The Dual Vocational Training System in the Federal Republic of Germany

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Abstract

The German "dual" vocational training system (DS) combines in-enterprise training with part-time attendance at a vocational school. The DS provides a direct link between the country's training capacity and the demand for skilled labor and is credited for achieving a smooth and effective transition from school to working life. The DS is therefore considered to be the main reason for the country's comparatively low rate of youth unemployment. About two-thirds of German 15- to 18-year-olds participate in the system. This report traces the origins of the DS, describes its administrative structure and explains the relationship between firms, schools and students.
I. Introduction

1. A team of World Bank technical educators and vocational training experts visited the Federal Republic of Germany (FRG) from September 23 to 27, 1985, to familiarize itself with the German Vocational Training System (VTS). The program, initiated by the Bank's Education and Training Department, and organized by the ILO's International Center for Advanced Technical and Vocational Training in Turin and Branch Office in Bonn, included visits to firms, training centers, chambers of industry and commerce, and of crafts, the Federation of German Trade Unions, the Federal Institute for Vocational Training and Education, and the Federal Ministry for Education and Science.

2. Although the German VTS includes a great variety of full-time vocational and technical schools at the upper secondary level, the Bank's team has focused its attention primarily on the so-called "dual" VTS, i.e., the traditional apprenticeship, which combines in-enterprise training with part-time attendance at a vocational school. In Germany, about two-thirds of the youth between ages 15 and 18 years participate in the dual VTS, while in comparison to other European countries, full-time in-school training is of much less significance. Germany's dual VTS is widely credited for achieving a smooth and effective transition from school to working life, and is therefore considered to be the main responsible factor
for the country's comparatively low rate of youth unemployment. The system's apparent success in securing both the employability and the effective employment of trainees was thus a decisive factor underlying the Bank team study tour to the FRG, the main objective of which was to assess the potential for replicating its positive features in developing countries.

II. The Dual Vocational Training System

3. Under the dual system (DS), the firm and the vocational school share the responsibility for providing young people with the best possible job qualifications, the former essentially through practical training and the latter by securing an adequate level of specific general and occupation-related education. The system is driven by the firm's supply of training places. The firm decides how many apprentices, for what occupations, and how it wishes to train; it also has freedom of selection among training candidates. In carrying out its responsibility, however, the firm is bound by vocational training regulations, issued by the Federal Government in consultation with the social partners (employers, organizations, and trade unions). These regulations specify the skills and knowledge to be acquired and the examinations criteria. The training relationship between trainee and training firm is governed by a contract (subject to civil law), which establishes the duration of the training period, the trainee's remuneration, and the mutual rights and obligations involved. Firms wishing to provide training are required to meet specific conditions regarding appropriateness of training equipment and environment, and the qualifications of instructors. The training program further
includes up to 12 hours a week of compulsory attendance at a vocational training school, which obligation is sometimes also concentrated into shorter periods of full-time attendance (block release). The school curriculum is about 60 percent trade-oriented and 40 percent general. The vocational schools are divided up according to branches of trade (industry, commerce, home economics, agriculture, etc.); students are grouped in classes according to their year of apprenticeship and receive instruction for a single occupation or several related occupations. The school component of the DS regulated by the legislation of the FDR's individual states.

4. Most young people start their "dual training" at the age of fifteen or sixteen, after completing nine or ten years of basic education. Trainees generally have a certificate of completion from lower-secondary school. Securing a training place is the responsibility of the prospective trainee, who must make a written application to suitable firms, in accordance with his career choice(s). In making career choices and searching for a training place, individuals are guided by a very extensive vocational counseling network. Vocational guidance is a crucial element underlying the German VTS, and begins already during the last two years of basic education. Thus, in addition to the activities of the career counseling offices of the local labor exchanges, the lower-secondary school program offers such opportunities as: (i) special courses in the subject of "the world of work"; (ii) practical experience in firms (usually four weeks); and (iii) in-school information and advice on employment and training/education opportunities by representatives of the employment administration. Furthermore, most of the larger firms organize periodic visits for prospective trainees.
5. Training under the DS lasts three to three-and-a-half years, with increasing specialization and gradual integration into the operational process; it ends with a state-approved examination before a committee, composed of representatives of employers organizations and trade unions, and vocational instructors. The examination committees are appointed by the responsible chambers of industry and commerce, and chambers of crafts. These chambers are the self-governing representative organizations of the various branches of economic activity, to which the Federal Government has also delegated the responsibility of monitoring compliance with the legal vocational training framework. The concept of vocational training, as determined in the 1969 Vocational Training Act, does not only cover initial training (i.e., upon completion of the period of compulsory full-time general education), but also further training and recycling; the latter benefits from financial incentives, both at the individual and institutional level, under the 1969 Employment Promotion Act. Among the various opportunities for further training, figures prominently the achievement of the "master craftsman" title, or similar official degrees in industrial trades.

6. The German VTS distinguishes about 440 occupational categories, all officially recognized by the Federal Government and subject to specific training regulations, which together provide the basis for more than 20,000 different adult occupations. In reality, however, training is concentrated in a relatively small number occupational categories; thus, over 60 percent of all male apprentices follow courses in the 20 most popular categories, while this concentration is even more marked among girls (80 percent). Girls represent about 40 percent of all trainees under the DS, and there is
still a clear demarcation line between typical male and female occupations. The most important training area under the DS is industry and commerce (about 45 percent of all apprentices, representing 7 percent of the work force), followed by the crafts sector (about 40 percent, 13 percent of the work force), while agriculture accounts for about 3 percent of all trainees. Nearly half the firms recorded in the crafts sector offer training opportunities, while this proportion is only slightly over 10 percent in industry and commerce. In that sector, however, the proportion of training firms increases with their size; thus, companies with more than 200 employees are nearly all offering vocational training. Nevertheless, 60 percent of all apprentices are undergoing their dual training in relatively small firms with less than 50 employees.

7. In-plant training is financed by the firm itself, while the school component of the DS is financed exclusively from public sources. Training firms spend on average 2 to 3 percent of their wage bill on initial training, and another 1 to 1.5 percent on further training. Total expenditure by the private sector (including donations and non-profit organizations) on vocational education/training and continuing education represented 3.2 percent of Germany's overall gross wage and salary income in 1983 (1.8 percent of GNP). Recurrent training costs are considered normal operating expenditures of the firm, and related capital outlays benefit from the prevailing fiscal depreciation allowances. Net unit cost of the initial in-plant training (i.e., taking into account the value of the apprentice's productive contribution) currently averages about US$5,000 per student/year (including capital depreciation), ranging from US$2,000 (hairdressing) to US$12,500 (electronics). This net cost decreases
significantly between the first and last year of training, as the apprentice is gradually integrated into the production process. The ratio of productive returns of the apprentice to gross training costs varies by sector: it averages about 74 percent in agriculture, 45 percent in crafts, and 36 percent in industry and commerce and the independent professions. Almost half of the total cost of vocational training consists of the apprentice's "allowance," which varies by sector and region, and the level of which is jointly settled by the employer's associations and the unions; instructor's salaries absorb another 40 percent. The apprentice's allowance represents on average between 20 and 40 percent of the starting monthly wage granted after completion of the initial training period.

III. Characteristics of the System

8. The current DS results from a long historical process, which began with the medieval crafts guilds, and evolved according to the successive development phases of the German society and economy. The system's strength is that it is supported by a national consensus, reflected in a complex organization, wherein all partners (central and local government, employers and employees and their representative organizations) are fully involved and responsible. Moreover, the system operates on the basis of clearly defined trades, regulations and procedures. The role of government, however, is essentially limited to providing the legislative framework for uniform in-company training, and ensuring that standard training requirements are met. Companies can therefore proceed on the assumption that manpower trained in different places will have uniform minimum qualifications.
9. Within an institutional framework that is generally supportive of investment in human resources, the DS is most strongly supported by employers, who organize, finance, and manage a very important part of the training. Although companies naturally provide training first and foremost to meet their own manpower requirements, they usually train in excess of their needs (on average about 20 percent in industry and commerce). However, for those trainees who are not absorbed by the sponsoring firm, the high standard of training, as a rule, guarantees alternative employment opportunities in other firms that do not provide vocational training. The commitment to provide initial vocational training under the DS, where there is in fact no obligation, is one of the most striking features of the system. This commitment goes far beyond the firm's self-interest in being able to adequately meet its own specific manpower requirements; it is also deeply rooted in a tradition where the training of young people has been considered a major function of enterprises for a long time, and in the existing socio-political consensus that there should be vocational training for everyone. Vocational training is thus unanimously viewed as a priority investment with high long-term social and economic returns.

10. The DS integrates education, training, and employment, creating a direct link between training capacity and the demand for skilled labor. This minimizes the aggravating consequences of misdirected planning, and the typical problems of education/training sector response to industry needs. Furthermore, there is a constant labor exchange between training and non-training firms, so that adjustments in their individual hiring and training decisions reflect the prevailing labor market conditions.
11. As witnessed by the Bank team's visits to enterprises and training centers, the DS creates an extremely strong motivation for the trainees, who:

(i) understand the purpose and content of the training process, since these are clearly related to existing positions for which they are preparing themselves;

(ii) try to attain the best possible results, because these will determine their assignment and career prospects in the firm; and

(iii) feel secure because their training is, as a rule, directly linked with future employment.

The employment orientation of the DS is enhanced by the extensive vocational orientation system (para. 4), and by the fact that, despite institutional rigidities, apprentices' allowances and starting wages in the various occupations do reflect relative skill scarcities prevailing in sectoral and regional labor markets. As a result, the DS has extremely low dropout and failure rates.

12. A key factor in the efficiency of the DS is the high competence, status, and motivation of instructors and teachers in both components of the system. Availability of qualified instructors is a key determining criterion in authorizing firms to provide initial training under the DS (para. 3). In-plant instructors are usually recruited from the firm's operational departments, and must have a minimum of five years of practical
experience. They have to be at least 25 years of age, and pedagogically and professionally qualified to carry out the training. Qualification is usually determined by an official master's certificate in industry and crafts, requiring as a rule one-and-a-half years of additional training in evening classes at a technical college, and a final examination covering professional and functional pedagogic suitability. For the selected instructor, the assignment represents a shift from a blue- to a white-collar career development (20 hrs./week of teaching versus 40 hrs./week of production work), with long-term rather than immediate benefits. Stringent statutory requirements regarding qualifications have led to increased professionalization among instructors. To a certain degree, the high status of vocational training, and of its teachers and instructors, also reflects the traditional high appreciation of manual and technical trades, of quality workmanship, and of practical experience in German society.

13. The DS provides a solid basis, and offers many opportunities for continued education/training, either for career improvement (e.g., the master's certificate in the crafts and industry sectors), or for keeping up to date on developments in one's profession, or for acquiring new skills in a different occupation. There are many bridges enabling DS graduates to re-enter the formal higher technical education system. Every fifth gainfully-employed person in the FRG has taken part in at least one in-service further training program. The DS contributes significantly to reducing the cost, and improving the efficiency, of further in-company training, since most of the trainees have completed their initial training within the same firm (this was quoted as one of the DS's long-term
benefits). Continuing in-company training is the major source of manpower supply in supervisory and lower management ranks in most German firms. The initial training under the DS, and continuing in-company training, together provide strong opportunities for upward and lateral job mobility.

IV. Recent Trends and Current Issues

14. Rapid technological change, and its impact on labor market conditions, has generated increasing concern with the need to enhance the lateral mobility of the German labor force. This concern has gradually led to a more general orientation of the initial DS training, culminating in the introduction in 1972 of the "basic vocational training year," which aims at a closer integration of the vocational and general educational systems. In this "basic" DS training year, a little over half the 440 recognized occupational training categories (para. 6) have been concentrated into 13 main occupational fields (e.g., "metal technology," with 77 associated trades), in which about 90 percent of young people are being trained; basic training now covers all the occupations in one of these 13 major groups, and more emphasis is being given to basic theoretical schooling. An increasing number of pupils (currently about 10 percent of all first-year trainees) take the opportunity to undergo their basic vocational training year at a full-time vocational school, which generally shortens the normal period of in-plant training. From the apprentice's point of view, this full-time in-school initial training year has the advantage of providing: (i) greater flexibility in the subsequent occupational choice; (ii) more time to find a training vacancy in the chosen occupational spectrum; and (iii) a second chance at acquiring a lower secondary school leaving certificate.
From the perspective of enterprises, the need to adapt to new and rapidly changing technologies has greatly increased the importance of continuing education and training of personnel, the effectiveness of which has come to require a more broadly-based initial in-plant training under the DS. Moreover, the rising value of machinery and equipment in the workplace, the inherent risks of training in a high technology production environment, and the rising cost of training to meet higher skills requirements, are inducing more and more firms to make a proportion of in-company training independent of the production process, and to create specialized in-company training centers, where part of the training course is taught supplementary to "on-the-job" learning. These developments have led to a situation where a growing number of small- and medium-scale enterprises are no longer in the organizational and financial position to provide training for the full breadth of required professional qualifications and to assume the legal responsibilities defined in the statutory training regulations. This situation has led to the creation of inter-plant training centers, which are operated and financed by the chambers, professional associations and company federations, and are usually subsidized by central and local governments. Other cooperative training alternatives have appeared, essentially for the same reasons, such as: (i) the provision of training facilities and services against renumerations by larger to smaller firms in the same branch of activity, for the former essentially to increase capacity utilization and reduce the cost of their training centers; (ii) the concluding of "group training associations," where several individual firms combine together to provide training. Such didactic and organizational changes in the way training is being conducted illustrate how the classic DS is adapting to present day circumstances.
16. Since the mid-1970s, the DS has also come under the strains of demographic and general economic conditions. The FRG has shared in the marked slowdown in economic activity of the industrialized countries; thus, real growth dropped from an average of 5.7 percent p.a. throughout the 1956-73 period to less than one percent p.a. thereafter. The impact of this slowdown on the labor market, combined with the effects of automation and new technologies, has been twofold: a sharp decline in employment opportunities for unskilled labor (mostly foreign workers) and quasi-stagnation of demand for most other categories of labor. At the same time, a "baby boom" in the early 1960s has led to a considerable increase in demand for training places, which reached its peak in 1981. The interplay of these demand and supply factors has generated an overall shortage of training places, which is accentuated by regional and sectoral disparities. Relatively unfavorable job prospects for academically trained persons, and capacity constraints in higher education institutions, have also induced a rapidly increasing number of upper secondary school graduates to search for training places under the DS (apprentices with higher education entry certificates represented already over 10 percent of the total number of DS trainees in 1983). All these recent developments, reflected in sharper selection criteria applied by firms in the allocation of training places, have created difficulties for children of foreign workers, handicapped, school dropouts, and females) in getting access to DS training and subsequent employment. As a result, the autonomy of firms in determining the supply of training places, the very essence of the DS, is being questioned, particularly by the trade unions.
17. The shortage in the supply of training places by enterprises, however, is believed to be a temporary phenomenon, in view of the fact that there has been a negative natural rate of population growth in the FRG since the early 1970s, which should be reflected in a corresponding decline in the demand for training places in the near future. Thus, a widely expected shortage of skilled labor in the simultaneous present surplus situation, has brought to light another weakness of the "enterprise-driven" DS, namely the short personnel-planning horizon of enterprises (ranging between half-a-year in small-scale enterprises and 4 years in large companies), which clearly fails to take expected manpower supply trends into account.

18. Meanwhile, the immediate concern for providing sufficient training places for the current generations of school leavers has overshadowed another issue, namely the financing of vocational training. There are apparently considerable differences in the costs of in-plant training assumed by individual firms. The autonomy of the firm in deciding how much it wants to spend on training not only affects the supply of training places, but has allegedly also qualitative implications: while the training offered in certain firms has become as much a trademark as a degree from certain universities, training in other firms is strictly confined to the minimum standards required by the federal regulations. Compliance with these minimum standards is not fully insured, moreover, since there are apparently some weaknesses in the supervision entrusted to the chambers. Furthermore, there is an issue of equity, between the firms that provide and finance training and those which do not. These issues have inspired a commission of the Federal Government to recommend the
creation of a Vocational Training Fund, to be financed by a levy on enterprises, to help balance the costs of training among firms. This recommendation has been heavily disputed between employers, trade unions and political parties, and has therefore not yet been implemented. Trade unions believe that only a collective system of financing can offer a long-term solution to the problem of ensuring both sufficient training places and quality training, while employers are afraid that with collective funding the VTS would loose in efficiency and become less responsive to their needs. The issue, however, also splits large and small enterprises (particularly in the crafts sector), because the training cost burden is relatively higher in the latter.

19. Finally, as emerged from the Bank team's interviews, there does not seem to be any attempt within companies to evaluate the results of the training in relation to its cost. The effectiveness of apprentices in mastering skills, as reflected in high pass rates on formal tests, is extensively assessed, but the effects of training have not been measured against costs and productivity in the workplace. There is an implicit "cost/benefit consciousness" in larger firms, however, to the extent that demand for initial and further training provided by the training department originates in, and reflects the needs of, the individual production units, and that the cost of training is consequently charged to their respective budgets.
V. Replicability of the German System in Developing countries.

20. The DS is being applied in various forms and to varying degrees in many developing countries. On-the-job training, complemented with part-time school attendance is certainly not a German monopoly. What distinguishes the German from most other DS experiences, however, is that it is deeply rooted in society, and is systematically organized to balance the interests of all concerned, with enterprises voluntarily taking the leads and relatively limited Government interference. In addition, the German system functions within an institutional framework that is generally supportive of investment in human resources. In most developing countries, particularly in the lower income range, the key features responsible for the DS's viability and success are lacking: (i) a national consensus among all parties involved; (ii) cohesive institutions and organization of economic activity (chambers, professional organizations, trade unions, etc.); (iii) the willingness and ability on the part of enterprises to assume training responsibilities; (iv) a sufficiently developed private enterprise sector; and (v) the traditional high appreciation of skilled work, and of vocational training institutions.

21. Among the middle and higher income developing countries, many have institutionalized in-plant training within a dual framework, with varying degrees of success. In most cases, however, firms are being coerced into participation through various official measures, rather than doing so voluntarily, and their supply of training places remains usually well below their recruitment needs. The lack of initiative and active participation on the part of enterprises is largely related to three basic issues:
(i) An industrial incentives framework, understandably designed to promote investments in physical capital, but which tends to discourage firms to invest in the upgrading of their human capital.

(ii) A relatively young industrial entrepreneurial tradition, characterized by weaknesses in the management of enterprises, particularly as regards human resources (e.g., absence of systematic job descriptions, and of coherent recruitment, compensation and promotion policies). This tends to limit their ability to play an effective leading role in manpower training.

(iii) Partly as a result of the preceding two issues, responsibilities and decision-making for vocational training are centralized in the hands of government, which causes the system to be overly rigid, bureaucratic, and unresponsive to the needs of the economy, which, in turn, tends to further discourage enterprises from active participation. By contrast, the most successful DS applications in the third world are those where the VTS has been placed under the responsibility of an autonomous organization with broad-based participation, such as, e.g., the National Training Service (SENA) in Colombia, and the Vocational Training Corporation in Jordan.

22. A striking feature of the German system is also the comparatively low remuneration level of apprentices. As mentioned earlier, in the German case the apprentice's allowance represents an average of 20 to 40 percent
of the starting monthly wage granted after completion of the initial training, whereas this relative remuneration level is usually much higher under officially sanctioned apprenticeship schemes in developing countries this percentage. Moreover, incorporation of the apprentice in the normal wage scale of the enterprise is often granted upon reaching a certain minimum age, rather than upon completion of the training. The high remuneration of apprentices, relative to their sub-optimal productivity during the learning period, is for the employer both a deterrent to offering training places in the firm, and an incentive to minimizing the training component of the apprenticeship to favor more immediate returns.

23. All in all, even though German firms are known to have successfully replicated their training system in foreign subsidiaries (sometimes in cooperation with local vocational schools), the German system as a whole evidently cannot be transferred to developing countries without appropriate modifications. It is indeed significant that the highly competent and active German aid and technical assistance agencies in the area of vocational training have not attempted to replicate the DS in developing countries, but, on the contrary, have created "classic" vocational schools, without systematic relations with industry.

24. The German experience, however, may inspire the Bank and others in the area of vocational training. First of all, efforts should be concentrated on ways to sensitize and mobilize all responsible partners in developing a national consensuses towards the importance of acquiring practical skills rather than degrees and diplomas. The development and strengthening of key institutions, such as e.g. chambers of industry and
crafts, should be encouraged. Foremost, existing disincentives towards acquiring practical skills over academic knowledge, such as embedded in administered remuneration rates and other labor market distortions, ought to be removed.

25. On a more operational level, specific elements of the DS could inspire the design and policy orientation of vocational training projects; most importantly those elements that could contribute to strengthen the role of enterprises in the process:

(i) Changes in legislation could be encouraged to facilitate firms to participate in vocational training, e.g. tax incentives and/or appropriate dispositions in the investment code, to remove all discrimination against investment in human capital, as opposed to physical capital.

(ii) The setting up of inter-firm training centers along the German model or other cooperative training arrangements among firms could be envisaged (public enterprises could play a role in this context).

(iii) One of the key factors for the success of the German VTS, which is almost impossible to solve within a formal government-operated system, is the high status of the instructor (salary, professional level, etc.). In the informal system (autonomous training institutions and in-company training), however, the conditions for securing a more motivating instructor status are
much better. It would be useful, in this respect, to investigate the type of effective support to be set in place to launch a comprehensive program in this area.

26. Finally, the employment orientation of the German DS is strongly enhanced by an extensive and effective vocational guidance and job-counselling network. The building and strengthening of such a system in our client countries is therefore to be encouraged.