Skills are central to productivity and wage growth and to achieving full employment. Although employers are the eventual users of worker skills, U.S. policymakers and researchers pay little attention to the skill development and skill matching roles of employers, instead focusing on schools and of other government-sponsored education and training. Public and private spending on formal education at all levels is nearly 8 percent of GDP (over $1.1 trillion in 2010), a higher percentage than nearly all other OECD countries. Spending on training in classrooms and workplaces represents a small fraction of education spending, even at the postsecondary level. In part, the resource allocation reflects the way the U.S. measures the quality of preparation of students for the workplace. The key indicators are years of schooling and level of degree as well as general academic tests of reading, writing, and math. Rarely do policymakers and policy researchers use information on what employers report they value most, occupational skills and workplace skills such as problem-solving, communication, responsibility, and punctuality.

Employer-led training helps deal with the gaps between what is learned at school and how to apply these and other skills at the workplace and in the context of particular occupations. An extensive body of research documents the high economic returns to workers resulting from employer-led training (Bishop 1997). Transferring skills to the workplace works best with supervisory support, interactive training, coaching, opportunities to perform what was learned in training, and keeping the training relevant to jobs (Pelligrino and Hilton 2012). Several studies find training usually benefits firms and yields external benefits, including gains for subsequent employers and for the public in avoidance of disasters as well as network externalities (as more are training in a common means of communication). Moreover, the government generally gains by paying little for the training while reaping tax benefits from the increased earnings of workers.

Given the high returns to workers, employers and the public, it is puzzling that policymakers do not place a high priority on stimulating employer-led training. In fact, the U.S. government does not even develop reliable measures of the size, composition, and differential
effectiveness of employer-led training. Spending on employer-led training is much higher than outlays on government training programs, yet far more research and policy attention has been directed toward government programs. One reason may be that governments in the United States have little influence on training efforts by private firms. Another may be that the public role in preparing workers for skilled careers is assumed to fall under the authority of the school system and postsecondary education institutions. A third reason is that employer-led training is difficult to measure.

Still, the role of employer-led training is increasingly attracting the attention of policymakers, especially in light of employer reports of worker shortages in skilled trades and in a range of middle-skill occupations. Claims of worker shortages are striking in an extended period of high unemployment. The combination of shortages and high unemployment suggests potential weaknesses in the largely school-based systems of initial preparation for the workforce. In a set of improvised responses, state and local officials have been trying to expand employer-led training through direct grants (often as a way of attracting new investments), sectoral programs, tailored community college training, and registered apprenticeship programs.

In considering what to do next, it is wise to take stock of what we know about employer-led training in the U.S. today. Why do employers spend the money to train workers? What is the scale of employer training today? Are employers shirking their responsibilities to dealing with the skills and jobs problems by abandoning their training roles? Is there sufficient data to determine the scope of employer-led training in the U.S.? What types of training are firms and other organizations providing? What policies might encourage more of the valuable types of employer-led training in the U.S.? What lessons concerning employer-led from other OECD countries might be applied effectively in the U.S.?

This paper examines these questions in the context of a changing economic environment. In particular, the discussion considers employer-led training in a period of high unemployment, demographic shifts, moderate growth, and, in the U.S., a resurgence of energy and manufacturing investments. The next section examines broad theoretical and empirical questions addressed in the existing academic and business literature. Why employers train and what type of training do we observe are the key issues. Section 3 reviews past and recent data on employer-led training as well as illustrations of ongoing employer-led training. In the fourth section, we consider differences in training regimes, particularly how OECD countries vary in their experiences with employer-led training. The section discusses government policies that interact with these training regimes. The paper concludes with implications for policy regarding employer-led training in the U.S.

Why Do Employers Train? Why Don’t They Train?

Employers want workers who can undertake relevant tasks, can work well with others, and ideally can improve operations and raise productivity over time. Training is one means to these ends. Nearly all employers provide training related to orientation, safety, employee benefits, and other specific aspects of the organization and operations. But, to staff a work force with other key skills and knowledge, firms decide on a “make or buy” approach. Some choose to buy by hiring workers who have the desired qualifications as a result of prior education, training,
and work experience. Others choose to deliver and to sponsor training that helps workers achieve high level qualifications.

In understanding these decisions, the standard Becker typology (Becker 1964) suggests firms will only pay for firm-specific training. Financing general training will not be cost-effective because of the risk the firm will not accrue sufficient benefits to offset training costs before other firms hire away the trained workers. Since the added productivity makes workers more valuable both inside and outside the firm, firms financing the training will be unable to recoup their investment by paying the newly trained worker a wage less than his or her newly enhanced level of productivity. Competitors will hire the worker away from the company providing training or bid up the trained worker’s wage to the new productivity level. Employers may finance “general” training costs by paying lower wages, as suggested by Becker’s theory, although past studies find little or no wage sacrifice with many types of training. Becker’s typology is instructive but limited. As Becker suggested, firm-specific training is common; however, many employers also train workers in general skills that are useful in other organizations.

One rationale for providing general training is the role of imperfect and asymmetric information. Employers providing training are often in a better position to judge the worker’s productivity than are outside employers (Katz and Ziderman 1990). Another rationale for employer-led general training is imperfect information and other market imperfections can allow employers to pay trained workers less than the gain in their productivity without losing them to other firms (Acemoglu and Pischke 1999). One reason is that the employers providing the training are in a better position to judge the worker’s productivity than are outside employers. An employer knows only a modest amount about workers when they enter the firm. One way of learning more is to observe how they learn, especially on the job. Another possibility is that general skills complement specific skills. As a result, increasing general skills raises workers’ ability to use their specific skills. Interestingly, transparent skill standards could erode the information advantage for employers (Greenhalgh 2002). Still, several studies show positive impacts of general training on firms’ productivity and profitability (Barrett and O’Connell 2001; Bassi and McMurrer 2004; and Hanssen 2007).

Another example of how providing general training can benefit firms comes from Cappelli (2004), who argues that imperfect information might be a reason to offer tuition benefits. It is difficult to sort workers whose qualifications are similar on paper. But when tuition benefits are offered, the applicants with more interest in learning relative to other applicants with the same paper qualifications are more likely to apply and use the general training. These workers may have more motivation and an unmeasured skills advantage. Cappelli (2004) finds evidence to support the notion that workers who take up tuition benefits are more effective than other workers with the same observed characteristics.

With respect to skill upgrading, employers can limit training to workers most likely to benefit and to stay with the organization. Recognizing that some critical occupational skills can only be learned at the workplace, employers may choose to undertake some training while collaborating with educational institutions and coalitions of organizations in the same industry.
Because skill requirements and the best methods for learning relevant skills vary across occupations and industries, we would expect training patterns differ as well.

Still another issue is risk and uncertainty. Typically, employer investments in training are generally irreversible. Employers cannot take back knowledge or require reimbursements from workers after the fact. This irreversibility, combined with uncertainty about productivity outcomes from training, has implications for evaluating employer returns to training investments (Jacobs 2007). In particular, the standard present value calculations do not necessarily serve as the correct guide. Instead, in an investment decision under uncertainty and irreversibility, one should take into account the option value of the additional trained worker. When the training is completed, the firm has the option but not the obligation to hire the trained worker and/or utilize the skills learned from training. This option value raises the firm’s returns and increases the likelihood that they will invest in training. Leuven and Oosterbeek (2001) consider firm-specific investments in on-the-job training. Given uncertainty about the productivity returns from irreversible investments in particular workers, the firm’s investment creates a real option that is especially valuable.¹

Other studies highlight the impacts of organizational attributes and strategies on worker training. For example, the incentive to train should be higher for those organizations that have to delegate decision making, that are large and have high monitoring costs, and that promote from within instead of hiring from the labor market for high-level positions. Knoke and Kalleberg (1994) find that organizations that are large, promote from within, and have formalized job structures provide more worker training. Osterman (1995) shows that organizations make tradeoffs between training existing workers and hiring workers with previously developed skills and that organizations train more when they use flat hierarchies, worker involvement, and teamwork and devolve decision making to the line level. Surprisingly, his estimates reveal no increase in training related to job ladders.

Firms benefit in other ways from employer-led training. At least as far back as 1962, learning by doing has been incorporated into models of economic growth (Arrow 1962). Bauernschuster, Falck, and Heblich (2009) document one mechanism affecting the firm and the economy: a positive impact of employer-led training on innovation. They first point out that, “Because of the rapidly changing environment of today’s world in which human capital derived from formal education (schooling, vocational education) depreciates quickly, learning by doing, in the form of in-firm training, may be an additional way to continue to accumulate leading-edge knowledge.” The authors use data from over 3,000 establishments in Germany who report on whether they introduced a new product or service in the past 2 years, newly adopted a product or service or enhanced an existing product or service. Information on training in the periods prior to the innovation period comes from questions about whether firms encouraged training by at least partly financing the training or by releasing workers for attending training. Using data on other firm characteristics as well as an identification strategy for causal inference, the authors find that a 10 percentage point increase in training intensity translates into an 11 percentage point higher propensity to innovate.

¹The analysis of real options adapts the tools for analyzing financial options to investments in physical or human capital assets or other decisions affecting nonfinancial matters. See, for example, Dixit and Pindyck (1995).
Another piece of evidence on the value of employer-led training comes from the work of Bassi and McMurrer (2004). They find that firms’ investments in training and development are the single most important predictors of stock prices, holding other factors constant. Bassi (2011) points out that this is a striking fact given the difficulty of finding any systematic predictors of stock prices. One part of the explanation is the inappropriate accounting treatment of human capital investments. Training investments, like other investments, incur costs in one year, but accrue benefits accrue over several years. In the case of physical investments, the income statement does not assign the full costs of the investment in the year the purchase occurs, but rather only those costs that reflect the amount of the asset used up during the current year’s activity. In contrast, human capital investments undertaken in a particular year are fully expensed in that year. This policy reduces the after-tax costs of financial incentives for training. On the other hand, investments in human capital are not reflected in the balance sheet as an asset. As a result, the accounting information shows companies investing in human capital showing lower profits that would an accurate measure of the performance of firms. To highlight the point, Bassi and McMurrer provide a simple example:

Consider two organizations that are identical in all but one respect: Company A makes substantial investments in skills, while Company B does not. What will be evident to any analyst comparing the companies’ income statements is that Company A has higher overhead for selling, general and Administrative expenses, and correspondingly lower reported earnings, than Company B. What will not be evident, however, is that some of Company A’s expenses are actually investments in future productivity. Consequently, Company A’s stock price would be expected to be lower—at least in the short run—than Company B’s. The decision of Company A to invest in employee skills thus occurs despite pressures from financial markets.

Since stock prices depend more on these accounting profits than on real value, the market underestimates future gains in the high training firms but over time, the added profits associated with training materialize, accompanied by a higher stock price.

Although several pieces of evidence show high returns to employer-led training, some studies are cautious about drawing causal conclusions. Bartel (2000) finds research from a variety of perspectives show significant benefits to employer-led training, many of the studies do not measure the costs of training. Still, she concludes that the available evidence indicates high estimates of returns for employers.

Given the apparent benefits of employer-led training, what are the potential barriers? Certainly, the commonly cited fear that firms will lose from their investments because of poaching by other firms plays a role. But, other factors may be at least as important. One is the difficulty of measuring the costs and benefits of training. When a skilled worker spends time training a less-skilled worker, the lost production is not always clear. Measuring benefits is often even harder. Even the category of gains may vary by firm. For some, the gains may take place when fewer serious accidents or medical errors take place; for others, in the form of lower expenses on maintenance; and for still others, through higher profitability attained through innovation.
A second potential barrier is lack of knowledge about what type of training will work best for the organization. As Bassi (2011) points out, the characteristics of training programs that yield the highest return on investment (ROI) vary with the size, maturity, industry, and other business needs. Employers thinking about incorporating occupational training, especially formal occupational training in the context of apprenticeships, must determine content standards (what completers should be able to accomplish), a curriculum, the role of courses vs. work-based learning, the effectiveness of mentors, and the methods for determining whether the trainee is achieving sufficient mastery in an occupation to graduate. Measurement and evaluation of training impacts is difficult, although several approaches have been developed for doing so (Bassi and McMurrer 2006).

A third barrier is scale. Setting up a formal training program and exposing workers to a wide range of tasks is especially difficult for small companies. They often lack the expertise and the cost per worker becomes prohibitive since the training will cover few workers. These problems can be overcome with the appropriate public and private institutions, such as public technical assistance in setting apprenticeships or consortia of employers in the same industry sector organized by private intermediary organizations of government entities. In some cases, a major firm can assist in the training efforts of small firms that are customers or suppliers. One example is the development of Cisco Academies, which use classroom training and on-line learning to train students and help them prepare for industry-recognized certifications in information and communication technology careers.2

How Extensive is Employer-Led Training in the US?

The role of employers in training workers is increasingly caught up in the broader issue of who is responsible for skill mismatches in the U.S. Despite widely quoted anecdotal and survey evidence that employers have difficulty filling a large number of skilled positions, especially in manufacturing, some see the notion of a “skills gap” overstated, that hiring difficulties are the result of low wages.3 Others see a major skills gap emerging over the next decade, as older workers retire. Still, to the extent that skills gaps exist, some argue that they result from what Wharton Professor Peter Capelli (2012) calls an enormous training gap and “sagging investment in employer training among those companies apparently desperate for skills,” though he admits the evidence is weak. Justin Rose, coauthor of a Boston Consulting Group study of skills gaps, argues that “Companies should be much more aggressive about cultivating the next generation of manufacturing talent” and investment more in recruiting and in-house training. Doing so, Rose argues, would give the U.S. a competitive advantage in manufacturing talent.

In fact, the current scale of training in the U.S. is hard to determine. Capelli (2012) cites a survey of U.S. employees by Accenture in 2011 indicating only 21 percent received any employer-provided training in the prior five years. However, an accompanying survey of employers indicated about 40 percent offered training, 81 percent believed the company placed a sufficient priority on training to meet company needs, and 54 percent viewed employers or business groups (rather than colleges or governments) as organizations that should be primarily

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3For an example of story highlighting the skills gap and the need for more company training, see Puri (2012).
responsible for education and training of workers. Employers viewed employability skills (e.g., motivation, accountability, time management, punctuality, a strong work ethic, and adaptability) as involving the highest deficits between workers’ actual skills and the importance of the skills. At the same time, the most important changes in job requirements over the next four years were technical skills and skill qualifications.

Another large and continuing private survey of employer training is performed by the American Society for Training and Development (ASTD). The ASTD surveys indicate no evidence of a downward trend in expenditures on training. In 2010, the average expenditure per employee in the firms participating in the survey reached $1,228, a 12 percent increase (inflation adjusted). The aggregate spending on training by U.S. employers amounted to over $170 billion or 2.7 percent of payrolls, according to ASTD. Although this figure probably overestimates employer training because of the nature of the sample, it is broadly consistent with estimates based on past ASTD employer surveys and indicates no tendency toward a decline in employer training. Tuition subsidies make up about 12 percent of training dollars.

Data from government surveys offer a mixed picture of both levels and trends in training. Unfortunately, despite the importance of the issue, the last federally sponsored, nationally representative survey of employer-led training took place in 1995. At that time, employers generally offered at least some training, especially for new employees. About 93% of establishments with 50 or more workers provided formal training in 1994 (Lerman, McKernan, and Riegg 2004). Although the rate was lower for smaller establishments, 72% of those with 20 or more workers offered formal training. An even higher share (97%) provided some form of informal training. Much of the training was orientation and safety training that takes place when workers start their jobs. Over 90% of recently hired workers received at least some on-the-job training (Barron, Berger, and Black 1999). Employers reported in 1992 that their most recent hire averaged 19 hours of formal training, 59 hours of informal training by managers, 34 hours of informal training by co-workers, and 41 hours of informal training by watching others (Bishop 1997). Although training for new hires may have declined since 1992, these results highlight the importance of informal training.

Between the 1980s and mid-1990s, surveys of workers show gradual increases in the incidence of employer-led training. The percentage of workers reporting receiving training in the Survey of Income and Program Participation (SIPP) rose from about 6% in 1984 to about 20% in 1996. Training is defined in the SIPP as lasting more than a week and intended to help search for or train for a new job or any training to improve job skills on one’s current or most recent job during the past year.

Using a somewhat different question on training, the National Household Education Surveys (NHES) estimated that the incidence of training increased from 19% to 27%. The main NHES questions ask about any work-related course, apprenticeship program, or vocational degree/diploma program taken in the prior 12 months. Unlike the SIPP, the NHES survey instrument reminds workers by mentioning “work or career-related courses, seminars, training, or workshops whether or not you had a job when you took them.” By far the most frequent participation was work-related courses, which involved 40% of all full-time workers in the 2004–05 survey. Employers provided financial support for nearly all of these courses, including
tuition and materials (86% of cases), worker salaries during the training (81% of cases), and programs offered at workplaces. Training incidence as measured by the NHES was consistently higher than that in the SIPP. However, the highest figure of all sources comes from the 1995 employer survey, where 70% of workers in establishments with 50 or more workers reported receiving training.

Table 1 reveals the wide variation in the reported incidence of training in the 2000s. As of 2003–2005, the share of workers receiving job training in the prior 12 months ranged from 56 percent in the National Assessment of Adult Literacy (NAAL), to 42 percent in the National Household Education Survey (NHES), to 21 percent in the Survey of Income and Program Participation. The SIPP show a downward trend from 1996 to 2004 and then a leveling off until 2008. The NHES, a survey specifically geared to adult education and training, showed an increase between 1999 and 2005. For all surveys, training is more common at higher levels of educational attainment, at larger firms, and slightly higher among women than men.

The government surveys differ on the intensity of training as well (Lerman 2010). Tuition subsidies are quite common, indicating that many workers do not take advantage of existing opportunities for training. A 1997 employer survey found that over 80 percent offered tuition subsidies for managers, supervisors, and administrators and 69 percent for frontline workers (Lerman 2010).

These figures and those from most government surveys do not include the large amount of informal training taking place in most workplaces. Most training is for upgrading skill, including training to teach new specific work skills, such as how to use equipment, machinery, or technical processes. Over 40 percent took up training to get or keep a state, industry, or company certificate or license, with over half of adults taking work-related training participated because of an employer requirement.

Comparative data paint a mixed picture of the scale of U.S. employer training. One report found that as of 1995 the incidence of career- or job-related training among 25- to 54-year-old workers is 49 percent in the United States, 38 percent in Canada, 20 percent in Germany, and 58 percent in the United Kingdom (Kletzer and Koch 2004). An OECD analysis of data in the late 1990s shows the U.S. at about 40 percent or close to the middle in the distribution of countries. The OECD analysis reinforces findings from other studies showing significant wage gains associated with employer training in a number of countries. A more recent comparison showed U.S. employer-led training in 2003 at levels similar to those in Canada, but slightly below those in Switzerland and Norway (Rubenson, Desjardins and Ee-Seul 2007). According to these data, about half of 16- to 64-year-old Americans participated in a course or program and half of these participants received support from employers.

These figures take little account of the variations in employer training for the under-25 workforce. Here, U.S. employers fall well short in the provision of occupational training for young people. Apprenticeship programs in Germany, Switzerland, Austria, Australia, and increasingly in the United Kingdom are widespread, often reaching over 50 percent of young people. In the U.S., apprenticeship training takes place at later ages and for only about 2–3% of a cohort.
Still, even in the U.S., apprenticeship is a significant, intensive form of employer-led training. It provides in-depth training in an occupational field in a combined classroom-based, work-based setting. Completing an apprenticeship typically requires 3–4 years of instruction. In the construction occupations, apprenticeships yield the most respected credentials. While national data sets rarely have sufficient cases to investigate this form of training, over 25,000 employers or union-employer programs offered apprenticeship training to at least 480,000 workers in the registered apprenticeship system in 2008 and probably a similar number in unregistered programs (Lerman, Eyster, and Chambers 2009). As of 2012, registered apprentices number about 400,000, with about 60,000 of the apprentices serving in the military. Although the combination of registered and unregistered apprentices constitute a small share of the workforce of about 140 million and each year’s completers represent only about 6% of an age cohort, the employer-led training under apprenticeships is quite intensive and of long duration.

Sponsors of U.S. apprenticeship programs report high levels of satisfaction with this approach to skill development. In a representative survey of 947 sponsors, 97% stated they would recommend the program to others, with 86% recommending it “strongly.” The benefit cited by over 80% of sponsors was the apprenticeship program’s role in meeting the demand for skilled workers. Another major benefit was that the apprenticeship programs show reliably which workers have the skills needed. Other benefits, cited by 68% of sponsors as very important, were raising productivity, strengthening worker morale and pride, and improving worker safety. A majority of sponsors also reported benefits in worker recruitment and retention and in meeting licensing requirements.

One common concern about encouraging intensive, employer-led training is that firms will be unable to recoup the costs of training because others firms will drive up the wages of the newly skilled workers. The process by which competitor firms bid away trained workers after their apprenticeship is commonly called “poaching”; it is viewed as a major disincentive to employer involvement in any training that raises the productivity of workers outside the firm. Some apprenticeship sponsors viewed poaching as a significant problem, but surprisingly, 46% of sponsors did not perceive it as a problem at all. Still, even among sponsors who perceived poaching as a problem, about 85% strongly recommend apprenticeship to others.

Another component of publicly assisted, U.S. employer-led training is the sector strategy. This approach brings together local and/or state government, employers in a specific industry or that use the same occupations, and intermediary organizations that can work with employers, governments, and workers. This group selects the targeted industry or occupations, develops deep expertise about skill requirements and job ladders, focuses on meeting industry needs, provides services to workers, and attempts to generate long-term change in employer recruitment and training. Although a third party often provides the training, employers also participate in the training process (Conway, Blair, Conway, and Dworak-Munoz 2007). Evidence from a randomized trial showed that a workers’ participation in sectoral programs yielded high rates of return. One aim of these programs is to encourage employer-led training among low-skill, low-wage workers. A large public initiative is currently under way to involving employers in training the less advantaged for occupations the health sector.4

What Lessons Can Be Drawn from Employer-led Training in Other OECD Countries?

Concerns about declines in employer-led training and skill mismatches are increasingly common in several OECD countries, not just in the U.S. OECD finds overqualified and under-qualified workers based on their qualifications compared to the qualifications of others on the job. The 2006 Leitch formal review of skills pointed to weak skill levels at the low and intermediate levels in the United Kingdom along with skills gaps relating to employability, technical skills, literacy, and numeracy. A 2012 Accenture report, released at a time of over 10% unemployment in European OECD countries, described complaints about the inadequate supply of skilled workers—mostly in high end manufacturing jobs. Meanwhile, youth unemployment is extremely high in many countries, with the 2011 unemployment rate of 15- to 24-year-olds reaching 46% in Spain, 29% in Italy, 22% in France, and 22% in Sweden (OECD 2012).

It is difficult to summarize the patterns of employer-led training across all 34 OECD countries. Clearly many have not found the best approach to matching skills to jobs and careers. On the other hand, it is worth examining key training issues and policies to assess what approaches are most promising.

Types of Qualifications

One issue that divides countries is the approach to employment qualifications. Some countries, notably the UK, favor using a National Vocational Qualification system (NVQs) that workers can learn in a modular fashion and achieve specified levels of competency at various times. The NVQ system takes account of skill gradations in each defined field and allows workers to gain documentation for each level, whether attained with one employer or many. The ultimate goal was that employers would place a value on attaining a qualification level, giving workers an incentive to learn on the job. Although this system has not worked as effectively as planned (Eraut 2001), the NVQ approach offers one example of how certifying the attainment of skills can provide the basis for measuring the heterogeneity of skills. Other countries, particularly Austria, Germany, and Switzerland, choose to train workers holistically until they have gained mastery over a range of occupational skills and can be viewed as a fully qualified engineer, carpenter, or member of any other profession. Occupational standards are built into apprenticeship programs; once completed, the apprentice completer is ready to become part of the occupation’s “community of practice.”

Training Mandates and Training Levies on Firms

A second policy issue relates to the role of mandates and subsidies in promoting employer-provided continuing vocational education. This focus excludes initial vocational education that prepare youth for careers. In a recent review paper, Müller and Behringer (2012)

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5 The recent report by the Leitch Commission illustrates the use of qualification standards in assessing national skills and in developing policy initiatives to enhance skills. See Leitch (2006).
describe a number of schemes that have been implemented in OECD countries but point out that few have been subject to a comprehensive evaluation. The approaches include tax relief or direct subsidies for training, advisory services to identify training needs and help develop training plans, recognized standards and frameworks for certifying the qualifications of trainees, and the creation of standards for trainers. Employers report that several of these policies influenced their decision to offer training. Large businesses appeared more responsive to training promotion policies than small businesses.

Financial incentives often take the form of tax subsidies, direct payments, or vouchers. For example, Netherlands and Austria have allowed firms to deduct 120% (instead of 100%) of their training costs.\(^6\) The evidence on these tax subsidies revealed little if any increase in training. Between 1999 and 2001, Flanders implemented an incremental training subsidy requiring participating firms to increase their training without reducing their work force. Evaluations viewed this subsidy as exerting a positive effect on training because of the requirement for increases in training and the coverage of informal training (Müller and Behringer 2012). A German state provided vouchers to employers and employees covering 50% of training costs up to a maximum, but required counseling from approved agencies. The vouchers can be used for any training institution that accepts them. Although half of supported companies and 60% of supported individuals said they would have conducted/undergone the training in absence of the subsidy, about two-thirds of the firms and 85% of the employees stated that the subsidies motivated them to pursue additional training. Nearly half of individuals supported by vouchers at employers’ initiatives had not participated in vocational training for at least five years.

The available, limited evidence on these subsidy schemes suggest several lessons. The subsidy features must be communicated effectively, especially to small businesses. The focus should be on small businesses since they are usually less likely to train. Limiting administrative burdens is important for attracting firms to participate. Incentives should be substantial and well tailed to employer needs and improving their economic performance. Finally, making firms make their own contributions in order to receive subsidies and offering subsidies for increases in training are most likely to insure that public training dollars do not simply substitute for training the firms would undertake in the absence of the subsidy.

Training levies have been in widespread use in OECD countries.\(^7\) Levies impose requirements on firms, typically that some share of payroll go for training or be subject to tax. One purpose is to maintain a reliable training budget not subject to public budgeting decisions. A second is to limit “free riders,” those firms that hire trained workers away from competing firms that invest in training. The source of the levies varies widely with respect to which firms are covered (an industry sector or all firms), the type of obligation of firms (percent of payroll or fixed amount per employee), differences in obligations by firm size or other characteristics, and how the funds are collected (social security, employment agency, or tax administration). The use of the funds varies as well. Recipients may be employers or training providers. The funds may be targeted on apprentices, the unemployed, existing employees or other groups. The types of training financed may include courses of approved providers, of any education or training

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\(^6\)Netherlands added an extra 20% deduction for training workers over 40, but an evaluation showed this policy led only to a delay in training those below 40 and not increase in overall training (Leuven and Osterbeek 2004).

\(^7\)The information in the next sections on training levies draws heavily on Müller and Behringer (2012).
leading to recognized qualifications, or courses with other stipulations.

Levies on firms go back the 1920s in France. Since 1971, firms are obligated to paying a fixed amount of payroll into training funds, if they do not spend this amount on training themselves. The mandatory contributions are 1.6% of payroll for firms with 20 or more workers and 1.05% for firms with 10–19 employees. Some of the proceeds finance individual training. If the remaining amounts do not go into training by the employer, they are used to fund regional and industry sector programs managed on a bipartite basis. In general, French firms subject to the levy use the allocated amount to pay for their training. The training levies have led to raising the amount continuing vocational training, to an increased awareness of the importance of training, and to the development of a competitive training industry. Some evidence indicates that participation in training is higher in France than it would be without the levy. However, training outcomes appear no better in France than in countries without the company mandate.

Several countries have implemented training levies and related training initiatives on an industry sector basis. The British government created the Sector Skills Development Agency in 2001 to fund, support, and monitor 24 Sector Skills Councils. The councils are led by employers with union representation; they oversee training efforts in each sector. Only two of the councils, those linked to the construction and audiovisual industries, impose levies on employers. Only when a majority of firms favor the mandates does the law impose them. The rates vary, depending on the firms’ own training activities. The funds collected are distributed as grants to firms for training. Some evidence suggests that the construction council’s activities significantly increase training, especially among small firms.

The sectoral funds in the Netherlands arise out of industry collective bargaining agreements. One goal of these compulsory funds aim is to limit free riders who hire trained workers away from firms that finance the workers’ training. All firms must pay into the fund and can only benefit if they train workers and apply for subsidies from the fund. While the presence of a sector training fund is expected to increase training, a rigorous analysis found the presence of a sector fund did not increase the amount of training in the relevant industry (Kamphuis, Glebbeek, and van Lieshout 2010).

Levies can clearly generate training funds but the schemes increase labor costs and reduce employer autonomy. For example, firms may want to spend much more on training in some years than others. Classification issues can also arise. Firms will try to designate expenses only peripherally related to training as training expenses. Researchers indicate that the commitment of employers to the schemes is especially important for their success (Johanson 2009).

At this point, the research is far from rigorous enough to go beyond suggestive findings. Tax incentives are simple to administer but substitute government training dollars for what firms would do anyway. Levies appear to have considerable potential, especially where the levies are well targeted and involve local control. The U.S. experience also suggests the desirability of local sectoral initiatives and that such initiatives can be effective even without a mandated training levy. One role of sectoral programs is to discourage poaching of workers trained elsewhere. Successful training levies often depend on strong preexisting relationships among
employers, labor representatives, and government. However, even these initiatives do not necessarily increase employer training.

Apprenticeships as In-depth Employer-Led Training

The most striking difference in employer-led training between the U.S. and many other OECD countries is the scale of apprenticeship training. As noted above, about 400,000 workers are participating in apprenticeships registered with the U.S. Department of Labor. About 60,000 of these apprenticeships are in the military, leaving only 340,000 civilian apprentices or less than 0.3% of the workforce. In sharp contrast, apprenticeships make up 3.7% of the employed population in Australia, 3.7% in Germany, 2.6% in Canada, 1.8% in England, and 1.7% in France.

Especially notable are the increases in countries that have not traditionally emphasized apprenticeship. Australia has expanded apprenticeship training dramatically, nearly quadrupling from 131,000 in 1994 to 515,000 in 2012.8 In England, apprenticeship levels jumped from just 53,000 in 1990 to 280,000 in 2009/2010 to 457,000 in 2010/2011. The French government recently announced a goal of expanding apprenticeships by 500,000 as part of its economic recovery program.

The U.S. differs from other OECD countries not only with regard to the scale and growth of apprenticeship but also the primary target group. In the U.S., apprenticeship is mostly a young adult program, with the median age of apprentices at about 26. Most other OECD countries use apprenticeships as a career preparation system for youth, primarily between the ages of 16 and 20. While employer sponsors of apprenticeship express high levels of satisfaction with apprenticeships and workers earn high returns to apprenticeships (Reed 2012), the role of government in promoting, supporting, and monitoring apprenticeships is quite modest and much less extensive than in other OECD countries.

Apprenticeship programs offer high quality, in-depth training that yields a valued certification for a rewarding career. They utilize sound principles of learning, allow young people to earn money while they acquire valuable skills, develop employability skills such as communication, problem-solving, and teamwork, and offer trainees a sense of pride in their contributions to production and their completion of a rigorous program involving years of training. Countries with robust apprenticeship programs are generally able to avoid high youth unemployment. While the OECD average unemployment rate in 2011 for 15- to 24-year-olds was 16.2% and 17.3% in the U.S., youth in Austria, Germany, and Switzerland experienced levels of only about 8 percent. The youth unemployment rate in Australia was about 11%. In addition, high apprenticeship countries managed to preserve manufacturing jobs. Manufacturing industries employed over 22 percent of German workers and nearly 16 percent of Swiss workers in 2008. In the U.S., less than 10 percent of workers held jobs in manufacturing.9

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9These figures come from OECD website, “Employment by activities and status (ALFS)” dataset, a subset of the Annual Labour Force Statistics (ALFS).
The Swiss system of skill preparation is particularly attractive in combining the best of workplace learning, including high standards and high potential productivity, together with frequent opportunities to move from career-focused education and training to university-oriented education. Companies provide most of the funding for apprenticeships in Switzerland, despite the largely free labor market operating in the country. One might expect to see little investment because of the potential for trained workers to leave and for companies to become free riders. Yet, it turns out that most companies can recoup their investments in apprenticeships within the training period (Muehlemann et al. 2010). On average, the gross costs per year amounted to about 18,000 Euros for Swiss firms. Although Swiss firms spend substantial amounts, they actually obtained benefits of over 19,000 Euros per year largely from the value added by apprentices. Thus, for a three year apprenticeship, Swiss firms are able to recoup the 54,400 Euro cost with benefits of 57,100 Euros. Moreover, these figures far understate the benefits because of savings in recruitment and training costs and in assuring a highly knowledgeable work force.

Employer benefits from apprenticeship are not limited to traditional apprenticeship countries, such as Switzerland and Germany, but also apply to countries that have been expanding apprenticeship in recent years. For example, though concrete cost-benefit figures are not readily available for apprenticeships in England, employers using apprenticeships express considerable satisfaction with the results (IFF Research 2012). Nearly all employers (96%) reported at least one major benefit. The most frequently cited benefit was improved productivity (72%). In addition, around two-thirds of employers mentioned improved staff morale, improved product or service, a more positive image in the sector, better staff retention, and the introduction of new ideas to the organization. Around two-fifths of private sector firms reported that it helped them win new business (43%), while just over a third (36%) indicated that offering and training apprentices had lowered their overall wage bill. One implication is that most of the positive benefits stem from factors other than having apprentices be simply a form of cheap labor.

Policy Implications for Expanding and Improving Employer-Led Training in the U.S.

Employers in the U.S. engage in extensive employer-led training that increase worker earnings and enhance individual and organizational performance. Still, there are several lessons from other OECD countries that can be adapted to encourage employers to do more to raise the skills of U.S. workers. The evidence from the OECD yields several policy implications.

One is to expand the role of apprenticeship, especially among younger workers. The success of robust apprenticeship systems in other OECD countries no doubt influenced the OECD (2009) itself to recommend a more substantial role for apprenticeship training in its report on Jobs for Youth. The evidence is strong that the approach yields high returns to workers, reduces youth unemployment, involves modest government costs, and, with well-structured apprenticeships (as in Switzerland), allows most firms to recoup their investments even during the training period. Further, a large role of workplace training increases the likelihood of a good match between training and the skill needs of the labor market. The OECD report notes out that while registered apprenticeships are a promising path to skills and careers, there are too few in the U.S. It suggests drawing lessons from the expansion of apprenticeships in Australia and the
United Kingdom. Such an approach, the OECD suggests, would require government subsidies, sub-minimum wages for apprentices, and sharply increased funding for the Office of Apprenticeship. The budget for the federal Office of Apprenticeship is tiny and has declined sharply in real terms. The funding is far too low to adequately market, monitor, and provide technical assistance for apprenticeship. For example, in Indiana, an industrial state with over 6 million people, only two government staffers are engaged in overseeing and expanding registered apprenticeship. The OECD recommendations include promoting the use of apprenticeships for teenagers and encouraging small and medium enterprises to collaborate in developing serious apprenticeship programs.

Central to the expansion of apprenticeships is marketing and technical assistance. An effort to expand apprenticeship in South Carolina shows the feasibility of expanding apprenticeship in the U.S. Stimulated by studies and public affairs efforts of South Carolina Chamber of Commerce, the state government funded a $1 million a year initiative for marketing and technical assistance as well as tax credits of $1,000 per apprentice per year beginning in 2007. Since then, the South Carolina initiative has generated nearly a tenfold increase in the number of apprentices in the state, covering positions in such industry sectors as advanced manufacturing, health care, and information technology.

The sector approach has proven effective in helping workers in U.S. demonstration projects and has been highlighted by the OECD as an important tool for engaging employers in several countries. Often, countries mandate a small levy on firms to support training in the sector. Such sector levies do much more to engage employers than broad-based subsidies or training taxes. The United Kingdom has established sector skills councils with employer-led bodies that specify training strategies for sectors employing about 85 percent of the workforce. So far, in the U.S., the scale has been limited, perhaps because each sector initiative takes place as a one-off effort that involves a high level of administrative expenses. Some experimentation of training levies within local sectoral programs makes sense, given the mixed experience in other OECD countries.

Another recommendation is to increase the engagement of employers and other stakeholders in order to develop and implement skill standards for qualifications for occupations, including clear assessment standards. The OECD recognizes that building these frameworks takes time and suggests an incremental approach, beginning with sectors where a consensus on standards already exist. Clear skill standards increase the value of qualifications and thus the incentive to learn and training and they facilitate lifelong learning. They simplify the task of setting up and operating training programs. Thus, in the U.S. context, such standards may improve the utilization of employer-subsidized tuition programs. However, the standards effort should be combined with other initiatives, since the increased portability linked to standards might reduce employer incentives to invest.

Several OECD countries have tried encouraging more employer-led training with training subsidies or training mandates requiring firms to spend at least a target share of payroll for training. Evaluations yield only mixed support for these approaches. Mandates appear to have increased employer-led training in France. However, subsidies and levies on firms appear to work best in the context of sector programs and localized programs. Only through such local or
Regional mechanisms are U.S. employers likely to embrace mandates. The U.S. has long used on-the-job training subsidies for firms and training vouchers for workers paid to training providers, largely through employment offices (today’s one-stop centers). But, they have been too small and too targeted toward particular groups of workers to exert a major effect on aggregate training levels. Still, a well-structured subsidy or mandate might prove effective in stimulating employer-led training, especially in combination with sector and apprenticeship programs.

Finally, a rarely mentioned but potentially effective strategy for encouraging employer-led training involves raising the visibility of training investments in financial statements. Currently, productive investments in building the skills of a company’s workforce count as current costs to firms, though they are in fact intangible investments. Investments in capital goods and plants involve allocating only a modest portion of costs to the current year, with the remaining amounts counted as assets on the company’s balance sheet. In contrast, all spending on skill development is a cost in the current year, despite the reality that the company will gain benefits from these expenses over a period of years. For tax purposes, expensing training costs in the current year saves money relative to treating training costs as an investment. However, this accounting treatment distorts the profitability of training investments relative to investments in capital equipment that firms depreciate over time. If investments in training were treated more closely in line with economic reality for measuring profits and assets (but not for tax purposes), the contributions of training investments might be measured more precisely and the benefits would become more apparent. Problems in valuing human capital investments are real, but approximations are better than ignoring the reality that training yields real assets for the firm. Incorporating the genuine assets firms create through training might encourage firms to increase training and workforce skills without any government expenditure.

Overall, many U.S. companies and public employers have a good record of training their current workforce while other companies train little. Still, the most glaring shortfall in U.S. employer-led training is the participation by firms in qualifying training, whereby young people learn by doing and gain mastery over an occupational field. While a U.S. solution to this problem will require new approaches, workforce policymakers and practitioners can learn a great deal from practices in other OECD countries.
References


__________ 2006. “Employers’ Perspectives on Human Capital Development and Management.” Manuscript Submitted to the OECD.


**Table 1**

Incidence of Training in the Prior 12 Months of Employed 25- to 64-Year-Olds, by Survey, Year, Sex, and Education

<table>
<thead>
<tr>
<th></th>
<th>Survey of Income and Program Participation</th>
<th>National Assessment of Adult Literacy</th>
<th>National Household Education Survey</th>
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<tr>
<td><strong>Total</strong></td>
<td>32.8</td>
<td>27.9</td>
<td>21.8</td>
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<tr>
<td><strong>Male</strong></td>
<td>30.4</td>
<td>25.3</td>
<td>19.7</td>
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<tr>
<td><strong>Female</strong></td>
<td>35.7</td>
<td>31.0</td>
<td>24.2</td>
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<tr>
<td>Males by highest education completed</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>10.1</td>
<td>6.9</td>
<td>4.8</td>
</tr>
<tr>
<td>High school graduate</td>
<td>20.7</td>
<td>15.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Some college</td>
<td>34.8</td>
<td>NA</td>
<td>22.9</td>
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<tr>
<td>Bachelor’s degree</td>
<td>41.8</td>
<td>35.5</td>
<td>26.5</td>
</tr>
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<td>Females by highest education completed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>11.2</td>
<td>9.3</td>
<td>5.7</td>
</tr>
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<td>High school graduate</td>
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<td>Some college</td>
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<tr>
<td>Bachelor’s degree</td>
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<td>42.3</td>
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