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THE GERMAN APPRENTICESHIP EXPERIENCE

A COMPARISON OF SCHOOL-TO-WORK MODELS

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In its fiscal year 1994 budget, the Clinton administration asked for $270 million to initiate a national system for school-to-work transition. The money is only a fraction of the funds already available for transition programs under the federal Vocational Education Program and the Job Training Partnership Act. In August the administration submitted a more comprehensive legislative proposal aimed at high school students who don't intend to go on to college. The legislation would provide grants for states to establish school-to-work systems and additional help for states and localities that already have such programs. The price tag for fiscal year 1995, $300 million. Students who finish the program would receive a high school diploma and an occupational skill certificate.

This proposal may represent only a starting point. During the 1992 campaign, candidate Clinton outlined a much more ambitious goal: the creation of a system of apprenticeship and certification similar to Germany's much vaunted youth apprenticeship program. Writing in *Phi Delta Kappan*, the magazine of the professional education society, Bill Clinton stated that "in our administration we'll establish a national apprenticeship program, like those in Europe." The details he spelled out in the article included extension of the program to all students not tracked for college, a 1 to 1.5 percent payroll tax to finance the program, and a national board to determine the skill content of each profession in which apprentices would be trained. Of the possible European models, Germany clearly came closest to the Clinton approach since it already had a national apprenticeship program with each of these characteristics. The only difference was that the payroll tax to finance the program in Germany was 2 instead of the 1 to 1.5 percent proposed by Clinton.

In submitting the administration's legislation in August, Secretary of Education Richard Riley commented that "we are the only major industrialized nation with no formal system for helping our young people—particularly the 75 percent of high school youth who don't go on to finish a four-year college—make the transition from the classroom to the workplace. That translates to lost productivity and wasted human potential." The administration's goal is to enhance individual productivity through a restructured education system. But while it is hard to be against efforts to improve U.S. productivity and competitiveness, it is not at all clear that embracing the German apprenticeship model is going to provide the solution. Emulating the German approach may in fact give us an education system that will not perform better but will cost more than our current one. No doubt budget realities caused the administration to scale back its plans in this area, but questions about what the German model has produced should have contributed too. Anyone contemplating restructuring our system should be aware of these issues.

TWO TYPES OF EDUCATION

The intellectual basis for improving education stems from the work of University of Chicago economist and Nobel Laureate Gary Becker on investments in human capital. Becker believes that individuals use experiences, such as their years of education, to increase their workplace productivity. In a competitive economy, the pay of workers is a direct reflection of their productivity. The amount each person produces multiplied by its market price equals that person's wage rate. More or higher-quality schooling improves productivity and leads directly to improved earnings and a higher standard of material well-being. Thus expenditures on education represent an investment in "human capital," which yields a

return to the individual over time in the form of increased earnings.

Human capital investments take different forms. Education can provide either specific job skills or more general skills such as literacy needed in any occupation. Through these two types of educational experiences, individuals are said to gain specific or general human capital. Broadly conceived, the formal education system of the United States excels at providing general human capital, and that of Germany at providing specific human capital. Each approach has its advantages and disadvantages.

A system emphasizing general education, such as we have in the United States, would theoretically produce individuals who think about a great variety of topics because they have been trained to do so. Thinking across disciplines, the argument goes, fosters among the most able an intellectual freedom that encourages innovation and invention. For average workers, a general education provides a general set of skills useful to a variety of employers. When faced with layoffs, workers with more general skills should have less trouble moving into new occupations.

DISADVANTAGES

The principal disadvantage of a general education is that workers must learn a different set of specific skills each time they obtain a new job. Moreover, both the initial and long-term productivity of generally skilled employees may never rise as high as that of workers who begin with more specific skills. Workers with lower productivity receive lower wages and have a higher probability of unemployment. Also, for the same level of production in a firm, lower output per worker results in higher per-unit production costs, which in turn has a direct impact on the market competitiveness of the firm. But worker skill level may not be the principal determinant of worker productivity. In an industrial economy, the machinery used in the production process has a large impact on the measured output of the typical worker. The production technologies employed may make the skill level of employees irrelevant beyond a minimum functional threshold.

Whether the average U.S. worker has a minimal functional threshold of skills is a legitimate concern. In 1992, according to the Bureau of Labor Statistics, 18 percent of the precision production workers over age 25 in the United States had less than a high school education; 12 percent of the entire labor force ages 25-64 did. Individuals with such limited education may have difficulty performing simple tasks at work or finding new jobs once unemployed. Unemployment rates for this group are typically nearly double that of high school graduates. For example, in 1992, 11.9 percent of individuals ages 25-64 with less than a high school education were unemployed versus 6.9 percent of high school graduates. Whether a national system of apprenticeship can address the problems of functional illiteracy and lack of rudimentary mathematical skills remains an open question.

While a more general education may prove useful in a dynamic economy, a formal educational system such as Germany's, which focuses on the transmission of skills related to a specific occupation, also has theoretical advantages. When young people leave school, they should already have skills particular employers find valuable in order to smooth their transition to work. Once at work, individuals who possess skills needed by employers should have a better chance than others of not being laid off. In theory, the higher workplace productivity acquired through this kind of education system helps offset the relatively higher wage rates paid in industrial nations and helps these nations retain high-productivity, high-wage jobs.

The major disadvantage for workers who possess very specific skills is that if laid off, they may lack general skills that would make it easier to move into a different occupation. One way of viewing this is that their individual productivity, except in the job for which they were originally trained, is too low to justify hiring them. In a dynamic economy characterized by significant job turnover, individuals who are the product of an education system that emphasizes a specific set of work skills would be expected to experience longer-term unemployment than individuals with more general skills.

The issue of specific versus general skills has become a familair topic of debate in Germany. While many in the United States worry that the education system here does not provide workers with a specific set of skills that can raise productivity, Germans face the problems of workers who are often left without a usable set of workplace skills when they lose a job in a declining industry. Anyone contemplating bringing our education system more in line with Germany's should be aware of these reservations.

GERMANY'S APPROACH

There are theoretical advantages and disadvantages to both the U.S. and German systems of education, but theory does not reveal which system is preferable. Nonetheless, many in the United States have concluded that a system such as Germany's, which emphasizes education aimed toward a specific occupation, is superior to ours, which emphasizes the development of a more general set of skills. Before examining whether existing evidence warrants such a conclusion, let us examine the high school education of a typical German.

The high school system in Germany prepares students for various certification exams. Certifications are usually received by age 19 since school is normally begun at age 6. This matches the 12 years of education most U.S. students have prior to high school graduation. Two broad tracks exist within the German high school system: one for individuals who are expected to attend a college, university, or advanced technical school, and one for those expected to enter an occupation directly following high school. For students headed for postsecondary education, high school experiences in Germany are similar in most respects to those in the United States. One clear difference is that since a smaller proportion of German high school graduates attend postsecondary schools, selection of students for the college-preparatory track is quite competitive, and the classes are more rigorous than the typical classes in U.S. public high schools.

APPRENTICESHIP PROGRAMS

Selection for the college-preparatory track is based upon the results of a single test taken at age 13. Those who do not quality (the majority of German young people) are tracked into apprenticeship programs. Companies offer apprenticeships that must lead to jobs at the end of a training period when the certification exam is passed. Students normally enter training at ages 15-17, so they may be apprentices for as long as four years. During the period of apprenticeship, students typically spend up to four weekdays at a work site and the remainder in the classroom. The government, industry, and unions jointly determine the content of the training at the work site. The classroom setting provides courses intended to reinforce the work experience. For example, apprentices in manufacturing might take courses in economics to help them understand the constraints faced by their employers. Trainees are paid a proportion of the wages of permanent workers in their specific industry. At the end of training, the apprentices take an occupational certification exam; pass rates are over 90 percent.

Data from the German Socio-Economic Panel (GSOEP) show that, of all high school certifications held in Germany in 1988 (the year before unification and therefore the most appropriate year for this analysis) by individuals older than 25, 69 percent came from this mixed system of apprenticeship and classroom education often referred to as the dual system. Seventy-nine percent of the individuals in the 24-33 age cohort who completed a high school level certification but did not have any further formal education were occupationally certified following an apprenticeship. Contrast this with the United States, where data from the National Longitudinal Surveys of Youth (NLSY) indicate that 70 percent of an identical cohort described their own educational curricula as general in nature. These figures show the differences in emphasis of the two systems. Adoption of a national system of apprenticeship would dramatically alter the emphasis of the U.S. educational system, although the extent of that change would be related to the size of the program. *Business Week* has estimated that a national apprenticeship program could affect 56 percent of high school students.

Two common misperceptions exist concerning apprenticeships. The first is that they are all in manufacturing. In fact, apprenticeships cover a broad spectrum of job types, from cashiers at retail stores to specialists in electronics. Second, the assumption is often made that because apprenticeships can only be offered if a full-time job is available following certification, former apprentices typically go to work at the workplace of their former employer. In fact, one year after certification, less than half of the newly certified workers in Germany were employed by the same company they worked for as apprentices. This change in employment can largely be explained by social circumstances. Apprentice wages are typically not enough for independent living, so most apprentices reside at home. Certification in Germany implies a breaking of home ties and mobility much as high school graduation does in the United States.

COMPARING RESULTS

Proponents of a national apprenticeship program believe that the United States is failing in international competition because of shortcomings in our educational system. But while there are areas where Germany is outperforming the United States economically, the evidence is not completely one-sided. A careful examination of the experiences of young people in the two systems reveals many similarities in areas where a "superior" education system may have been expected to produce differences.

Consider again 1988, the year prior to German reunification, and compare the same cohort of young workers described by the GSOEP and NLSY data. These 24- to 33-year-old high school graduates with no further education have had time to make the transition to the world of work. For these young workers, the German system has not produced a more robust manufacturing sector. Approximately 18 percent of the U.S. cohort was working in manufacturing compared to 16 percent of the German cohort. Nor did it produce a higher level of employment for this age group; about 82 percent of both cohorts were working. Levels of socialization were similar too. In the cohorts considered, 58 percent of

the Germans and 56 percent of the Americans were married. Thirty-four percent of the German households had children; so did 35 percent of the American households. These and other data indicate how similar the experiences of Germany and America are, not how dissimilar.

Comparisons of aggregate indicators of economic well-being tell a similar story. Organization for Economic Cooperation and Development data for the six nonrecessionary years prior to German reunification (1983–1988) show that the rate of employment growth in the United States exceeded that of Germany each year. The average rate of increase in this period was 2.4 percent in the United States versus 0.4 percent in Germany. Over the same period, the rate of growth in real Gross Domestic Product in the United States surpassed Germany's each year. The average rate of increase over the period was 3.9 percent in the United States and 2.3 percent in Germany. These data illustrate that in some important respects the economic performance of the United States has exceeded that of Germany.

HUMAN CAPITAL THEORY

All of these observations suggest that an apprenticeship program by itself is unlikely to have widespread positive effects either on economic measures such as employment or on indirectly related social problems. But then again, Becker's human capital theory never suggested that all of the ills of society would be solved, only that additional or higher quality time spent in education would translate into higher worker productivity and thus higher wages. If a program of apprenticeship is indeed superior to a classroom curriculum, then individuals who are occupationally certified should be paid more than individuals who are educated in the general curriculum. Is this true?

Again consider the youth cohort from Germany, as analyzed in 1988. Now separate those who successfully completed a high school apprenticeship from those who successfully completed another high school level curriculum. Also, subtract individuals whose highest level of certification was less or more than a high school level in order to evaluate comparable groups of individuals. The only available study, completed earlier this year by the author, indicates that, on average, earnings of successful apprentices in Germany were no different from those of nonapprentices 5 to 14 years following certification.

Evidence from this study shows that training results in substantial increases in earnings for males but not for females. When averaged, however, there is no positive net effect on earnings. One common explanation among researchers for this phenomenon is that the apprenticeship system in Germany perpetuates a gender-based segregation of occupations. It is possible that the United States might enact a program characterized by less bias. But apprenticeships are offered by firms, not selected from a hypothetical high-wage job structure designed by a government economist. If some women are apprenticed in trades formerly reserved for men and vice versa, gender differences in earnings might narrow. But introducing a more gender-neutral system of apprenticeship is unlikely to affect net earnings of apprentices taken as a whole, because the existing distribution of jobs as well as the wages attached to them would remain unchanged. This raises some doubt about the advantages in terms of wage gains of adopting a national system of apprenticeship in the United States.

A considerable body of evidence shows that improved education is related to higher earnings. A reasonable national goal would be to see to it that all workers have the necessary skills to engage in productive employment. Reform could be as simple as returning meaningful literacy and numeracy standards to high schools and having the collective will to achieve them. Alternatively, improvement might involve a national scheme of apprenticeship and occupational certification. If achieving national educational goals costs more money but increases the earning ability of citizens, such a program might very well be merited. This appraisal suggests that the apprenticeship program used in Germany would not pass this test.