



Skill formation in cross-border contexts: The case of the trinational Upper Rhine region

Lukas Graf¹

Abstract

Cross-border regions display significant economic, political, and cultural cooperation and represent a central feature of Europe — not least as innovation labs for the European integration project. A key example is the trinational French-German-Swiss Upper Rhine region. Each of the respective bordering countries displays a specific mode of regulation in VET. How do actors govern vocational education and training (VET) in this dynamic industry cluster in which distinct national political-administrative units do not overlap with the functional needs of employers and (future) employees? Relying on expert interviews and document analysis, this chapter offers a novel comparison of the respective subnational units within each cross-border region. The institutional study finds a key pattern through which skill formation is institutionalised within the cross-border context: the leveraging of complementarities between distinct educational institutions. In combining the specific strengths of different national skills regimes, VET stakeholders in cross-border regions are in a position to enlarge the scope and capacities of their skill regime far beyond national borders.

1 Introduction

Skill formation is considered to be one of the major institutional spheres in national socio-economic production models (Thelen 2004; Busemeyer and Trampusch 2012) and central to successful industry clusters more specifically (Schröder and Voelzkow 2016). In addition, the case of skill formation is particularly interesting to analyse in the context of cross-border regions, given that the political economy of skill formation literature has thus far mainly focused on the analysis of education and training within national frameworks (Streeck 2012; Emmenegger et al. 2019b). As much of this literature emphasises distinct national models of skill formation — especially in the area of vocational education and training (VET) (Bosch

1 Prof. Dr. Lukas Graf, Assistant Professor of Educational Governance, Hertie School of Governance, e-mail: graf@hertie-school.org

and Charest 2008) — the question arises how actors handle the respective institutional differences in cross-border industry clusters that transcend national borders? This research gap is even more surprising considering that some of these cross-border clusters are among the economically most successful regions in Europe (Graf and Gardin 2018; Leftris et al. 2005), suggesting that firms can derive some form of institutional advantage from their location in a cross-border context (Johnson 2009; Lundquist and Trippel 2013).

The related research puzzle is how governance in collective skill formation is managed in contexts where the political-administrative units do not overlap with the functional needs of employers and (future) employees within an industry cluster. Thus, how do private and public actors in such cross-border industry clusters draw on and develop the pool of skilled workers required for the competitiveness of their industry cluster — despite the presence of borders that mark distinct models of regulation and skill formation? Furthermore, how do the subnational parts of the cross-border industry cluster relate to each other and to the respective national model of regulation in which they are formally embedded?

To address these questions, we combine the comparative capitalism literature, with its focus on national varieties of capitalism (VoC) (e.g., Hall and Soskice 2001), and the literature on local production systems and industry clusters (or regional varieties of capitalism) (e.g., Crouch and Voelzkow 2009; Ebner 2016). None of these two approaches has yet been applied explicitly to the case of cross-border industry clusters. Thus, the present analysis contributes to these two literatures by extending them to cross-border local production systems and industry clusters. As a case study we focus on one of Europe's most dynamic cross-border industry clusters and wealthiest regions, namely the French-German-Swiss Upper Rhine region, well-known especially for its chemical, pharmaceutical, and life sciences industries (Walther and Reitel 2013; Zeller 2011). The Upper Rhine region is sometimes considered as a role model for other cross-border regions for its long tradition of regional integration (Richardson 2017, p. 23). Due to its high level of cross-border activity, in this region the effects of cross-border governance in skill formation should be particularly sizable. The region is, broadly speaking, composed of North-western Switzerland, Baden in Germany, and Alsace in France. Importantly, each of the three bordering countries displays a specific mode of regulation both with regard to its national model of capitalism and its skill formation system.

In terms of methods, the chapter relies on a comparative institutional analysis based on expert interviews with relevant stakeholders, document analysis, and the limited available secondary literature. The study finds a specific pattern through which cross-border skill formation is institutionalised, namely the leveraging of complementarities between distinct educational institutions in each part of the

cluster. Employers and other (intermediary) organisations in the trinational Upper Rhine region are building on this cross-border leveraging — which can lead to institutional innovations. Thus, actors in cross-border clusters are in a position to enlarge the scope and capacities of their skill regime beyond national borders.

The next sections present the theoretical framework as well as methods and data. Subsequently, the empirical analysis and the findings are presented. The chapter concludes with a discussion and an outlook.

2 Theoretical framework: Comparative capitalism, cross-border regions, and skill formation

As is well-established in the comparative capitalism literature, France, Germany, and Switzerland represent distinct models of capitalism, with Germany and Switzerland typically being counted towards the group of coordinated market economies and France seen as a more state-led type of capitalism (Amable 2003; Hall and Soskice 2001; Schmidt 2002). While Germany is considered to be an ideal type of a coordinated market economy, Switzerland is sometimes depicted as a hybrid between the coordinated and liberal type of capitalism, mainly due to its more flexible labour market arrangements (Mach and Trampusch 2011). Furthermore, the governance of skill formation — especially with regard to VET — also differs in these three neighbouring countries. In Switzerland and Germany, there is a strong tradition of corporatist-governed dual apprenticeship training (Pilz 2007). While in Switzerland we find a highly complex configuration of hybrid organisations of the world of work (Organisationen der Arbeitswelt) that play a key role in the corporatist governance of apprenticeship training, the responsible German chambers are less fragmented and built on compulsory membership (often along sectoral lines) (Emmenegger et al. 2019a). The French VET system, on the other hand, is based primarily on full-time school-based VET and is far more centralised (Bosch and Charest 2008; Busemeyer and Trampusch 2012; Culpepper 2003; Greinert 2005; Powell et al. 2012b).²

Research into cross-border regions is naturally drawn to conceptualisations that go beyond the study of education and training within such national analytical frameworks. According to Walther (2013), “cross-border governance thus results from the subtle and delicate balance between the heterogeneity of the border situation and the common concerns arising from cross-border development” (p. 218). Broadly speaking, regional cross-border governance takes place when state actors and non-state actors from different regions cooperate voluntarily across different

2 For a comprehensive review and critique of typologies in comparative vocational education, see Pilz (2016).

levels (local, regional, national), and in doing so combine different forms of cooperation of regional processes (Zäch and Pütz 2014). Thus, “cross-border regions are even more multi-actor and multi-level spaces than institutionalized regions in decentralized states” (Zumbusch and Scherer 2015, p. 502). Cross-border regions combine or cut through two or more political-administrative units, often leading to a mismatch between the ‘legal political area’ and the ‘functional economic area’. A key example of this phenomenon is the emergence of cross-border employment catchment areas and related cooperation projects in education and training (Lezzi 2000; Maillat and Lécho 1995).

2.1 *Analytical perspectives on cross-border industry clusters*

An industry cluster can be defined as “geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for instance, universities, standards agencies, trade associations) in a particular field that compete but also cooperate” (Porter 2000, p. 15). Such clusters can be expected to provide institutional conditions conducive to intensive micro-level negotiations (Martin 2013) facilitating cooperation between the various involved actors. One of the core insights from recent political economy research on industry clusters is that they rely on the construction and maintenance of *collective competition goods*. Schröder and Voelzkow (2016) point to the importance of collective competition goods, such as a well-qualified workforce, knowhow, or an efficient distribution system, for the competitiveness of a cluster. They state that

[Collective competition goods] have to be provided collectively; companies either have to cooperate directly to provide them or the state or associations have to do so. In any case, a collective action problem has to be overcome as each company of a cluster has an interest in these goods, while none can provide them alone without other companies being able to exploit this effort. (Schröder and Voelzkow 2016, p. 12)

However, as Schröder and Voelzkow (2016) and Crouch and Voelzkow (2009) have argued, the political economy literature offers two opposing views on the link between regional industry clusters (with their respective collective competition goods) and the national models of regulation. The classical *VoC literature* (e.g., Hall and Gingerich 2009) suggests that the key to success for a sector or region is that the governance mode applying to its collective competition goods is coherent to that of the national model of capitalism in which it is embedded. Hall and Soskice (2001) state that “... nations with a particular type of coordination in one sphere of the economy should tend to develop complementary practices in

other spheres as well” (p. 18). In their understanding, complementarity is seen to derive from similar (coherent) institutions on different regulatory levels (here: national model of capitalism and industry cluster). From this point of view, productive institutional complementarity between the industry cluster and the national model of capitalism essentially builds on the coherence between the respective governance modes.

In contrast to the classical VoC literature, the *literature on local production systems* (or regional varieties of capitalism) (Crouch et al. 2001, 2005, 2009) holds that it is precisely the incoherence between the governance mode of the collective competition good of an industry cluster and the governance mode of the national model of capitalism that creates productive institutional complementarity for an industry cluster. That is, the industry cluster typically develops institutions that are not fitting with the respective mode of regulation in the national model, and it is therefore that it is able to offer the specific regulation that the regional industry requires (Schröder and Voelzkow 2016). As Amable (2005) puts it, “complementarity may also exist where very different ‘logics’ operate in different institutional areas” (p. 372). Thus, from this point of view, institutional complementarity is seen as mainly deriving from incoherence. That is, industrial clusters are assumed to develop institutions dissimilar (incoherent) to their national governance mode, in this way yielding productive complementarity.

2.2 *Vocational education and training in a cross-border industry cluster: Theoretical expectation*

Crucially, both the VoC perspective and the local production systems perspective assume that industry clusters are embedded within one national frame — which, however, is not the case for cross-border industry clusters. Then, what expectations can we derive from these two theories for the case of cross-border industry clusters that span two or more national systems? At the most basic level, we expect to find relevant collective competition goods in the domain of skill formation within the trinational Upper Rhine industry cluster — as these can be assumed to be a necessary condition for any type of successful industry cluster. Beyond this, these two approaches allow us to derive two competing, stylised scenarios of how firms and other actors in the cluster can benefit from their location in a cross-border region.

Based on the VoC perspective, we would expect coherence between each national sub-unit of the cross-border industry cluster and the respective national model of capitalism. This, in turn, would imply incoherence between the three parts of the cross-border industry clusters. Given this type of incoherence, benefits for firms being located in such a cluster are likely to derive from them tapping into

the institutional resources — or comparative institutional advantages — of the respective other part. That is, firms located in the Swiss part would mainly contribute to the collective competition good of their Swiss part alone. Yet, at the same time, they would find ways to leverage the distinct way in which skill formation is institutionalised in the German and French parts of the cluster. In sum, in this scenario, we would expect to observe within-country complementarities (between the relevant subnational part of the cluster and the respective national level) based on coherence (Hypothesis 1.1) and cross-border level complementarities within the cluster based on incoherence (Hypothesis 1.2).

Based on the local production systems perspective, however, we would expect the development of original collective competition goods that span the three parts of the cross-border industry cluster and that provide some sort of cross-border coherence. Private and/or public actors within the cross-border region can be expected to provide these goods jointly and, hence, we call these joint *cross-border collective competition goods*. Cross-border collective competition goods, on the one hand, build on a certain level of coherence that makes intensive industry-level cooperation possible in the first place, and, on the other hand, they themselves contribute to increased coherence between the three subnational parts of the cluster. That is, overtime, they are likely to facilitate a partial hybridisation between the three parts of the cluster,³ which, in turn, implies that the three parts of the cross-border cluster partly diverge from the respective national model to which they formally belong. In sum, in this scenario we would expect to find jointly provided cross-border collective competition goods within the cluster (Hypothesis 2.2) that partially diverge from the respective national model of capitalism (Hypothesis 2.1).

3 Methods and data

To test these hypotheses, our core cases are local education and training programs that provide firms in the Upper Rhine region in the field of pharmacy, chemistry, and life sciences as well as adjunct suppliers producing necessary tools and instruments with the skilled workforce they require to be competitive in global markets. Despite its global outreach and partially global recruitment practises, this industry still relies substantially on the regional skills pool (Streckeisen 2010, Interview 7). Given that the Swiss part of the Upper Rhine region represents the economic centre of this industry cluster, we mainly focus on programmes of initial professional

3 According to Boyer (2005), “the process of hybridization precisely describes the process through which tentatively imported institutions are transformed via their interaction with domestic institutional forms” (p. 366).

education and training — and related actor constellations — that are the most relevant ones in this Swiss part, and explore how these are linked to the cross-border context. More specifically, we focus on apprenticeship training at the upper secondary level, which represents the main educational pathway into the labour market in Switzerland (Emmenegger et al. 2019b; Ryan 2012). The main educational provider in the Swiss part of the industry cluster is the regional host-company training network called ‘Aprentas’ in which around 70 firms in Northwestern Switzerland join forces in building their workforce in the chemistry, pharmacy, and life sciences sector, and which represents a core example of a Swiss-style collective competition good in the Basel region. The three main occupations that Aprentas trains for are chemical and pharmaceutical technologist, lab technician in chemistry and biology, but also several technical and commercial occupations.

The comparative historical-institutional analysis is based on a review of relevant secondary literature, document analysis as well as expert interviews with key actors. Ten interviews were carried out with expert practitioners from the public and private sector in the cross-border region, including representatives of educational institutions, businesses, unions, cross-border intermediary organisations, and local politicians.⁴ Interviewees were mainly senior practitioners with first-hand experiences of cross-border activities in the Upper Rhine region. The majority of the interviewees were Swiss actors, in line with the abovementioned focus on the Swiss part of the industry cluster, but all of them had substantial knowledge of the cross-border region as a whole. Representatives of educational institutions made up the largest type of interviewees, given their day-to-day knowledge of the concrete operation of cross-border activities in education and training. The semi-structured interviews were based on an interview guideline structured by key concepts derived from the chapter’s theoretical framework. This involved, for instance, arguments regarding barriers and opportunities related to cross-border activities in education and training. This systematic structure then allowed the comparison of the information provided by the interviewees. The information was analysed with reference to the steps proposed by Meuser and Nagel (2009) that include, for instance, paraphrasing, coding (ordering of thematic passages), thematic comparison and conceptualization. Interviews took place either in the form of personal meetings or via phone and lasted on average around 50 minutes. For non-recorded interviews, notes from the interview were written out in full immediately after the interview.

4 Interview 1 (10 November 2016); Interview 2 (21 November 2016); Interview 3 (25 November 2016); Interview 4 (29 November 2016); Interview 5 (28 March 2017); Interview 6 (28 March 2017); Interview 7 (04 April 2017); Interview 8 (26 June 2017); Interview 9 (05 August 2017); Interview 10 (11 July 2018).

4 Vocational education and training in the chemistry, pharmaceutical and life sciences cross-border cluster

The Upper Rhine region includes the Swiss cantons Basel-City, Basel-Country, Aargau, and Solothurn, Alsace in France, and Baden and Southern Palatinate in Germany. This region, located very centrally in Western Europe at the crossroads of major trade routes (Brunet 1989; Rokkan 1981), is home to around six million people and approximately 90,000 cross-border commuters (Oberrheinkonferenz 2014). It is characterized by a long-standing tradition in cross-border cooperation in various policy domains (Walther and Reitel 2013). Alsace has switched between German and French control several times. While the first language in Alsace is French, the traditional dialect is Germanic — which to some extent lowers the language barrier in cross-border activities (several interviews). While economic activity in the cross-border region is diversified, especially in its Southern part, the region is dominated by the chemical, pharmaceutical, and life sciences industry and its suppliers (Zeller 2011), which is therefore in the spotlight of this analysis. The genesis and rise of the chemical industry is intrinsically linked to its location in the border region. For example, chemists and entrepreneurs especially from Alsace (France) initially came to Basel to benefit from the non-existence of patent laws for chemical products in Switzerland until 1907 (Stucki 1986).

The following figures give a rough indication of the relevance of cross-border human capital flows in the Swiss part of the cluster (not even considering the foreigners that actually take residence in Switzerland): in 2014, there were 31,400 people commuting from Alsace into Northwestern Switzerland and 33,700 from Baden — while the number of commuters in the opposite directions was very low (Oberrheinkonferenz 2014, Interview 5). Furthermore, in 2008, 14% of the commuters from France and 17% of those from Germany were working in the chemical and pharmaceutical industries (EURES-T 2008). Already in 2004, more than 40% of the employees of Novartis (a global player in the pharmaceutical industry) in Northwestern Switzerland were cross-border commuters (Streckeisen 2008).

Local actors have been successful in creating a range of cross-border intermediary organisations that foster cooperation but also the exchange of best practices across borders to connect actors and institutions of the three parts of the region (Interview 8). The most influential of these organisations are the Franco-German-Swiss Upper Rhine conference, the INTERREG Oberrhein (a programme within the EU's INTERREG programme for cross-border cooperation), EURES-Transfrontalier (EURES-T), and Regio Basiliensis. As a result of this cross-border institution-building, in the Upper Rhine region, “[n]ational borders play a diminishing role in the formation of policy networks for both information exchange and decision making” (Walther and Reitel 2013, p. 217).

In the following, the key skill formation program identified in Section 3, namely the Aprentas training network, and its connection to the cross-border context are analysed. The analytical interpretation follows in Section 5.

4.1 *The Aprentas training network*

Apprenticeship training in Switzerland is typically organised in three integrated places of learning. That is, next to the vocational school and the workplace, there is also the so-called third place of learning, which is organised by the responsible professional organisation and offers inter-firm training for apprentices (Wettstein and Gonon 2009). However, among other things, due to “rising flexibility, the rationalisation of production processes and the standardisation of products” (Imdorf and Leemann 2012, p. 58), it has become increasingly difficult to create (additional) apprenticeship places. In reaction to this challenge, starting in the early 2000s we observe the founding of training networks in Switzerland. Broadly speaking, these networks are made up of various firms within a region that operate in related sectors and in which a ‘lead organisation’ supports the firms in implementing apprenticeship training, for example through providing the third place of learning, vocational schooling, marketing, and recruitment instruments (Imdorf and Leemann 2012).

In the Basel region, the so-called Aprentas training network was founded in 2000 ‘bottom-up’ by Novartis, Syngenta, and Ciba (now BASF Schweiz) (Zeller 2001, p. 270). In the wake of a general trend to outsource various infrastructure services, Aprentas was created with the mission to service all three companies. However, Aprentas was, from the beginning, also open to other, smaller companies. In fact, the three founding firms explicitly stated that Aprentas should enable other firms to participate in apprenticeship training that previously abstained from it due to their small size (Ciba and Novartis 2000). Interestingly, while Thelen and Busemeyer (2012) observe increasing segmentalism between large and small firms in the German VET case, the Swiss case of Aprentas provides an example of large industrial firms intensifying cooperation with smaller firms in their sector and region to provide a collective competition good.

Aprentas offers training for around 600 students in 14 occupations in the natural sciences, technical occupations, and commerce. It is a non-profit association (*Verein*) with several training locations in the greater Basel area (Aprentas 2013), subsidised by the cantons Basel-Country and Basel-City. It also provides further training and higher VET programs. At the level of apprenticeship training, Aprentas organises the third place of learning and, for some occupations, also the vocational schooling part. In addition, Aprentas supports its member firms in the marketing of their training positions and also in the selection process. Next to the three

key sponsoring firms, around 70 other firms in the chemical-pharmaceutical, technical, and service sectors are members of Aprentas.

Thus, the Aprentas training network represents an example of a collective competition good in the field of skill formation within the Swiss part of the trinational industry cluster, and is in line with the governance mode in the Swiss collective skill formation system overall. Yet, how does this training network relate to the cross-border context in which it is also embedded?

4.2 Cross-border perspectives on the Aprentas training network

At the Upper Rhine, the principal tool of internationalisation in the field of VET is the EUREGIO-Certificate, specifically created for this region. This certificate supports work experiences abroad, targeting apprentices but also students in full-time vocational schools. For four weeks or longer, apprentices go abroad for a work experience taking place in a firm within the trinational Upper Rhine region — usually during their holidays, as it tends to be difficult to integrate the work abroad phase in the regular curriculum (Interview 1). The EUREGIO-Certificate is overseen by the Franco-German-Swiss conference of the Upper Rhine. Further actors involved include regional public governance organisations but also chambers of industry and commerce in Germany and France. The certificate does not build on joint teaching staff or a joint curriculum, but ‘merely’ facilitates student exchange. The actual number of apprentices participating in the EUREGIO-Certificate programme on behalf of Aprentas is rather limited (Interviews 3, 10). The core problem here is that the three-year apprenticeship programmes are usually very densely packed, leaving little room for such international exchanges. Furthermore, the different national legislations and corresponding curricular contents make it difficult to actually create integrated cross-border VET programs (Interview 6). In addition, as firms pay apprentices a salary, they are not always keen on sending them abroad and, thus, to lose productive capacities (Interview 1). Overall, the influence of the EUREGIO-Certificate as a tool to facilitate cross-border skill formation is modest and it does not have a substantial impact on the Aprentas training network as a collective competition good.

However, two other aspects of cross-border activity are more relevant. These aspects relate to the question of who is recruited (I.) for apprenticeships and (II.) for entry-level jobs. In this context, it is important to note that the educational expansion, occurring in all western industrialised nations in the post-World War II period (see Schofer and Meyer 2005), played out differently in Switzerland than in Germany and France. In Germany and even more so in France, this expansion mainly took place in general academic schooling at the secondary level as well as at the higher education level (Bernhard 2017; Graf 2017). In France and Germany,

social democratic parties supported the expansion of academic education — with social democrats as key proponents of making selective academic secondary schools more accessible to the lower middle classes (Nikolai and Rothe 2013). In contrast, in Switzerland — with its arguably more conservative and business-oriented political landscape in which employers and their associations have greater direct influence on educational programmes and contents — the pressure for expansion was primarily channelled through expanding apprenticeship training at the secondary level and higher VET programs (Gemperle 2007). The resulting lack of academic skills in Switzerland affects the recruitment decisions of Swiss firms at the Upper Rhine.

I. Recruitment for apprenticeships: The member firms of Aprentas have become increasingly aware of the possibility to recruit talented graduates from the academic track of upper secondary level education (who hold a higher education entrance qualification) from Germany (*Abitur*) and France (*baccalaureate*) for their apprenticeship positions (Interview 6). Not only do these candidates have a higher level of general education that helps them cope with risen work requirements related to, for instance, modern digital process control technology and more complex project structures overall, but also increased English-language requirements, which are of high relevance in the rapidly globalising chemical, pharmaceutical and life sciences industry (Streckeisen 2008). In the case of Novartis, which contributes almost half of the apprentices to the Aprentas training network, already around one third of all apprentices hold a higher education entrance qualification (Interview 2). At the same time, in 2011, foreigners from neighbouring countries took up 20–30% of the apprentice positions that Novartis offers in Switzerland (Furger 2011). This situation is unusual in the Swiss context, where it is, unlike in Germany, uncommon that people holding higher education entrance qualifications enter apprenticeship programmes at the secondary level (Gonon and Maurer 2012; Graf 2016). Thus, Swiss firms in the industry cluster are strategically drawing on the skills portfolio developed in the neighbouring regions.

II. Recruitment for entry-level jobs: When it comes to the entry-level jobs adequate for apprentices that have finished their training in the Swiss part of the cluster, it is important to note that employers in the Swiss part of the cluster — as a complementary strategy — often also hire graduates from practice-oriented short-track post-secondary training programmes in France and Germany for these positions (Streckeisen 2010). For example, in Alsace there exists a range of post-baccalaureate short-track vocational programmes in the fields of chemistry, pharmacy, and life sciences, in which students receive more theoretical training than Swiss apprentices do. Such programmes are mainly offered by national higher vocational

schools (e.g., École Nationale Supérieure d'enseignement en Chimie, Mulhouse) or university-based two-year technological courses (e.g., Instituts universitaire de technologie in Mulhouse or Strasbourg). In this way, firms based in the Swiss part of the cluster are able to complement the practical skills portfolio that Swiss apprentices acquire by hiring graduates from abroad and, thus, by leveraging the comparative institutional advantages of the other regions of the cluster. Another interesting facet of changing recruitment patterns is related to the origin of the management personnel. In the past 10–15 years, more and more international managers have been hired in the chemical industry. However, these are not as familiar with the Swiss concept of dual apprenticeship and more open to recruiting academically trained personnel from outside the Swiss frame (Interview 1).

The next section summarises key findings of the case study in relation to the central hypotheses formulated in Section 2.

4.3 Findings: The leveraging of regional complementarities

The institutional analysis finds that the Aprentas training network represents a case of within-country complementarity based on similar (coherent) institutions, which corresponds to Hypothesis 1.1. The training network is embedded in the specific Swiss mode of decentralised cooperation of skill formation. That is, it is in line with the institutional setting and governance mode at the Swiss national level. No such training networks can be observed in the French or German parts of the Upper Rhine cluster. At the same time, the VET case also illustrates that the involved Swiss employers are able to draw on the regionally available institutional resources in the other parts of the cluster. For example, they draw on the large regional pool of young Germans with higher education entrance qualification to recruit them for their apprenticeship programmes. Beyond this, for entry-level jobs, firms based in the Swiss part of the cluster also hire graduates from practice-oriented short track higher education programmes, for instance, in Alsace, which have received more theoretical and language training than Swiss apprentices. In France, such programmes are offered by national higher vocational schools or university-based two-year technological courses. In this sense, Swiss firms in the cluster are able to complement the high level of practical skills that apprentices acquire within the Swiss model by leveraging the distinct institutional features of skill formation in the French and German parts of the cluster (which supports Hypothesis 1.2).

5 Conclusion

Cross-border regions are a key feature of Europe, yet underexplored especially in terms of the education and training dimension. What can we learn from the case of the governance of vocational education and training in the trinational Upper Rhine region? The chapter has found a key pattern through which cross-border skill formation is institutionalised: the cross-border complementarity based on comparative institutional advantages, i.e. the leveraging of dissimilar (incoherent) collective competition goods in each part of the cluster. This fits the theoretical predictions derived from the national VoC literature. Employers and other organisations in the Swiss and other parts of the cross-border industry cluster build extensively on cross-border institutional leveraging. This, in turn, can lead to institutional innovation as actors in cross-border clusters enlarge the scope and capacities of their educational system far beyond the national borders.

More generally, in the case of VET research on cross-border regions, increased attention should be given to education and training developments taking place in the neighbouring countries as integral parts of the production models and stratification systems of these regions, and how they shape and are being shaped by different socio-economic and political processes that increasingly transcend the national paradigm. This also implies taking into account the very different education systems of the neighbouring countries (for example, differences in: educational governance, curricula, overall structures and duration of schooling, transitions from education to work), and how their institutional features — often shaped by distinct models of capitalism — translate into the respective country's system of training and labour. In fact, in a relatively small country like Switzerland, in which a significant proportion of economic activity takes place in or close to cross-border regions, this perspective presents a challenge to the strong national focus of much of the comparative capitalism and comparative VET literature, but also the perception of Switzerland as a laggard with regard to European integration.

Cross-border regions are constantly challenged by the need to internalise influences both from the 'inside' and 'outside'. This challenge is relevant, for instance, to all those actors that need to coordinate activities in skill formation but are faced with a situation in which extensive socio-economic activities crosscutting political-administrative units prevail. With regard to the European level, the findings suggest that the success of the European educational system as a whole (Powell et al. 2012a) — and particular of a European VET model — is not so much dependent on the harmonisation of national or regional specificities, but more on a sophisticated combination of regionally available institutional resources. Further research could explore in more detail whether the socio-economic fabric and strength of other cross-border regions, in which different economic

sectors and VET models dominate, also derive from institutional resources into which local firms and organisations can tap due to their very location in hybrid cross-border regions that successfully combine ‘native’ and ‘foreign’ institutional conditions.

References

- Amable, B. (2003). *The diversity of modern capitalism*. Oxford: Oxford University Press.
- Amable, B. (2005). Complementarity, hierarchy, compatibility, coherence. *Socio-Economic Review*, 3(2), pp. 371–373.
- Aprentas. (2013). Aprentas – Ausbildungsverbund berufliche Grund- und Weiterbildung naturwissenschaftlich, technisch, kaufmännisch. Basel: Aprentas.
- Bernhard, N. (2017). *Durch Europäisierung zu mehr Durchlässigkeit? Veränderungsdynamiken des Verhältnisses von beruflicher Bildung zur Hochschulbildung in Deutschland und Frankreich*. Opladen: Budrich UniPress.
- Bosch, G., & Charest, J. (2008). Vocational training and labour market in liberal and coordinated economies. *Industrial Relations Journal*, 39(5), pp. 428–447.
- Boyer, R. (2005). Complementarity in regulation theory. In C. Crouch, W. Streeck, R. Boyer, B. Amable, P. A. Hall, & G. Jackson (Eds.), *Dialogue on 'Institutional complementarity and political economy'*. *Socio-Economic Review*, 3(2), pp. 366–371.
- Brunet, R. (1989). *Les villes «européennes»*. Montpellier-Paris: Datar.
- Busemeyer, M. R., & Trampusch, C. (Eds.). (2012). *The political economy of collective skill formation*. Oxford: Oxford University Press.
- Ciba, & Novartis (2000, October 24). *Neuer Ausbildungsverbund Aprentas gegründet*. [Press release]. Retrieved from Panorama website: <http://panorama.ch/pdf/aprentas.pdf>. Accessed: 24 October 2019.
- Crouch, C. (2005). *Capitalist diversity and change: Recombinant governance and institutional entrepreneurs*. Oxford: Oxford University Press.
- Crouch, C., Galès, P. L., & Voelzkow, H. (2001). *Local production systems in Europe*. Oxford: Oxford University Press.
- Crouch, C., & Voelzkow, H. (2009). Introduction: Local and sectoral diversity within national economic systems. In C. Crouch & H. Voelzkow (Eds.), *Innovation in local economies: Germany in comparative context* (pp. 1–29). Oxford: Oxford University Press.
- Culpepper, P. D. (2003). *Creating cooperation. How states develop human capital in Europe*. Ithaca: Cornell University Press.
- Ebner, A. (2016). Editorial: Exploring regional varieties of capitalism. *Regional Studies*, 50(1), pp. 3–6.
- Emmenegger, P., Graf, L., & Strebel, A. (2019a). Social versus liberal collective skill formation systems? A comparative-historical analysis of the role of trade unions in German and Swiss VET. *European Journal of Industrial Relations*. Advance online publication. doi:10.1177/0959680119844426.

- Emmenegger, P., Graf, L., & Trampusch, C. (2019b). The governance of decentralised co-operation in collective training systems: A review and conceptualisation. *Journal of Vocational Education & Training*, 71(1), pp. 21–45.
- EURES-T. (2008). *Regionalprofil Oberrhein 2008. Statistische Daten, Analysen der wirtschaftlichen Lage und des Arbeitsmarktes*. Basel: EURES-Transfrontalier Oberrhein.
- Furger, M. (2011). Die Lehrlingslücke. *Neue Zürcher Zeitung*. Retrieved from NZZ website: https://www.nzz.ch/die_lehrlingsluecke-1.11055940. Accessed: 24 October 2019.
- Gemperle, M. (2007). Die Ideologie der Praxis – ein Instrument zur Privilegiensicherung in der Wissensgesellschaft. In M. Gemperle & P. Streckeisen (Eds.), *Ein neues Zeitalter des Wissens? Kritische Beiträge zur Diskussion über die Wissensgesellschaft* (pp. 193–235). Zürich: Seismo.
- Gonon, P., & Maurer, M. (2012). Educational policy actors as stakeholders in the development of the collective skill system: The case of Switzerland. In M. R. Busemeyer & C. Trampusch (Eds.), *The political economy of collective skill formation* (pp. 126–149). Oxford: Oxford University Press.
- Graf, L. (2016). The rise of work-based academic education in Austria, Germany and Switzerland. *Journal of Vocational Education & Training*, 68(1), pp. 1–16.
- Graf, L. (2017). Work-based higher education programmes in Germany and the US: Comparing multi-actor corporatist governance in higher education. *Policy and Society*, 36(1), pp. 89–108.
- Graf, L., & Gardin, M. (2018). Transnational skills development in post-industrial knowledge economies: The case of Luxembourg and the Greater Region. *Journal of Education and Work*, 31(1), pp. 1–15.
- Greinert, W.-D. (2005). *Mass vocational education and training in Europe*. Luxembourg: Office for Official Publications of the European Communities.
- Hall, P. A., & Gingerich, D. W. (2009). Varieties of capitalism and institutional complementarities in the political economy: An empirical analysis. *British Journal of Political Science*, 39(3), pp. 449–482.
- Hall, P. A., & Soskice, D. (2001). An introduction to varieties of capitalism. In P. A. Hall, & D. Soskice (Eds.), *Varieties of capitalism – The institutional foundation of comparative advantage* (pp. 1–68). New York: Oxford University Press.
- Imdorf, C., & Leemann, R. J. (2012). New models of apprenticeship and equal employment opportunity. Do training networks enhance fair hiring practices? *Journal of Vocational Education & Training*, 64(1), pp. 57–74.
- Johnson, C. M. (2009). Cross-border regions and territorial restructuring in Central Europe: Room for more transboundary space. *European Urban and Regional Studies*, 16(2), pp. 177–191.
- Leftris, T., Kallioras, D., Manetos, P., & Patrakos, G. (2005). A border regions typology in the enlarged European Union. *Journal of Borderland Studies*, 20(2), pp. 67–89.
- Lezzi, M. (2000). Transboundary cooperation in Switzerland: Training for Europe. *Journal of Borderland Studies*, XV(1), pp. 107–142.
- Lundquist, K.-J., & Tripl, M. (2013). Distance, proximity and types of cross-border innovation systems. *Regional Studies*, 47(3), pp. 450–460.

- Mach, A., & Trampusch, C. (2011). The Swiss political economy in comparative perspective. In C. Trampusch & A. Mach (Eds.), *Switzerland in Europe. Continuity and change in the Swiss political economy* (pp. 11–26). New York: Routledge.
- Maillat, D., & Lécho, G. (1995). The Franco-Swiss jura arc: From cut-off to seam. *Journal of Borderland Studies*, *X*(1), pp. 1–18.
- Martin, C. J. (2013). Negotiating political agreement. In J. Mansbridge & C. J. Martin (Eds.), *Negotiating agreement in politics* (pp. 1–18). Washington DC: American Political Science Association.
- Meuser, M., & Nagel, U. (2009). ExpertInneninterviews – vielfach erprobt, wenig bedacht. Ein Beitrag zur qualitativen Methodendiskussion. In A. Bogner, B. Littig, & W. Menz (Eds.), *Das Experteninterview – Theorie, Methode, Anwendung* (pp.71–94). Wiesbaden: VS Verlag für Sozialwissenschaften.
- Nikolai, R., & Rothe, K. (2013). Konvergenz in der Schulstruktur? Programmatik von CDU und SPD im Vergleich. *Zeitschrift für Politikwissenschaft*, *23*(4), pp. 545–572.
- Oberreinkonferenz. (2014). *Oberrhein – Zahlen und Fakten 2014*. Retrieved from Oberreinkonferenz website: <https://www.oberrheinkonferenz.org/de/wirtschaft/zahlenundfakten.html>. Accessed: 24 October 2019.
- Pilz, M. (2007). Two countries – one system of vocational education? A comparison of the apprenticeship reform in the commercial sector in Switzerland and Germany. *Compare*, *37*(1), pp. 69–87.
- Pilz, M. (2016). Typologies in comparative vocational education: Existing models and a new approach. *Vocations and Learning*, *9*(3), pp. 295–314.
- Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, *14*(1), pp. 15–34.
- Powell, J. J. W., Bernhard, N., & Graf, L. (2012a). The emerging european model in skill formation. *Sociology of Education*, *85*(3), pp. 240–258.
- Powell, J. J. W., Graf, L., Bernhard, N., Coutrot, L., & Kieffer, A. (2012b). The shifting relationship between vocational and higher education in France and Germany: Towards convergence? *European Journal of Education*, *47*(3), pp. 405–423.
- Richardson, K. E. (2017). *Knowledge borders*. Cheltenham: Edward Elgar.
- Rokkan, S. (1981). Territories, nations, parties: Toward a geoeconomic-geopolitical model for the explanation of variations within Western Europe. In R. L. Merrit & B. M. Russett (Eds.), *From national development to global community. Essays in honor of Karl. W. Deutsch* (pp. 70–95). London: George Allen & Unwin.
- Ryan, P. (2012). Review of the book *The political economy of collective skill formation*, by M. Busemeyer & C. Trampusch and *Switzerland in Europe*, by C. Trampusch & A. Mach. *Journal of Vocational Education & Training*, *64*(3), pp. 381–385.
- Schmidt, V. A. (2002). *The futures of european capitalism*. Oxford: Oxford University Press.
- Schofer, E., & Meyer, J. W. (2005). The worldwide expansion of higher education in the twentieth century. *American Sociological Review*, *70*(6), pp. 898–920.
- Schröder, M., & Voelzkow, H. (2016). Varieties of regulation: How to combine sectoral, regional and national levels. *Regional Studies*, *50*(1), pp. 7–19.

- Streckeisen, P. (2008). Die entzauberte “Wissensarbeit”, oder wie die Fabrik ins Labor eindringt. Ein Forschungsbericht aus der Pharmaindustrie. *Swiss Journal of Sociology*, 34(1), pp. 115–129.
- Streckeisen, P. (2010). Metamorphosen der Berufsbildung in der Basler Chemie: Soziale Flugbahnen der Produktionsarbeiter und Laborangestellten im Umbruch. *Swiss Journal of Sociology*, 36(1), pp. 91–107.
- Streeck, W. (2012). Skills and politics: General and specific. In M. R. Busemeyer & C. Trampusch (Eds.), *The political economy of collective skill formation* (pp. 317–352). Oxford: Oxford University Press.
- Stucki, L. (1986). Chemiker kamen über die Grenze. *Die Zeit*. Retrieved from Zeit website: <https://www.zeit.de/1968/42/chemiker-kamen-ueber-die-grenze>. Accessed: 07 August 2019.
- Thelen, K. (2004). *How institutions evolve: The political economy of skills in Germany, Britain, the United States, and Japan*. New York: Cambridge University Press.
- Thelen, K., & Busemeyer, M. R. (2012). Institutional change in German vocational training: From collectivism to segmentalism. In M. R. Busemeyer & C. Trampusch (Eds.), *The political economy of collective skill formation* (pp. 68–100). Oxford: Oxford University Press.
- Walther, O., & Reitel, B. (2013). Cross-border policy networks in the Basel region: The effect of national borders and brokerage roles. *Space and Polity*, 17(2), pp. 217–236.
- Wettstein, E., & Gonon, P. (2009). *Berufsbildung in der Schweiz*. Bern: hep verlag ag.
- Zäch, C., & Pütz, M. (2014). Regional Governance in der grenzüberschreitenden Zusammenarbeit. *disP – The Planning Review*, 50(4).
- Zeller, C. (2001). *Globalisierungsstrategien – Der Weg von Novartis*. Berlin: Springer.
- Zeller, C. (2011). Globaler Pharmaknoten Basel: Regionale und industrielle Restrukturierung. In W. Matznetter, & R. Musil (Eds.), *Europa: Metropolen im Wandel* (pp. 67–81). Vienna: Mandelbaum Verlag.
- Zumbusch, K., & Scherer, R. (2015). Cross-border governance: Balancing formalized and less formalized co-operations. *Social Sciences*, 4(3), pp. 499–519.

Internationale Berufsbildungsforschung

RESEARCH

Matthias Pilz · Junmin Li *Editors*

Comparative Vocational Education Research

Enduring Challenges and New Ways
Forward

 Springer VS

Editors

Matthias Pilz
Chair of Economics and
Business Education
University of Cologne
Cologne, Germany

Junmin Li
Chair of Economics and
Business Education
University of Cologne
Cologne, Germany

Internationale Berufsbildungsforschung

ISBN 978-3-658-29923-1

ISBN 978-3-658-29924-8 (eBook)

<https://doi.org/10.1007/978-3-658-29924-8>

© Springer Fachmedien Wiesbaden GmbH, part of Springer Nature 2020

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer VS imprint is published by the registered company Springer Fachmedien Wiesbaden GmbH part of Springer Nature.

The registered company address is: Abraham-Lincoln-Str. 46, 65189 Wiesbaden, Germany

Contents

Introduction/Opening Chapter

Comparative vocational education and training research: What purposes does it serve?	3
<i>Karen Evans</i>	

Part I International Comparative VET Theories and Methodologies

Beyond typologies: Alternative ways of comparing VET systems.....	23
<i>Martin Fischer</i>	

A framework for the comparative study of institutional-employer partnerships in vocational education and training	43
<i>Jim Hordern</i>	

Tools and means to understand different TVET models in developing countries: An approach to the epistemological opening up of international TVET in development cooperation.....	57
<i>Stefan Wolf</i>	

Part II Research Results on International Comparative VET

The learning outcome approach to European VET policy tools: Where are the arguments and the evidence?.....	81
<i>Christopher Winch</i>	

The Swiss PET system and similar programs in Germany and Austria.....	97
<i>Antje Barabasch and Naomi Heller</i>	

Competency-based education and training in Namibia: Educational transfer as imitation	113
<i>Michael Gessler and Susanne Peters</i>	

Skill formation in cross-border contexts: The case of the trinational Upper Rhine region.....	131
<i>Lukas Graf</i>	
Comparing the integration of technical vocational education and training (TVET) in systems of innovation: Towards a new cultural political economy of skills?	149
<i>Jan Peter Ganter de Otero</i>	
Evaluating dual apprenticeship effects on youth employment: A focus on the mechanisms	163
<i>Oscar Valiente, Aurora López-Fogués, Hugo Fuentes and René Rosado</i>	
Competency-based curriculum development in vocational education and training: An example of knowledge transfer from the Western world to India	181
<i>Muthuveeran Ramasamy</i>	
Transfer research as an element of comparative vocational education and training: An example of factors influencing the transfer of dual training approaches of German companies in China, India and Mexico	199
<i>Kristina Wiemann and Matthias Pilz</i>	
How decent is work in the automobile industry in Shanghai? What does it mean for Chinese vocational education and training? An analysis of shop floor jobs in the Shanghai automobile industry.....	221
<i>Jun Li and Dongshu Li</i>	

Part III Lessons Learnt from Comparative VET Research in Practice

Comparative methods in practice: Using an iterative approach to explore aviation apprenticeships in England and Germany.....	243
<i>Junmin Li, Ann Lahiff, Lorna Unwin and Matthias Pilz</i>	
Reflections on typologies of comparison studies and the necessity of cultural-historical views illustrated by the analysis of the Swedish vocational education system from abroad.....	259
<i>Franz Kaiser</i>	

The value of ethnography and the comparative case study approach
in VET research – exemplified by the project “VET cultures in a
European comparison” 275
Erika Gericke

Undertaking comparative VET research in international teams:
The example of exploring recruitment and training cultures in SMEs
in Germany, Australia and the United States 291
Matthias Pilz, Roger Harris, Lea Zenner-Höffkes and Christopher Zirkle

Closing Chapter

Comparison of VET approaches through history, with a particular
focus on Africa 313
Kenneth King

Index of Authors 327