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Success and Failure in Training Reforms: France and Germany

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AICGS POLICY PAPERS

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Developments in Germany are of interest because of the country's size, location and history. We need to understand public policy in Germany because Germany is a key international partner and because German preferences will continue to be an important ingredient in the formulation of EU policy regimes. Sometimes German solutions to pressing policy concerns are important because they have a "model" character. This is not necessarily a matter of praise or emulation. Indeed, German solutions may be untransferable or undesirable. Nevertheless, the constellation of institutions and practices that makes up Germany's "social market economy" provides the researcher with an unparalleled real time laboratory in organized capitalism. Over a variety of policy issues, comparison with Germany illuminates advantages and disadvantages of options that would not easily come to mind if the German "case" did not exist. Industrial relations, financial institutions, health-care reform, pollution abatement, intergovernmental relations, immigration, and employment training are just a few of the sectors for which a German component might pay high dividends to policy analysis.

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C O N T E N T S

I. INTRODUCTION

This paper assesses the ongoing political reform of the systems of vocational education and training in France and in eastern Germany. The two cases are geographically separated by the one thing which unites their training reforms: western Germany. The new institutions and practices of west German vocational training constitute just one of the many institutional transfers from western Germany which followed German unification in 1990. The French reform effort, of slightly older vintage, was hardly less overt in taking the celebrated German dual system of apprenticeship training as its benchmark when overhauling the system of in-firm initial training in France, beginning with the reforms of 1984 and culminating in the five-year law of 1993.

The comparison will strike many readers as odd. And in what follows, I shall not try to obscure the different nature of the challenges the two countries faced. The reforms converge, though, in a common goal: to establish a system of in-firm training through which private companies in a market environment make substantial investments in the development of skilled labor. Divergent historical and cultural paths of development, different levels of overall investment and industrial modernization, radically different experiences with the market—all these and more affect the exact challenges facing the reform of vocational training in France and in the states of the former German Democratic Republic. It is always so in trying to draw inferences from international comparison. Rather than elaborating the many differences that go uncontrolled in such a quasi-experimental design, I launch straight into a stylization of the problems in each case as these governments have tried to increase the level and quality of in-firm vocational training.

The GDR had an established practice of industrial apprenticeship and shared with western Germany the historical roots of craft training in Germany. Unlike in France, therefore, the primary challenge was not to convince companies and personnel managers that apprenticeship was an attractive way to train highly skilled workers, nor was it to convince youths and their families that apprenticeship training was a viable port of entry to a respected and well-remunerated position in society. These factors, so difficult to put in place in France, were part of eastern Germany's historical heritage, a heritage not fundamentally altered by the nature of training in the GDR.[1]

[1] There are important practical differences between training as it existed in the GDR and in the Federal Republic: notable among these are the duration of apprenticeship (three years in FRG, two in GDR); the distribution of apprenticeships among different types of professions (in the GDR, industrial training was dominant and *Handwerk* training practically non-existent); and the fact that schools were located in plants in the GDR, as opposed to being maintained separately by the *Länder* in the Federal Republic. See Wagner (1997) for a discussion of differences between eastern and western German training before the *Wende*.

What was radically new in eastern German apprenticeship training after 1989—as in many other aspects of life in eastern Germany—was the primacy of the market in the making of company decisions. The introduction of the market economy has dramatically reduced industrial employment in the new federal states, and thus, the need for future skilled labor (Wagner 1997; Carlin and Soskice 1997). Many industrial companies in eastern Germany find themselves placed in severe market competition, a situation in which the guarantee of future skilled labor through apprenticeship can seem an unaffordable luxury.

In France, too, the challenge of in-firm training is to convince a large number of firms to invest in the development of the skills of their workforce through initial in-firm training. Yet the challenge here is not making the decision to invest in a market context, which is nothing new to French companies, but rather deciding to use initial in-firm training at levels both quantitatively and qualitatively superior to those used in the past (cf. Maurice et al. 1986). Quantitatively, the governments that introduced three reform waves of initial training (1984, 1987, and 1993) stated their hope to increase company use of in-firm training in the battle against France's very high youth unemployment (Chamard 1994). In particular, the government wanted to increase the meager participation of large companies in apprenticeship training.[2] Qualitatively, they hoped to increase thereby the supply of skilled workers available to French companies, a constant complaint of those companies over the past two decades (Goasguen 1994).[3] Thus, the goal of recent training reforms

[2] In 1992, for example, fifty percent of the youths in in-firm training contracts in France were employed in companies of fewer than ten employees. Only six percent were in firms with more than 500 employees (Chamard 1994: 3). The weak involvement of large companies in apprenticeship training and similar measures is a common observation in comparisons of the French and German training systems: "[t]he major difference between the two systems rests on the fact that large firms [in France] remain markedly at the margins on these measures of training" (Géhin and Mehaut 1993: 50).

[3] The peak large employers' association has supported this change enthusiastically, arguing that "apprenticeship and **alternance** contracts…rely on a balanced contribution from companies and from training centers toward the acquisition by

in France is to convince firms to move from a model in which apprentices occupy a lowly social and economic position—and do not develop broad, transferable skills—to a pattern in which the companies take on a greater number of trainees than in the past, and train them in a more sophisticated way than in the past.

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young people of skills, *savoir-faire*, and the behavior necessary to the practice of a profession and their integration in the human community of work that is the firm. It is logically the growth of [these contracts] that the companies desire" (CNPF 1993: 147).

The fundamental problem is thus similar between the French and the eastern German cases: to convince firms to invest in sustainable, high-level youth training. In order to find out what companies are doing and why, in 1995 and 1996 I conducted interviews with personnel and training managers from companies in France and eastern Germany. The sample used for this paper includes fifty-two companies[4] from the metal and electronics industries, all of which are members of the chambers of industry and commerce in their respective countries. The information was collected through interviews conducted on plant premises and lasting one to three hours; supplementary information was frequently gathered through follow-up phone calls or documentation supplied by the company. The companies presented in this paper were drawn from the French regions of Rhône-Alpes, Picardy, and Alsace and from the eastern German *Länder* of Saxony and Saxony-Anhalt.

These data allow me to compare training practices of companies in the most important industrial sector in both France and eastern Germany with the benchmark they both seek to emulate: west German apprenticeship training. In the next section, I argue that the institutional heritages of the French and eastern German political economies structure differently the decisions facing companies seeking to acquire skilled workers. The third section summarizes the criteria of western German training that will be used to assess these reforms. In the fourth and fifth sections of the paper, I present the firm-level training data to demonstrate how companies in different size brackets are responding to government attempts to change the training system. The sixth section expands the argument about the importance of exit-options and of pre-existing product market strategies in explaining differences in firm training practices observed between and within the two cases. The conclusion strikes a pessimistic tone for the ease of successfully reforming a training system, but develops in brief the implications of the preceding analysis for policymakers interested in effecting this sort of policy change.

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[4] The sample comprises almost entirely single-plant companies or legally independent (single establishment) companies belonging to a larger industrial group. Four of the largest companies (two in eastern Germany, two in France) have multiple plants for which personnel/training decisions were handled by a single office, and for these cases the data refer to total company employment managed through the single office. Legally separate subsidiaries are not included in the data.

II. THE TRAINING GAME

Because the central conceptual problem of the two training reforms is how to get individual firms to invest in the provision of skills for their workers, we need to focus on the interests of these companies to understand their choices with respect to apprenticeship training. While the reforms analyzed here were pushed by governments, the principal peak associations of employers in both countries also actively pursued the greater collective implication of private companies in youth training. Yet what business wants collectively does not always equate to what individual firms want. This axiom of collective action allows us to add a new twist to the analysis of Becker (1964) and others, which posits that the amount of skills provided by the market will likely be sub-optimal because of problems of poaching and of moral hazard.

I will argue that the structure of the collective action problem facing companies differs according to their (historically developed) product market strategies and the educational systems through which they can procure skilled workers.[5] In France, the prisoners' dilemma is the more likely form of the game, because prior market strategies and the structure of the educational system encourage the use of low-level training for many industrial workers. It is easier in France to use the various options available through the education system to provide firm-specific training without imparting to workers a broader set of skills. Any individual firm faces a high incentive not to invest heavily in training of young people, because its markets are likely to be oriented around this form of

[5] The two variables are interdependent, in that companies develop product market strategies under the constraint of what skills are provided by the social system in which they are situated. Likewise, the educational system produces future workers, and so faces more or less pressure to respond to the needs of companies in the private economy, which must rely on the workers thus trained. A prolonged mis-match between the skills produced by the system and the product market strategies of companies will put pressure on one or the other to change.

production, and because the system of education and training (and the power of the French unions therein) does not force companies to provide general skills while at the same time providing firm-specific upskilling.

In eastern Germany, contrariwise, direct inheritance of the famously rigid dual system of apprenticeship training closes off the possibility for defection that can entice French companies. This much was assured by the legal fiat that imposed the education system of the old Federal Republic on the new eastern states. To the extent that eastern German companies adopt DQP-style methods of production, we would (*ceteris paribus*) expect them to be even more likely to invest in the provision of broad skills for their workforce. The more their product market strategy depends on the acquisition of these skills by their workers, the more they are likely to invest in the development of those skills. As the need for these skills increases for the individual firm, the collective action problem facing it comes to resemble more of an assurance game than a prisoners' dilemma, because defection is a more costly strategy than in France, given the lack of alternatives to the dual system for acquiring skills.

We can stylize the situation thus: to produce goods for a given market, a company demands a certain bundle of skills. Given the demand for this bundle of skills, the company examines the existing possibilities of the educational system, as well as alternative ways of acquiring these skills (such as poaching from other companies or the further training of existing employees). It can either engage the education system for the production of these skills, pursue alternative paths for acquiring them, or not meet its own demand (which presumably entails changes in what it will demand in the future).[6] In light of differences on these two dimensions between eastern Germany and France, we can better understand the dilemmas of individual companies and the problem that faces them collectively.

The strategy of "diversified quality production," on which western German companies have built their export competitiveness, demands the deep, broad skills associated with the German dual system (Streeck 1991).[7] French large firms have not, historically, had access to the dual system, and

[6] Alternatively, a company can also out-source or shift production to a different country, where the available skills mix is more conducive to pursuing the production of a given good.

[7] When talking about systems of production, like DQP, with reference to a whole economy, the claim is obviously not that every firm in the economy organizes production exactly this way. Instead, production regimes are heuristics that underline in ideal-typical form the differences in production between an average group of firms in one society with those in another.

partly as a result have developed strategies based on different skill requirements than those of their German counterparts (Maurice et al. 1986; Géhin and Mehaut 1993). As opposed to DQP, large French firms have developed along the lines of what Boyer (1987) has called "flexible mass production." Such a system of production puts the onus of flexible responses to changes in demand less on a broadly skilled manual workforce and more on technicians and mid-level management (Regini 1995; Hancké and Soskice 1996). As we will see in the empirical sections, the historical development of these ideal typical product market strategies has influenced the way that large firms in the two countries respond to the current training reforms.

There is an ongoing debate about how the organizational innovations associated with lean production are affected by the traditional dual system model. See the contributions by Herrigel and by Finegold and Wagner in the volume edited by Culpepper and Finegold, *The German Skills Machine*, which is forthcoming from Berghahn Books.

The other structuring difference between the two countries is the system of vocational education and training, and in particular the options for in-firm initial training. The German dual system has only apprenticeship regulations, whose procedures for updating and changing qualifications are standardized. If a company wants to train, it must do so under an approved qualification, and be certified by the relevant chamber (e.g., industry and commerce) to dispense training in that profession. France gives companies the choice of apprenticeship qualifications or professional qualifications through the *contrat de qualification*.[8] Each of the French programs has associated procedures for changing qualifications and for ensuring that companies have the capacity to deliver that training. Yet these procedures differ from those in Germany in ways that can be important for training behavior.

To institute a change the German metal-working professions—either to update an existing certification or to introduce an entirely new one—requires approval by a board of experts nominated in equal numbers by the IG Metall union and by the Gesamtmetall employers' association.[9] A representative of the employers' association characterizes the typical lines of divergence between the two in the following way: the union wants to ensure maximal breadth of the skill qualification

[8] French companies also have the option of hiring youth who have been trained through the school-based vocational training system, which in France accounts for more students each year than apprenticeship and the CQ combined (Comité de Coordination 1996b: 72-73). French companies have long expressed their disdain for the school-based track as being far-removed from their needs of production. However, when combined with the existence of the developed system of further training in France, this track presents a further alternative for training companies. This theme is important, and I will return to it in the conclusions, but note that it only exacerbates the problems recounted above by giving companies yet another exit option from high investments devoted to in-firm training contracts.

[9] The procedure is similar for all other professions, but in the metal professions the degree of autonomy enjoyed by Gesamtmetall and the IG Metall within their respective federations gives them *de facto* the ability to push changes through without the input of the umbrella federations (the BDA and DGB, respectively). This difference has no practical importance for the point being illustrated.

(transferability), whereas the employers want to ensure the maximal specificity of the skill qualification for that particular profession (interviews, Gesamtmetall, BDA). Not under dispute is that this qualification should enhance the technical skills of the worker on the shopfloor.

This process is laborious and is sometimes decried by firms as being too slow to adjust to new methods or areas of production.[10] However, there is no alternative mode of initial qualification to which individual German firms can turn. If a firm wishes to train apprentices and remain in Germany, it has no exit option: it must either refuse to train at all (which may limit severely its ability to get skilled workers) or it must train under the existing apprenticeship qualifications. Lacking exit, the German company may of course use voice by lobbying for changes in the professions. But the bottom line is, if a firm in Germany wants to train apprentices, it must train them in one of the approved professions.

A French firm that wants to train in an in-firm youth training contract may choose between the apprenticeship and the qualification contracts. An actor that is largely absent in Germany (due to federalism) dominates French apprenticeship: the national ministry of education. Attached to the ministry of education are parity boards (CPCs) which bring together sectoral representatives of the professional world **in a consultative role only** (d'Iribarne and Lemaître 1987). Unlike in Germany, these groups have no decision-making power. Thus, whereas in Germany the content of apprenticeship qualifications is determined by negotiations between employers and employees, and consequently depends on debates among experts on the qualifications for the *Facharbeiter*, the role of the professions in French apprenticeship is far more limited (cf. Jobert and Tallard 1995). The dominant voice in French apprenticeship is an education ministry which, historically, has been more

[10] Firms are of course free to tailor their courses to **more demanding** standards (e.g., some of the European or TÜV standards). However, they must meet the minimal breadth and depth requirements laid down by the formal training regulations.

concerned with the functions of the general education of French citizens than with their training as skilled workers.

The lack of real power accorded to the French social partners in apprenticeship decision-making was one of the factors which led to the development of the youth **alternance** contracts in the early 1980s, most notably the *contrat de qualification*. In the metal and electronics sector[11], the definition of the content of the qualifications awarded at the end of the process, the CQPM (*certificat de qualification professionnelle de la métallurgie*), is dominated from start to finish by the metal employers' association, the UIMM. The CQPM qualifications are designed by companies and technical experts associated with the UIMM, sometimes in (informal) consultation with local representatives of the educational ministry. There is no set duration to the CQPM; it may last from six months to two years. In theory, the CQPM must be ratified by a collective agreement signed by at least one of the representative unions, but "in practice this negotiation is not systematically understood by all the sectors as a procedure to be realized simultaneously with the construction of the *référent* [qualification]. This [delay of the approval by collective agreement] can sometimes **take up to several years**" (Charraud 1995: 124; emphasis added). Rather than being a product of arduous negotiations between the experts of the unions and the employers' association, the CQPM is usually a product of experts primarily associated with the employers, which is only later presented to the unions for ratification.

This system of qualification has proved more amenable to control by the French social partners, and is obviously much closer to the "economic world" than is the apprenticeship system, dominated by the French education ministry. It also confers on firms with good access to the employers' association a flexibility and rapidity of innovation in qualifications that is absent from the German system. However, the balance of power between employers and unions in the definition of the CQPM is quite likely to result in a firm-specific training qualification, without a much wider transferability of those skills (cf. Charraud et al. 1996).[12] The existence of CQs thus give some

[11] There are three possible ways of determining a validation of a training course through a *contrat de qualification*. Above I discuss only the method used in the metal and electronics branch, as that is the relevant one for this paper. See Charraud (1995) for a comparative discussion of the three approaches.

[12] For this reason, some firms in my French sample reported that the use of *contrats de qualification* was distrusted by their workforce, seen as a source for replacing workers rather than for legitimately training future workers.

French firms a legitimate, plausible exit option (from apprenticeship) when considering the possibilities for youth in-firm training.

To summarize this difference, recall Becker's distinction between general and firm-specific human capital (1964): the German system of apprenticeship combines these characteristics in a skilled worker qualification, such that firms must invest in some of the costs of general training in order to get the specific qualifications they need; in France, the twin system of in-firm youth training contracts does not marry the relevance of qualifications (for employers) with the breadth of skills acquired (by the trainees).

These differences have direct implications for the decisional calculus facing individual companies. If we take an "average" French industrial company, the odds are that the company has aimed itself at product market niches where the organization of production along "flexible Fordist" lines will be competitive. If we assume that the company is using increasingly sophisticated machinery, and so has greater technical needs than in the past, or that the company is implementing more team-based production methods, thereby calling for a higher "social competence" of the worker than in the past, then the company (if it is of decent size) is probably pushing the employers' association to increase the availability of highly skilled workers. However, this does not automatically imply that the company will itself utilize the new training measures, which are actively supported by its own association. The company may have a political interest in improving the general supply of skilled workers, but it will not automatically train young people using the new system if doing so would not be in line with the immediate interests of the company.

In theory, then, the collective action problem of training will be more difficult to solve in France than in eastern Germany. But the argument laid out here holds only inasmuch as the rigidity of the dual system constrains employers from pursuing alternative methods of finding skilled workers. Having a labor market flooded with lots of skilled workers, made redundant by the closing of their old companies, would certainly provide one way to get around this problem. And the propensity to follow a DQP production profile is not automatically one that will be chosen by eastern German companies. Yet concentrating on these two variables will allow us better to grasp the nature of the "game" facing individual companies in search of skilled labor.

III. GERMAN APPRENTICESHIP TRAINING AS AN INVESTMENT

Both firms and potential apprentices have to invest in the training relationship. The former invests money in an apprentice's skills, the latter invests time in developing those skills, while being paid a relatively low wage. If all the actors in this game can be persuaded to cooperate without defecting, then the way is open for the establishment of a "high-skill equilibrium," a situation in which the majority of firms in broad sectoral swathes of the economy invest substantially in the training of their workers, while the apprentices themselves have acquired the requisite general qualifications and are willing to accept apprenticeship wages in return for the development of skills that will yield them a significantly higher return over the life cycle. For both eastern Germany and France, the attractions of the "high-skill equilibrium" are attractive. What is not so obvious is how to establish a new training system such that the participants believe they will get to the win-win situation of the high-skill equilibrium without being duped.

I take as central to the success of reform of both systems the key characteristic of the dual system in the former West Germany: that firms themselves are willing to bear the cost of training. Methodologically, it is quite difficult to assess the net investment that employers make in training, but scholars have made fairly sophisticated estimates of training costs and benefits in western Germany. Two of the results of this research are especially relevant for the problem of measurement in assessing training reforms: first, that the net costs to the company of training in the crafts sector are negligible; and second, that small companies on average invest a much lower amount per trainee than do large firms (see von Bardeleben et al.1995 and Wagner 1997).

For all firms, the cost of training includes wages and social contributions for apprentices, the cost of employing extra trainers (or the opportunity cost lost by having skilled workers supervise trainees), necessary equipment and instructional materials, and miscellaneous administrative costs. The sum of these annual costs (including the wages of trainers) averaged close to 32,000 DM for IHK firms and 25,000 DM for Hwk firms in western Germany in 1991 (Von Bardeleben et al 1995: 7-8). Yet these gross costs are deceptive for two reasons. First, depending on how early and to what extent they are integrated into the work process, the labor of apprentices also brings some benefits for the firm. They may be doing a job less well than a fully-skilled worker, but they are also getting paid less than a skilled worker. Second, the real costs of hiring a trainer depend on how much time (and when) a trainer is training. For example, in the training workshops of large industrial firms, there may be an *Ausbildungsleiter* whose only job is to supervise the apprentices in the workshop; this trainer is doing almost nothing but training. This case contrasts sharply with that of a skilled

worker who has an apprentice under his wing in the work process, but who is also doing his own job. He may well be able to spend his time giving intensive instruction to the apprentice during times of slack demand, that is, when he does not have much else to do anyway (Soskice 1994).

Such considerations are not equally pertinent for all German firms. In particular, the size of a firm and whether or not it belongs to the Industrial or the Crafts Chamber affect the "net" costs of training. In general, the larger the firm, the more likely it is to have full-time trainers and a workshop area dedicated exclusively to the training of apprentices. The German Federal Institute of Vocational Training's study of the cost of training to firms controls these effects in accounting explicitly both for the benefit to the firm of work performed by the apprentice and for the fact that many "trainers" are in fact skilled workers who would work for the firm whether or not it were training, using data provided by 1370 training firms for the year 1991. Thus calculated, the net cost of training for the smallest German firms in 1991 was 1,647 DM, or twelve percent of the total cost of training for firms of this size (13,868 DM).

In contrast, the total cost of training was over twice as high for firms having over 500 employees (28,197 DM), and *the net cost (17,886 DM) for these larger firms makes up over sixty percent of this (higher) total cost* (Von Bardeleben et al 1995: 16). Similarly, as a result of lower average training wages in *Handwerk*, and the fact that *Handwerk* apprentices are integrated more quickly into the workforce and bring a higher level of productivity at an earlier stage than their counterparts in industry, the net cost of training for firms in the craft chambers (Hwk) is significantly lower than for firms in the chambers of industry and commerce (IHK). Thus, the same BiBB figures for 1991 reveal that, of an adjusted total training cost to IHK firms of 20,508 DM, the net cost to the firm is 9,193 DM (just under half the total); yet of a lower adjusted total cost to Handwerk firms of 12,936 DM, *the net cost to firms is only 400 DM* (three percent of total cost) (Von Bardeleben et al 1995: 15).[13]

Since *Handwerk* firms are on average smaller than industrial firms, there is a great deal of multicollinearity between the effects of firm size and the effects of being an industry or crafts firm.

[13] These "adjusted total costs" are lower than the total costs reported for IHK and Hwk firms in the previous paragraph because they do not include some of the wage costs of "training personnel," who in fact have other jobs in the firm.

There is unfortunately very little empirical work on this subject, aside from that already cited, so the exact contributions of the two factors remain unclear; both seem to make a significant difference in the cost of training to firms.

In effect, as argued in Soskice (1994), there are two sectors in the German training system: one comprising *Handwerk* firms and one made-up of IHK firms.[14] For many *Handwerk* firms there is no reason to worry about losing money by investing in the training of a worker who then absconds with her newly acquired skills to a competing firm; the net investment of the firm is often very close to zero. We should then expect that there is a more concerted effort by the IHK than by the Hwk firms to retain their apprentices after training them. And in fact, the retention rate of German small firms (predominantly *Handwerk*, although we lack precise numbers here) is much lower than that in larger firms, where the firm invests significantly more in the training per worker. Thus the retention rate of all western German firms with less than 50 workers is around .62, while the retention rate of firms having more than 500 workers is about .85 (Büchtemann 1989 cited in Soskice 1994: 37)[15]. Small firms thus retain on average six of every ten workers they train; large firms retain eight or nine of every ten they train. Small wonder, given the differential costs of the initial investment.

It is relatively unproblematic for a government to transfer a system of training regulations to a new environment when that system costs the firms very little. The difficulties associated with the transfer of the training system will be most severe for the IHK firms, but also potentially the most fruitful. For it is in the training patterns of IHK firms that we can observe the ideal-typical game in which the firm has to be willing to make the uncovered investment in the training of a skilled worker in order for both to be able to reap the pay-off of the "high-skill equilibrium."

I use two measures to assess the degree to which eastern German and French training practices approximate to this stylized model of western German training: the ratio of apprentices/total workforce, and the rate of retention of apprentices after their training. Both are

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[14] David Soskice has influenced my thinking on this point, and the above paragraph relies largely on the account developed in Soskice 1994. In the real world, there is obviously a much less clean bifurcation of types of firm training: some firms (including some in my sample) train in both Hwk and IHK job classifications, and the generalizations about the costs of training are obviously aggregate averages which will vary considerably from one firm to another—or even within one firm. There are small firms in the *Handwerk* sector where training is expensive and thorough, and larger IHK firms where the level of training is quite low.

[15] However, compare the discussion in Harhoff and Kane (1996: 12), in which the authors present data showing that, even in industrial firms with more than 1000 workers, "50 percent of those completing apprenticeships leave the firm where they were trained within 5 years."

indirect indicators of the investment of a firm in training. Since IHK firms pay a lot more per apprentice than do craft firms, it is logical that they retain a much higher percentage of those they train.[16] They want to hire almost all the trainees in whom they have invested and do not want to make this substantial investment in someone whom they are not planning to hire. *Handwerk* firms, on the other hand, lose little if anything in hiring apprentices and will therefore maintain (on average) higher rates of apprentices in relation to their total employment than the IHK firms, since they are going to let go a higher percentage after the training is completed.

[16] A large number of eastern German companies, which had only very recently started training again when I conducted my interviews in 1995-96, therefore had no data on retention. Moreover, as a social measure, many of the eastern German companies that did train during the early 1990s allowed their current apprentices to finish their training, in spite of large reductions in other parts of their workforce that reduced the availability of jobs for the apprentices after their training. Thus, some of the retention data that is available for 1995 reflects the decimation of employment several years earlier. I have retention rates from only a few eastern German companies, which I use in the discussion of particular cases in the text; however, given the paucity of data points, I do not present average retention rates for eastern Germany in the tables.

The correlate of this logic is that IHK firms will maintain a lower ratio of apprentices to total employees than do Hwk firms. In western Germany, the ratio considered by industrial firms and training experts in the metal and electronics industry as that necessary to maintain the level of skilled workers is about six percent. That is, on average industrial firms need to train six apprentices per 100 total skilled workers to fill the gaps left by skilled workers moving on (to other firms), moving up (to management positions), or moving out (to retirement).[17] In craft firms the rate is on average much higher (in excess of ten percent, although this figure varies). Thus, in presenting the data on the ratio of apprentices to total employment, I consider that industrial firms in eastern Germany and in France are indeed training at the levels comparable to IHK firms in western Germany when the ratio is within the margin of error of ± two percent around the average of six percent.[18] Those firms training above this level, unless they are growing at a phenomenal rate, are training more workers than they will need to replace their workforce; those training below this level are shrinking or are not investing at a sufficiently high level to be able to replace the skilled workers lost to natural attrition. Either case represents a divergence of training patterns from those which maintain the dual system in the western Germany.

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[17] This figure is uncontroversial and was cited to me by a number of people familiar with training in the industrial firms (in the employer's associations, in the IHK, in firms themselves, and by academics). The former head of training for the French metal employers says the association would eventually like to see a ratio of apprentices/workforce of 4-5 percent. So, in using this measure to assess the patterns of training of firms in my sample, I use a margin of error of ±2 percent, since the six percent is approximate.

[18] Because industrial company data are those most important for trying to establish that firms are investing in in-firm initial training, I concentrated on firms in this sector in structuring the comparison between France and eastern Germany. However, my firm sample in Germany, east and west, did include several *Handwerk* companies, whose training practices were very much in line with the two-sector discussion presented above. The present paper presents only data from firms currently belonging to the chambers of industry and commerce in the two countries.

IV. EASTERN GERMAN TRAINING: LARGE FIRMS IN THE LEAD

The standards of the dual system have been transferred inflexibly to the new federal states of eastern Germany. Evidence from my sample of twenty-four industrial companies in eastern Germany demonstrates that how company training practices have responded to these changes differs according the size of the firm in question. They all face, to varying degrees, a common pressure: lacking any alternative system for procuring skilled workers, firms encounter increasing pressure to rejuvenate their workforces and preserve the skill base of their firm by taking on new apprentices. Yet the rigidity and breadth of the qualifications associated with the dual system presents many companies with challenges in using the apprenticeship system to meet their needs. Large companies, relying on their ownership links to parent corporations in western Germany, have led the push toward the high-skill equilibrium in eastern Germany. Companies in the *Mittelstand* depend on subsidies to underwrite their training activities, as they find the breadth of demands imposed by the training regulations in the metal and electronics industry to be a heavy burden. Small companies, too, feel the pinch of these regulations, but because of their relative lack of resources, they are least likely to be able to adopt apprentices and train them to western German standards.

Large Firms

The five companies in my sample with more than 500 employees all maintain a ratio of apprentices to the total workforce well above the floor of the western German "target range" for sustainable training (see Table 1). One of the companies actually trains well above the western German target range, with an apprenticeship/employment proportion of twelve percent. This company is part of a well-known western German conglomerate that is one of the paragons of virtuous dual training in the west. Between 1992 and 1995, after calculating its own 'need' for apprentices, the company hired one hundred **extra** apprentices (that is, above the calculated need for replacing their skilled workers) per year in eastern Germany, because of the lack of in-firm training places available to eastern German youth.[19] Without these extra (politically motivated) places, then, this firm would also be training in the target range.

[19] As one of the most prominent German corporations, it is safe to conclude that the company faced very intense political pressure to take extra apprentices in the gutted eastern German youth labor market. The company certainly derives a public relations windfall from the extra training, and it makes this extra commitment very public in company literature about its

Table 1: Eastern German Firms with employees>=500

Firm	Training Ratio	Ownership
LG1	7.0%	th
LG2	8.0%	w
LG3	4.6%	w
LG4	5.4%	w
LG5	12.0%	w

Source: interviews conducted in 1995 and 1996 in France and Germany. All companies presented here are members of the chambers of industry and commerce.
Ownership key: w: owned by western German firm; th: owned by Treuhand successor organization; int: owned by international (non-German) firm; i : independently owned eastern German firm; h: former* Handwerk *cooperative, with cooperative private ownership.

training program.

There is a difference of training strategy between the three larger firms and the two smaller one. The three largest firms train for different markets—engineering, consumer electronics, machinery—but all train and retain at high levels. Along with the largest company, another member of this elite group said that it had taken on extra apprentices in 1992 at the behest of the local IHK, when the crisis of the local labor market was particularly acute. As a result, the firm only retained sixty-nine percent of its trainees in 1995 (when those who entered in 1992 finished), although all passed the final tests. However, a company representative noted that this outcome was unusual, saying the company normally retained all its trainees who had finished, and that the company tried not to take on more apprentices than it would need.[20] For these three companies, apprenticeship training is an investment in future skilled workers, and only in exceptional cases are trainees who pass the final exam of the IHK not retained. In cases where the companies do train beyond their own projected skills needs, it is specifically as a political action, to respond to weaknesses in the local labor market.

Moreover, all three of these companies train in partnership with smaller companies that lack the machinery and/or personnel to train their own apprentices according to the broad requirements of the IHK training regulations. None receives subsidy support for its own training program, nor does any of the three receive direct public support to participate in partnership training schemes (although they are reimbursed for administrative costs). These three companies, owned by western German conglomerates, are model citizens of the new market world of eastern German training.

The other two large firms, which also train in the target range, both claim to be training at least somewhat beyond their need for future skilled labor. Both are involved in steel production, although with different levels of product differentiation. One company retained only sixty-four percent of its finishing apprentices in 1995, and the chief of apprenticeship there noted that training slightly above need increases pressure on apprentices to work hard, since all are not likely to be hired. What is interesting about this company, in comparison with the French firms we will examine below, is that apprenticeship nevertheless remains the overwhelming qualification path in the firm: eighty-two

[20] The local IHK representative in fact lamented that the company, which has a high profile in the local economy, did not regularly train above need.

percent of the people working in the firm received their apprenticeship training there. Even for an eastern German firm not at the leading edge of industrial technology, apprenticeship proves to be the dominant mode of skill acquisition.

The final large firm, which is the only one not owned by a western German parent corporation, was still owned by the successor to the *Treuhand* in 1995. This company was in fact training far above its own future need for workers and was doing so only because its training was subsidized and encouraged by the *Treuhand*. It hired none of its apprentices who finished their training in 1995 and voiced no plans to retain any of its younger apprentices when they finished their training. Anticipating further lay-offs in order to make the company an attractive privatization candidate, the appearance of this company in the "target range" is a spurious reading; the firm is neither investing in the training of apprentices nor planning to use them as future workers. This case suggests caution in using the western German "target range" to classify those firms training at high level implies some methodological dangers, as the target range may not go hand in hand with a policy of very high retention.

Nevertheless, the criterion of the training ratio underscores that the large firms in the eastern German sample that are owned by western German corporations do in fact train at levels associated with the high-skill equilibrium. Ownership by a western German company may entail certain attributes which make these firms more likely than others to train.[21] As argued by Carlin and Mayer (1995), the collateral and reputational effects that east German firms gain by having western ownership structure can greatly ease their access to long-term finance. The importance of such access to finance would certainly conform to arguments about the importance of long-term finance in sustaining the "high-skill equilibrium" (Soskice 1990b, 1994; Finegold and Soskice 1988). However, it could also be that west German companies, with both access to capital and inside information about eastern German industry, acquired the best companies, in which case the training practices of these companies may be less tied to their ownership by west German companies than to their own rosy future prospects. There is not enough evidence here to draw a strong causal inference about the relationship

[21] In comparison, the *Treuhand* companies in my sample train at wildly differing levels. Due to the uncertainty over their future ownership structure, these firms have difficulty planning current investment in youth training on the basis of a possible future need for skilled workers. Their training at high quantitative levels may not correlate with plans to hire the apprentices after their training.

of ownership to western German style training practices, but the strong association between the two factors merits further study.

(Subsidized) Training in the *Mittelstand*[22]

Eight of the ten companies in the sample with between 150 and 500 employees receive subsidies, of one form or another, to train apprentices. Despite this aid, these companies still maintain a lower training ratio (apprentices/workforce) than large firms in eastern Germany. As it turns out, some subsidies seem better able than others to respond to the needs of firms in this size bracket that want to begin apprenticeship training. Direct subsidies, though, are anathema to the principle of firm responsibility for the in-firm costs of training that is dominant in the west, and their widespread use in eastern Germany could potentially dilute the extent to which firms invest in the development of human capital through apprenticeship. I return to this theme below.

[22] Defined here by employment of between 150 and 500 workers.

Table 2[23] demonstrates that only one of the seven privately-owned *Mittelstand* companies is training in the western German target range. For two more, 1995 was the first year in which they had begun training again since the *Wende*. If they reach a full complement of apprentices (that is, having trainees in the first through fourth years)—and both planned to take on new trainees in the upcoming years[24]—they will be at or even above the target western German range. Two firms, which were already training below the target range, planned to further reduce or phase out apprenticeship entirely. One of these companies, now owned by a British corporation, claimed that a central decision had been made that apprenticeship no longer fit with the skill production strategy of the firm. The other, smaller company was owned by a western German firm, and was located in a labor market characterized by unusually high official unemployment (over twenty percent). This company reported that it was able to find sufficient skilled workers on the local labor market, because so many trained people in the metal professions were unemployed[25] (Culpepper 1996b).

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[23] One company in table 2 has a training ratio of 46.5 percent, meaning that almost one of two employees of this company is an apprentice. This bizarre case is of course heavily subsidized, and the situation results from the break-up of a much larger former *Kombinat* into several different companies. The one company depicted here took on all the former apprentices still under contract at the old *Kombinat* and received direct EU and state government to support the cost of this training until these apprentices finish their training. Since the case is so unusual, I exclude it from the average calculated for the rest of the companies in this size range.

[24] The *Berufsbildungsbericht* (1996: 41-43) notes that firms are often cautious when expressing in surveys their projected need for trainees, and that in 1995 the actual number of apprenticeship contracts exceeded by a considerable margin those projected by a BIBB survey of the same year. It is not clear whether or not the same dynamic would hold in a face-to-face interview, but absent evidence to the contrary, there is no reason to believe that these companies are likely to over-state their likelihood of training in the future.

[25] In the two years prior to the interview in the fall of 1995, this firm had hired forty workers directly off the labor market

Table 2: Eastern German Firms with 150-500 employees

Firm	Training Ratio	Ownership
MG0	46.5%	l
MG1	2.2%	w
MG2	1.6%	w
MG3	1.5%	w
MG4	14.0%	th
MG5	14.0%	th
MG6	2.9%	w
MG7	2.3%	th
MG8	6.2%	w
MG9	2.2%	int

but only three of its own apprentices. A large industrial *Kombinat* in the area closed down in 1994, accounting for much of the glut on the labor market.

Turning to the publicly-owned companies, the high training ratios of two of the three *Treuhand* firms are eye-catching. One of these firms received from the *Treuhand* 25,000 DM per apprentice per year for more than half of its apprentices (guaranteed for three years). This aid, which is by far the most generous subsidy available for in-firm apprenticeship training in eastern Germany, is used to finance the hiring of apprentices beyond the 'need' of the company; a need, which, given the uncertainty of the company's ownership status, is currently difficult to estimate. The second firm training at an excess level (by western German standards) claimed to be training to need, and had not therefore taken the available aid for extra places; this company had retained seventy-eight percent of those apprentices who finished their training in 1995.[26] Knowledge of these subsidies is not widespread; in fact, the personnel chief at the third *Treuhand* firm in the size range claimed to have no knowledge of the existence of *Treuhand* aid, lamenting the firm's inability to train more. Because the future ownership situation of these firms was unclear at the time of interview, my interlocutors at the companies did not portray this subsidized training as part of any long-term strategy to guarantee future skilled labor.

[26] While this firm took no *Treuhand* aid, it had been able to get 170,000 DM in subsidies from the state government of Saxony-Anhalt for "equipment," subsidies which are tied to the number of trainees. This works out to over 6000 DM per apprentice trained.

Although the federal government refuses to provide direct subsidies for in-firm training places,[27] governments in the new *Länder*, regardless of their political complexion, have not felt constrained by this principle. All five of the new *Land* governments and that of Berlin have developed subsidy programs for in-firm training places, based on various criteria such as creating "supplementary" places (those places offered by firms, even though they foresee no need for the future labor) or creating places for especially disadvantaged groups (e.g., women in technical professions). In 1995, almost 60,000 in-firm apprenticeship places in eastern Germany were supported by some of this public money; thus, more than half the new in-firm places in the new federal states in 1995 were publicly subsidized (BMBW 1996: 6). Yet devoting all that money to in-firm training has not led to good results everywhere: many firms continue to train not at all or at levels below those characteristic of the west. The results presented in this section suggest that only privately owned *Mittelstand* firms in Saxony—not *Treuhand* firms, and not *Mittelstand* firms in Saxony-Anhalt—have used subsidies to begin training at levels consistent with the high-skill equilibrium in western Germany.

The reason lies in the different design of subsidies in Saxony (for a fuller discussion of the Saxon policy and its development, see Culpepper 1996a and b). The Saxon government in 1995 introduced a program for sponsoring training alliances among companies that lack the "organizational and technical prerequisites" necessary to hire an apprentice in a so-called *Ausbildungsverbund* (SSWA 1995).[28] This policy recognizes that the broad standards set by German training regulations,

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[27] The *Treuhand* aid described above could be construed as an exception to the policy of the federal government not to pay directly for the costs of in-firm training. Leaving aside the important technicality the THA and its successors are independent agencies, aid funneled through the THA is opaque, and not easily monitored by the federal government.

[28] The program aims to help the smaller companies that are most likely to need help to be able to meet the requirements of German training regulations, and it thus limits aid to companies with less than 500 employees. Larger companies can participate as the training center for the partnership, but they are only reimbursed for the organizational costs entailed in this role.

particularly in the first year of an apprenticeship in the metal professions, require access to machinery that many smaller companies do not possess. While in the states of western Germany, many IHKs provide out-of-firm training centers that give smaller firms access to a broader range of machinery than they themselves have, such a network of out-of-firm technical centers has not yet developed in eastern Germany. The *Verbund* mimics this function by giving companies in the *Mittelstand* access to the machinery and use of other (larger) company trainers that can allow them to fulfill those IHK requirements.

The amount of money given by the subsidy does not explain the success of the *Verbund* program. The aid supplied by the program is certainly generous, but it is less then 1/6 of the amount given to the THA firm discussed above (MG4 in Table 2). Likewise, Saxony-Anhalt subsidized the creation of more apprenticeship places per capita than did the Saxon government in 1995 (BMBW 1996: 195). Rather than depending on the amount of the subsidy, the success of the *Verbund* lies in the fact that it eases the practical difficulties of apprenticeship training for smaller firms without exempting them from the rigorous breadth of the skill requirements demanded by the training regulations of the dual system.[29]

It remains to be seen whether the subsidies given to eastern German companies will indeed be withdrawn as the economic situation there improves, or whether instead a mentality of subsidy-dependence is developing. The dependence of companies in the eastern German *Mittelstand* on subsidies to support apprenticeship represents a sharp contrast with western German practice and a break with the foundation of the dual system: company responsibility for the costs of in-firm training. Among these subsidies, though, the *Verbund* policy of Saxony is alone in having spurred companies to begin training in a pattern consistent with western German training practice.

Small and Medium-Size Firms (SMEs)

The bleakness of the apprenticeship market in eastern Germany is especially apparent in table 3, which shows the situation of firms in my sample having fewer than 150 employees. Only one-fifth of these companies are training apprentices at all. The obstacles that hinder firms in the *Mittelstand* from training are more daunting still to small industrial companies in the new federal states. The non-

[29] A BiBB survey finds that one-third of companies currently training across eastern Germany name training in a *Verbund* as a condition that would allow them to increase their level of training (BMBW 1996: 10).

training small firms cite two principal reasons for not training apprentices. First, five of six report an abundant supply of the skills they need on the external labor market as the reason they had not yet chosen to train apprentices. Second, three of the six cited lack of a qualified trainer, or inability to spare a worker to supervise an apprentice, as the reason they had not trained.[30] Moreover, all answered that there was no subsidy program which could convince them to train, suggesting that cost is not the principal obstacle to training for firms in this size range.

Table 3: Eastern German Firms with <150 employees

Firm	Training Ratio	Ownership
SG1	0.0%	th
SG2	0.0%	l
SG3	0.0%	w
SG5	0.0%	l
SG6	0.0%	l
SG7	1.6%	int
SG8	0.0%	w
SG9	15.1%	h

[30] In an earlier, larger survey of non-training firms in the new federal states, von Bardeleben (1993: 49) found availability of skilled labor as the most frequently cited reason for not training, chosen by one-third of firms. In a later round of the panel (1993-94), the non-training companies citing easy supply of skilled labor was cut in half, named by only seventeen percent as their ground for not training (von Bardeleben 1995: 84-85).

The two exceptional cases in this size bracket—firms that do train—underscore the probable inability of subsidies to solve the problems of eastern German SMEs: neither of these companies receives any subsidies to train apprentices. The one company that maintains a high ratio of apprentices/workers (over fifteen percent) in 1995 retained none of its trainees. This firm, which in the GDR fell under the *Handwerk* property law, conforms more closely to the artisanal model discussed in section III, in which firms train at a higher proportion of workforce, retain a much lower proportion of their trainees, and have very low or zero net training costs, when compared with IHK firms.[31] The second training company among the SMEs was growing and had invested substantially in the development of new plant. Owned by an international parent company and producing goods for export to the advanced industrial countries, the only reason this company's training does not land in the target range is because it has been unable to find the qualified apprentices it seeks.[32] This company paradoxically behaves more like the large companies (or some of the small French companies) in the sample, with its ownership links to a parent company permitting serious investment in new machinery; difficulties in attracting skilled labor also characterize the large eastern German

[31] There were several *Handwerk* firms in my eastern German sample, which I exclude from this presentation for the sake of direct comparability with the French firms (all of which belong to the industrial chamber). However, the *Handwerk* firms in the German sample have training ratios which conform to the predictions of the Soskice model: those which trained had an average training ratio of 14.5 percent. The newly declared IHK firm discussed above thus fits squarely in the *Handwerk* training pattern.

[32] Located in a small town near the border with the Czech Republic, the company's manager put down his problems to attracting skilled workers to the location's distance from the large cities.

companies. While an attractive model, this company has little in common with the other eastern German SMEs.

Surveys by the German Federal Institute for Vocational Training, while not specific to the metal and electronics industry, confirm that small companies in eastern Germany find it especially difficult to train apprentices according to western German standards (von Bardeleben 1995). These surveys yield some contradictory results with respect to why these companies do not train, and whether subsidies can solve those problems. Von Bardeleben's survey of non-training firms 1993-94 found that only sixteen percent gave "apprenticeship too expensive" as their reason for not training, an answer given less frequently than "inability to fulfill training regulations" or "no time" (1995: 84-85). However, two-thirds of them named "financial aid" as the measure most likely to entice them to train more.[33] Be that as it may, the experience of SMEs in this sample rejects the idea that the mere introduction of indiscriminate subsidies would suffice to enable them to train apprentices.

V. FRENCH TRAINING: A SMALL FIRM RENAISSANCE?

This section lays out the broad patterns of in-firm youth training in French companies, using the same size categories familiar from the previous section. One of the prime objectives stated in debates around the French reforms was to increase the use of the youth training contracts by large firms. While, quantitatively, the number of apprenticeship and qualification contracts in companies of more than ten people are creeping upwards (DARES 1996), the data I gathered from twenty-nine industrial companies in France suggests this reform has thus far been a qualitative failure. Large companies in France do not carry the same training load as their eastern German counterparts and retain few of those they train. Companies in the medium size range between 150 and 500 employees do somewhat better in terms of training ratios, but their rates of retention are far below those we should expect for firms making a high net investment in youth training. Small firms, though, are as a group relatively more involved in using in-firm youth training contracts than is true in eastern Germany. Even more striking are both the level and quality of training in SMEs in the French sector

[33] Von Bardeleben also questions this result, saying that "it shows only that many firms in the new federal states, as a result of their lack of economic experience with in-firm training and the lack of a longer-term apprenticeship culture, do not at all see the middle- and long-term advantages of apprenticeship training." (1995: 86)

known as bar-turning, which represents one of the few bright spots on the in-firm training landscape in France.

Large Firms

Table 4 depicts the training practices of the nine French companies in the sample that have employment of at least 500. Only one of these companies trains in the target range, and that firm in 1996 retained none of its apprentices who finished their training that year. Eight of the nine had apprentices or youths in qualification contracts finish their training contracts in 1996, but only half of these even hired **any** of those finishing into permanent contracts. While most of these companies have used the policy tools available for youth training in a deliberate strategy to maintain or upgrade the skill base of their workforce, the ways in which they have done so bear little resemblance to the practices of the largest eastern German companies and to the practices of the dual system in western Germany.

Table 4: French Firms with employment>=500

Firm	Training Ratio	1996 Retention	Ownership
LF1	0.2%	na	grp allemand
LF2	3.2%	0.00	ind
LF3	0.7%	0.00	grp
LF4	1.7%	0.67	grp allemand
LF5	3.0%	0.57	grp
LF6	3.0%	0.60	grp
LF7	6.4%	0.00	grp
LF8	1.0%	0.00	grp
LF9	0.4%	0.96	grp

Ownership key: grp: owned by another corporation; grp allemand: owned by a German conglomerate; ind: independent/family-owned firm. Training Ratio for French firm equals the sum of apprentice and qualification contracts as a percentage of total employment.

Three of the firms occupy sectors involving complex mechanical goods, and youth training at these firms demonstrates some common characteristics of the largest, most technologically advanced manufacturing companies in my French sample. All three report having developed specific strategies of youth training to cope with new product development and consequently increased skill demands, or in order to replace the know-how of existing workers nearing retirement. Yet in none of these plants does the training ratio reach the levels associated with the maintenance of a skilled

workforce in Germany (four to eight percent of the workforce). Moreover, the training measures used in these firms were generally special initiatives to replace or create new workers of a certain skill level, rather than a sustained program of bringing in young workers to replace the old on a continuous basis.

The two firms with the lower total employment have a combined number of trainees equal to about three percent of their workforce, and retained roughly sixty percent of those who completed their training program in 1995 and/or 1996. The three percent proportion is lower than the west German norm, and lower even than that observed in similarly large firms in eastern Germany. But what is most striking by comparison to Germany is the retention rate: these large firms in France retain a much lower proportion of their youth trainees, at a rate more characteristic of small craft firms in Germany.

Such low retention rates would be totally irrational if these firms had a heavy net investment in youth training. But they do not. Instead, given the level of state subsidies available for youth training, they are probably breaking even or better from their youth training. Only one firm in my sample reported conducting a systematic analysis of the costs of youth training, including estimates for the productivity of the youth in the firm (but excluding the factors shown by von Bardeleben et al. (1995) to reduce the net cost of apprenticeship training). To the surprise of the personnel director, these calculations show that the firm in 1995-96 was making a slight profit from the training program, thanks to generous government subsidies. This firm and the other, slightly larger mechanical firm training at roughly three percent of the workforce, indicated that they might reduce their training in the absence of government subsidies.

The third large mechanical goods firm, the largest single plant in the sample, has a higher retention rate than any other plant in the large or in the medium size range. If there were any large company in whose training practices we might expect to find traces of the German model, it should be this company. However, the experience of this company is not indicative of a long-term, high investment in initial youth training. Instead, the training program developed there was targeted very narrowly at meeting a minimal level for the company's skill requirements over a short period of time. In conjunction with the development of a new product line, the company embarked on the training program because the existing local labor market would not be able to meet its needs for skilled labor. Whereas the firm had previously hired production workers with no qualifications and had not engaged in any programs for training young people, the new technology and production methods

required the company to impose a minimum of CAP qualification for production workers, with a long-term goal of establishing the *bac* as the minimum level of hiring for workers in production. But the decision to train was a stop-gap measure, rather than a durable change in the way the company does business.

Cognizant that such qualifications were not available in sufficient quantity on the local labor market, the company entered negotiations with regional government and public education officials to develop a qualification program which met the company's need for math, technology, and industrial design qualifications. After a year, the firm broke off the negotiations, unable to agree with education officials on a diploma-granting program.[34] The firm turned to the UIMM, the French sectoral employers' association for the metalworking industries, which succeeded in negotiating a CQPM with the regional *direction du travail* that concentrated training requirements in only the technical areas demanded by the firm.

Between 1991 and 1996 the firm trained over 250 youth through the CQ program, hiring all who succeeded in passing the final test (for comparison, the plant almost doubled its total employment during this time; roughly one-fourth of the new hires came by way of the youth training program). However, the final group of trainees finished this program in 1996, and the company has discontinued its training program at the level of the *contrat de qualification*, while continuing to take a small number of apprentices each year. "[Now] we hire fewer and fewer [trainees], it is easier to find people with diplomas….if in 1997 we need thirty-seven workers, we would find them on the labor market; we will not do any more *contrats de qualification*."

In 1995, while the company was still actively engaged in this youth training initiative, the proportion of young trainees there represented barely over two percent of the total workforce; and this, at the peak of their extra-ordinary training initiatives. In 1996, at the time of interview, its ratio of trainees to total employment was equal to only 0.4 percent. This represents a "return to normal" after the end of its training program. The company's training director is quite satisfied with the training program and the flexibility afforded by the *contrat de qualification*. But this company used the program as a temporary measure, not as part of a routine strategy of increasing youth training programs. The company does train in apprenticeship, but in numbers that are tiny by comparison to

[34] The central point of disagreement was the content of the program. Officials of the company wanted only technical subjects relevant for production, while education ministry officials insisted on including broader training requirements; the broader requirements also would have required that the trainees spend more time in a training center.

its German counterparts; for this firm, as for the other two very large firms discussed above, routine youth training plays a subsidiary role in strategies of recruitment.

The remaining six companies in the large size category all have lower skill demands than the companies just discussed. While a heterogeneous bunch, these companies as a group tend to train few youths in training contracts and to retain few of those they do train. Those that train the most retain the least. Illustrative of the general trends in this group are the practices of two firms that occupy similar product markets, in which the skill demands put on the workforce are extremely low.[35] Both characterize their training as more of a "social" mission than one that fills an economic need for future skilled labor. A personnel director at one of the firms notes that "for us, by contrast to [the practice in] other firms, training is a question of, 1) [creating] the necessary qualifications, but also of 2) managing the evolution of [the careers of] the other personnel here; of these people, maybe one in ten will be trained for promotion…. Thus, the fact is that we have to manage this frustration." Both these firms retained none of the youths they trained over the past year.

[35] The employment numbers cited for both firms include part-time and interim workers, which constitute up to one-quarter of their workforces. This partly results from the highly seasonal character of demand in the industry; consumer demand in the winter months is four times greater than in the summer months.

One of the two firms has constructed a special training school for apprentices, as a result of a deal with the unions signed in 1995. The firm agreed to take on a group of apprentices from disadvantaged neighborhoods, in fairly large numbers, in exchange for an agreement, signed by all but one of the unions represented at the company, giving management flexibility as to when the apprentices attended training. In other words, trainees would forego training in the winter months of peak demand and spend more time in the training center during summer periods of slack demand. The firm's personnel director notes that the program was begun with an eye towards the retirement of some older workers; the firm wants to replace them with younger workers at a minimum level of CAP. However, he makes clear that the purpose of the program is not to retain trainees at a high rate: "we will not necessarily [hire them after apprenticeship], but at least they will have the diplomas, and would do better on the labor market [than without any training]." The program is a central element of the company's "*entreprise citoyenne*" image, a firm trying to give an opportunity for a diploma to youths coming from difficult circumstances, in exchange for a flexible supplement to the labor force in periods of peak demand. The program may well be socially beneficial, but the principal observation to be made with regard to a comparison with Germany is that the program is not intended as a durable investment in training youth as future skilled workers.[36]

These cases are exemplary of the behavior of many French large companies, for which training is more often considered a cost than an investment.[37] For those with higher skill demands (the minority in my sample), in-firm youth training contracts have on occasion been used to bridge current or predicted shortages of skilled labor. Yet these programs are generally temporary and do not fit into any larger pattern of skill development in the companies. Moreover, the existence of the CQPM has allowed several companies to tailor qualifications very specifically to their own needs, without requiring them to bear the costs of any broader, more portable skills. And, even when investing in youth training contracts like these, French large firms train a lower proportion of

[36] Asked if the firm would train in the absence of state subsidies for training, the personnel director answered, "no, because that [training] costs money, and the firm cannot support that cost. We don't do it [train] **because** of the money, but **without** public money we would not be able to do it."

[37] It is possible to argue that training only takes place at all because of the presence of the apprenticeship and continuing training taxes in France, but that is wrong. Large companies on average far exceed the minimum stipulated by the continuing training tax (which includes a portion for **alternance** contracts like the CQ), so this does not enter their decisional calculus about training. Similarly, no large company indicated that took on apprentices to avoid the tax.

workers, invest a lower amount per youth trainee, and retain a lower proportion of young people trained in such programs, than do their counterparts in Germany, east and west.

Companies with 150-500 employees

The next size group, including six firms with between 150 and 500 employees, maintains a higher average training ratio than the large companies in the sample, and half of these companies train within the target range of four to eight percent of total workforce (see Table 3). Because they are in such different markets, it is hard to generalize about these firms. However, using the criteria of the proportion of trainees/workforce and retention, it is helpful to distinguish the larger two companies from the smaller four. Eighty-six percent of the trainees at the larger two companies are in *contrats de qualification* for trainees, the majority at the CAP (i.e., the lowest possible) level. One of these has many people in the workforce nearing retirement and finds itself in a position analogous to that of the largest firm above, which used the *contrat de qualification* as a flexible tool capable of being rapidly structured to the needs of the firm at low cost.[38]

Table 5: French Firms with 150-500 employees

Firm	Training Ratio	1996 Retention	Ownership
MF1	3.0%	0.80	ind
MF2	7.0%	0.25	grp
MF3	7.1%	0.67	grp
MF4	4.0%	0.18	grp allemand
MF5	1.0%	0.00	grp
MF6	2.8%	0.64	grp

The four smaller firms in this group, all of which have between 200 and 250 employees, show a greater resemblance to patterns of German training. Two of the four train within the target range, and each of the firms trains at a variety of different education levels (BEP, bac, and DUT). Yet their retention rates are lower than one might expect to see from firms engaged in a heavy net investment in youth training. The average retention rate of the four firms is .48, meaning less than half of the youth trainees are hired by these companies after the end of their training contract.

[38] Both the largest company and this one are in Alsace, and thus are far more likely than other French companies to suffer from tight labor markets. Unemployment in Alsace is less than eight percent, compared with a national average close to thirteen percent overall.

For one of the four, a high-end mechanical goods producer, low retention is partly a product of the difference between training for office jobs and for production jobs. "If we train somebody in the workshop, we do it to hire them. In the offices, our policy is different: he [the trainee] can give us a little help, it's nice to have young person to lend a hand….[at the end of the training period] we would rather take another young trainee than to hire somebody…. On the shop floor, we keep them because we need them; in the office, we are not looking to increase the number of office workers." For this firm, at least, technically trained apprentices are valuable and are retained; but those who pursue office qualifications are principally a source of cheap labor.

This size tranche has some ambiguous lessons. Most interesting is the division between the two larger and the four smaller companies in their use of the CQ and the apprenticeship contracts. At the two largest companies, most of the contracts are CQs; in the four smaller companies, three-fourths of the youths in training contracts are in apprenticeship contracts, with qualification levels running the gamut from lowest to highest. As the discussion in section VI will explore more thoroughly, larger companies are more likely to be able to use the CQ for the development of narrowly defined firm-specific skills. Smaller companies, lacking both the personnel and the political resources to develop firm-specific qualifications, are less able to use the "exit option" presented by the CQ, and thus more likely to rely on apprenticeship. Even so, these companies still retain their apprentices at a rate that suggests that their net investment in training is low, and that youth training is not their primary means for attracting skilled workers.

Small and Medium Size Firms (SMEs)

It is only among some of the small and medium sized firms (SMEs), those with fewer than 150 employees, that firms in my French sample frequently train and retain their trainees at very high levels.[39] While many of the companies in this size range could certainly be considered smaller "craft" firms, this is not universally true, and it does not follow that the educational level at which their training takes place is low. Several of these firms employ some of the most advanced machinery used in their respective industries, and their trainees often get qualifications at the bac+2 level. For some

[39] It is also important to note that, because these firms are quite small, the numbers on which retention rates are based are also small: if a firm only trains one person, and then hires that person after training, the retention rate is 100 percent. The small numbers on which the descriptive statistics are based are likely to be a bit unstable and discrete rather than continuous—that is to say, not perfectly indicative of retention taken over, say, a five year period.

of these firms, youth training programs are both an effective means to train their own future skilled workers and a way to bring in higher level workers at low wages in order to adapt them to the needs of the firm

By dint of my research design, this sample includes a high proportion of companies from the bar-turning industry (seven of the fourteen firms with fewer than 150 employees produce wholly or partly for this industry). Bar-turning refers to the mechanical production of large or small cylindrical components for use in larger, more complex mechanical goods (trains, planes, and automobiles). These firms are typically suppliers to larger producers, e.g. in the automobile industry. Over the past decade, despite high average youth unemployment, bar-turning and many other mechanical industries in France have experienced a shortage of skilled labor. The firms with which I spoke in this industry repeatedly mentioned conditions under which they competed with other firms for labor and feared poaching. Given that many metalworking firms in a variety of different sectors report problems attracting qualified young people to their professions, the industry is not unique. Neither, however, is the industry is typical of French industry as a whole.

As shown in tables 6a and 6b, SMEs in the bar-turning industry maintain a higher ratio of trainees as a total proportion of the workforce, and retain after apprenticeship a higher proportion of their trainees, than do SMEs in other metal-working sectors in France. The average retention rate of the bar-turning firms with fewer than 150 employees, in which at least one person completed a training contract in 1995 or 1996, is .86; the average ratio of trainees to the total workforce in all bar-turning firms in the sample is 4.9 percent. The same averages for SMEs in sectors other than bar-turning are a retention rate of .75 and a proportion of trainees to workforce of 2.8 percent. The sorts of figures that we see in the bar-turning industry are characteristic of firms making the substantial investment in youth training characteristic of the ideal-typical western German model. Attitudes towards subsidies, and whether a firm would train less in the absence of subsidies, further support this finding. Three of the six training SMEs not in the bar-turning industry would train fewer or no young people in the absence of state subsidies; only one of six training firms in bar-turning would take on fewer young trainees in the absence of public subsidies to training.

Table 6a: French Firms with <=150 employees in non-bar-turning sectors

Firm	Training Ratio	1996 Retention	Ownership
SF1	9.1%	0.50	ind

SF2	3.4%	1.00	ind
SF3	0.0%	na	ind
SF4	1.9%	na	ind
SF5	0.9%	0.50	ind
SF6	4.0%	1.00	ind
SF7	0.0%	na	ind

Table 6b: French Firms with <=150 employees in the bar-turning sector

Firm	Training Ratio	1996 Retention	Ownership
SFBT1	13.3%	1.00	ind
SFBT2	8.7%	0.50	ind
SFBT3	0.0%	na	ind
SFBT4	5.0%	0.67	ind
SFBT5	1.1%	1.00	ind
SFBT6	3.0%	1.00	ind
SFBT7	2.9%	1.00	ind

Firms in the bar-turning industry in my sample use youth training contracts as an especially important part of their recruitment strategies. Labor shortages in this industry are important to this outcome, they do not alone explain the success of the bar-turners. As we shall see in section VI, the trade association of the bar-turning industry has played an extremely important role in fighting for qualifications considered relevant and useful for firms in this industry, and have put at their disposal training facilities whose technical endowments the companies appreciate.

Before moving to the next section, a word about the firms which choose not to train at all in youth training contracts. As in the sample from eastern Germany, it is among the small firms that we find non-training firms. Three firms in my sample, ranging in size from 40 to 107 employees (and including one in the bar-turning industry), did not train at all in youth contracts. While all three noted that they did not have much turnover in their personnel, each had hired production-level workers on the external labor market in 1995 and 1996. All three cited the amount of time required to train young people, namely the time devoted by other workers to supervise and assist the trainees, as the principal reason they did not have youth training contracts. As one noted about youth training, "we lack time. Our people in charge no longer want to train [in youth contracts], it is a heavy burden." Unlike in eastern Germany, none of these firms cited the abundance of skilled labor available on the labor market as reasons they chose not to train. It is instead the administrative and practical complications of training which deter these companies from training in a youth training contract.

VI. EXIT OPTIONS AND FIRM CHOICES

Exit and Large Companies

One compelling empirical observations in this paper is the sharp contrast between the training behavior of large companies in eastern Germany and in France. The contrast between the two aptly illustrates the way in which the nature of the educational system, buttressed by the existing product market strategies of companies, structures firm preferences over training practices. The largest firms are numerically in the minority in the overall apprenticeship training populations of both France and Germany, but they constitute the most powerful members of the employers' associations, and thus occupy a central political role for the outcome of training reforms.

Because large, western German-owned firms have played a leading role in apprenticeship training in the eastern German economy, and because the broad skill requirements of the dual system suit their product market strategies, there has been no significant political pressure for loosening the requirements of the German training regulations. For these companies, with deep pockets and excellent access to information through the training networks of their parent corporations, the qualifications supervised by the IHK are a baseline on top of which they are able to develop their own, firm-specific specializations. This allows them to enter and capture product markets where their skill resources give them comparative advantage by facilitating incremental product customization (Streeck 1992; cf. Carlin and Soskice 1997). Given their dominant voices in the employers' association and the IHKs, these companies are well-placed to press for new professions (or changes in old ones) which respond to their new requirements.

However, for the *Mittelstand* companies in eastern Germany, these qualifications impose onerous requirements of machinery and personnel. And, as the availability of unemployed, well-qualified skilled labor decreases in eastern Germany, the small and medium size firms that want to train young workers have little alternative but to take on apprentices through the dual system. As discussed in section IV, the Saxon *Verbund* policy was deftly designed in that it focused public moneys on the specific problems of firms in the *Mittelstand*: meeting the broad IHK requirements for the metal professions during (especially) the first year of training. This case reinforces the impression from eastern Germany that the key to enabling firms to begin engaging in substantial

human capital investments through apprenticeship training is not to ease the requirements on them, but instead to help them to meet requirements that are difficult.

Eastern German firms have not only the carrot of incentive, but also the stick of constraint. The most notable of these is well documented in the literature on the western German political economy (Streeck, Soskice): at every level of standards development and certification through the dual system, there is a legally enforced presence of labor representatives. The role in defining national standards, in concert with the representatives of the employers' association, is paramount, but it is supplemented by parity representation in the training committee of the IHKs, which supervise all elements of regional training regulation, and in the *Land* committees that advise regional governments on training policy and problems. Finally, the works council has the authority to challenge abusive apprenticeship practices observed or reported at the firm-level. While works councils in eastern Germany have proved less confrontational than their western counterparts (cf. Hyman 1996), they nevertheless retain a shop-floor capacity for intervention which sets up one more obstacle to the exploitation of trainees.

Large firms in France, as represented in my sample, have reacted very differently than their German counterparts to reforms encouraging them to train more apprentices. This choice stems from the options available to them through the bifurcated structure of the French initial in-firm training system, and from their implication in a given organization of production. The existence within the French system of the CQ, which allows large firms in pressing need to pursue extremely firm-specific upskilling, provides an exit should the apprenticeship system, dominated by the national education ministry, prove insufficiently pliable to firm demands for new skills. In addition, the CQ provides firms of all sizes with a means to hire workers at the *Bac+2* level, and to give them firm-specific training while paying a fairly low wage. In some cases the CQ serves as a 2-year probationary period for workers who, once permanently employed, entail high wages and social charges on the company's payroll.

Developing a tailor-made qualification, as in the case of the largest firm in the sample, requires extensive aid from the employers' association. This aid is *prima facie* much less likely to be available to individual small firms than to large conglomerates, as the former pay much lower membership fees than the latter. Two relatively large firms (with employment of 400 and 700) employed the large majority of the CQs training in technical professions from my entire sample. They each trained the workers at the lowest level (CAP) and retained only two-thirds of them. The

personnel manager from one of the firms derided the skill level of the participating youths as "quite lamentable." For each of these firms, the training adopted was a low-level, firm-specific qualification, the lowest-cost way to acquire the workers necessary for semi-skilled jobs. As in the case of the largest firm in the sample (discussed in section V), these firms were able to use the qualification contract to tailor their "training" as specifically as possible to the firm's needs.

The addition of the CQ has increased the ability of large firms to have more input over the construction of relevant qualifications, without (as in Germany) surrendering a significant voice to the unions. Without the acquisition of relevant working qualifications being tied to the requirement that those qualifications be broad, the innovation of the CQ becomes either a source of cheap labor or a stop-gap for meeting temporary labor shortages. In the absence of a union movement able to push for broad qualifications, large French firms have developed a strategy that makes best use of the qualities passed on through the school based technical training system. These skills are supplemented by mandatory further training expenditures which allow companies to impart firm-specific skills to their workforces on continual basis (Regini 1997). The existing educational system and the exit options it creates for large firms does not entice, nor does it force, those firms to move away from their "equilibrium" strategy of reliance on predominantly low-skilled workers.

Bar-turning and Some Surprising Collective Action

The startling success of the French bar-turning industry is best explained, in light of the unusual structure of the industry, by returning to the analytical axes of product markets and the educational system. Sixty percent of the production of the French bar-turning industry is concentrated in the valley of the Arve river, on the border with Switzerland, with production dominated by SMEs. As an industry of suppliers dependent on orders from larger producers in the automotive, aerospace, and other mechanical industries, the bar-turning firms of the Arve have been forced to maintain their technological edge in order to remain internationally competitive. Companies in this industry manufacture for a wide variety of markets, and in varying production runs. What all share is a reliance on families of CNC machinery that are at the center of all bar-turning work. Since the late 1980s, the trade association of the industry has sought numerous ways to meet the demand for more highly skilled technical labor to run these machines.

The organization of production in bar-turning should not be confused with the breadth of skill requirements associated with the large DQP firms in Germany. However, the labor shortage in the

industry has at least created a pressing need for permanent upskilling, with hires taking place at ever higher degree levels. Yet the education system does not look the same to the companies of the bar-turning industry, which is dominated by very small production units[40], as it does to large French firms. While large companies in France may tailor a CQPM to their exact specifications, no firm in the bar-turning industry holds this kind of sway with the general metal employers' association, which helps design and authorize CQs. This density of firms with similar needs for basic and advanced technical skills (from the lowest level, CAP, to the *bac+2*), has led even small firms to develop a close relationship with the national trade association for bar-turning, whose offices are located in the heart of the Arve valley. With a multitude of small firms, each with using different manufacturing techniques and strategies, the CQs produced under trade association pressure lack the firm-specific traits of the CQs negotiated by larger companies. The certifications, to be sure, are very specific to bar-turning industry; they do not contain the broad initial year's training of German metal-working apprenticeships. But the balance of many competing small firms has produced unusually transferable qualifications from the routinely firm-specific CQ in France.

As noted in section V, these firms collectively train and retain at levels higher than any other group of firms in the French sample. Small firms in the bar-turning industry have used the *contrat de qualification* to create skill categories at high levels—bac and bac+2—which prove more satisfactory than apprenticeship to these firms, while also providing more highly skilled workers. The use of CQs by small firms in my sample occurs primarily in the bar-turning industry. In the six bar-turning companies that train, there are nine CQs and six apprenticeship contracts; thus sixty percent of the youth training contracts are CQs. In the non bar-turning industries, there are only five CQs and sixgteen apprenticeships (so, only twenty-four percent of contracts are CQs, equal to the percentage for the overall French firm sample). Also notable is the fact that almost all the CQs in bar-turning are in technical fields, whereas the majority of CQs in other small firms are in service qualifications. Firms in bar-turning are far more likely than other small firms to train in *contrats de qualification*, and more likely to use these training contracts for technical professions.

All the bar-turning firms in the sample that train cite one of two connected reasons for their heavy reliance on the CQ. First, the qualification has a professional skill content: as noted at one

[40] Firms with over 100 employees account for only ten percent of total employment in the French bar-turning sector, and three-quarters of companies in the industry have less than twenty employees.

firm, "apprenticeship is more general, the diploma [it gives] is scholastic….while the content of the *contrat de qualification* is completely professional." But this difference in content is not unique to the bar-turning industry, and could indeed serve as a blanket description of the distinction between the two qualifications for all industries. The second element that attracts firms is the level of training equipment available at local training centers in the two regions studied, particularly in the region with a training center devoted exclusively to bar-turning. "Personally," said one manager, "I prefer the *contrat de qualification* because the [training center] is much more technically advanced than the [vocational] high school, much more up to date." The combination of degrees appropriate to firm demands, and high level machinery and instruction available through local training centers, has made the *contrat de qualification* a preferred measure for companies in these industries.

Advanced machinery is a(n excludable) collective good that is particularly relevant in the case of the Arve. In the bar-turning industry, with its specific machinery requirements, the technical center established by member firms in the Arve decided in the mid-1980s to take on the role of training center for local companies, in response to the chronic shortage of skilled workers and technicians. The center made a massive investment in machinery which is specific to the industry, financed by member firm contributions. Access to these high-level machines and the trainers of this center are leading reasons why smaller companies in the Arve valley opt to train through the *contrat de qualification*.

What separates the training center in the Arve from other employer-run training centers across France is the combination of highly specialized, expensive machinery relevant for a large number of companies. Other centers have access to technologically advanced machinery; but the more advanced (and thus expensive) the specialized training machinery, the more likely it is to be tied to the presence of a large consumer of such training, i.e., a single large company. The Arve training center makes available to small firms in bar-turning the gamut (still narrow, in comparison to Germany) of machinery used in the industry. Like the *Verbund* aid of the state of Saxony, the existence of such a training center gives smaller companies access to a broad range of machinery that

they could not afford to provide on their own, which in turn allows them to train in broader qualifications than what is strictly necessary for their own firm.[41]

The extraordinarily dense concentration of a number of small firms, with a high degree of commonality of interests, allows companies in the industry to overcome the standard collective action problem of multiple small units (cf. Olson 1965). This is important because, as argued in the second section, the combination of product market strategies and the structure of the educational system generally compounds the collective action dilemma of French firms. Their existing market strategies, as well as the bifurcated youth in-firm training system, raise the payoffs to defection. Moreover, a tight sectoral labor market facilitates the acceptance by companies of the use of the broader skill qualifications negotiated by the trade association. The small average size of companies in the sector prevents any one company from being able to develop firm-specific training contracts, but without this labor market constraint, companies might be able to hire generally trained people in the mechanical professions, then use firm-specific training to shape them to their desired skill profile, using temporary or interim contracts to escape high wage costs during the time of training. However, since they must compete for scarce labor, these companies are constrained to offer broad certification contracts to attract potential skilled workers. The achievement of the bar-turning industry lies in having increased the cost of defection to individual companies, while providing the information circulation (through its trade association) necessary for companies to benefit from the generalized training regulations.

VII. CONCLUSION

In order to draw broader conclusions about apprenticeship-style training systems in France and eastern Germany, some further elements would need to be considered. Most prominent among

[41] Lest this "functional equivalence" of *Verbund* aid and the bar-turning technical center seem an overly stretched parallel, recall that *Verbund* aid fills a gap left by the absence of IHK out-of-firm centers in eastern Germany.

these is the complex, payroll-tax financed system of French further training that complements the initial training system described above. There is also the role of school-based technical education and the rise of the *bac* + 2 in France. These elements of skill context, like the transitional further training measures instituted in most east German firms after the *Wende*, have helped shape company attitudes toward the initial training of apprentices. In this paper, I have set aside these contextual issues to focus on the use of in-firm youth contracts; but the findings of such an exercise can only be properly understood in light of these broader factors.

What the present comparison has revealed is the different strategies of large companies in the two cases with respect to apprenticeship training. In France, successive measures to make in-firm training contracts a more attractive tool for skill provision have failed to have a major impact on the training strategies of large companies. The use of broad, higher-level degrees is as marginal in 1997 as it was when the 1993 reform law was passed. Large companies have used the CQ to their advantage, but not as the measures of broad skill acquisition that its proponents intended when the contracts were originally introduced.

That French large companies have resisted change is less surprising than the fact that eastern German large companies are leading it.[42] This seems to be associated with their wholesale ownership by large firms in the west, which, having sunk material investments in these firms, are now diffusing their practices of human capital investment there as well. For those who find this unsurprising, it bears reminding that the preparation of these companies for privatization involved large lay-offs of skilled labor. This pool of laid-off workers could easily have constituted an alternative source for future skill provision, involving (presumably) lower net costs of training because of their already acquired basic qualifications and familiarity with plant machinery and procedures (this is precisely what many *Mittelstand* and smaller firms have done).

Large companies in eastern Germany have engaged themselves at high rates in the dual system, accepting the rigidity of German apprenticeship qualifications there, rather than using the new

[42] A common reaction of the person "on the street" to this finding is that east Germans train because they are culturally used to training, and the French do not because they have not before. Such a comment explains nothing about why some groups of companies train more, and some less, in eastern Germany and in France. It is not wrong to point out that familiarity with (and social acceptance of) apprenticeship in Germany is one of the factors that makes it easier to attract highly qualified youth to this track; nor is it inaccurate to say the fact that east German companies have sunk costs in training equipment and personnel, and their familiarity with apprenticeship, may make them more likely (all other things equal) to consider in-firm training as a viable means of acquiring skilled workers. But these observations are not a global explanation of anything, and certainly not of the difference between the training strategies of small firms observed in the two countries.

context to bargain this rigidity downward. Smaller eastern German industrial firms have encountered greater difficulties in using this system of broad qualifications, because of the machinery and personnel demands it makes on them. The *Verbund* policy has been one state-level solution for making entry into dual training practices less onerous for the companies of the *Mittelstand*.

The findings of this paper suggest two conditions could encourage the wider use of the training measures by smaller companies: 1) an increase in the number of large, western German owned companies in eastern Germany, whose training is not only beneficial for its own sake, but which also creates positive externalities for firms in the *Mittelstand* that need access to experience or machinery to begin training (cf. Carlin and Soskice 1997); and 2) state governments need to create subsidies more narrowly aimed at enabling small firms to overcome the difficult constraints imposed by the adoption of the western German training system. In designing such policies, close cooperation between government and employers' organizations with broad membership increases the likelihood of accurately targeting transitional subsidies (Culpepper 1997).

In France, there is neither a large firm or nor a union bulwark against the adaptation of training contracts to firm-specific needs. In this absence, firm patterns of investment in and retention of human capital do not tend to converge toward those observed in western German dual training. In the bar-turning industry—pushed by labor scarcity, pulled by easy access to high-level machinery for youth training, and united by commonly shared needs for sectoral- (rather than firm-) specific skills—we do see companies training and retaining at high levels. The specificity of bar-turning may be hard to generalize in France, but French policymakers could draw from this evidence the inference that firms need more than just enticements (subsidies, tax relief) to train at high levels; and these enticements have been the primary element of French policy thus far. Equally important, though much more difficult to execute in practice, is to impose constraints on companies that force them to use the training measures in a manner more consistent with the high-skill model of western Germany.

The successful training cases of training reform in this paper—eastern German large companies, the Saxon *Mittelstand*, and the French bar-turning industry—were all made possible because the pay-offs to high-level training were high, and the attractions of defection were low. The principal determinants of these payoffs, I have argued, were the structure of the existing system of education and training and the predominance of a product market strategy. Both create obstacles for policymakers who want to effect a change in the organization of the training system. The general, sober lesson to be drawn from these cases, is that the best way to overcome collective action

problems like the prisoners' dilemma is to turn them into more easily soluble assurance games. Given the path-dependency of the structures necessary to change the pay-off matrix of employers, this counsel may be cold comfort for would-be reformers.

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