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Training Regimes in Germany and the Netherlands**

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Pathways of change in CMEs

Training regimes in Germany and the Netherlands

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Abstract

This paper provides a comparative analysis of training regimes in Germany and the Netherlands. Both countries are CMEs with similar institutions, but their training regimes differ in important ways. The paper first maps the similarities and differences in the training regimes in both countries and then turns to three questions that frame the analysis of these similarities and differences. First, how have skills regimes adjusted to changes in economic and employment structure, such as de-industrialization and the rise of the service economy? Second, how much does the structure and adaptability of the training regime help to explain the relative success of the Dutch employment miracle? Does the Dutch training regime represent successful institutional adaptation to changed economic circumstances? Conversely, does the inflexibility of the training regime contribute to the German employment malaise? Finally, what do these findings suggest for the analysis of the political economy of skills regimes in other CMEs?

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Pathways of change in CMEs: Training regimes in Germany and the Netherlands

1. Introduction

Since the publication of Hall and Soskice's edited volume, *Varieties of Capitalism* in 2001, comparative political economy (CPE) scholars have adjusted their research agendas to take account of the complementarities between social protection, skill formation and production. Whereas scholars like Swenson (2002), Mares (2003) and Martin (1999) have addressed the links between production and social protection, skills regimes remain largely uncharted territory.¹ As Iversen and Stephens (2007) note, education has never fit easily into the research programs of most comparative politics scholars. Comparative welfare state research has almost completely ignored the field of education and training even though education has much in common with social policy and is a core element of the welfare state. As a result, there is a large literature on the welfare state and on other core institutions of the economy and public sector but relatively little CPE research concerning education and training. This is changing, not least because the VoC framework has opened up new research questions, suggested new places to look for answers, and started to resolve some of the puzzles that have remained "unsolved" in CPE for decades.

Despite the many criticisms of VoC (too little attention to politics, too functionalist; see, for example, Howell 2003) the VoC framework is the starting point for much of the comparative political economy literature today. We welcome this development and want to focus on two issues that we think merit more attention: the importance of human capital formation for varieties of capitalism (VoC) research and the need for a deeper understanding of differences among coordinated market economies. Thus we join scholars like Culpepper and Thelen (forthcoming in Mayer and Solga) in focusing on cross-national variation among CMEs, but we differ from them by analysing the ways in which differences in skills regimes shape processes of economic adjustment, particularly the expansion of the service economy, and vice versa.

This paper investigates the ways in which the structure of skills regimes in CMEs shapes national responses to structural economic change. Despite high levels of employer coordination, the relative size of the service and manufacturing sectors differ substantially across CMEs. The central task of this paper is to show that the balance between

¹ The exceptions are Thelen (2004) and Culpepper (1999a and b).

manufacturing and services has only partly to do with factor endowments and much to do with the structure of skills regimes in CMEs. Our central argument is that the key institutional difference across CME training regimes is the role of the state, particularly the role of vocational schools. Put simply, we argue that (all else equal) in firm-based skills regimes public provision of skills is more limited and training firms have to earn a return on skills via long job tenure. As a consequence, firm-based skills regimes tend to be slower to adjust to structural changes and are therefore more vulnerable to the negative effects of de-industrialization, particularly shifts in employment between sectors, than school-based regimes or regimes that combine firm-based and school-based training. We present a typology of training regimes that classifies countries based on this key cleavage and develop an argument that links institutional differences across training regimes to variations in service sector growth (or variations in the rate de-industrialization). The next two sections situate our analysis within the VoC literature and lay out our typology of training regimes. We then briefly discuss the key features of the German and Dutch training regimes in order to illustrate our arguments about the link between training regime structure and economic transformation. Finally, we discuss the implications of our analysis for the CPE and VoC literatures.

2. Literature Review (theoretical issues)

A great virtue of the VoC approach is that it does two things that much existing research neglects or does poorly: it emphasizes the centrality of employer and employee interests and strategy for explaining the origins and effects of relevant institutional structures and it highlights the institutional complementarities between systems of social protection, skills regimes, labour market regulation and production regimes. However, the VoC framework emphasizes similarities rather than differences within CMEs and LMEs. We join a growing number of scholars who are trying to understand the implications of institutional variation among CMEs, especially in the field of skill formation (Thelen 2004, Culpepper 1999a and b).

Estevez-Abe et al. (2001) introduce the concept “welfare production regime” (WPR) to capture the ways in which social protection regimes, skills regimes, and production regimes are interconnected. As Estevez-Abe et al. put it, “welfare production regimes are the set of product market strategies, employee skill trajectories, and social, economic, and political institutions that support them.” (146). In coordinated market economies (CMEs), firms’ product market strategies are based on the availability of specific skills. In order to protect their investment in specific skills, workers demand social insurance policies that protect these

skill investments, such as employment protection, generous unemployment insurance and earnings-related pensions. Firms then pursue product market strategies based on incremental innovation or “diversified quality production” (Streeck 1991) because of the abundance of specific skills. According to this logic, skilled workers will join with manufacturing employers in supporting social protection and training policies that support this high skill equilibrium.

We know from the large literature on welfare regimes that social protection in the CMEs takes on two forms: the “social democratic” or the “conservative/corporatist.”² Thus there are two broad ‘recipes’ for organizing social protection so that workers’ investments in specific skills are protected, even if the corporatist regime matches the prototype of the CME, exemplified by Germany. Similarly, training regimes vary across CMEs, as the next section shows. The key point is that the VoC framework tells us that social policy in the CMEs should protect workers’ investments in specific skills and that training regimes should support the development of the kinds of specific skills on which firm strategies in CMEs rely. But the framework tells us little about the considerable variation in how social protection and skills regimes are structured and whether this variation in institutional design is important.

It is precisely this point that we pursue in this paper, because we think that differences in institutional design or structure matter for how economies adjust to structural economic change. To put it another way, different institutional designs may provide similar effects (protection of skill investments, product market strategies based on incremental innovation, etc.) but if the economic context changes (the shift of manufacturing to developing countries, jobless growth in the manufacturing sector are two examples) the specific institutional constellation in a given country may cease to produce the economic outcomes that the institutional mix produced in the past, even if employer coordination continues to function.

The VoC approach implicitly assumes a more or less stable economic equilibrium in which the manufacturing/industrial sector is the motor of the economy. Arguments about skill investments are premised on insights about how the industrial sector functions and not the service sector. As Iversen and Wren (1998) argue, however, the most important recent economic change among the advanced capitalist countries is the rise of the service economy. The service sector is the main source of job growth among advanced capitalist countries, even if the size of the manufacturing sector stays relatively constant. This important economic fact has not been adequately addressed in the VoC literature.

² Here we draw on Esping-Andersen's typology, leaving aside for the moment the debate about the existence of three or more "worlds of welfare capitalism." See Castles and Mitchell, Leibfried.

VoC's emphasis on the manufacturing sector means that we have little insight into how core VoC claims play out when the service sector enters the analysis. We do not claim to provide a comprehensive answer to this problem, but we do want to call attention to the growing importance of the service sector for national economic performance and the role of the skills regime in facilitating the transition to a more service-based, post-industrial economy. This means that employer coordination and the institutions associated with it, may function differently in CMEs with large service sectors. Given the importance of general and specific skills for private services, employers' product market strategies will be based on institutions that can supply and protect these skills. Training institutions suited for the provision of firm and industry-specific skills may not sufficiently supply the mix of general and specific skills that the service sector requires.

Hall and Soskice (2001) argue that firms are the "key agents of adjustment in the face of technological change or international competition whose activities aggregate into overall levels of economic performance" (6). The key similarity among CME firms is that they use non-market institutions to coordinate their activities. We think this argument is compatible with our emphasis on the links between economic structure (manufacturing/services) and training regimes. As the next section elaborates, training systems in the CMEs vary along several important dimensions, most notably the role of the state in the delivery and financing of training, and these differences are associated with the extent to which training systems provide general skills along with industry-specific skills. In regimes where employers dominate training, as in the German dual system, the balance of specific and general skills is tipped towards specific skills. Moreover, German training institutions appropriate for manufacturing employers have been transferred to the service sector, contributing to the accumulation of "service-specific" skill formation rather than the kinds of general skills required in service sector jobs. In CME regimes where the state plays an important role in financing and delivery, the provision of specific and general skills is more likely. It is this difference in skill production that helps explain the growth of the service sector in some CMEs and not in others. In short, firm-based training regimes by their very nature undersupply general skills, hindering the expansion of the service sector. In contrast, state-based skills regimes facilitate the expansion of the service economy by providing both general and specific skills.

3. The problem of training and training regimes

The debate about the provision of human capital has traditionally focussed on a collective action problem of firms. While national economies and firms themselves benefit

from higher skill levels, many firms are unwilling to invest in employee training, since high skilled employees might be poached by other firms. The threat of skilled labour being poached by other firms or leaving voluntarily in search for higher wages in competitive labour markets leads to lower firm investments in skills and therefore to a lower skill-level in the economy as a whole (Soskice and Finegold 1988).

As a consequence, employees need to stay with the firm which trains them long enough for firms to recoup the return of their investment. The assumption is that once trained, high skilled labour will perform with higher levels of productivity at comparatively lower wages. At the same time, employees who acquire firm specific skills need to protect their investments by having secure employment relationships that will pay off their own investments in their skill sets. If they acquire highly specific skills, which they cannot use elsewhere, workers need assurance that the company will use these skills at comparatively higher wages for a reasonable length of time (Estevez-Abe et al. 2001, Iversen 2005).

Achieving a high-skill equilibrium therefore requires firms and employees to jointly invest in skills and to share the returns on this investment with each other. This balancing act can function only if there are institutions that reduce the turnover of highly skilled labour. These institutions include training institutions in firm or sectoral skill regimes which give workers' representatives and firms a say in the content and certification of skills. Workers can then make sure that training courses guarantee a minimum period of job tenure and create the basis for a long-term employment relationship. In addition, there are supplementary institutions that help keep wages for skilled employees comparatively low and protect skills over the business cycle. These institutions are sufficiently generous unemployment benefit schemes (Estevez-Abe et al. 2001, Mares 2003), employment protection legislation (Iversen and Stephens 2007, Harcourt and Wood 2007, Thelen 2007) and a centralized collective bargaining regime that can secure a relatively compressed wage structure (Streeck 1996).

The collective action problem arises primarily in systems where firms provide training, especially when firm training investments are high. Whereas firm-based training appears to have a positive effect on general skill levels by making training a general responsibility of firms (Iversen 2005, Soskice and Finegold 1988), the downside of firm-based training regimes is that the training institutions must continuously maintain a balance between the firms' and employees' needs for returns on their respective investment in specific training.

In a dynamic economic environment, the problem is further complicated by the fact that the interests of the actors, their costs and benefits, and the balance between them vary along several dimensions. For firms, the important factors for investing in training are the

business cycle, their production strategies and structural changes in the economy. Small firms have different pay-offs than large firms (Culpepper 2008), high productivity firms have different payoffs than artisan firms (Thelen 2004) and potentially service sector firms have different payoffs than manufacturing firms. For employees returns on training investments depend on employment protection institutions and the type of unemployment insurance schemes which allow them to protect their occupation-specific skills even during spells of unemployment. Generous unemployment benefits help highly skilled workers to protect their skills during economic downswings (Mares 2003) and employment protection can secure longer periods of job tenure (Harcourt and Wood 2007). Here again, women workers have different interest in long job tenure than men (Estevez-Abe 2005, Iversen 2005) and service sector employees a higher use of general skills compared to manufacturing sector employees.

Kathleen Thelen's work has shown in detail how two firm-based training regimes- the Japanese and German – have dealt with the question of finding this balance (Thelen 2004; Thelen and Kuome 1999). For the German training regime, the certification of skills by artisan chambers was the answer, which was needed in order to reassure both sides that their investment was worthwhile: state policy granting a monopoly rights to certify skills put pressure on artisanal masters to train their apprentices well in order not to lose the training privilege, while apprentices had to stay with their masters long enough to receive their certificates (Thelen and Kuome 1999, 225). This was supplemented by relatively strict employment laws that gave firms incentives to keep investing into existing staff rather than looking for better skills on the external labour market and by wage agreements, which tended to keep wages for skilled workers compressed (Streeck 1996). In Japan, in contrast, the problem was successfully addressed by the attempt to control labour mobility. One way of achieving this was to develop internal labour markets and lifelong employment relationships (Thelen and Kuome 1999, 225). In-house trade unions and firm-specific labour relations supported this system.

The German solution was to lift the assessment of how long an apprentice needs to stay with the firm beyond the boundaries of the firm onto the level of artisanal and industry chambers. The Japanese approach remained within the boundaries of the firm and tied the employee to the firm long-term. Due to the confinement of these practices to big firms, Thelen called it 'segmentalist' in contrast to the more 'collectivist' German system. Both training regimes imply longer job-tenure rates compared to training regimes in liberal market economies.

While the skills acquired in the Japanese training regime are as a consequence predominantly firm-specific (and less portable), the German training regime provides firm and industry specific but generally portable (occupational) skills. The formation of these skills takes place in a tightly regulated system of the state and social partners. Employers, trade unions and public authorities jointly decide upon and administer training schemes that are partly implemented by the employer and partly by schools.

Even among coordinated market economies, only a minority of countries have a training regime that is similar to either the Japanese or the German. Only the German speaking countries Austria and Switzerland have comparable training systems to the German one (Culpepper 2007). There is no other country among the OECD 18 that comes close to the Japanese segmentalist system of training which is based on lifelong employment, internal labour markets and firm-based training.

Rather, in most CMEs the dominant form of training is not firm-based training, but in the majority of countries vocational training is either largely school-based or a mixture of apprenticeships and vocational schools. The training in vocational schools however presents another category of training, which is distinct from both, the general skills systems, such as the liberal market training regimes and the specific skills system, such as the workplace-based training schemes of Germany and Japan.

Training regimes based on vocational schools, have some common features with workplace-based training regimes. To the extent that the content of occupational skills are decided by joint bodies of employers and trade unions, skills tend to be more industry specific and therefore similarly occupational as in workplace-based regimes. As in workplace-based training regimes, vocational schools use their privileged access to employers for placing trainees as interns in firms, thereby creating close ties with the needs of employers.

However, school-based training systems differ substantially from workplace-based training regimes with regard to the distribution of costs for training and therefore also regarding the conditions on which returns on training can be achieved. Since trainees are students rather than employees, firms' investments into training are considerably less compared to levels of investments that firms put into training in workplace training.

The balancing act of sharing investments and returns of training therefore plays out differently in school-based occupational training regimes compared to workplace training regimes. On the one hand, since schools, even vocational schools, provide more general than specific skills, students will receive a broader skills set. Broader general skill sets can be employed in a number of jobs and employment protection becomes less a priority. On the

other hand, because the skill set is supervised jointly by employers and trade unions, there is some guarantee that the content of teaching in vocational schools can fulfil the skill needs of the firms. In terms of skill specificity vocational schools therefore can deliver quite similar types of skills compared to workplace-based training, but given the different contexts, vocational schools are more likely to create better social skills.

With regard to the costs of training, the distribution is shifted from the private sector onto the public. Private investment of firms into vocational training is lower on the whole and in addition less specifically tied to the individual employee. Firms' involvement in training is focussed on their engagement in supervisory boards of vocational schools, the design of training courses and adaptation of curricula to new technologies. They tend to invest not into a specific apprentice but into a cohort of students that participates in a training programme for firms in their own sector. As long as vocational schools continue to produce these types of skills, firms do not have to make sure that they retain an individual employee. For the trainee, since skills are more general, as long as the skills that are provided by the vocational school match labour market demands, long job tenure is not that much of an issue than in workplace-training regimes.

We therefore suggest distinguishing two ideal types of occupational training systems that sit in between general education systems (the LMEs) and the segmentalist training system (Japan) and take into account the differences between school-based training and workplace-based training:

In a *school-based occupational training system* vocational training is typically organised by the state, which runs vocational schools. The content of training is usually set in cooperation with the social partners. Students spend a considerable amount of time at a workplace, but have neither the status of employees nor are they paid. Firms do not heavily invest in training besides taking interns.

In comparison in *workplace-based occupational training systems*, apprentices are employees of the firm. They spent the majority of their time at the workplace and only a couple of days per week at school. The content of the training is also set in cooperation with the social partners. Firms bear the bulk of the costs for the training of apprentices, but can also tailor the specific content of training to the firm's needs.

In reality, many Western European countries have a mixture of workplace and school-based training. Even in countries with workplace training, some vocational training takes exclusively place in vocational schools. In Germany in recent years, almost a third of students in post-secondary education are in vocational schools rather than in workplace

apprenticeships. However, the important distinction is which type of training is characteristic for the training regime. In general, this is where the majority of training takes place.

The distinction between workplace-based and school-based training regimes leaves us with four distinct types of training regimes, three of which belong to the group of coordinated market economies. At the extreme ends we have liberal market economies with very little vocational training and the segmentalist firm-based training regime in Japan. The two types of occupational training regimes are located between the two extremes. The group of school-based training regimes could even be separated in strictly school based and mixed systems. Mixed systems can be found in Belgium, France and the Netherlands.

[table 1]

The distinction between training regimes resembles categories within the training literature on market-based, state-based and corporatist training regimes (Wollschläger 2000; Crouch, Sako and Finegold 1997; Ashton et al. 2000). This is, however, only superficially true, since we specifically focus on the question of how actors deal with the issue of providing specific skills in a context, where collective action problems arise. In our analysis the provision of vocational schools is another solution to the balancing act of safeguarding the returns of investment into specific/occupational skills along side with the Japanese and the German solution, which however has again different implications within the family of CMEs.

As an initial test of our assumption we can look at how some indicators work which are generally seen as indicative for training regimes. The first one is job tenure. As has been argued above, when employers invest into the skills of their workforce, they also have to make sure to gain returns on their investments. Returns are likely to be higher when highly skilled employees can be hired for relatively long period of times for wages that are comparatively lower. Employers therefore have an interest in long tenure and centralized wage bargaining arrangements, which tend to compress wages. If the costs for training are primarily born by the government, firms' interests in long tenure and wage compression is lower than if the costs for training are completely paid by the firms themselves. The extent to which firms support and seek long tenure of employees and are therefore willing to accept stronger employment protection and higher social transfers is likely to depend on the degree of their investment in skills. Table 2 shows that job tenure indeed varies with the type of vocational training regime. The more specific skill set and the more firm-based the training, the longer the tenure rate of employees with one employer.

[table 2]

Another indicator for our assumption is public and private spending on secondary (non-tertiary) education. We should expect that public spending on non-tertiary education varies with the degree to which the vocational training regime is school-based or workplace-based. The data in table 2 shows that this is actually the case. While spending on education in liberal market economies is about average of the OECD 18 countries as a whole, vocational school occupational training countries spend a higher share on education than those with workplace training. And even when looking at the division of costs between public and private, we can see that in countries with workplace-based occupational training, firms spend almost as much on secondary and post-secondary but non-tertiary training as the government.³

4. Germany and the Netherlands compared

We have chosen the German and the Dutch training regimes as cases in order to illustrate and analyze the differences between workplace-based and school-based training systems with regard to the political coalitions that underlie them and their capacity to adapt to the structural changes on the labour market. We assume that the different pay-offs the systems provide for the actors involved for the returns on investment in skills will shape the actors preferences for the development of the training institutions in a changing economic context. This section will therefore highlight the key issues which we argue are the most important for understanding the different institutional arrangements underpinning the two systems. They can be grouped into firstly the costs and returns of training for firms and employees, secondly the role of vocational schools and state involvement (including state subsidies for training) and thirdly as a consequence of the interaction of the two the potential for adaptation to new economic structures.

3.1 Vocational training in Germany

The German system of vocational training has received a lot of attention in the political economy literature and does not need to be laid out in detail here (Streeck 1984, Thelen 2004 and 2007, Thelen and Busemeyer 2007). To begin with, two features of the German training regime are crucial for our understanding: First, for young adults the workplace-apprenticeship system is the most important stream of post-secondary education.

³ The high degree of variation within the workplace-based training regimes is due to the data on Austria, which differs strongly from Germany and Switzerland by suggesting that Austrian firms spend next to nothing on training.

More than half of all school leavers after compulsory secondary education start an apprenticeship, while only a little less than a quarter stay in full time education or attend vocational schools (table 3). Only in Switzerland there is a higher share of school leavers who choose to seek an apprenticeship. Thereby the pathway of workplace-based apprenticeship is of utmost importance not only for the skill formation of firms, but also as an instrument of regional authorities in secondary education to facilitate the transition from school to work. The budgeting of general, vocational and supplementary schools⁴ in the public realm as well as active labour market instruments for school leavers are based on the assumption that a majority of school-leavers will move towards an apprenticeship.

[table 3]

Second, the motives of firms for providing vocational training basically fall into two groups of firms (Soskice 1994; Marsden and Ryan 1991, Neubäumer 1999).⁵ Big and high productivity firms train in order to utilize high skilled employees, who are trained to serve the firm's production needs. They invest heavily in training and usually train more apprentices than they can keep in order to cream off the highest potentials of hard-working and smart apprentices. Apprentices in these firms contribute little to the production process while in training. For big firms, the investment in training is partly motivated by tailoring skills of their workforce to their production needs. Partly, however, firms have used training as a political tool, which they could use when dealing with local, regional but also national political issues.⁶ For big firms, it is almost impossible for political reasons as a good citizen not to engage in vocational training.

Small, artisan firms on the other hand train in order to utilize the cheap labour that apprentices provide after having acquired a minimum of skilled. They invest little in training, but also tend to train more apprentices than they can keep. Apprentices in these firms contribute to the production process from very early on. Medium-sized firm can fall into one or the other category and some firms can even have different types of apprentices within the same firm depending on the occupation. The different motivation for firms to train have over time led to a complementary system, in which training firms supply skilled labour to those

⁴ Supplementary schools are general schools which provide general education to apprentices. They are attended 1-2 days per week during the apprenticeship.

⁵ Providing vocational training for firms is voluntary. About half of the German firms have a licence to train, and less than a quarter of all firms do train. Once firms take on apprentices, they have to follow the rules as laid out by the law and by the tripartite VET committees.

⁶ Evidence for the political importance of training is for instance that public sector firms traditionally trained more than private sector firms. In some cases training decisions were dependent on public contracts (i.e. postal services). Also the government used public campaigns to increase training knowing that firms were receptive for political pressure.

firms, which do not train. Artisan apprentices, who have a lower skill level and do not find work in the handicrafts they are trained in often move to big firms as semi-skilled employees.

The remuneration of apprentices reflects this schism. Pay for an apprentice is regulated in separate collective agreements. In general remuneration is low and below a living wage.⁷ However, apprentices in big manufacturing firms or highly skilled services sectors such as banks tend to be considerably better paid than artisan apprentices, since firms compete for good students after secondary education. More than 90% of firms with more than 500 employees train, but to a lesser extent compared to smaller firms (Berufsbildungsbericht 2005). Also, compared to smaller firms, bigger firms tend to keep their apprenticeships at a higher ratio.⁸

In the past, high levels of workplace-based training was therefore secured by a combination of different interests in cheap labour on the one hand and investing in good citizenship and high skills on the other, which both followed their own logic of what made business sense. Both types of firms were however receptive to political arguments and threats of state intervention, which maintained high training activity for a long time. Training capacity could be increased by political pressure and government initiatives have frequently relied on this mechanism in order to facilitate the school-to-work transition for school-leavers. Both types of firms had therefore a business case in favour training, which was underlined and strengthened by frequent research of the vocational training research institute (BIBB) which has repeatedly shown that the net benefits of training outweighed the net costs for initial vocational training (Beicht et al. 2004).

For students, who have left school after compulsory secondary education, workplace-training has a higher status compared to training via vocational schools. Vocational schools have traditionally co-existed alongside workplace-based training, primarily for specific (primarily female) occupations such as childcare workers and midwifery. In addition to these qualifying vocational schools, another type of vocational school developed, which was increasingly used for absorbing students who were unable to find an apprenticeship.⁹ These were general schools, which aimed to provide basic knowledge of professional education (Berufsgrundschuljahr). These types of transitional school programmes offer courses which

⁷ In contrast to wages in general, there is a minimum wage for apprentices as the collective agreement is legally binding for all apprentices. This serves to prevent apprentices to work for no wage at all.

⁸ The ratio of apprentices who stay with the firm in big firms (more than 500 employees) is 68% in Western Germany compared to 47% in firms with less than 10 employees (Berufsbildungsbericht 2007).

⁹ Vocational schools also exist for public sector professions such as middle ranking police officers, or tax inspectors. Here however the admission to a school was connected with an automatic job offer in the sector.

meant to enable students to find apprenticeships the following year. In addition vocational schools were also established, which offer fully fledged vocational courses in place of apprenticeships. Weak students, who were unable to find employment as an apprentice could thereby start a school with a programme, which would lead them acquiring the same vocational certification as apprentices.

In contrast to school-based occupational training regimes (see the section on the Netherlands below), the first choice of students however was the workplace-based apprenticeship and the best students would aim for workplace education. At the height of the German apprentice system in the 1980s, even students who would eventually go back to tertiary education opted for a workplace apprenticeship first as the foundation of a solid education.¹⁰ To future employers a workplace based apprenticeship signalled work ethos and a solid knowledge of a production process.¹¹ The high skill firms therefore equally drew good students into the apprenticeship system.

Over time, a hierarchy of certified skills developed, in which tertiary education was superior to workplace-based training, but workplace-based training was superior to vocational schools. As a consequence, neither firms, nor students nor the state have had an interest in developing alternative pathways to occupational schools – for instance via vocational schools beyond their role as a ‘residual’ category for those students, who did not do well enough to succeed on the apprenticeship market. Firms have no interest in high quality vocational schools, which might draw good students away from them. Since vocational schools are labelled as for weak students, school-leavers try to avoid transitional vocational schools. Trade unions feared their weak performance as undermining the skill level and insisted on high vocational standards in the certification of skills. For education policy-makers vocational schools are part of an active labour market policy for weak students but not an instrument for training policy. Given the clear superiority of the workplace-based apprenticeship system, it was the aim of education and training policy to keep the scope for these transitional vocational schools at a minimum level.

For the same reason of reputation signalling, this mechanism also applied for the expansion of the service economy. Following the success of workplace-based training, vocational training committees started actively designing new occupations in the service economy, particularly in IT sectors and office work as an active contribution of institutional

¹⁰ In particular in banking, many bank managers have opted for a workplace-based apprenticeship before they went to study business administration at university.

¹¹ And for German firms a good starting point for a career. Juergen Schrempp, the former CEO of DaimlerChrysler had started as a car mechanic apprentice at the firm.

transfer. Only in attractive niche markets, where students would work for almost nothing and firms therefore were not interested in regulating the content of training and thereby also a minimum pay for apprentices, such as the media and design industry, training was taken up by private schools.

With the expansion of education, the political aim to abolish unskilled labour and the increase of immigration since the early 1970s, the demand for further training at the lower end of the training market increased rapidly during the last three decades. Because firms could only respond to these political aims to a limited extent, not all school-leavers were absorbed by the workplace-based apprenticeship system. The size of vocational schools at the lower end of the vocational education market therefore grew disproportionately. Studies now report that the share of transitional training programmes today has reached a level of almost 40% of all students leaving compulsory secondary education (Baethge et al 2007).

Analysts of vocational training thereby observed that over time the receptiveness of firms to give in to political lobbying for more apprenticeships has declined due to higher competitive pressure on firms and cost-sensitive management (Baethge 1999). In particular the artisan sector, which at one point during the 1980s managed to push up training rates to 17% in order to avoid further political pressure (Busemeyer 2007), has declined in size and cannot provide sufficient numbers of apprenticeships for academically weak students any more. In addition, also for the students themselves, the attraction of an artisan apprenticeship has lost its appeal. As artisan apprentices are seen and used as cheap labour with an uncertain future within the firm, drop out rates have dramatically increased over the last decades from 10% in 1977 up to 25% in the mid-1990s (Baethge 2007, 31).

As the workplace-training regime was seen as highly successful in terms of facilitating school to work transitions, political pressure has consistently been employed for maintaining the workplace-training regime even at the expense of the expansion of higher education. As table 3 shows, Germany is the country with the second lowest share of students in general post-secondary education with 24% of students continuing general education. The massive increase in tertiary education in most countries of the OECD has had barely an effect in Germany. Between 1991 and 2002 the share of students in tertiary education in Germany only grew by 2 percentage points compared to 5 percentage points in the Netherlands and up to 15 percentage points in Canada and 11 in the UK. The development of high level general skills was therefore hampered in two ways, first by reserving workplace-based training for better students, and second by not allowing a bigger share of students to move into tertiary education.

3.2 The case of the Netherlands

Like other political-economic institutions in the Netherlands, the training regime is not a purebred as in Germany, but rather a mixed breed that combines elements characteristic of other systems. As one expert has put it, the Dutch system of vocational training is a pragmatic and opportunistic mix of elements borrowed from other countries.¹² The most important influences from Germany have been the apprenticeship system and the formulation of a national system of qualifications. French influence has shaped the strong role of the state in financing and steering vocational training. Finally, Anglo-Saxon influence can be seen in the important role of schools in the training system.¹³

A core feature of the educational system in the Netherlands is the strong separation between general or academic education ("*geleerde*" *vorming*) and vocational education ("*andere*" *vorming*) (Bronneman-Helmers 2006: 28). This separation has deep historical roots, and has survived many attempts to overcome or weaken it. The Secondary Education Law from 1863 (*Middelbaar Onderwijswet*) specifically excluded vocational education from state regulation and financing, based on the principle that practical training was the province of employers, whereas the state should be responsible for general education. The current VT system, especially senior secondary vocational education (MBO), originated in the training initiatives undertaken by employers in the industrial sector in the 19th and 20th centuries. As industrialization picked up speed, employers or other private actors established vocational schools to meet the needs of the growing industrial sector. However, the government did finance vocational education deemed to be "general" or "theoretical" rather than "practical."

The state stepped in to regulate this emerging network of vocational schools in 1919 with the Law on Vocational Training (*Wet op het Nijverheidsonderwijs*) that anchored the VT system in the needs of the regions. In keeping with earlier developments, the state did not establish VT schools. Private actors still dominated the system even if there was now national legislation governing their activities. Another outcome of industrialization was the emergence of an apprenticeship system run by employers and unions. The first apprenticeships were established as alternatives to the craft schools and were intended for young men whose parents could not afford to do without the wages of their sons, or for young men in regions where there were no craft schools (Bronneman-Helmers 2006: 29-30). The social partners set

¹² Expert interview, June 2007.

¹³ Unless otherwise noted, the discussion of VT in the Netherlands is based on Hövels, et al. (2006); Bronneman-Helmers (2006) and Maes (2004).

up national sectoral organizations to administer the system. Prior to WWII, the apprenticeship system remained small, largely because of the importance of craft schools (*ambachtscholen*).

After WW II, the state took on a more active role in the VT system, and the general education component of VT increased. These trends culminated in the 1963 Mammoth Law¹⁴ (*Wet op het voortgezet onderwijs*, or *Mammoetwet*) that integrated industrial vocational training into the system of secondary education. The primary justification for the new approach was the perception that the existing system of industrial training schools was not adequately meeting the needs of the labor market. By this time, the separation of general education and vocational training was already firmly established, and general education enjoyed higher status than VT. Integrating the VT system into the general school system was seen as a way to increase the status of VT, thereby improving the quality and attractiveness of VT. Experts argued at the time that VT was too practice-oriented; increasing the general education component would improve the preparation of students for professions/trades rather than a narrowly defined job. The introduction of the Mammoth Law left the existing apprenticeship system in place. Both employers and unions supported the strengthening of the general skills component in the VT system.

The Mammoth Law ushered in a period in which the VT system focused less on preparing students for the labor market and more on what Hövels, et al. (2006: 6) refer to as 'socio-cultural' dimensions. Rather than simply preparing students for labor market entry, the VT system now took on functions such as reducing social inequality and promoting students' personal development. By the end of the 1970s, firms were complaining that VT graduates no longer knew how to hold a hammer.

The economic crisis that hit the Netherlands (and the rest of Western Europe) in the early 1980s prompted a return to a clearer focus on the needs of the labor market in the VT system. The rapid increase in youth unemployment and the decreasing number of apprenticeships signalled to policy-makers that something was wrong in the existing system, and they began to focus on the deficiencies of the system introduced by the Mammoth Law.¹⁵ The center-left government set up a commission to investigate reform (the Wagner Commission). Probably more important, the well-known 1982 Wassenaar Accord

¹⁴ The law took effect in 1968.

¹⁵ The "hole in the Mammoth Law" was that students who finished lower level VT and wanted to start an apprenticeship had few prospects when the apprenticeships dried up 1970s, because they did not qualify for anything except an apprenticeship. The then-current structure of MBO was not suited to take in these students because they had an lower secondary vocational (Ibo) degree, and many of these did not qualify the student to start MBO (Hövels et al.: 13).

strengthened the new labor market orientation in thinking about the direction of VT. The Wassenaar Accord laid the basis for subsequent arrangements concerning the introduction of training funds into wage agreements, increasing the number of apprenticeships, and other VT-related issues. By the early 1980s, VT was seen as the mutual responsibility of the state, social partners and educational institutions.

A substantial reform of vocational education in 1994 (*Wet educatie en beroepsonderwijs*, WEB, in force since 1/1/1996) reorganized and streamlined the system of vocational schools and vocational training. The WEB law was based on several issues that had dominated discussions in the 1980s about how to reform VT: improving cooperation between industry and the VT system; improving the integration of work and learning (the German system was considered a model); meeting needs of employers as well as students, especially weak ones; amalgamation of existing educational institutions into regional schools, and the introduction of the third generation of final qualifications (*eindtermen*). Until the WEB, the private sector only had informal influence on the VT system (except for the apprenticeship system). In keeping with the consensus that VT should be more in tune with labor market needs, all important actors agreed that formal influence of the social partners should increase. Moreover, all agreed that there should be shared responsibility between government, educational institutions and the private sector. This shared responsibility was seen to apply to workplace-based learning and the content of VT, and was the basis for the introduction of a national system of skill certification.

The adoption of the WEB was preceded in the second half of the 1980s by a process of consolidation and amalgamation in the vocational education sector. In the first half of the 1990s, the Regional Educational Centers (*Regionale Opleidingscentra*, ROCs; see below) were formed. As the consolidation process proceeded, the apprenticeship system formed the basis for comparison for the school-based programs. A consensus emerged that school-based programs should provide an initial qualification just as the apprenticeship did. This reorientation was aimed at solving the problem of early school-leavers without an sort of vocational diploma or apprenticeship qualification. To deal with this problem, the WEB improves the integration of the different levels of the MBO so it is easier to move up in the system.

One of the other key developments that resulted from the reorientation of VT since 1980 was the two-fold increase in the number of apprenticeships between 1980 and 1990. The introduction of branch-level training funds, the growing economy and more variation in the structure of apprenticeships all contributed to the increase. One of the other ideas that

emerged from the Wagner discussions was the creation of the branch-level training funds to pay for apprenticeships. Some branches already had funds, now others started. The Ministry of Social Affairs also stimulated the funds by making subsidies conditional on the establishment of the O & O funds.

To sum up, the outstanding features of the Dutch system are the dominance and higher status of school-based training and strong state involvement in terms of regulation and financing. What does the current system look like after more three decades of institutional innovation? As in Germany, education is compulsory from age 5 until 16. Primary education ends at age 12, after which students are tracked into one of three secondary school pathways:

1. **VWO**-pre-university education or higher professional education (**HBO**): six years
2. **HAVO**-senior general secondary education (five years) for those aiming for higher level vocational degrees (**HBO**). Many **HAVO** students also end up in **MBO**.
3. **VMBO**-preparatory senior secondary education: for those aiming at senior secondary vocational education (**MBO**).

Senior secondary vocational education (**MBO**), the most important pathway for the purposes of this paper, has two pathways:

BBL: (*beroepsbegleidende leerweg*) pathway: day release/block pathway. At least 60% of training takes place at the workplace. This is the old apprenticeship system

BOL: (*beroepsopleidende leerweg*) full-time, school-based instruction, with 20-60% workplace-based training

The number of students taking part in BBL has increased significantly since the mid 1950s (Maes 2004: 33), but the school-based BOL still dominates, absorbing about two thirds of MBO students.¹⁶

There are 43 Regional Training Centers (*Regional Opleidingscentrum*, ROC), and these replaced the much larger number of fragmented vocational schools that existed prior to the 1980s. The size of the ROCs varies from 2,000 to 24,000 trainees (Maes 2004: 22).¹⁷ 19

¹⁶ The most recent innovation in the Dutch system is the introduction of competence-based learning into the MBO. Briefly, competence-based learning is the idea that students should learn problem-solving so that they can apply their concrete skills to a variety of situations. Thus rather than acquiring a specific set of skills, students learn how to apply skills and knowledge simultaneously.

¹⁷ There are also 12 agricultural training centers and 13 professional colleges for sectors such as graphics and shipping and transport. Since the 1996 reform, private institutions can also provide MBO training, but most is provided by ROCs.

national knowledge centers (*kenniscentra*) for vocational training and the labor market are responsible for skill certification (recruiting employers; monitoring quality; defining occupational profiles, and identifying competence requirements corresponding to these profiles) in specific sectors. The KCs are also responsible for making sure that there are enough apprenticeships and internships in their sector, as well as for matching ROC programs with labor market needs. Thus the KCs are important intermediate organizations linking the providers of training with the labor market organizations (see Hövels et al. 2006 and Maes 2004). The KCs were created in the 1994 WEB reform. As Maes (2004: 21) puts it, the “intensive cooperation between the organized labour market and education is central to the concept of vocational education and training in the Netherlands.” The KCs are represented at the national level by their peak association, Colo. The administration of the KCs is corporatist: employers, unions and the education sector itself are represented on the boards of the KCs. The Education Inspectorate (Onderwijsinspectie) monitors the quality of education provided at the ROCs and private providers.

The ROA (Research Center for Education and the Labor Market, *Researchcentrum voor onderwijs en arbeidsmarkt*) produces a forecast every other year concerning expected labor market developments. Colo uses ROA data to forecast skills needs for each of the 19 sectors. ROCs are expected to use this information in order to adjust their course offerings and capacity to changing LM needs.

The central government finances the ROCs directly for their initial VT offerings. Central government also provides subsidies to employers for training. In 2002, the central government allocated 2 billion euros to the ROCs. ROCs receive lump sum grants. Students age 16 or older pay tuition fees to a central organization (IBG), not to the ROC directly. Until age 18 parents receive child allowance and after that the student receives educational grants. O & O (*onderzoek en ontwikkelingsfondsen*) funds are part of collective agreements and these mainly finance continuing VT, not initial VT. A levy of 0.1% to 0.64% of the gross wage bill is paid into a sectoral fund. 40% of firms participate. MBO students pay tuition but also qualify for public education loans.

What are the costs and benefits of training for employers and trainees in the Dutch system? First, it should be emphasized that the role of employers is not as strong as it is in Germany. Only after the 1994 WEB reform were firms formally integrated into a national system of VT. Prior to this, a decentralized and fragmented system of vocational schools existed, and firms did not have consistent influence on the curriculum of vocational schools.

In contrast, employers and unions ran the apprenticeship system and fought to maintain the system when an early draft of the WEB proposed that the reformed VT system take over its functions.

Employers' key interest is in better matching of VT to their needs on the labor market. The mix of school-based and workplace-based training aims to do this, albeit in different ways. Employers generally like the apprenticeship system because it is a system they jointly run (with the unions), and it gives them access to skilled workers who can quickly enter the production process. Apprentices' wages are negotiated in collective agreements and are at least the minimum wage or youth minimum wage. Thus Dutch employers pay more than German employers do for apprentices, but given that 2/3 of MBO students follow school-based programs (BOL) the overall financial burden on firms is probably smaller than in Germany. Moreover, firms receive financial assistance from the state (apprentice wages are tax deductible) and from the sectoral training funds.

The Dutch system has not always performed well in integrating firms' skill needs into the VET system. As discussed earlier, employers complained loudly in the 1970s that the VT system focused too little on skills actually required on the labor market. The WEB reform aims to correct this by giving employers (and unions) more influence on the content of VT and skill certification, and by increasing the role of workplace-based learning, even in the school-based pathway (BOL).

Students are generally interested in following the course of study that will give them the best job opportunities. Unions are flexible on the issue of matching VT content and skill certification to labor market needs and care more about issues such as apprentice pay, working conditions, and employability.¹⁸ As noted, the school-based MBO pathway has higher status than the day-release or apprenticeship pathway. Given the dominant place of school-based training in the Dutch system and the status of the apprenticeship as a less attractive but by no means unacceptable option, both pathways are viable alternatives for students. Indeed, youth unemployment in the Netherlands has historically been comparatively low (except for the early 1980s). The MBO Council (*MBO Raad*) reports that 3 percent of those with an MBO diploma are unemployed after six months. Those with a higher level qualification (level 3 or 4) are much less likely to be unemployed than those with a level 1 or 2 diploma (BVE Raad).¹⁹

¹⁸ Expert interview, June 2007.

¹⁹ There are four levels in the MBO. 1 is lowest, 4 is highest.

To sum up, as in Germany there is a hierarchy of educational pathways, with university education enjoying the highest status, followed by higher professional education (HBO),²⁰ and senior secondary vocational education (MBO). A majority of the workforce has an MBO degree, and there is little competition between the day-release and school-based pathway. The school-based pathway has higher status and attracts more students, but the day-release pathway is a respectable alternative. Employers do not seem to discriminate between the pathways in hiring graduates, and since the introduction of the required 20%-60% of workplace training in the school-based pathway, MBO graduates' practical skills have improved.

3.3 The cases compared

The extent of institutional innovation in the Dutch vocational education system is breathtaking compared to the stability of the German system. Despite this, the German and Dutch systems of vocational training have much in common. The core similarities are: the separation of general and vocational education; the importance of workplace-based vocational education (even if the Dutch system emphasizes it less); and the central roles played by the social partners in the administration of the apprenticeship system and skill certification. Both skills regimes thus function according to the logic predicted by the VoC framework: students receive training in the acquisition of firm-specific and industry-specific skills, and training institutions support this goal. However, there is considerable variation in how this basic logic is carried out in the two countries.

The key differences between the German and Dutch systems of vocational training are: the dominance and higher status of school-based secondary vocational education in the Netherlands; the role of the state in financing vocational education; and the role of the state in facilitating cooperation between the social partners and vocational educational institutions in skill certification and the coordination of school-based education with labor market needs.

What do these differences mean in terms of skill investments? We examine first the issue of financing. The German system relies heavily on the willingness of firms to train. This is costly, and in an economic downturn, the consequences are severe when the apprenticeship system is the only viable ticket to a decent job. The Dutch system operates according to a different logic that is less vulnerable to economic swings. Public financing of vocational schools means that the preferred vocational education pathway is less vulnerable to economic swings than in Germany. Whereas German firms might reduce their training budgets in a

²⁰ HBO awards Bachelors degrees in areas such as nursing, business, teaching, and engineering.

downturn, Dutch vocational schools generally do not. Indeed, the Dutch mix of school-based and workplace-based vocational training permits a flexible balance between the two pathways. In an upturn, the number of apprentices generally increases, and in a downturn the school-based pathway absorbs more students. The Dutch BOL has higher status, but this does not mean that the BBL is an unattractive option. It may be second-best in some occupations and sectors, but it is clearly not as unattractive as vocational schools seem to be in Germany. The existence of two pathways means that "all eggs are not in one basket" and the system does not stand or fall on the willingness of firms to train.

The higher status and larger role for vocational school in the Netherlands also means that general skills occupy an important part of the curriculum in senior secondary vocational education. In Germany, school-based instruction comprises about 20% of most apprenticeships, but the schools offering the courses have little impact on the system. The Business Chambers administer final exams, largely based on on-site training and not subjects taught in the vocational schools.

Second, there are important differences in the institutions facilitating cooperation between firms, unions and educational institutions. The Knowledge Centers in the Netherlands appear to be unique in Europe (Hövels et al. 2006, Maes 2004). As noted, these are intermediate institutions linking the social partners to vocational educational institutions, and they are crucial actors in two key areas: skill certification and matching the content of vocational education to labor market needs. In Germany, the tripartite VT commissions are responsible for the content of vocational training in their respective sectors, as well as skill certification, but educational institutions have little influence. The much larger role played by vocational schools in the Dutch system is arguably one of the factors contributing to acquisition of general skills alongside specific skills.

Indeed, since the 1960s, the role of general skill acquisition in the Dutch system has increased. The shift to competence-based learning is also important in this regard because it strengthens the general component of VT education. As the next section argues, it is precisely the acquisition of general skills and competences in conjunction with specific vocational skills that are crucial for service sector employment.

Finally, Dutch unions are more flexible than German unions in terms of the structure of secondary vocational education. There are four levels of MBO, so even the weakest students can achieve a basic qualification (although obviously not all do) at level 1 or 2. Whereas German unions staunchly defend the "*Berufsprinzip*" and the comprehensive three

year education required to qualify for a *Beruf*, Dutch unions have accepted reforms to the MBO system that weaken this concept.

4. Adjustment to the service economy

National systems of skill formation are both cause and consequence of a nation's economic performance (Soskice and Finegold 1988, 22): Training institutions have evolved when firms aimed to meet their skill needs in the process of industrialization and they influence the further development of these economies by providing or not providing adequate skills for meeting new economic conditions.

In this section, we briefly illustrate how different institutional structures will play out differently when facing economic change. The VoC approach assumes different institutional regimes are likely to give rise to different patterns of economic specialization. Hall and Soskice used patent applications to show that LMEs tend to specialize in radical innovation industries, while CMEs tend to follow the path of incremental innovation industries. Our analysis looks at different patterns of economic specialization within coordinated market economies when facing the process of deindustrialization.

We discuss the different pathways of workplace versus school-based occupational training regimes with regard to the trends of economic specialization and the rise of the service economy. Service sector jobs are generally assumed to demand a high level of flexibility in delivery that a vocational training system focused on simply imparting a specific set of skills may not necessarily provide. Higher degrees of skill specificity might therefore not be compatible with service sector employment. Moreover, the increased financial burden on firms could reduce their willingness to take on apprentices, and an ideological retreat away from the idea that governments should intervene leaves firms as the only credible actors for initiating reform measures.

Those who criticize the apprenticeship system of vocational education training tend to argue that apprenticeship systems are not well-equipped to provide students with the skills necessary for a service based knowledge economy, such as high levels of social skills and the capacity for self-learning. In a study of Australian and British experiences, Smith (2000) shows that apprenticeships are not directed towards the acquisition of skills such as self-directed learning that support flexible delivery typical of the new economy.

Others do not criticize the manner of skill acquisition itself, but rather the willingness of firms to remain committed to taking on new apprentices (Parmentier, Schober, and Tessaring 1994; Tessaring 1996). Crouch et al. (2001) see this as a general problem endemic

to the current age whereby collective action remains necessary to address training demands but actors are no longer willing to commit – where the idea that deregulation leads to success dominates, Keynesian intervention is shunned and firms hold more credibility with regards to policy-setting than government workers. In a mostly optimistic yet critical assessment of the German system, Idriss (2002) explains how adjustment occurred well in terms of coming up with solutions to create new apprenticeship spots in firms, providing school-based training for those who do not receive apprenticeships and increasing communication with various actors over the modernization of the system. Praising the will to enact reforms, she criticizes these steps for not solving the problem. The creation of school-based ‘apprenticeships’ are not taken seriously on the job market and, due to the strong position of the *Berufskonzept*, occupations remain outdated.

In principle, there is no reason as to why the apprenticeship system cannot operate in the service economy employing a similar logic as in the manufacturing sector. Non-tertiary high skilled service sector employees, such as bank clerks, software programmers and doctors’ assistants could be equally suitable for the service economy as students from professional schools or the lower tertiary sector. Small, low-cost service firms such as hairdressing and low-price retailing might use the same kind of cost-related strategies as small artisanal firms for training. As long as the training courses are adapted to the changing character of the service economy, workplace-training can aim to preserve the advantages of the apprenticeship system.

On the other hand, there are some indicators pointing to the fact that school-based training systems might fit more easily with the skill requirements of service sector firms and therefore enhance service sector employment. Levels of educational attainment in general have a significant effect on the rise of the service sector. Recent research shows that rapidly rising educational attainment levels contribute significantly to employment services overall. In particular, moving men from medium to higher education increased the specialization in business services (Nickell et al. 2002, 31).

Iversen (2005) sees as the main contrast the acquisition of social skills and states: “...the distinction between manufacturing and services represents one of the most important economic interfaces affecting the transferability of skills in the latter half of the 20th century. Even low skilled blue-collar workers, almost all males, find it exceedingly hard to adjust to similarly low-skilled service sector jobs because they lack something, for want of a better word, may be thought of as a form of social skills” (Iversen 2005, p. 187). From a gender perspective, Estevez-Abe criticizes training regimes which focus on specific and occupational

skills for hampering women's career development. Women often have patchy employment spells and therefore can not pursue careers in internal labour markets as easily as men. As firm specific skills give higher returns to long job tenure, women are more likely to be discriminated in CMEs compared to LMEs (Estevez-Abe 2005).

Our own data shows at first glance that the type of training regimes is less related to employment in services but more to employment in manufacturing. Compared to general education regimes, occupational and specific skill regimes tend to have higher shares of manufacturing employment (see table 4). As a general tendency it seems to be the case that the more specific the skills provided by the VT regime, the higher the share of manufacturing employment tends to be. Moreover, in a cross-sectional regression analysis for 18 OECD countries, the type of training regime had a significant effect, even when spending levels for education and the share of tertiary education was controlled for (table 5).

[table 4 and 5]

The actual enrolment in workplace-based apprenticeship thereby correlates not to current shares of manufacturing employment but to those of the 1970s (Graph 2). In a positive interpretation, this could mean that manufacturing firms, which invest in specific skills are more competitive and retain employment in the manufacturing sector. Due to higher skill levels in manufacturing occupations, firms in occupational and specific skill regimes are able to fend off global competition more easily and therefore manage to retain higher manufacturing shares.

[graph 2]

In contrast, in economies with general, school-based skills, firms move towards a decline in manufacturing employment and an increase in services more quickly. Shorter spells of job-tenure and higher degrees of fluctuation in the economy as a whole contribute to faster structural change towards deindustrialization.

The distinction is not only true in the comparison between LMEs and CMEs but applies even more so to differences within the group of CMEs. Employment in school-based occupational skill regimes tends to be lower in manufacturing than in workplace-based skill regimes, with the distinction between school-based and workplace-based being greater than the distinction between LMEs and CMEs in general. If this observation captures some of the

developments that are occurring in the process of deindustrialization, it leaves us with some speculation on how different types of CMEs are likely to follow distinct paths of institutional change, which we will address in the final section of this paper.

6. Institutional Change and training: where are Germany and the Netherlands heading?

This section briefly discusses what we think are the most likely institutional trajectories for the German and Dutch vocational training regimes. Our key contention is that Germany is likely to remain on the CME path in terms of emphasis on specific skill provision. Even if Germany manages to expand tertiary education, its status as the prototype of the CME specific skills regime will remain stable or even increase. In contrast, the Netherlands is likely to continue on a path of "liberalization" path, moving farther away from the German regime. These two likely scenarios are the consequence of both countries' capacity to adjust to deindustrialization, and they have serious implications for their further development. Germany is likely to continue to experience slower and more high-skilled service sector growth, shaped by a comparative lack of general skills at the bottom end of the labour market and a higher degree of specific sector skills which cater to very special requirements, while the Netherlands is likely to move further towards school-based and general skill-based type of service sector growth.

Our starting point for these considerations is again the preferences of employers for training systems, which are likely to depend on their level of investments into skills. In essence, we argue that the extent to which costs are shared between firms and the state and the way the cost sharing occurs determines firms' preferences in these training institutions. Moreover, we claim that this distinction is important for understanding firms' interests in training and therefore for conceptualizing the trajectories of change of training regimes in the process of deindustrialization.

Our analysis so far has highlighted the ways in which the distribution of VT financing as well as the distribution of control over VT content and skills certification shape employers' institutional preferences in VT. German employers' substantial financial investment in the VT system, and their key role in skill certification provide employers with considerable resources: they have access to the best trainees and can tailor skill certification to their needs. Unions generally ally with employers in defending the structure of the current system because it provides valuable resources for them as organizations: influence on occupational classifications and corresponding wage rates, as well as guarantees in some sectors that trainees be hired after completing their apprenticeship. Therefore the coalition between

employers' and unions' preference regarding the maintenance of the system is likely to continue even in the face of increasing problems in meeting the training needs of low-qualified school-leavers (Hassel 2007). As a consequence, the structure of the German VT system does not emphasize the acquisition of general skills to the extent that the service sector requires. In turn the continuing weakness of independent services are likely to help maintain the dominance of manufacturing firms in political decision-making.

In contrast, the Dutch VT system includes a healthy dose of general skill provision, largely because of the dominance of school-based vocational training. Even though the practical component of the Dutch VT system has increased as a result of recent policy changes, the location of most training in vocational schools more or less guarantees that general skills provision is higher in the Netherlands than in the German workplace-based regime. Thus the Dutch regimes can be seen as a bridge between LME and CME skill regimes, as the Danish system appears to be (see Culpepper and Thelen, forthcoming).

One of the central insights of much CPE research is that national economies do not converge on one model but develop along nationally-distinct trajectories, based on their own comparative advantages. For decades the German vocational training regime was considered to be a vital part of Germany's comparative advantage, and in many ways it still is. However, as we have argued, the German skills regime works well under economic conditions that are more difficult for job creation in the manufacturing sector. The industrial sector has been decreasing for three decades, even if it is still the motor of the economy. Thus a skills regime suited for an industrial economy slows or even hampers adjustment to de-industrialization because it continues to provide specific skills ill-suited to service sector employment, and it relies almost exclusively on firms to invest in skills. In contrast, the Dutch skills regime seems to be in perpetual motion, not necessarily because policy-makers are foresighted, but because it showed cracks earlier than the German system and because no single actor or set of actors dominates the system as in Germany.

7. Conclusions

One of the central issues on the VoC research agenda is mapping and explaining the differences across CMEs. Differences in how CMEs 'organize coordination' have important implications for how CMEs respond to structural economic change. We have argued in this paper that differences in the extent of state involvement in the financing, delivery and regulation of VT shapes the ways in which CMEs respond to deindustrialization. Firm-based VT systems are vulnerable to economic swings and structural economic change whereas

school-based systems with significant financial support from the state are better able to weather conjunctural storms and to adjust to new economic conditions. Moreover, school-based systems have a distinct advantage over firm-based systems in the provision of general skills that are so central to the service economy.

Our comparison of Dutch and German vocational training systems moreover emphasizes institutional stability in Germany and institutional innovation in the Netherlands. Whereas Germany has had the reputation for having established a vocational training system that was the envy of other advanced industrial countries, the Netherlands has continuously tinkered with its hybrid system and not really gotten that much attention. But in the current post-industrial world, the German system may very well be running into increasingly higher costs by holding on to a system that specializes in (high-level) specific skills, while the Dutch mixed-breed system may prove to be much more suited to different kinds of economic specialization and therefore to a post-industrial economy, because it is more flexible. Much political, economic and social capital is invested in Germany's vaunted dual system, but the system seems more suited to an industrial economy than a post-industrial economy. The historical success of the German system and the intense preferences of both unions and employers to maintain it make radical innovation along Dutch lines unlikely.

It would be incorrect to argue that Dutch policy-makers correctly anticipated the needs of the post-industrial economy and reformed their vocational training system accordingly. The Netherlands has always been more of a trading nation than an industrial nation (like Germany), so the apprenticeship system never occupied such a strong position in the political economy as it did in Germany. The dominance of school-based education in the Netherlands also meant that no organized actor 'owned' the vocational training system. To be sure, the state played a key role in financing and regulating general, and later, vocational education, but a formidable 'school lobby' never really emerged that might have blocked innovations like the introduction of required practical (workplace) training.

As we outlined in the beginning, conceptualizing the role of education in general and integrating education systems into the analysis is a necessary further step in the advancement of theorizing along the lines of the VoC approach. Moreover, understanding key differences between CMEs in a crucial field such as human capital formation will help to sharpen the arguments on how employers' and employees' preferences interact in the context of existing economic institutions in particular in the process of economic change. The picture of national economic systems and institutional complementarities between institutions is likely to become more complex as our understanding of these interactions improves. Ultimately it will however

contribute to a more nuanced level of theorizing of economic institutions and institutional change.

Table 1: Varieties of training regimes

	Primary place of vocational training	Primary bearer of costs	Skills specificity	Countries
Liberal Market Economies	Little training in schools	State	General	LMEs
Coordinated market economies	Vocational schools	State	Occupational / academic	Sweden, Norway, Finland
	Mixed	Mixed	Occupational / practical	Netherlands, France, Belgium, Denmark
	Apprenticeships in firms and schools	Firms	Occupational / practical	Germany, Switzerland, Austria
	Firms	Firms	Specific	Japan

Table 2: Vocational training systems, public spending on non-tertiary education, and job tenure

System of vocational training		Public-private ratio of spending on upper secondary and post-secondary non-tertiary education	Public spending on non-tertiary education (share of GDP)	Job tenure (average number of years)
General skill system	Mean	26.3	3.80	4.76
	N	1	6	5
	SD	.	.58	.98
School-based occupational	Mean	11.85	4.27	6.87
	N	4	7	7
	SD	12.30	.54	1.46
Workplace-based occupational	Mean	58.73	3.67	7.87
	N	3	3	3
	SD	49.89	.51	2.49
Firm-based	Mean		2.70	8.30
	N		1	1
	SD		.	.
Total	Mean	27.9	3.89	6.6
	N	8	17	16
	SD	35.3	.62	1.9

Table 3: Estimated distribution of upper secondary students by the main education and training pathways after compulsory education (1996 or closest year in %)

Countries	General education	Apprenticeships	Vocational schools
Australia	94.00	3.00	2.00
Austria	22.00	41.00	37.00
Belgium	32.00	3.00	65.00
Canada	94.00	1.00	5.00
Denmark	42.00	44.00	14.00
Finland	48.00	5.00	47.00
France	46.00	11.00	43.00
Germany	24.00	52.00	24.00
Ireland	80.00	5.00	15.00
Italy	28.00	0.00	72.00
Japan	74.00	0.00	26.00
Netherlands	30.00	23.00	47.00
New Zealand	62.00	8.00	30.00
Norway	48.00	25.00	27.00
Sweden	40.00	0.00	60.00
Switzerland	31.00	60.00	9.00
United Kingdom	43.00	24.00	33.00
United States	88.00	0.00	12.00

Source: OECD 1999, p. 193

Table 4: Employment in manufacturing by training regime

System of vocational training	Mean	N	Standard Deviation
Weak	22.2	6	3.3
vocational colleges	23.2	3	3.0
mixed (college and apprenticeships)	23.6	4	2.1
dual apprenticeships	28.3	3	4.1
company-based training	31.4	2	3.1
Total	24.7	18	4.3

Source: OECD, own calculations.

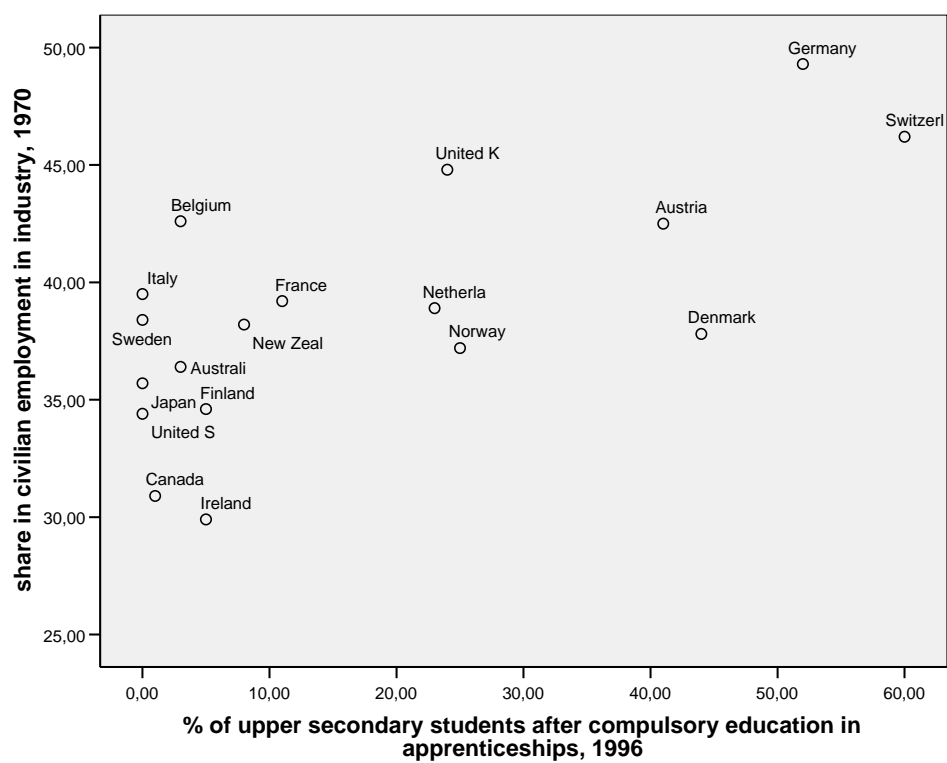
Table 5: Regression Results for Share of Employment in Manufacturing, 2005

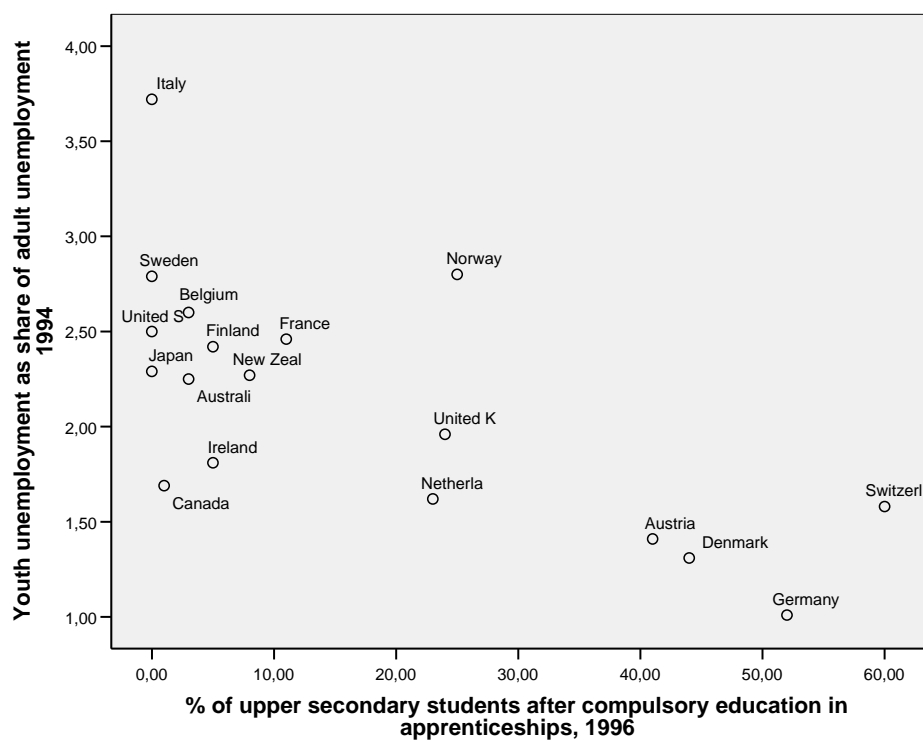
	Employment Share in Manufacturing
Contribution of school-based schooling to training regime	1.99** (2.45)
Public spending on tertiary education (as share of GDP)	-2.28** (-2.11)
Tertiary education (as share of population with tertiary education)	-.18** (-2.25)
Adjusted r-squared	0.69
Number of observations	18

T-scores are in parentheses

** Significance level: <0.05

Source: OECD for employment share in industry, public spending on tertiary education and educational attainment. Contribution of school-based schooling to training regime is an ordinal variable ranging from 1 to 5 based on the classification in table 1.

Graph 1: Training pathways and economic specialization

Graph 2: Training pathways and youth unemployment

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