 2011). Dominated by social democratic parties, such as in Sweden, these countries replaced their stratified schooling structures by comprehensive schools in the 1960s. Educational spending is high or above the OECD-average. Vocational education

Table 1. Stylised characteristics of education in typical Social Democratic, Conservative and Liberal WS regimes.

	Social Democratic	Conservative	Liberal
Dominant party	Social Democratic	Christian Democratic	Conservative
Spending on education	High	Medium/low	Medium
Relationship btw. education and social policy	Close	Separated	Medium
Structure of education system	Comprehensive	Stratified	Comprehensive
Nature of education	Social citizenship right	Linked to occupational status	Human capital investment
Vocational education and training (VET)	State-dominated (full-time schooling)	Dual model (workplace and vocational school combined)	Employer-dominated (on-the-job training)

Source: based on review of WS literature.

is state-dominated, and social equality is given priority by avoiding academic selectiveness (Busemeyer 2015, 4). Conservative WS regimes, in turn, are exemplified by countries such as Germany in which Christian democratic parties emerged in the post-war period. Education and social policy are separated, and educational spending is low compared to the OECD-average (Allmendinger and Leibfried 2003, 63). The family as a welfare provider is predominant. Stratified schooling structures characterise these regimes. The vocational system is partly financed by the state and partly by employers. Instead of education being addressed as a social right, it is more closely linked to the overall socio-economic structure of society (Busemeyer 2015, 4–5). And finally, in Liberal WS regimes, such as in the United Kingdom (UK), the market forms the main welfare domain. These countries were influenced by Conservative parties that addressed the importance of choice in their view on education. Thus, numerous private schools exist as alternatives to publically funded comprehensive schools, resulting in educational segregation (West and Nikolai 2013, 483–484). Here, education is part of social policy, yet it is now also being increasingly addressed as a commodity in the market (see Busemeyer 2015, 259–265). Spending in Liberal WS regimes is around the OECD-average. The vocational system is dominated by on-the-job training and underdeveloped vis-à-vis higher education.

The VoC approach, in turn, stresses the institutional complementarity between national skill formation regimes and distinct varieties of capitalism (e.g. Hall and Soskice 2001; Busemeyer and Trampusch 2012). In fact, the characteristics of the education system, and especially the system of vocational education and training, are often considered as core socio-economic institutions that can help us understand how distinct varieties of capitalism could arise and are continuously reproduced (see Thelen 2004). Table 2 shows key examples of the typical institutional configuration of the education-economy nexus in liberal market economies (LMEs) and coordinated market economies (CMEs), which are the two major varieties of capitalism discussed in the comparative capitalism literature.

In LMEs, such as the UK or United States (US), the education systems are strongly shaped by market relations, which is reminiscent of Esping-Andersen's Liberal WS regime. Given that employment protection is low and unemployment benefits are limited, both employers and employees are reluctant to invest heavily in occupation- or industry-specific skills, knowing that workers frequently have to change jobs. Furthermore, as wage scales are usually flexibilised, investing heavily in the (initial) training of

Table 2. Stylised characteristics of the typical configuration of the education-economy nexus in liberal and coordinated market economies.

	Liberal market economies	Coordinated market economies
Mode of governance	Market-based	Strategic interaction
Dominant skills-orientation	General academic education	Occupationally-specific skills
Organisational model of vocational training	Focus on on-the-job training	Focus on collectively-organised apprenticeship training
Employment protection	Low	High
Unemployment benefits	Limited	Rather generous
Wage scales	Mainly flexibilised	Mainly standardised

Source: based on review of VoC literature.

workers is attached to significant risks, as other firms may later poach these workers (Hall and Soskice 2001). Overall, this specific configuration leads to a focus on the acquisition of mainly general and academic skills in the education system and, thereafter, on-the-job training in the firm (e.g. Bosch and Charest 2008).

In contrast, in CMEs the various stakeholders collectively organise advanced skill formation through strategic coordination (e.g. Culpepper 2003; Graf 2009). This situation resembles some of the regimes that form the Conservative WS cluster. Prime illustrations of this are the systems of dual apprenticeship training in Germany, Austria, Denmark, and the Netherlands, which are to a significant extent governed through social partnership. Linked to this configuration is that students in these systems usually acquire occupationally specific skills (e.g. Culpepper and Finegold 1999). This is supported by a relatively high level of employment protection and generous unemployment benefits. Furthermore, as the relatively strong role of labour unions ensures the standardisation of wages, the risk of poaching is limited (Streeck 1991).

According to Schröder (2013, 60), the WS and the VoC clusters of literature are 'nested in each other like Russian Matryoshka dolls'. Similarly, Ebbinghaus and Manow (2001, 12) examine the welfare state-political economy linkages, recognising a 'need to delineate non-overlapping typologies in order to avoid a tautology when speaking of institutional complementarities between components of two conceptually differentiated spheres'. These fresh interpretations opened up the possibilities to further research the crucial link between politics, welfare and socio-economic variants. Nevertheless, there are still obvious blind spots in the literature that have been 'aggravated by a lack of interdisciplinary exchange' (Busemeyer 2015, 21). Under investigation are often two sides which are viewed from different, albeit related, angles: In short, WS theories tend to focus on the individuals' life chances and the redistribution of wealth in various nation states, whereas the VoC approach examines the nature and coordinative capacities of firms in the production of different types of national wealth formation (Swank and Martin 2001; Kettunen and Petersen 2011; Schröder 2013).

However, both approaches focus on cross-national institutional variations, albeit with different foci: The WS literature, when it considers education, has focused more on general education at primary and secondary levels, and higher education. In contrast, the VoC literature has traditionally emphasised vocational education and training and especially the dual apprenticeship system at the secondary level (e.g. Hall and Soskice 2001; Thelen 2004; Bosch and Charest 2008).³ However, in recent years both clusters of literature have expanded to provide a more general analysis of other types and levels of education: WS researchers are now also investigating vocational education and training (e.g. Estevez-Abe, Iversen, and Soskice 2001; Iversen and Stephens 2008) and VoC researchers have started to examine general academic education (e.g. Hoelscher 2012). The next section therefore focusses on the relevance of the above perspectives with regard to the Luxembourgish case, representing a small state but remarkably successful economy in Europe.

Analysing transnationalisation in Luxembourg's skills regime

In the following empirical sections, we explore the hybrid nature of Luxembourg's transnationalised skills regime and its institutional embeddedness with reference to the relevant key elements of the WS and VoC approaches. This is done in three subsections. Due to space constraints, we will mainly refer to selected illustrative cases rather than provide a comprehensive account of the Luxembourgish education and skill formation system as a whole. First, we examine the role of political ideology, educational spending and stratification, which are key indicators debated in the WS literature. Second, we focus on the vocational education and training system, which is the main skill formation sector discussed by VoC scholars. Third, we discuss the crucial role played by migrant workers in Luxembourg's transnationalised socio-economic model.

Overall, we find that strong transnational traits within the Luxembourgish case defy any neat fit with existing educational typologies (for a comparison, see Arts and Gelissen 2002, 149–150). Luxembourg has clearly developed a hybrid strategy of skills development. This refers to both the 'import' of institutional elements as well as skilled workers from different (neighbouring) national models, but also the

'extension' of the Luxembourgish system itself into the Greater Region, for instance, through cross-border educational cooperation. In bringing together the specific strengths of different national skills regimes, we find that 'bricolage' represents a core feature of Luxembourg's highly stratified skills regime and labour market.

Political ideology, educational spending and stratification in Luxembourg

Luxembourg's welfare state has been influenced by strong Christian democratic ideology, namely through the Christian Social People's Party (CSV), which has ruled the country uninterruptedly from 1945 until 1974 and from 1979 until 2013.⁴ The party often occupies top positions in society, and is thereby affiliated to the country's business and media elite. However, educational spending in Luxembourg is considerably higher than in other countries dominated historically by Christian democracy (see Arts and Gelissen 2002), such as Germany. In effect, in terms of educational spending per pupil per year, Luxembourg invests considerably more than the OECD-countries on average: USD 21,240 (OECD 2014). The same is true for Luxembourgish teachers who earn more than double compared to the OECD-average: per annum starting from EUR 64,043 (OECD 2013). High spending, nevertheless, does not translate to increased educational mobility and social equality, like in the Social Democratic model,⁵ as here Luxembourg ranks considerably below the OECD-average – also in terms of its results in the Programme for International Student Assessment (PISA) of the OECD. In addition, repeating a year of study has been a common and expensive feature of the system, resulting in a rather inefficient model of educational governance (see OECD 2010, 9).

Like in the majority of Conservative WS regimes, the education system in Luxembourg is stratified: after the sixth grade, pupils are divided into two (broadly defined) streams: academic and vocational. Vocational education in Luxembourg is state-dominated with at least 75% of training taking place in state-funded full-time general-academic or vocational schools (Graf and Tröhler 2015, 105). A brief look at Luxembourg's education system, as viewed through the prism of WS research, reveals that it is possible to combine a strong Christian democratic welfare state with high spending and strong central state involvement (such as in vocational education), which is untypical of Conservative WS regimes, while still maintaining a stratified schooling structure (and as its result, rigid occupational hierarchies) after primary education. In this light, Luxembourg is located somewhere between the Social Democratic and Conservative regimes, for it shares essential features from both models. However, none of the characteristics examined here fall into the Liberal model. For instance, the share of private education remains minimal. In this sense, Luxembourg challenges several core assumptions about the expected consistency of classical WS types, which still tend to dominate the literature. In fact, Luxembourg displays selected WS characteristics of the bordering countries – namely France's mixed Social Democratic and Conservative WS regime, and the Conservative WS regimes of Germany and Belgium (see Hartmann-Hirsch 2008; Kerschen 2016). This hybrid model suits Luxembourg's national labour needs and is enabled by the country's unique geographical location, historically mixed cultural characteristics and small size (see final discussion).⁶

Vocational education and training in Luxembourg

Luxembourg exhibits a highly differentiated and complex national vocational training system. At least with regard to its dual system of training, the Luxembourgish case corresponds to some of the basic CME features elaborated earlier (see Table 2). In fact, work-based vocational education and training in Luxembourg resembles that in Germany, with its dual apprenticeship training system and highly stratified education system (Protsch and Solga 2015; Graf 2015), which is often considered as the core example of CME-type skill formation (Hall and Soskice 2001). Thus, the governance of Luxembourg's dual system involves strong elements of social partnership such as neo-corporatist 'tripartite' negotiations between employers, unions and state agencies (for recent developments, see Kerschen 2016) – in conjunction with decentralised, strategic interactions between firms (e.g. CEDEFOP 2014). Furthermore,

apprentices are trained for specific occupations, which are typically linked to stable employment patterns. Overall, the system is tailored towards skills that enable incremental rather than radical innovation within the economy.

From this perspective, the Luxembourgish case is a rather straightforward example of a type of skill formation typically associated with CMEs. However, the dual system makes up only a part of the secondary level education system in Luxembourg. The larger part consists of full-time school-based vocational education and training (MEN 2015), associated with little firm-involvement but instead more centralised state influence, as well as a greater emphasis on general skills. In other words, the Luxembourgish system contains elements of the dual German system, where school-to-work transitions have generally been efficient in comparison to other types of VET, and the more school-orientated and predominantly state-organised French education system.

There are thus a variety of transnational influences within Luxembourg's education and training system, which implies that the Luxembourgish case does not fit as smoothly into the CME category as it appears at first sight. Another example is the structural necessity of international educational cooperation with the neighbouring countries – especially in cross-border dual training (e.g. with Rhineland-Palatinate in Germany or Wallonia in Belgium). Through such cross-border cooperation, the Luxembourgish skill formation system is in effect extended into the Greater Region. For instance, due to the country's small population but diversified economy, there are not always enough apprentices in a specific occupation to be able to offer the classroom-based part of the training for particular jobs (see Koenig 2007, 471; Biré and Cardoso 2012, 9), which means that Luxembourgish students sometimes attend vocational part-time schools in the neighbouring countries. Beyond that, as the next section points out, Luxembourg's education and skill formation system is continuously being modified to accommodate the high proportion of migrants. Overall, Luxembourg's VET system is characterised by a significant degree of 'mix-and-match' of various educational ideals and national institutional models (Graf and Tröhler 2015).

Migrant workers in Luxembourg

Two major groups of migrants can be distinguished that both play a significant role in Luxembourg's socio-economic production model. First, there is the group of foreign knowledge workers that mainly work in high-skill professions and that have received their education and training abroad. These knowledge workers mostly come from across Europe and are occupied in such fields as finance, consulting, EU governance, online retail, research, and more generally, high-level service jobs. Second, there is the group of migrants that carry out mostly lower level service and manufacturing jobs in fields such as construction, gastronomy, local retail, logistics and industry.⁷ This latter group of workers is largely drawn from the economically weaker neighbouring areas in the Greater Region (Lorraine, Wallonia, Rhineland-Palatine and Saarland) as well as from the Southern European countries, especially Portugal (OECD 2010, 63–76), which is the country of origin of the largest migrant group in Luxembourg. Of course, in some cases the situation is less clear-cut, and members of these two broad groups may work in all sectors of the economy.

Here, it is important to note that only a proportion of the migrants actually take their residence in Luxembourg, given the limited housing provided in the Grand Duchy combined with very high domestic living costs. Instead, migrant workers are often living in the neighbouring countries within the Greater Region and commute daily to Luxembourg for work. In 2010, for example, these cross-border workers constituted 42% of Luxembourg's active labour force (OECD 2010, 64). Yet, these commuters do not always have the same access to social benefits as their Luxembourgish counterparts (see below), albeit there have been recent developments to change this (see, e.g. Tageblatt 2014, 2017). Therefore, the Luxembourgish WS regime could be characterised as a system in which these groups contribute fully but consume moderately (see, e.g. Hartmann-Hirsch 2008). In other words, the situation undermines the single nation state as the main welfare provider, for benefits are drawn from sources of multiple nation states. For example, at least until recently, most unemployment benefits and care insurance are provided by the country of residence, and not by that of employment. With regard to education,

it is self-evident that no educational expenditure occurs to Luxembourg for these groups, since their education and training has usually taken place in their home country (Clément and Hartmann-Hirsch 2011, 25). A further related problem is that the social policy regulations regarding cross-border labour movements (e.g. in cross-border taxation or unemployment protection) are highly complex and hardly understood even by the experts in the respective ministries. This has led to a significant degree of loose coupling when it comes to the actual implementation of the related policies, and at times conflicts arise between the regions involved and local or EU bureaucrats (e.g. Tägeblatt 2016).

Importantly, while the WS and VoC approaches do not necessarily differentiate between distinct social groups based on country of origin, the modern Luxembourgish political economy is configured in a way that migrants and cross-border workers are mainly operating in different production models compared to native Luxembourgers. Thus, Luxembourgers are mainly working in the public sector, while these jobs are typically not accessible to migrant workers.⁸ Furthermore, migrants and cross-border workers are only partly in a position to gain full access to Luxembourg's wealth, given that most of them only have a short to medium term career perspective in Luxembourg or, as mentioned earlier, they are not entitled to the same benefits. As a result of this partial socio-economic divide between migrants and Luxembourgers, there arise cultural and political cleavages between these two groups (e.g. Wille 2012), based on different policy preferences, but limited political representation on the side of migrants. While these cleavages are not always discussed in a comprehensive manner in the Luxembourgish media, their relevance is rising as the number of non-Luxembourgish workers keeps increasing,⁹ and also due to emergent distributive struggles arising from the government's various initiatives to cut spending (e.g. Tägeblatt 2014; Kerschen 2016). Further, as implied previously, for our purposes it is essential to highlight that those who work in Luxembourg but live abroad are disconnected from the Luxembourgish education system, as neither the workers themselves nor their children have been educated in Luxembourg.

Overall, this unusual situation suggests that the linkage between the education system and the labour market cannot be adequately assessed by the traditional WS or VoC approaches, which are still embedded in the traditional national analytical frame. This is problematic especially in the Luxembourgish case, for the cross-border commuters constitute such a high percentage of the nation's active labour force, combined with generally high immigration levels. In effect, according to some estimates, cross-border commuters and migrants together already make up over 70% of the country's active labour force (Le Gouvernement 2016).

Thus, to gain insight into the overall political economy of Luxembourg, it is not meaningful to exclusively examine the remaining Luxembourgers, also because this group mainly flows into the public sector (see OECD 2010). Rather, an adequate examination of the education-work linkage would mean to take into account the very different education systems of the neighbouring countries (e.g. differences in: educational governance, curricula, overall structures and duration of schooling, vocational and higher education, transitions from school to work), and how they are translated into Luxembourg's own system of labour. No such studies have so far been conducted applying a combined WS and VoC perspective in the case of Luxembourg.

The hybrid case of skill formation in Luxembourg

Our findings touch upon several underexplored features of the Luxembourgish education and skill formation system. In particular, the tremendously diverse society of Luxembourg, as a cultural crossroads and an EU capital, offers interesting responses to the contemporary pressures of transnationalisation, post-industrialisation and Europeanisation. Given the multiple regional and transnational influences (and their complex interdependences) that define Luxembourg's welfare state and political economy, it is not possible to speak of a national skill formation system that smoothly fits the typologies presented by the WS and VoC theories. Therefore, our paper adds to the existing literature that criticises these two approaches for their usually rigid focus on the nation as the prime site for analysis and their partial blindness with regard to different social groups within the nation state, as well as for their somewhat

inflexible and static typologies. However, in what ways does transnationalisation – especially in the form of a bricolage of different national models – signify a strength and complementarity instead of a challenge in Luxembourg's political economy?

From the side of the VoC theory, the analysis points to a systematic labour market segmentation (see, e.g. Sengenberger 1978; Emmenegger and Careja 2012) between Luxembourgers and migrants. In other words, the jobs that these two groups are occupying are typically embedded in different institutional environments – with some of the most attractive educational pathways and stable career trajectories tailored exclusively towards the native Luxembourgers. Moreover, from the side of the WS theory, Luxembourg's education system seems to be situated somewhere between the Social Democratic and Conservative regimes. All these different features are to a large extent complimentary for the functioning of the country's political economy.

This examination thus suggests that it is essential to combine classical political economy approaches in a more flexible way so that they can better account for small states such as Luxembourg, strongly influenced by 'external' factors such as its larger neighbouring countries (here: France and Germany), a high degree cross-border migration (here: within the Greater Region), a dynamically evolving international financial and service sector (requiring university-educated professionals), and a strong presence of EU institutions, which all are embedded within the framework of favourable EU legislation. It should also be stressed that for most employees working in these sectors, Luxembourg's own education system is not relevant, for they are usually not part of it.

More generally, here it seems relevant to take into account the complex mixture of different education and skill formation systems, as well as the related production models, and most importantly, critically examine how all these components can interact with one another within one country or region. Although Luxembourg is an extreme case in this respect, the fact that more and more EU citizens are working in countries different from their original educational background – especially in the case of border regions – is a development likely to increase in the coming years. At least from the perspective of small and strongly transnationalised nations or regions, this gives an indication of how the individual's experience in the national education system, and hence one's nationally specific skills acquired from there, translate less than before directly into the national market. In Luxembourg, it is the norm rather than the exception that the employee has not been educated within the country, and this understandably also itself feeds into, modifies and structures the transnationalisation of the labour market, and thus the country's small and open knowledge economy.

From this angle, it is quite safe to conclude that while Luxembourg might have historically evolved as a Conservative WS including some Social Democratic characteristics or a CME including elements of non-coordinated capitalism, it has also been transforming due to a rapid transnationalisation and financialisation in the post-WWII era. Whereas in many other countries such a high degree of transnational labour mobility would be considered as highly problematic, for instance, with regard to managing the supply and demand conditions of the domestic labour market and the risk of rising populism (e.g. Helbling 2011), the case of Luxembourg seems to point towards the opposite. In effect, by creating a hybrid system of skill formation in the form of a bricolage of different national models, the Grand Duchy mainly works this to its advantage: It partially combines the comparative institutional advantages that each of these regimes – whether Christian/Social Democratic WS or LME-CME – can offer.

This is especially relevant given the structural-historical context of the country, i.e. its rapid transformation from a strong industrial society of the early 1900s to the current post-industrial knowledge economy (see, e.g. Thewes 2011). For instance, today, the different language skills of the workforce coupled with fundamentally different educational backgrounds have been hugely beneficial for the diversification, functioning and adaptability of Luxembourg's open economy. This applies, for instance, with regard to those economic sectors surrounding the EU institutions and international finance, and more recently, foreign high-tech service companies and research centres. All these factors contribute a key factor in the country's competitiveness strategy by first gaining access to, and then capturing and maximising the very different national skill sets available.

The employers in Luxembourg have been able to utilise the multiple skills demanded by the very nature of their business, and show how diversity can be capitalised on and transformed into an institutional resource rather than being considered as a problem. In fact, that Luxembourg's skills base is mainly crafted elsewhere has been essential for the initial settlement, existence and survival of internationally oriented firms in Luxembourg. The Luxembourgish model, then, has been to develop a postmodern strategy to deal with de-industrialisation, and to create a domestic transnational labour market in a time of rising globalisation as well as to decrease the reliance on a single economic sector, such as the steel industry, in an attempt to enhance the country's international competitiveness, innovation and human capital.

Outlook: skill formation in small open economies

We have discussed Luxembourg's transnational skills regime in relation to two major social science perspectives on skill formation, namely the welfare state and varieties of capitalism approaches. We have found a bricolage of institutional elements from different national models within Luxembourg's system of skills development, requiring a more flexible employment of the VoC and WS typologies. In this context, we have shown how Luxembourg strategically applies elements of transnationalisation to its skills regime. In this sense, it has created a hybrid system of skills development as a strategy of responding to post-industrial labour market challenges.

More specifically, our institutionalist analysis has identified that the country is involved in transnational skills development in three complementary ways: (a) employers in Luxembourg extensively recruit skilled workers at the global and European levels but also (b) heavily rely on the distinct skills sets of cross-border commuters from the Greater Region. Furthermore, (c) Luxembourg combines institutional elements of these neighbouring countries – each representing a distinct model of capitalism and welfare – within its own education system. In combining the specific strengths of different national skills regimes, institutional bricolage has come to represent a core feature of Luxembourg's highly stratified skills regime and labour market.

While at first sight Luxembourg appears to be a special case, the country is still of broader relevance for comparative research on education and work, since it raises profound questions on how multicultural societies organise their education and skill formation systems, for many European regions can no longer be regarded as consisting of a single cultural realm, or as an independent national socio-economic space. This theoretical challenge seems especially relevant in the case of smaller advanced economies in which the proportion of migrant and cross-border workers vis-à-vis the domestically trained workforce is very large. In these cases, not only is the national frame insufficient in capturing the reality of the WS-VoC matrix, but it may also offer a superficial and misleading picture of the national education system as being predicated primarily on the 'native' labour market. Although our analysis shows that there still exists a national education policy in Luxembourg (demonstrated, for instance, by the establishment of the national university in 2003), the results also point to a gap between established theory and the actual empirical observations. Thus, for example, further advancing WS-VoC oriented analyses of the whole Greater Region, and not only of the individual countries belonging to it, would be beneficial for future research, and there have already been promising initiatives taken into this direction in other fields of study (e.g. Wille 2016; Wolf 2016).¹⁰

A similar approach could then potentially be applied to other European regions dominated by multiculturalism and transnationalisation, and rigorously analysed against how they have come to realise their cultural plurality in their education and skill formation systems. Here, future comparative research could also be envisaged to include sub-national and city levels which are situated next to larger entities. Brussels in Belgium and Strasbourg in France share obvious similarities with Luxembourg City, given their multilingual and multicultural workforce, the existence of a similar *Quartier européen* and a mix of Conservative/Social Democratic welfare state features with certain CME characteristics of the countries in general. Although being a clear example of a Liberal WS and LME, the City of London in the UK also resembles the Luxembourgish case in the sense that it has an upper finance class made up of mainly

foreign knowledge workers (at least until the UK's decision to leave the EU on 23 June 2016, and the subsequent Brexit negotiations), which is simultaneously served by low and high skilled migrants, and situated next to the national public sector (Westminster). A similar situation characterises Lichtenstein and the Canton of Zurich in Switzerland, centred on multinational businesses and banking. Beyond Europe, economies like Singapore and Hong Kong, with their highly transnationalised and rich service sectors, could equally offer an interesting comparative foil for future research in this field.

Thus, while the nation state is likely to remain the bedrock for WS and VoC analyses in the foreseeable future (e.g. Evans and Stroud 2016), increased attention should be given to education and training developments taking place abroad as an integral part of the production models and stratification systems of the countries in question, and how they are being shaped by different transnationalisation processes that increasingly transcend the national paradigm. This paper has proposed a flexible approach to WS and VoC that facilitates the analysis of transnational skills regimes and labour markets. That is, by applying elements of the classical WS and VoC typologies in combination and, crucially, to skill formation as a whole rather than the respective educational sectors to which each typology is usually applied, we were able to map the hybrid Luxembourgish model against the French and German cases. In this way, it also became possible to explore how different welfare states and models of capitalism provide different institutional sources for transnational skill capture.

Understanding how these transnational elements are then concretely combined within a specific socio-economic context requires the in-depth analysis of transnational skills regimes, which by their very nature transcend the strong national framing of WS and VoC. Here, our findings suggest that future WS and VoC research into transnational skills development should take into account key factors such as the strategic extension of national skill formation systems through cross-border cooperation, the complex channelling of native and non-native workers into different labour market segments, and, more generally, the institutional bricolage of different elements of WS and VoC ideal types within one socio-economic space. In this endeavour, a flexible approach to the study of transnational skills regimes that simultaneously builds on, challenges, and goes beyond current typologies seems most promising.

Notes

1. In this paper, the term 'education and skill formation' is used to refer broadly to the whole education system. However, we are especially interested in how education and skill formation are linked to the labour market and, in turn, embedded in the respective education-economy nexus.
2. See <http://www.granderegion.net/de/grande-region/index.html> (accessed 1 July 2016).
3. In addition, there exists a rich literature on Europeanisation which has interesting crossing points to the WS and VoC literatures. However, it mainly concentrates on higher education (see, e.g. Dale and Robertson 2009).
4. This was often done in coalition with the smaller Democratic Party (DP) as their junior partner.
5. This is mainly due to the fact that social policies have not embraced proactive education policy until recently.
6. The small size of Luxembourg further implies that geography plays a special role (see, e.g. Wolf 2016), and that no federal structure is necessary.
7. Whereas the first generation of migrants worked mainly in the steel industry, the second generation most often works in lower level services and construction.
8. In the public sector, language becomes a major source of protectionism for well-paid service jobs for the native Luxembourgers who can master the three official languages: Luxembourgish, French and German.
9. Here, it is also relevant to mention that the overall number of those who reside in Luxembourg but who do not have Luxembourgish citizenship, and thus no voting rights, is today approaching a 50% mark (MEN 2015, 16).
10. Moreover, to again question the relevance of the nation state, it would be illuminating to analyse to what extent transnational traits in education are due to such countries' multilingual or multicultural characteristics (as a national trait) or result, for instance, from the activities of transnational 'global' agencies (exemplified by the influence of the EU, the OECD, and the like).

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