

## Panel 3

## DUAL EDUCATION: EUROPE'S SECRET RECIPE?

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Europe has long embraced the use of vocational education to prepare youth for entry into the workforce. None has moved into this as strongly and consistently as Austria, Germany, and Switzerland. With their dual education systems and the intensive apprenticeship programs, these countries have forged very close links between the education system and industry. While many other European countries have developed extensive vocational programs, they have stopped short of the full commitment to apprenticeship programs. Would all of Europe be better off by moving further in the direction of a tightened school-workplace linkage?

While the discussion of vocational education in general has been going on for some time, it has intensified with the recession of 2008 and the subsequent slow recovery of employment. Indeed the raw data suggest that people with vocational education at the upper secondary and tertiary level have higher employment rates than those with general education and that this difference is especially pronounced for young people (age 25–34).

Vocational education, particularly with apprenticeships, is designed to ensure that workers have job-related skills that make them immediately useful to firms. Thus, especially when faced with unemployment problems, it may be good policy to ensure that the education system is providing the skills most needed by the economy.

But the decisions are more complicated than just that, and policy deliberations must also consider a broader set of issues. First, there is now considerable evidence

that general academic skills – mathematics, reading comprehension, and scientific understanding – have a strong influence on economic growth. Part of this comes from contributing to innovation in the economy, but part also comes from having a generally sophisticated workforce that can assimilate new production approaches. Thus, as a first caution, it is important that vocational programs not slight on the development of general cognitive skills.

Second, being prepared for immediate employment must be balanced by implications for employment as the job demands change. In a rapidly growing economy, the nature of most jobs throughout the economy is continuously evolving. This evolution means that the skills that a worker initially brings to the job may become obsolete as the job changes. These changes may be dealt with through ‘lifelong learning’, a currently popular theme of policy discussions. But, it is important that careful thought be given to both the character and the economics of such lifelong learning.

The evidence currently available points to a tendency for the gains in initial employment that come with apprenticeship programs to be offset in varying degrees by lessened employability later in life. Such tendencies are amplified by more rapid economic growth. As a result, it is important that policy take a broad perspective about the expansion of vocational education and not concentrate completely on initial employment.

### Unemployment and vocational education

The starting point of many discussions of the possibility of expanded vocational education is often the performance of the German economy. In the face of recessionary forces across all of Europe, the German economy has maintained a very even keel, and unemployment has not been an overwhelming concern.

Germany is of course not the only European economy to have significant use of vocational education.



Many other countries have varying amounts of vocational education and have more or less close relationships between schools and firms. Germany is near one extreme with its early tracking in school and with its well-developed apprenticeship programs with firms. But others have extensive apprenticeship programs (for example, Austria, Switzerland and Denmark). Therefore, it is useful to begin by looking at whether the degree of use of vocational education is related to unemployment.

Figure 2

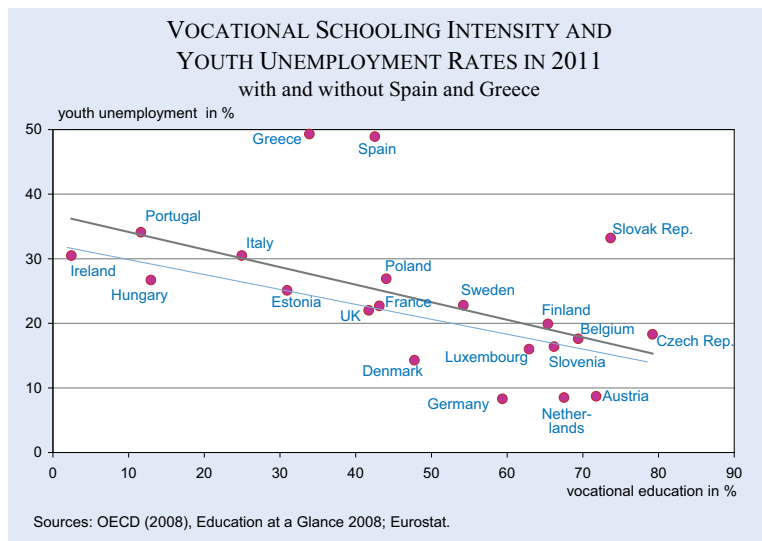


Figure 1 displays the relationship between the proportion of students in some sort of vocational training and the overall unemployment rate for 2011 for a selection of European countries in the OECD. From this picture, we see that the apprenticeship countries of Germany, Austria and Denmark do have low unemployment rates to go along with their schooling programs. Moreover, if we look across all of the countries, there is indeed an apparent relationship between unemployment and vocational training – as seen by the top line that is slanting down through the country observations.

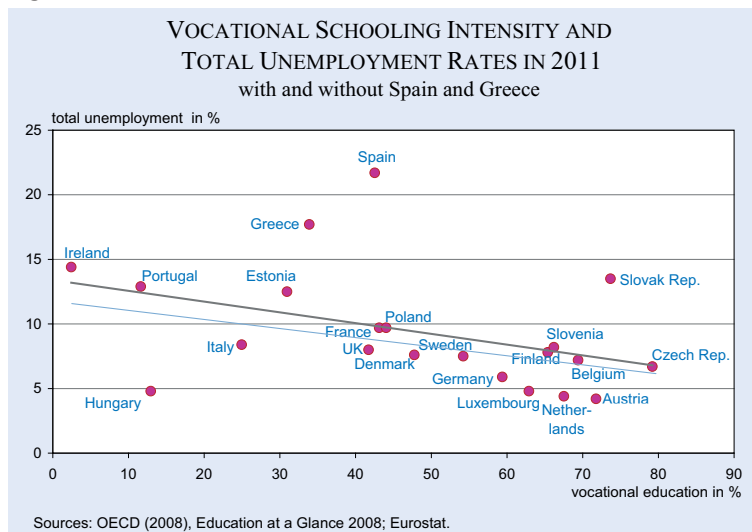
But, the downward sloping line is somewhat driven by Spain and Greece. Without these two countries – where few people would argue that the form of schooling is the main driving force – the relationship becomes flatter but still downward sloping as indicated

by the second, lower line in the figure. On average, having 10 percent more students in vocational programs leads to a 0.6 percent lower overall unemployment rate.

In summary, even though the business cycle is not so much driven by the short-run match between worker skills and employer demands as by macroeconomic conditions, the added attachment of workers to firms shows up.

The arguments for vocational education, however, tend to focus more on youth unemployment. As shown in Figure 2, there is an even stronger relationship between youth unemployment rates and vocational education. (Again, the steeper line includes all countries, while the flatter line excludes Spain and Greece). For youth, a ten percent greater participation in vocational education leads to a 2 percent lower unemployment rate. By this measure, the aggregate data suggest that vocational education does improve the job possibilities for youth and does lead to lower unemployment rates even during the recovery from a deep recession.

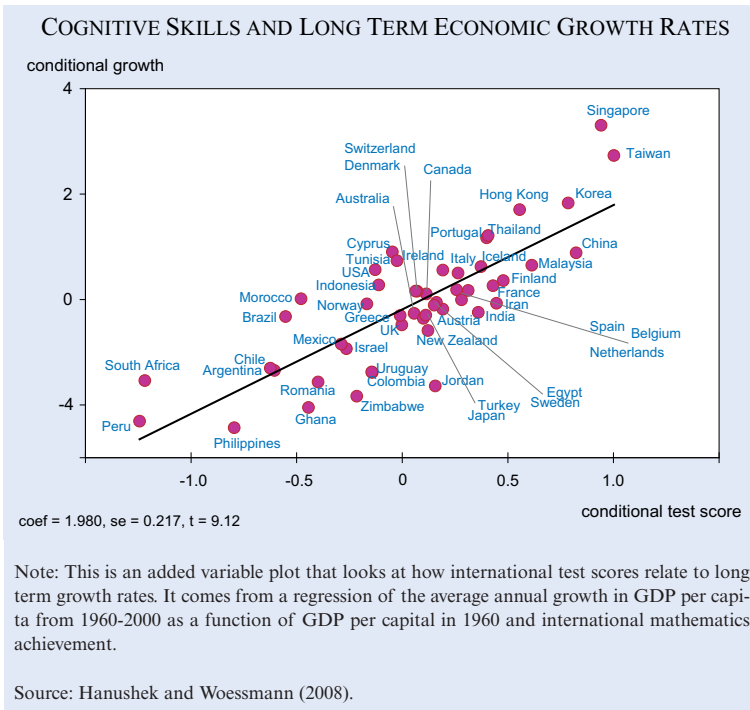
Figure 1



**Importance of cognitive skills**

The type of education offered is just one dimension of schooling. A second, and potentially much more important, dimension is the quality of education. We know

Figure 3



from international assessments that there is wide variation across countries in what students know. Moreover, these differences in cognitive skills, measured by international tests such as PISA, are very important.

Figure 3 shows the impact of differences in mathematics and science on long-term growth of nations. The graph plots how test score differences on the horizontal axis match with differences in the growth rate for GDP per capita between 1960 and 2000. These long-term growth rates are closely linked to the skills of the populations measured by the common tests across nations. Moreover, the different growth rates have huge impacts on the well-being of societies.

This fact is very important for the current discussion of vocational education. The German dual education system has been developed over a long period of time. An important component of this has been the development of a strong academic component for those who are on the vocational track – so that Germany on a whole is doing quite a good job relative to the rest of the OECD on the most recent PISA tests.

If, however, a country viewed vocational education as mostly a nonacademic track with limited emphasis on academic skills, it might find itself at a serious disadvantage in terms of long-run growth. Anecdotal evi-

dence suggests that some nations may in fact be looking at vocational schooling as a distinct alternative to developing much in the way of academic skills. In other words, while some countries may view the German experiences simply in terms of the apprenticeship programs and the linkages with firms, this would be a mistake. The German experience really is the dual system that combines academic preparation with industrial experience.

**Lifetime employment patterns**

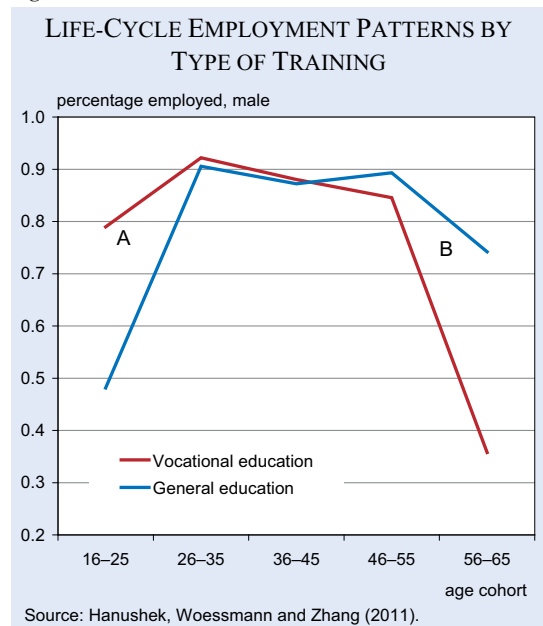
But even with an emphasis on academic preparation within the vocational school system, there may be further trade-off that is potentially important. Specifically, the more specific the training of people for a given vocation the more likely it is that they become narrower and less flexible. People trained to the specifics of a given firm doing a given type of production may not be as well-prepared to move to a different firm with a different task as somebody with more general training. Indeed, when firms talk about needing better prepared students to enter their firms, they often are suggesting that the training should be more tailored to their current operations.

What happens if the technology changes? Or even the whole industry changes focus as with many industries that are suddenly faced with foreign competition?

The big concern is that vocational training may make people less adaptable to change and less able to adjust to new technologies. This concern is particularly important when there is rapid technological development – as would be implied by rapid economic growth. Vocational training may make students better able to carry out the school-to-work transition and better able to enter into jobs quickly. But it may also make them worse off in the future when technology changes and it may lead them to have fewer employment opportunities over the full life-cycle.

A study by Hanushek, Woessmann and Zhang (2011) suggests that these concerns are very real. Figure 4

Figure 4



traces out employment rates by age and schooling type for a sample of Danish, German and Swiss workers in the mid-1990s. The area marked 'A' represents the employment advantage of young workers with vocational training compared to general education – exactly the motivation behind much vocational education that is designed to make the school-to-work transition smoother. Area 'B' on the other hand shows the lessened relative employment of older workers with vocational training.

The policy question is whether A is bigger than B. For Germany, it does not appear to be. The losses later in the career seem larger than the gains early in the career for those with vocational schooling. However, when we do the same calculations for other apprenticeship countries (Denmark and Switzerland), we find different results. For Denmark, gains and losses appear to balance out. For Switzerland, the early gains of vocationally trained workers appear greater than the subsequent losses. Interestingly, the ordering of these countries exactly matches difference in growth rates. Germany, with the highest growth and thus the most technological change, puts vocationally trained workers at the most disadvantage later in life, while Switzerland with the lowest growth finds the early gains to be dominant.

Some of these observations of potential trade-offs point to the importance of lifelong learning. Lifelong learning has been a topic of importance for the European Union – and various policy docu-

ments highlight the need for people to continue to invest throughout their lifetime. At the same time, it has generally been difficult to figure out how to provide lifelong learning, who funds it, and the like. This discussion of vocational education clearly demonstrates the need to have some viable mechanisms to ensure that there is learning throughout the career so that early skills can be adapted to later employment.

### Conclusions

The summary of this discussion is that vocational education appears to have some advantages for helping youth to enter firms smoothly. Thus, for example, Germany's system of apprenticeships seems to be very successful. But a nuanced view of the benefits and costs is necessary.

A successful system of vocational training cannot neglect developing strong cognitive skills in individuals. Here Germany is also a model, because those in the vocational track also get strong classroom instruction in basic math, science, and language skills.

Further, a successful system of vocational training must consider whether vocationally trained workers have enough flexibility to adapt to different technologies. This is particularly true in a rapidly growing economy where individual industries change noticeably over time and where the composition of firms in the economy also changes. Such need for flexibility emphasizes the need for some way of providing lifelong learning.

Germany's highly developed dual system may indeed be a model for other countries, but the specific lessons cannot be lost: vocational skills must be complemented with strong academic skills. And, even Germany must address issues of the life-cycle of employment: high growth and rapid technological change require finding ways to ensure the continued employability of people with specific vocational skills across the life-cycle.

### References

- Hanushek, E.A. and L. Woessmann (2008), "The Role of Cognitive Skills in Economic Development", *Journal of Economic Literature* 46, 607-668.
- Hanushek, E.A., L. Woessmann and L. Zhang (2011), "General Education, Vocational Education, and Labor-market Outcomes over the Life-cycle", NBER Working Paper 17504.

## PANEL

**Knut Engelmann**, Managing Editor of *The Wall Street Journal Deutschland*, chaired the third panel and once again highlighted the questions to be tackled: is the dual education system a stabilising factor in an economy? Does it explain the low youth unemployment rates in Germany, Austria and Switzerland? How exportable is the system and does it produce the kind of workers needed in a digitalised and globalised world?

The first statement by a panel member was given by **Christian Lettmayr**, Acting Director of the Brussels-based European Centre for Development of Vocational Training. He observed that the demand for skills has been weakened by the 2008–10 crisis, but the supply of skills has remained stable. This imbalance has increased the danger of a skills mismatch, which results when the more highly qualified compete with the lesser qualified, pushing them out of the labour market. In Germany, youth unemployment is currently the lowest in the EU. This may be attributed to the dual education system, but the model is not easily exportable and requires adaptations. Many initiatives exist that promote work-based learning models all of which are attempts to reduce imbalances and mismatches on the labour market.

State Secretary **Cornelia Quennet-Thielen** of the German Federal Ministry of Education and Research confirmed the interest in the German approach to vocational education. The strength of the German system is that learning on the job complements learning in the classroom and that employers are strongly involved, rendering the training a practice orientation and providing employment for most of those who complete the course. Companies participate because they benefit economically: the system reduces their recruitment costs and leads to lower employee fluctuation. At the same time, the system has adapted well to new vocational profiles. However, because dual training is deeply embedded in the educational system and requires substantial coordination among the various actors, countries that wish to adopt this approach must focus on the ‘dual principles’ that underlie the system. Above all, she stressed, the attractiveness of vocational training must be enhanced by improving quality, offering a broad spectrum of careers and ensuring ‘sufficient mobility and permeability’ in the system.

**Andrew McCoshan** of the University of Warwick’s Centre for Education and Industry is an expert in the comparison of education systems. He observed that the success of the dual education system must be seen in its context. It qualifies people for entry into a labour market that is highly stratified and regulated and is also backed up by employment law. From a systems perspective, the prospects for the transferability of the dual-education model are not good. Essential features of the system, however, such as striving for a close fit between qualifications and occupations can be transferred, as well as enhancing the role of employers. At the same time, the weaknesses of the system – lower levels of life-long learning, less permeability and flexibility – should be corrected if ‘the ideal mix’ is to be achieved.

The panel also included a vocational training practitioner: **Gerhard F. Braun**, Vice-President of the Confederation of German Employers Organisations (BDA) and managing director of a leading medical textiles firm. He observed that employers view training as an investment in a company’s future. The dual vocational education system is the main source for skilled workers and personnel, and in times of demographic change it is crucial for employers to attract talent to the company at a very early stage. The active co-operation between employers and trade unions in Germany is one of the success factors of dual education in Germany.

**Giampaolo Galli**, Director General of the Italian employers’ federation, Confindustria, lamented the low rate of vocational-school graduates in his country. Italian universities also do not train sufficient numbers of engineers, doctors and lawyers and too many trained in the humanities. Vocational-school enrolment has been declining in Italy in recent decades, which is why his organisation has been calling for change and for vocational training on the lines of the German dual education system.

To start off the discussion, Knut Engelmann asked the panellists for their advice to Italy. Gerhard Braun observed that even in Germany the close links between schools and companies is fairly recent and that Italy should move in this direction. Andrew McCoshan pointed out that the apprenticeship system is being successfully rebuilt in Britain, largely because its value has been recognised. Italy should also adopt this approach.

**Alessandro Cigno**, economics professor at the University of Florence, shared Eric Hanushek's criticism of early tracking but added that offering everyone the same education is not the answer. This leads to a growing divide between public and private education, as can be observed in the United States and Britain. Then the discussion turned to the alleged early career gains and later losses of the dual education system in Germany. Hans-Werner Sinn wondered if the high unemployment of vocationally trained workers in Germany at the end of their careers was because the data for this assertion was collected ten years ago when high unemployment led to a rash of early retirement schemes. Gerhard Braun confirmed that German companies lost a lot of know-how at this time. "The employment rate of older people has subsequently increased", also due to the demographic problem Germany faces, he asserted. In response to the question of whether it is wise to export the dual education model that has given Germany a competitive advantage, Cornelia Quennet-Thielen stressed that German industry's activity abroad is a great advantage. "It would be a sign of weakness if we were not willing to share successful models".