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Work-based higher education programmes in Germany and the US: Comparing multi-actor corporatist governance in higher education

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ABSTRACT

In both Germany and the United States, employers search for new strategies to recruit and train people in times of a dynamically evolving economy and rising educational expectations on the part of individuals. In this context, we observe the proliferation of work-based higher education programmes in both countries. This development challenges the common classification found in the political economy and educational policy literature that distinguishes between collectively governed dual apprenticeships in Germany and market-driven on-the-job training in the US. The paper proposes an alternative conceptualization that identifies significant similarities in the governance mode of work-based higher education across the two countries. Based on expert interviews and document analysis, the institutional analysis focuses on complex multi-actor governance constellations at the nexus of vocational training and higher education and explores consequences for contemporary policy-making in advanced skill formation.

KEYWORDS

Corporatism; educational policy; Germany; governance; US; work-based higher education

1. Complex multi-actor dynamics in work-based higher education

> The search for appropriate balances between general and vocational education, between encouraging firms and becoming dependent on them, must continue to be at the forefront of [educational] policy making and planning. (Crouch, Finegold, & Sako, 1999, p. 30)

The need to adjust skill formation to technological change and increasing global economic competition so as to ensure high levels of social welfare has been widely acknowledged by policy-makers since at least the 1990s (Crouch et al., 1999; Parker & Rogers, 1999). In this regard, one major response by key stakeholders – including firms, higher education (HE) organizations, and students – is the expansion of so-called work-based HE programmes. These hybrid programmes strike a new balance between general and vocational education, combining HE organizations and the workplace as the two core sites of learning. However, to date policy-makers still lack a thorough conceptual understanding of the complex multi-actor constellations and governance patterns that have emerged in

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the wake of the growing relevance of work-based higher education programmes in many industrialized countries. Far from being institutionally designed at the national level, these programmes usually arise from the bottom-up initiative of employers and HE organizations at the subnational level, often further driven by strong student demand.

Germany and the United States are central examples of this more general trend and, in this context, particularly interesting to compare, given that in the relevant literature, both countries have long been referred to as distinct ideal types and role models for the organization of skill formation and related educational policies (Clark, 1983; Thelen, 2004). In comparative vocational education and training (VET) research, the training systems of Germany and the US are described as different prototypes (Deißinger & Frommberger, 2010; Greinert, 2005). Thus, Germany is considered representative of countries with strong dual systems, in which VET enjoys a high reputation and is governed within historically evolved structures of social partnership between employers and employees (Euler, 2013; Rothe, 2001). The US, however, is viewed as a classic representative of the Anglophone countries, in which VET control is characterized by market-driven on-the-job training (Lerman, 2010; Rauner, 2009) and, in this context, by a flexible setting or even a lack of 'systemness' (see Section 5). As a complement to this, the Varieties of Capitalism (VoC) approach – which analyses the embedding of companies in different types of advanced capitalism – discusses dual apprenticeship training as a centrepiece of the coordinated German market economy; by contrast, it characterizes the more market-oriented vocational training in the US as typical of a liberal market economy (e.g. Hall & Soskice, 2001). Estevez-Abe, Iversen, and Soskice (2001) identify a general skills equilibrium for the US and an industry-specific, firm-specific skills mix for Germany. Busemeyer and Trampusch (2012) describe Germany as a collective and the US as a liberal skill formation system. Some authors have suggested that Germany and the US might best be able to draw on their comparative institutional advantages if they keep focusing on advancing the specific characteristics of their VET and HE systems, respectively (see, e.g. Bosch & Charest, 2008).

However, the abovementioned classifications have not been developed with the current proliferation of hybrid work-based HE in mind. This is critical as it implies that educational policy-makers still lack a comprehensive overview of the institutional foundations, governance logics, and distributional consequences of this rapidly emerging educational sector at the nexus of VET and HE. Overall, it is evident that the VET classifications and the corresponding institutional-comparative analyses that have emerged to date have focussed mainly on VET at secondary level (e.g. Bosch & Charest, 2008; Greinert, 1988, 2005; Hall & Soskice, 2001). Yet this only partially does the current developments justice, among other things because, in Germany and the US, advanced work-based forms of HE have become firmly established in recent years. In Germany, this refers to dual study programmes and, with that, to hybrid educational organizations that combine institutional elements of both HE and VET, for instance, regarding curricula, teaching staff, and financing. In the US, work-based HE is also expanding, for example, in the form of apprenticeship programmes provided by community colleges but also co-op programmes offered by universities. In all these cases, employers and HE organizations increasingly cooperate in the provision of advanced work-based skill formation.

Against this backdrop, the present article argues that relatively similar forms of work-based training and corresponding actor constellations can be found in the HE systems of Germany and the US – which is rather surprising if one considers the traditional

classifications mentioned earlier that categorize the two countries as most different systems among the rich Western democracies. Interestingly, Germany and the US are experiencing the pressure to establish hybrid programmes from different directions. While in Germany the main challenge is to accommodate the increasing level of academic knowledge required in certain occupations, in the US the main pressure derives from the lack of viable alternatives to educational careers based on 'pure' college education. In the absence of a classification for comparing work–university-based forms of training, the article develops a conceptualization to aid in their identification. I include traditional dual apprenticeships at the secondary level in this comparison as a starting point and point of contrast. The aim here is to systematically describe the different types of work-based training forms in the two national education systems, with a specific focus on their respective multi-actor corporatist governance contexts and policy implications. Enhanced knowledge about such multi-actor contexts is particularly important considering that research has focused on either VET or HE. Work-based HE, on the other hand, brings together actors from both fields. While this opens up new possibilities for collaboration among the respective actors, it may also give rise to new types of (distributional) conflicts – and thus call for the development of new policies that can address these issues.

Given that work-based HE programmes are located at the nexus of HE and VET, relevant insights from both research fields are combined in this study. The data used in the empirical analysis are expert interviews that were conducted in both countries. I also analyse policy documents and, where available, draw on relevant secondary literature. In the next step, the research design and key concepts are described in detail. This is followed in the main part by an analysis of the two country cases. They are then compared. In the concluding discussion, the consequences of the findings for contemporary educational policy-making are discussed. Crucially, as Germany and the US are converging on similar solutions at the nexus of VET and HE, new opportunities for transatlantic policy learning are opening up.

2. Research design and methods

Work-based training forms are currently in a time of great transition and differentiation. Thus, this analysis particularly aims at systematically describing contemporary formats of work-based HE programmes, and less so at a causal analysis of the emergence of these programmes. Therefore, this study focuses mainly on the contemporary period (around 2010–2015), sometimes including references to historical developments for further contextualization. Many scholars have emphasized the crucial role of descriptive conceptualizations as a basis for causal analyses that build upon them (e.g. Adcock & Collier, 2001). In this article, the dimensions and information on the possible overarching context conditions (see Georg, 2005, p. 190) have been drawn from a range of sources. In addition to analysing the limited available secondary literature and relevant policy documents from the fields of VET and HE, such as mission statements and institutional data reports, I particularly draw on interview data. For this purpose, I conducted ten semi-structured interviews (50–90 min each) with experts in Germany and the US between 2013 and 2015. The interviewees included, for example, the management staff of educational organizations, senior representatives of public authorities, experts from chambers of commerce and employers'

associations, key intermediary organizations in VET and HE and experts from thematically relevant think tanks.[1] The experts were selected on the basis of their ability to speak competently about relevant developments in work-based HE both at the regional and national levels. To interpret the expert interviews, theory-based qualitative content analysis tools were used (Gläser & Laudel, 2009). The findings from the interviews were then crosschecked with the available documents and secondary literature. This made it possible to identify central categories and their manifestations based on the empirical material.

The conceptualization developed on this basis is interdisciplinary in character and combines perspectives from sociology and political science. Sociology and political science usually do not highlight the same institutional features of skill formation systems. The reason for this, among others, is that organizational sociology has traditionally focused more on HE, whereas due to its greater affinity with employers, political economy has usually focused on company-oriented VET. The present paper brings together the two disciplinary perspectives to better understand the partly new forms of training that are located at the interface between VET and HE – each of which traditionally dominated by a different set of key actors.[2] More generally, the paper advocates an explicitly comparative as well as a multidisciplinary approach to theorize and empirically demonstrate the necessity of a multi-level and cross-sectoral analysis that brings educational and employment institutions into a synthetic analysis. The conceptualization is conceived in such a way as to allow it to identify the institutional core of work-based training forms as specifically as possible; at the same time, it is intended to be broad enough to identify the respective differential forms in Germany and the US (on 'family resemblance categories' see Collier & Mahon, 1993). The next section presents the conceptualization in general terms. In the country analyses in Sections 4 and 5, the respective dimensions are then illustrated in detail.

3. Conceptualizing work-based training at the nexus of vocational and higher education

The conceptualization is based on two key dimensions, each of which has several sub-dimensions. The *system dimensions* are presented first, as they serve to describe and locate work-based HE within the given structural context. However, second, the main focus is on the *governance dimensions*, which help to carve out the policy-relevant aspects of work-based HE.

The system dimensions focus mainly on structural features that serve to clarify the positioning of hybrid educational programmes within their environment. These dimensions largely build on core categories from sociological research on general and academic education. However, this perspective is extended such that it can also depict training programmes that are located at the interface between the traditional sub-systems of VET and HE. Following the well-established classification by Allmendinger (1989), I distinguish between the *stratification* (here: dimensions SYS1 'training level' and SYS2 'relation to VET and HE systems') and the *standardization* (here: SYS3) of education and training. In this

[1]Interviews: DE1: 11 December 2013 (Darmstadt); DE2: 12 December 2013 (Bonn); DE3: 13 December 2013 (Bonn); DE4: 13 December 2013 (Bonn); DE5: 18 June 2015 (Bonn); US1: 23 January 2015 (Washington, DC); US2: 03 February 2015 (Washington, DC); US3: 26 February 2015 (Washington, DC); US4: 26 February 2015 (Washington, DC); US5: 16 March 2015 (New York City).

[2]In this way, the paper also speaks to recent advances regarding the integration of HE into the VoC framework (Graf, 2009; Hölscher, 2016; Leuze, 2010).

context, it is also important to directly integrate the intersection with (or transition into) the labour market system (which is, in turn, influenced by SYS1–3). For this reason, I include the career prospects of graduates (SYS4). Table 1 lists the four system dimensions – all of which mainly focus on how education and training is institutionalized at the national level.

The first system dimension (SYS1) refers to the level of the education system at which the individual training forms are located ('vertical positioning'). By referring to the level, I take account of the critiques by educational sociologists (Heisig & Solga, 2015; Leuze, 2010) that political-economic analyses of VET systems often neglect the level of the skills acquired because they chiefly focus on the degree of specificity ('firm-specificity') or their generality ('transferability'). In this context, one can distinguish between work-based forms of training at two distinct system levels, namely the upper-secondary and the post-secondary levels.

The second system dimension (SYS2) refers to the relationship to the vocational education and university systems ('horizontal positioning'). In most countries, these sub-systems have traditionally been separated by some form of an 'educational schism' (Baethge, 2006; Crouch et al., 1999). However, in recent years, a number of scholars have pointed out that the institutional embedding of work-based education within the overall educational system plays a decisive role for its status and performance (e.g. Grubb & Lazerson, 2005; Severing & Teichler, 2013) – and, in addition, is crucial to ensure social mobility (Powell & Solga, 2011).

The third system dimension (SYS3) relates to the degree of national standardization of work-based training programmes. The degree of the 'provision of equal educational standards nationwide' (Allmendinger, 1989, p. 231) particularly influences the general recognition of vocational qualifications and their transferability between different employers and industrial sectors (see also Busemeyer, 2015).

The fourth system dimension (SYS4) relates to the job position intended for the apprentice or student within the company. Here, in the case of work-based training programmes, we can broadly distinguish between skilled careers, that is, a career as a skilled worker in an occupation for which one is trained and qualified, or membership to the (middle) management with specific professional experience.

In the second comparative dimension, *governance characteristics* – which are well established in political science research on skill formation – are in the foreground (Table 2). Here, the starting point is that it is not possible to establish work-based forms of training solely through state or market-based governance; instead, more complex steering mechanisms are required at various levels. More specifically, individual firms, employers' associations, educational organizations, employees' organizations, and public governance organizations

Table 1. System dimensions (SYS).

Training level (vertical positioning)	SYS1-Level
Relation to VET and HE systems (horizontal positioning)	SYS2-Relation HE/VET
Standardization of education and training	SYS3-Standardization
Transition into labour market (career prospects of graduates)	SYS4-Careers

Table 2. Governance dimensions (GOV).

Social partnership governance under (passive) state supervision	GOV1-Social partnership
Decentralized cooperation of employers (to avoid market failure)	GOV2-Employer cooperation
Influence of educational organizations as independent institutional actors	GOV3-educ. organizations as actors
Financing (theory phase and practical phase)	GOV4-Financing

are considered to be key stakeholders. Thus, this dimension emphasizes multiple actors and their agency and, therefore, to some extent counterbalances the structural focus of the earlier system dimensions.

By pointing to the degree of social partnership control by employers and employees under passive state supervision (GOV1) (e.g. Streeck, Hilbert, Kevelaer, Maier, & Weber, 1987) as well as the decentralized cooperation of individual employers (GOV2) (Culpepper, 2003), I take into account the two core features that characterize the governance of dual training systems. However, given that this is a study about developments at the nexus of VET and HE, it is furthermore necessary to take into account a central insight from organizational theory on the functioning of HE systems, namely the significant influence of educational organizations as institutional actors in their own right (e.g. Brint & Karabel, 1991; Meier, 2009) (GOV3). Finally, governance characteristics of educational programmes or fields are usually directly related to aspects of financing (GOV4). Especially in the case of work-based training forms – and thus for training forms financed jointly by public and private actors (e.g. Kell, 2006, pp. 475–479) – the financial aspect is a category of central and potentially conflict-laden importance. Table 2 lists the four governance dimensions that – in complex decentralized systems – may operate at the national, sectoral, or regional levels (on subnational variation in collective skill formation systems, see Emmenegger, Graf, & Trampusch, 2016).

The first governance dimension (GOV1) relates to the degree of influence of social-partnership governance at the national level (e.g. Hall & Soskice, 2001; Greinert, 2005) – and the state's role in this context. This dimension is mainly concerned with the form of collective cooperation between employer representatives (for example, associations and chambers of commerce) and employee representatives (usually trade unions), often under the more or less passive supervision of public authorities (e.g. Thelen, 2004). Through such types of collaboration, the organizations in question can directly shape VET in the collective negotiation process, which can lead to both practically relevant professional qualifications and successful transitions from the education system into the labour market (Euler, 2013; Parker & Rogers, 1999).

The second governance dimension (GOV2) indicates the relevance of the so-called decentralized cooperation of employers in the VET field (Culpepper, 2003; Culpepper & Thelen, 2008; Streeck & Kenworthy, 2005). This dimension refers to coordination among employers and emphasizes the central function of representative bodies (intermediary organizations) like employers' associations or chambers of commerce. Of principle interest here is the question of how companies that are usually in competition with each other learn to cooperate successfully – for example, to prevent the poaching of workers trained in their own companies.

The third governance dimension (GOV3) refers to the level of individual organizations and takes into account the influence of the educational organizations themselves as institutional actors. In this context, organizational sociologists (e.g. for community colleges in the US, see Brint & Karabel, 1991) and education researchers (e.g. Gonon & Maurer, 2012) have demonstrated that the management staff of educational organizations, who usually want to strengthen the position and legitimacy of their own organization, can significantly shape institutional change in their organizational field.

The fourth governance dimension (GOV4) focuses on financing aspects. This provides information on who bears the cost of training (e.g. Busemeyer & Trampusch, 2012, p. 19;

Kell, 2006, pp. 475–479; Reed, 2013). Here, we can distinguish between the financing of the theory and the company-based parts of the training. For work-based training forms, a mixed-type financing by the government and training company and (co-)financing by the trainees is customary.

Finally, it should be noted that these system and governance dimensions can relate to each other in various ways. For instance, the system dimensions SYS1 ('training level') and SYS2 ('relation to VET and HE') help to define the boundaries of the (hybrid) governance contexts, which includes HE organizations as key actors (GOV3) and is characterized by complex public-private funding structures (GOV4). Furthermore, the governance dimensions GOV1 ('social partnership') and GOV2 ('decentralized cooperation') are potentially linked to a relatively high level of standardization (SYS3) and smooth education-to-work transitions (SYS4) despite limited central government influence. While it is beyond the scope of this paper to explore all of these potential cross-links in detail, they sometimes surface in the two case studies presented next.

4. Dual apprenticeships and dual study programmes in Germany

Germany is internationally known for its system of dual apprenticeship training at the secondary level, not least due to the low levels of youth unemployment that have become associated with it (e.g. Busemeyer, 2015). The traditional dual apprenticeship training in Germany will be presented in a compressed form, as it has already been described in detail in the relevant existing literature (e.g. Culpepper & Thelen, 2008; Greinert, 2005; Rothe, 2001). These dual apprenticeships, which train skilled workers, are located at the secondary level and form the institutional core of the German VET system. They are characterized in particular by national standardization based on the Vocational Training Act and the Crafts Code, as well as by strong traditions of social-partnership-based governance and decentralized cooperation between the companies, for example, via chambers of commerce. By contrast, the vocational schools, which deliver the theory-based component of the training, rarely play a significant role as independent actors in the organizational field of dual training. Whereas the vocational schools are funded by the state, the companies cover the cost of company-based training and the trainee salary.

Due to the historical development of dual apprenticeships, there has traditionally been a strong institutional separation between VET and HE (Baethge, 2006). Still, there are trends that suggest a gradual change is underway, which does not fundamentally call the respective core institutional configuration of the two education/training fields into question, but which has nevertheless brought a certain dynamic to a long-established situation, namely the development and expansion of dual study programmes (Graf, 2017). Dual study programmes are active at the interface between VET and HE (see Krone, 2015), and as a hybrid organizational form they connect organizational and institutional elements of the classic VET and the classic HE systems.

In April 2013, the Federal Institute for Vocational Training listed 1,461 courses with more than 64,358 university places (Bundesinstitut für Berufsbildung [BIBB], 2014). Compared to April 2008, this represented an increase in the number of registered university places of 46% (BIBB, 2008, 2014). Dual study programmes are particularly offered in economics, engineering, and computer sciences, but also in health care – that is, subjects that are close to the 'world of work' and associated with high-skilled jobs. The continuing expansion of the

dual study programmes has led to an increasing differentiation of the German HE landscape in these subject areas. The providers of dual study programmes, next to the employers that offer the workplace training, are primarily universities of applied sciences (59%), vocational academies (15%), and the Cooperative University of Baden-Württemberg (20%). In addition, some traditional research universities offer such programmes (6%) (BIBB, 2014, p. 28). In the abovementioned subject areas, dual-study programmes already represent a sizeable proportion of the relevant student groups. In Baden-Wuerttemberg – where these programmes were first established – about 10% of students are now enrolled in dual-study programmes (Statistik-BW, 2016). While the total number of apprentices in the traditional dual system at the upper-secondary level is far higher (approx. 1.3 million) (DESTATIS, 2016), dual-study programmes can be considered disproportionately relevant because they are increasingly diverting the most capable and motivated youths from this traditional system, not least due to rising educational aspirations (Severing & Teichler, 2013).[3]

The so-called *ausbildungsintegrierende* (apprenticeship-integrating) dual study programmes – which in some cases also involve a vocational school – typically lead to a recognized qualification from the VET system as well as a bachelor's degree. In addition to this original type, there are *praxisintegrierende* (practice-integrating), *berufsintegrierende* (job-integrating), and *berufsbegleitende* (job-accompanying) dual study courses. These types of dual study programmes also work on the basic principle of a systematic link between theory-based and practical phases at an organizational and content level, but they are concluded with a bachelor's degree only, not an additional vocational qualification. Whereas the *ausbildungsintegrierende* and *praxisintegrierende* programmes are primarily designed as initial VET programmes for prospective students with a HE entrance qualification, *berufsintegrierende* and *berufsbegleitende* programmes are mainly conceived as professional development opportunities for people already in the workforce (e.g. Kupfer & Mucke, 2010), who may also be accepted into HE programmes on the basis of a VET certificate and relevant work experience.

Dual study programmes are formally located at the post-secondary level (SYS1-Level), but they are not part of the higher vocational training system (such as master craftsman or technician training). Instead, they are located within the university system (SYS2-Relation HE/VET). In light of the feared lack of skilled workers and engineers, they provide companies with an attractive opportunity for recruiting high-performing secondary school leavers for middle management positions (Interview DE2) (SYS4-Careers). From the perspective of employers, the rising number of young people entering the academic stream at the upper-secondary level represents an attractive pool for recruiting talent for work-based training programmes. Furthermore, dual study programmes cater to the expectations of a growing group of people with HE entrance qualifications, who despite their academically oriented secondary education seek a fast, hands-on, challenging – and salaried – academic training with very good chances of being employed in the training company (Interview DE4; Baethge & Wolter, 2015; BIBB, 2014).

Taking the commonly required criteria for the accreditation of bachelor's degrees as a basis, the specific form of a dual study programme is mainly determined within a negotiation process between the HE organization and the associated companies. This is reflected,

[3]In this sense, the rise of dual study programmes represents a specific development within the more general trend in Germany of HE expansion at the cost of VET (Baethge & Wolter, 2015).

among other things, in an overall much lower level of standardization of learning processes in the dual study programmes in comparison to the traditional apprenticeships (SYS3-Standardization). For example, the organization of in-company learning as well as the payment of students varies from case to case (see also Becker, 2006). Only for the *ausbildungsintegrierenden* (apprenticeship-integrating) dual study programmes are there more universal in-company and external standards pertaining to the vocational qualification additionally obtained within the programme. More generally, while the practical part of dual study programmes is financed by the training companies, the exact mix of private and public funding for the theory part varies from case to case (GOV4-Financing).

Unions have had little involvement in the establishment and development of dual study programmes; historically, unions play a markedly smaller role in the German HE system than in the traditional dual apprenticeship system. Employers therefore have a structurally stronger influence over dual study programmes than they do in the case of the classic dual apprenticeship (see, for example, Busse, 2009; Heidemann & Koch, 2013) (GOV1-Social partnership). In the HE field, by contrast, the participating companies usually only have to negotiate with universities on how the practice phase of a dual study programme should be designed – which is facilitated by German universities enjoying far-reaching autonomy with regard to teaching and research in most fields of study (German Basic Law, article 5 paragraph 3). The state typically exercises a major control function only indirectly via the accreditation agencies for bachelor's and master's degree programmes. The current expansion of dual study programmes is being governed less by educational policy actors in a top-down manner; instead, it is being driven from the bottom up by large and medium-sized companies that cooperate with HE organizations interested in innovative degree programmes. Many HE organizations with an applied orientation have realized that these programmes are an efficient way to recruit talented students and position themselves vis-à-vis traditional research universities (Jahn, 1999, p. 19) (GOV3-educ. organizations as actors).

In addition, dual study programmes call into question the already fragile education policy tradition of a decentralized cooperation between large, medium-sized and small companies in organizing VET (GOV2-Employer cooperation). Especially for smaller companies, it is often too complex and expensive to develop and implement such a programme. Conversely, large companies are significantly more relevant for HE organizations than small ones because large companies can sometimes fill entire classrooms or programmes themselves (Interview DE1; see also Krone, 2015). Large companies with a significant proportion of dual students at one site may therefore tend to exert strong influence on the design of the curricula in some cases. The result is a 'tortuous bargaining process' (Interview DE5) in which the various responsible people from the universities and the company representatives negotiate the content of the course within the respective study programme committees. Furthermore, chambers of commerce, which are a central component of the decentralized cooperation between companies for classic dual apprenticeships, are of little importance within dual study programmes (Interview DE3; Becker, 2006; Busse, 2009). The strong influence of individual companies on the design of specific dual study programmes can therefore jeopardize the holistic quality of both the academic and the vocational components of the training, thus favouring firm-specific content.

In the following, I analyse the US case of work-based HE, which will then be compared to the German case.

5. Apprenticeships and co-op programmes in the US

In the US, the standard trajectory is for all students to attend a high school – that is, a general secondary school – to prepare them for a college education (Grubb & Lazerson, 2005, p. 298). High school focuses on general education and has only a very limited vocational orientation (see Gonon, 2009, p. 85). More generally, given the 'college for all' mentality in the US, VET programmes have typically enjoyed less prominence than in Germany (e.g. Powell, Bernhard, & Graf, 2012; Lerman, 2014). Vocational training forms (work-based training programmes) are thus normally begun after high school. Traditionally, unlike apprenticeships in Germany, US apprenticeships are not so much located at the secondary level (see, e.g. US Department of Education, 2005, p. 23). Instead, VET in the US usually involves courses at post-secondary level (SYS1-Level). In this context, it is crucial to note the extraordinary diversity of HE organizations in the US – especially if compared to the relative homogeneity and quality of traditional HE organizations in Germany (Schreiterer, 2008). Furthermore, we can observe that, in the US, as the level of education at which work-based training takes place increases, so does the quality of in-company training and the involvement of companies (Interview US1, US2).

In recent years, work-based training has grown in importance in the education policy debate in the US (e.g. Lerman, 2014; Rein, 2013). Its expansion is also seen as a prerequisite for encouraging the relocation of the manufacturing industry to the US (Powell & Fortwengel, 2014). In the political debate – in which the Obama administration has been an active participant – this development is termed 'reshoring' or 'bringing manufacturing back home' (Interview US1; Fortwengel & Jackson, 2016). In the following section, the two formats of work-based training in the US that come closest to the German model of work-based training are described. Besides these two main types, there are a large number of different formats of work-based training in the US, partly due to the limited presence of employer coordination at the sectoral level (see Hall & Soskice, 2001; Graf, Powell, Fortwengel, & Bernhard, 2014). However, these other formats are not directly comparable with the German model, since they do not involve the systematic link between the two learning sites of company and school/higher-education institution typical of the German model. The two formats that are analysed in this paper are thus not representative of VET in the US as a whole, as they rather represent the high-quality end of the spectrum of work-based training programmes. Nevertheless, they are formats that are firmly institutionalized in the US education system and that are accordingly compatible with it: on the one hand (a) apprenticeships offered by community colleges and on the other hand (b) cooperative study programmes (co-ops). In both cases, the theory portion of the training, in contrast to the classic dual apprenticeship in Germany, is largely carried out at the post-secondary level (SYS1-Level) by established HE organizations (SYS2-Relation HE/VET). The proportion of students enrolled in these work-based programmes is still relatively small if compared to the total number of full-time HE students in the US (approx. 12.6 million; NCES, 2015). However, they are increasingly popular among students as a way to learn and earn simultaneously but also gaining more and more attention by policy makers as a way to address skills gaps in the US (see e.g. Fortwengel & Jackson, 2016 on apprenticeships; Rein, 2013 on co-ops).

(a) Community colleges are an integral part of the US higher education system (Reed, 2013). In the US there are 1123 mostly public community colleges, which enrol 46% of all

undergraduate students in the US (American Association of Community Colleges [AACC], 2015, p. 1). With average annual student fees of $3347, studying for a degree at a community college is much cheaper than going to a traditional four-year institution of HE (AACC, 2015, p. 1). After two years, students can obtain a so-called associate's degree. This degree gives access to employment and thus serves as a direct transition into the labour market. In addition, there is the option of entering a traditional four-year institution in the third year (Carnevale, 2014). Community colleges fulfil multiple functions. On the horizontal dimension, they offer a wide range of learning opportunities, from basic career education to more advanced technical training courses. On the vertical dimension, they act as an institutional bridge between high school and the traditional universities (Cohen, Brawer, & Kisker, 2014). In fact, they sometimes also enrol high school students. However, community colleges sometimes have a problematic reputation due to the high proportion of students who do not complete their degrees in the normal period or even drop out. At the same time, there are indications that community colleges generally perform well in terms of the earnings and placements of their graduates, but that they still lack the reputation to attract better students (Carlson, 2016). At present, the expansion of high-quality vocational training and apprenticeship programmes at community colleges is seen as one of the ways of resolving this problem (Interview US5).

Community colleges serve as a central hub for apprenticeships in the US. In the context of apprenticeships, they often provide the theory component of the training and cooperate with the companies doing the in-house training. In 2014, there were 410,375 apprentices enrolled in 19,260 apprenticeship-training courses registered by the US Department of Labor (2015).[4] Among these apprentices, up to about 40% were trained in cooperation with community colleges (Rein, 2013, p. 28).[5] An example that may be mentioned here is the Apprenticeship 2000 programme, which is organized in collaboration with the Central Piedmont Community College in North Carolina (Powell & Fortwengel, 2014). In this programme, apprenticeships in eight technical professions are offered. The apprentices are recruited directly from high schools for an apprenticeship in one of the eight partner companies participating. The training takes four years for an associate's degree and a journeyman's certificate. Usually the apprentices spend four days a week in the company and one day at the community college.[6] More generally, since the 1990s one can observe a proliferation of regional/sectoral training initiatives in the US that facilitate the cooperation among firms and between private and public actors (Parker & Rogers, 1999).

Interestingly, many of the initiatives in the sector of work-based training at community colleges were inspired by the classic dual apprenticeship model in countries such as Germany and Switzerland (e.g. Nicholson & Fortwengel, 2015). Companies from German-speaking countries have played a significant role in jointly shaping successful work-based training programmes in the US in the early stages of implementation (Interview US3). However, the American apprenticeship model differs considerably from most of the secondary level dual apprenticeship models in Europe. Thus, the training programmes in the US are considerably more differentiated, for example, with regard to binding quality standards for

[4]The registration of an apprenticeship programme with the Department of Labor is voluntary.
[5]In addition to community colleges, there are, for example, private post-secondary educational institutions that offer apprenticeships.
[6]See http://apprenticeship2000.com (August 29, 2016).

the company-based part of the training (SYS3-Standardization) (see also Lerman, 2010, p. 130). At the same time, the governance of VET in the US is usually less influenced by the supervision of the social partners or by decentralized cooperation between employers, but rather by direct cooperation between the representatives of the community colleges and the individual companies (GOV1-Social partnership and GOV2-Employer cooperation). In a few sectors, such as the health care sector or the construction industry, there are also trade unions that jointly organize apprenticeships. In some cases – such as the Apprenticeship 2000 programme – companies come together at the regional level in order to reach a sufficient class size to establish an apprenticeship training programme at a community college. However, overall, the VET system in the US is characterized by diverse options and functions and, more generally, 'flexibility without a system' (Interview US4). As a result, the management and staff of community colleges play a crucial role in the design and quality assurance in the sector of work-based training (GOV3-educ. organizations as actors). In this model, the companies typically finance the in-house part of the training, the students' salaries, and usually the tuition fees for the community college (GOV4-Financing).

In addition to apprenticeships that aim to train skilled workers (SYS4-Careers), there are (b) traditional universities and community colleges that offer cooperative programmes (co-ops), which, similarly to dual study programmes in Germany, integrate work-based practical phases. The first co-op programme was established in 1906 at the University of Cincinnati (Tanaka, 2014). The growth of this new training type was modest in the first 50 years; in 1960, there were only 65 such programmes in the entire US. However, in recent times interest in co-op programmes has risen sharply. Currently, there are over 900 colleges that provide co-op programmes: they offer them in almost all subjects and cater to over 170,000 undergraduate and more than 4000 graduate students (Wilson, 2014, pp. 349, 350).

One of the largest American providers of co-op programmes is the private Northeastern University in Boston, Massachusetts. In this co-op programme, which was established in 1909, about 9000 students are currently enrolled in the subject areas of media and design, business administration, computer science, engineering, health sciences, natural sciences, law, and human and social sciences. About 3000 employers in 35 states and 80 countries worldwide currently participate (Northeastern University, 2015a, p. 4). In a five-year bachelor's degree, students complete up to three paid six-month practical phases (or up to two in the optional four-year variety). Payment for the so-called 'student-employees' is determined by the employer concerned and depends on factors such as the job position and the industrial sector (Northeastern University, 2015b). During the theory phases, the students have to pay fees – for Northeastern University, this currently comes to about $45,000 for an entire academic year (minus the time for the practical phases) (Northeastern University, 2015c).

Co-op programmes are intended to prepare their 'student-employees' for middle management positions by linking learning sites in companies and universities (SYS4-Careers). Prospective students initially apply to the university and are then assisted in looking for suitable employers for their practical phases. There are no general national standards with regard to the organization of this training type (SYS3-Standardization). Hence, there is no uniform regulation regarding the payment of the students during the practical phase, or even with regard to the question of whether the company pays the tuition fees – which may otherwise be borne by the student (GOV4-Financing). Co-ops normally lead to a bachelor's degree. It is common for students to complete practical phases with more than one company. In co-op programmes, social partnership governance is of limited influence

(GOV1-Social partnership). For the company-based phases, the relevant state labour legislation applies. Decentralized cooperation between employers is of secondary importance; instead, the companies compete with each other for talented individuals from the pool of students and graduates (GOV2-Employer cooperation). What is crucial for the initiation and implementation of co-op programmes – in addition to the participating companies – is the university management (GOV3-educ. organizations as actors).

In the following section, the two country cases of Germany and the US are the subject of a structured comparison.

6. Comparing work-based training in Germany and the US

In this section, the previously analysed forms of work-based training are schematically compared based on the system dimensions (Table 3) and governance dimensions (Table 4) developed previously. This comparison shows that by bringing both VET and HE as well as the related analytical dimensions from sociology and political science into one overarching conceptualization, it becomes possible to capture core features of hybrid work-based programs that straddle these very fields.

Overall, this comparison shows that the two US formats and the German dual study programmes share more with the overall institutional set-up of academic learning at the HE level than with the traditional dual apprenticeships in Germany. While traditional dual apprenticeship training (Germany) is located at the secondary level, the dual study programmes in Germany as well as the apprenticeships based at community colleges and the co-op programmes in the US are located at post-secondary level (SYS1). In addition, these three latter types are not considered to be part of VET system, but rather of the HE system (SYS2). The degree of national standardization of work-based HE programmes in both countries is much lower than for the traditional dual apprenticeships in Germany (SYS3), not least because of the large differences in local implementation (or the 'uncontrolled growth' of these programme types) in the case of the former. With regard to the anticipated career paths, apprenticeships in Germany and the US aim mainly at training specialist workers, whereas dual study (Germany) and co-op (US) programmes usually prepare students for middle management positions (SYS4).

With regard to the governance of work-based training, the influence of social partnership is minimal in work-based HE programmes in both Germany and the US, as is the influence of decentralized cooperation between employers, whereas these are central features of the traditional dual apprenticeships in Germany (GOV1 and GOV2). One consequence is that the competition between the companies for the well-trained graduates from work-based HE – especially in the case of co-op programmes – is often more pronounced than is the case for graduates of the traditional dual apprenticeships.[7] At the same time, within the post-secondary work-based training types, the HE organizations play a rather autonomous role in designing the programmes, while the vocational schools in the traditional German dual apprenticeship system do not act as key institutional actors (GOV3). Regarding the financing, all four types are rather similar, since the companies pay the trainees. In the case

[7]In some cases, German employers try to 'incentivize' dual studies graduates to stay with them for some years – by requiring them to pay back part of the training costs if they leave immediately after graduation.

Table 3. Schematic representation of the system dimensions of work-based forms of training in Germany (DE) and the US.

	SYS1: Training level	SYS2: Relation to VET and HE system	SYS3: Standardization	SYS4: Career prospects
DE: Dual apprenticeships	Secondary	Core of the VET system	Unified national standard	Skilled labour
DE: Dual study programmes	Post-secondary*	Part of the university system**	Significant local differences	Middle management
US: Apprenticeships	Post-secondary	Part of the university system***	Significant local differences	Skilled labour
US: Co-op education	Post-secondary	Part of the university system	Significant local differences	Middle management

Source: Own depiction.
*Sometimes involving dual apprenticeship certificate.
**In some cases leads to dual qualification of 'bachelor' and 'vocational training certificate'.
***In some cases leads to dual qualification of 'associate's degree' and 'journeyman's certificate'.

Table 4. Schematic representation of the governance dimensions of work-based forms of training in Germany (DE) and the US.

	GOV1: Social partnership under (passive) state supervision	GOV2: Decentralized cooperation of companies	GOV3: Role of educational institution as an actor	GOV4: Financing (theory; practice)
DE: Dual apprenticeships	Central	Central	Marginal	Theory: state; practice: company
DE: Dual study programmes	Marginal (some state quality control through accreditation)	Weak; some consultation in supervisory boards of the programmes	Central	Theory: state and partly company; practice: company
US: Apprenticeships	Marginal (some quality control through registered apprenticeships)	Weak; in some cases at a local level to achieve critical mass	Central	Theory: state and company; practice: company
US: Co-op education	Marginal	Very weak; companies compete for students	Central	Theory: student; practice: company

Source: Own depiction.

of co-op programmes, only the practical phase is paid; students must therefore usually pay the tuition fees themselves (GOV4).

Interestingly, the two countries are experiencing the pressure to move towards hybrid programmes from different directions. While in Germany the main challenge is to accommodate the increasing level of academic knowledge required in certain occupations, in the US the main pressure derives from the lack of viable alternatives to educational careers based on 'pure' college education. The observed partial convergence between Germany and the US appears to have been aided by the fact that German companies are partly shifting their in-house training to the HE field, where the HE systems of the two countries – for example, regarding the bachelor's and master's degrees – are relatively more similar than the vocational training structures at the secondary level.[8] Further research is needed to explore and compare these processes of institutional change in more detail and place them in a global context. Nevertheless, it should be noted that the observed partial convergence between

[8]On structural similarities across HE systems, see, e.g. Knill, Dobbins, & Vögtle, 2013.

German and the US refers to dynamically evolving, hybrid educational solutions at the nexus of VET and HE – rather than a convergence of the two skill formation systems altogether. Established classifications of skill formation systems – such as the ones by Estevez-Abe et al. (2001) or Busemeyer and Trampusch (2012) – are still well suited to explain the overall institutional configurations of these systems. However, the present analysis suggests that the analytical dimensions developed here are able to account more specifically for rapidly expanding hybrid VET-HE educational programs in industrialized countries in which VET and HE fields have traditionally been separated.

7. Multi-actor work-based higher education: outlook and potential for policy learning

This paper examined and compared work-based forms of training in Germany and the US at a time when employers are searching for new strategies to recruit and train people in the face of a dynamically evolving economy and rising educational expectations on the part of individuals. In this context, the focus was on multi-actor dynamics at the nexus of VET and HE. Traditionally, a distinction is made in this regard between the corporatist dual apprenticeships in Germany and the more market-led apprenticeships in the US. However, this conventional classification cannot adequately capture the spread of work–university-based training programmes that can be observed in both countries. As has been shown, these programmes are characterized by the bottom-up cooperation of various private and public actors at the subnational level. Employers play a strong role in this growing sector of advanced skill formation, for instance, as central gatekeepers regulating access to these programmes. This, in combination with the lack of inter-employer coordination in this sector, suggests a growing need for educational policies that can address the potential long-term distributional consequences of such multi-actor work-based education and training settings. This is especially relevant as corporate interests are taking centre stage in such work-based HE programmes – which means that sustainable funding models and a curricular balance between general-academic and firm-specific contents is not something that can be taken for granted.

Against this backdrop, the article suggested a conceptualization in order to compare work-based training forms in Germany and the US. This conceptualization is sensitive to both multi-actor but also multi-level aspects, in particular because work-based HE tends to straddle the boundary between the traditionally separated actor spheres of VET and HE and between secondary and post-secondary educational levels. As such, it can serve as a foundation for the more detailed discussion of future pathways for educational policy in this expanding sector. More generally, the country case studies showed that, overall, there are greater similarities between the three university-based formats – dual study programmes in Germany and co-ops and community college–based apprenticeships in the US – than between traditional dual apprenticeships and the dual study programmes in Germany. Companies in both countries increasingly cooperate with HE organizations to recruit talented young people that would otherwise pursue a 'purely' academic education, and train them as highly skilled technical specialists or for middle management positions.

On this basis, the comparative analysis indicated that there may be more potential for cross-national policy learning in the sector of work-based HE than in either 'pure' HE or VET in the traditional sense. In the latter two cases, the two countries indeed represent

most different systems, which limits the possibilities to successfully transfer educational models to the respective other national institutional context. In contrast, this study showed that there are significant similarities between the work-based HE programmes in Germany and the US, which opens up possibilities to mutually learn from the respective experiences on both sides of the Atlantic – which is a rather unexpected finding, given that previous literature has mainly stressed path-dependent developments of skill formation in liberal and coordinated market economies (see Busemeyer & Vossiek, 2016 for a review). Thus, the complex multi-actor governance of work-based HE opens up new possibilities for cooperation but potentially also new types of (distributional) conflicts, for instance, around the role of employers in the definition of target groups and curricular content – requiring policies that can address these issues. For example, German dual study programmes may provide relevant stakeholders in the US with concepts useful to further increase the curricular integration between the workplace and the seminar room and to develop apprenticeship programmes that are attractive enough to also encourage the enrolment of high school graduates who would otherwise opt for a four-year college degree. Actors in Germany, on the other hand, could look to US co-op programmes for ideas on how to design dual study programmes in Germany in which students have opportunities to complete practical training with more than one firm. They thus widen students' learning experiences and limit their risk if and when employers focus their training efforts too heavily on firm-specific skills. In any case, the potential for the successful transfer of such institutional and organizational elements is currently also supported by a very strong interest in advanced work-based training on both sides of the Atlantic.

In a next analytical step, a historical and political reconstruction of the development of work-based HE would be helpful to gain further insights into the nature and dynamics of the growth of these programmes – especially since it represents a rather recent phenomenon (see Graf, 2017). Political economy research, which has so far mainly looked at dual apprenticeships at the secondary level (e.g. Hall & Soskice, 2001), could particularly benefit from an in-depth analysis of work-based HE programmes. For comparative educational policy research, work–university-based training formats in turn suggest the need to systematically connect relevant findings from the VET and HE research, which have to date been largely examined by separate scholarly communities. A wider debate about the social role and the regulation of work-based forms of training seems useful considering their increasing popularity, but also because in many cases they are linked to a more market-driven form of practice-oriented skill formation and, hence, not embedded in social-partnership-influenced collective governance structures. In this way, their expansion is also of interest to scholars studying changing corporatist governance structures more generally.

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