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Public Financing of Workforce Services for Incumbent Workers?

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November 2013

At a small firm that manufactures plastic tubing for medical procedures, a trainer from the state's manufacturing extension service provided a team of production workers with a video camera. The team's homework assignment as part of a training course was to videotape their procedure for switching the production of tubing with a particular diameter to tubing with a different diameter. The team formally diagnosed the procedure that had been videotaped during a subsequent training session and derived a list of over 20 ways they could make the shut-down and set-up more efficient. It was easy for an outsider to picture the productivity improvements that were going to occur immediately with those team members as soon as they returned to the production floor. It was easy for this observer to concur with the firm's management that without such improvements, competitive pressures could easily force the firm to downsize.

At a large automotive Tier 1 supplier, John was a dependable, hard worker, but he lacked the communication and problem-solving skills to progress in his career. After 10 years on the job, he still was in the same entry-level position into which he was hired. After an 80-hour general, basic skills class, John blossomed. His supervisor marveled at the change and indicated that John had recently contributed several useful suggestions for improving the work flow of his line. The supervisor indicated that John was going to now be a candidate for promotion, whereas without the training, he probably would have been a candidate for layoff if a downturn hit the firm.

These are two anecdotes from the qualitative portion of evaluations, undertaken by the author, of two state-funded training initiatives for incumbent workers. A more quantitative analysis of outcomes for the program administered by one of the states based on administrative data collected from firms was suggestive of quite handsome returns for workers, firms, and the state. These anecdotes and administrative data analyses suggest a hypothesis: there is a reservoir of productive skills in incumbent workers, especially frontline, low-wage workers that, if tapped, could produce substantial economic benefits for workers, employers, and society. The usual

context for the notion of a skills gap is in reference to having difficulty filling job openings, but the untapped skills of incumbent workers may be another gap that this paper suggests may be closed or, at least, reduced in size with additional on-the-job training.

The training initiatives thumbnailed above relied on public funding to enhance workers' skills. Whether subsidization of private-sector training is a legitimate use of public funds is debatable. On the one hand, the programs may be creating economic value added for society as long as some of the benefits from the training are not fully captured by the firms and workers who are subsidized. On the other hand, if most or all of the training benefits are accruing to firms, the government may be propping up poorly performing or poorly managed companies. After all, general training to relatively low-skilled workers is fairly inexpensive and quite accessible. So, if there is a substantial payoff to be had, why hadn't the companies invested in the training themselves?

A purpose of this paper is to suggest that there are justifications for public investment in private-sector training. It argues, in particular, that certain types of training are likely to result in positive externalities (spillovers) for society that justify public support as an incentive. The paper goes on to provide an estimate of the investment in incumbent worker training undertaken in the U.S. and to discuss briefly policy initiatives in European countries that subsidize the training of employed workers. It then suggests an increase in the public subsidization of incumbent worker training and a method of financing that increase. Finally, the paper concludes with some policy recommendations and has a data appendix that documents the estimates of subsidized training in the U.S.

Justification for Public Support

For the most part, publicly supported skill training for adults is provided to nonemployed individuals in the U.S. The Workforce Investment Act (WIA), as with its predecessors: the Job Training Partnership Act and Comprehensive Employment and Training Act, targets public training funds on individuals having difficulties becoming employed or having been dislocated from employment with little likelihood of becoming reemployed in the same occupation. The reasons for this targeting are transparent. Shortening spells of nonemployment is likely to reduce public employment-conditioned transfer payments and increase the efficiency of the labor market because there will be less search time spent by unemployed individuals and job openings (vacancies) will be filled more quickly. Furthermore, public subsidies overcome human capital investment borrowing constraints that may be especially severe for nonemployed individuals.

However, in addition to investments in job training for nonemployed individuals, it should be noted that, in the U.S., the public does provide job training support for employed workers and has done so for decades. This type of support for incumbent workers is probably less well recognized and is certainly at a reduced scale compared to programs for nonemployed individuals. One example of public support for employed workers is economic development initiatives such as job training grants aimed at business attraction or expansion. These often take the form of customized training contracts with community or technical colleges for training workers who will be employed in expanded or newly opened facilities.

More recently, state governments have turned to the subsidization of incumbent worker training for retention and competitiveness reasons. The dynamics of economic change, especially the relative shift away from manufacturing and toward services, are leaving some states with obsolete manufacturing capacity and, often, relatively highly paid dislocated workers who lack skills or have high mobility costs that impede their employment prospects. In response to these problems, states are investing public funds in training activities for existing workers to try to retain businesses and employment.

I argue that the basic reason why there is public support of training is because of the existence of positive externalities, or spillovers. In many circumstances, society benefits from the training of incumbent workers, and public subsidization is one way to encourage additional training activities. The well-established Becker (1962)/Mincer (1974) model of specific or general training suggests that on-the-job training activities are a joint investment made by an employer and worker with the intention of accruing future benefits. If the training is purely general, this theoretical framework suggests that the worker bears the investment cost in the form of lower wages and any costs during the training period and expects a payoff in the form of a higher wage once her skills have been enhanced and she is more productive. If the training is firm-specific, then the firm bears part of the investment cost in the form of training expenses and the worker bears part of the investment cost in the form of a lower (training) wage. The payoff for the firm comes in the form of higher worker productivity net of wages and the payoff to the worker is again higher post-training wages. However, if we examine more carefully the motivations for job training, it is evident that many types of training provide social benefits in addition to benefits to the firm and worker.

Typology of On-the-job Training

Hollenbeck (1996) suggests that training is undertaken in the workplace for one of eight reasons. That study classifies training into the following mutually exclusive and exhaustive categories:¹ (1) workplace and company orientation, (2) training required to learn and perform job tasks, (3) occupational safety or employee health and wellness training, (4) training to complement technological change, product change, or process transformation, (5) training to upgrade or maintain occupational skills and knowledge, (6) strategic training to gather information, (7) awareness training, and (8) workplace education and general employee development. Let me briefly describe each type.

Workplace and Company Orientation

Workplace and company orientation activities include tours and introductions that take place on the first day or days of employment. They include introducing employees to human resource and workplace practices and policies. In some instances, organizations provide (new) employees with materials that give general background information about the organization or industry. The intent is to provide a broad context for the employee's job tasks. The U.S. Department of Labor's Bureau of Labor Statistics (BLS) (1996) reports that almost three-quarters of firms with 50 or more employees offer formal orientation training.

¹Admittedly, there may be training activities that do not fit neatly into this classification system; but I believe that by far the largest share of training activities are undertaken for one of these reasons.

Training Required to Learn and Perform Job Tasks

Training required to learn and perform job tasks consists of instruction given to employees that are new to a position on how to perform their jobs.² In many situations, this type of training is done informally by a co-worker or supervisor who instructs the employee and then monitors closely the employee's performance for a time. Alternatively, some training may be done through job shadowing, i.e., the trainee follows around an incumbent on the job. Formal apprenticeships are another mode of providing this type of training. Apprenticeships intersperse formal classroom instruction with informal on-the-job specific training with mentors. Sometimes, employees are given technical or service manuals to read about their specific expected tasks. With the growing importance of flexible manufacturing techniques, companies are increasingly engaging in cross-training their employees, i.e., training them how to perform co-workers' job tasks. This, too, would be considered as part of this type of training.

Occupational Safety or Employee Health and Wellness Training

The third type of training is occupational safety or employee health and wellness training. For example, occupational safety and health regulations mandate that firms provide training in how to handle hazardous substances that may be used in their workplaces. Teachers are trained on the potential dangers of blood-borne pathogens and how to handle situations in which a student has been injured resulting in bleeding. Professional drivers (truck or bus) undertake periodic mandatory safety training. Recently, firms have begun to train employees on the ill health effects of tobacco usage or substance abuse. Some firms offer training in stress management.

Training to Complement Technological Change, Product Change, or Process Transformation

A large share of training is undertaken when organizations invest in new capital equipment, change product lines, or transform their production processes. Virtually all technological change involves new equipment whose operating instructions must be learned. The infusion of information technology into workplaces and subsequent hardware and software upgrades result in a considerable amount of training for employees, for example.³ Furthermore, organizations are transforming their production processes to so-called high performance workplaces that require new ways of working. The implementation of increased flexibility and total quality approaches requires worker training also.

Training to Upgrade or Maintain Occupational Skills and Knowledge

²The phrase "new to a position" conjures up the image of a newly hired employee, but the intent is to also include training to a tenured employee who may be promoted to a new position including management or supervision.

³The mission of the Hollings Manufacturing Extension Partnership Programs is to improve the use of technology by small and medium-sized manufacturing businesses. Under the aegis of the National Institute of Standards and Technology (NIST), a system of centers in all 50 states and Puerto Rico assists companies in adopting new technologies. Training for the new technology is one of the services that centers provide.

Another substantial amount of training, particularly in professional occupations, occurs to upgrade or maintain occupational skills and knowledge. For example, health care professionals attend conferences or read journals to maintain their expertise in various procedures. Teachers engage in professional development activities to learn about new instructional techniques or curricula. Airline flight attendants participate in training annually to upgrade their skills and knowledge about different equipment. In many occupations, not just professional ones, materials or techniques that are used to accomplish work may change, which may cause technical job skills to atrophy and require upgrading. Participation in appropriate training activities may then be used to “re-tool” a worker’s skill. For example, draftspersons trained with mechanical drawing skills have to upgrade their skills to computer-assisted design.

Strategic Training to Gather Information

Strategic training to gather information is another motive that employers and employees have for training. Organizations invest in training as a strategy to be competitive or to facilitate innovation. They send employees to conferences or formal classes to find out if a new process or equipment item might be of value within the organization. Organizations that recognize how important information is for competitiveness are constantly gathering information through external training. Oftentimes, organizations identify certain key employees as information gatherers and innovators, and these employees participate in training for this purpose.

Awareness Training

With awareness training, many companies reinforce cultural diversity or gender sensitivity. The purpose of this training is to facilitate working relationships among co-workers and relationships with customers. This type of training might also be undertaken to minimize legal problems within the organization.

Workplace Education and General Employee Development

The last type of training in this typology, workplace education and general employee development, involves skills that are not specific to one’s job or occupation, but contribute to one’s productivity. For example, some employers have become aware of the deficiencies in basic academic or employability skills (reading levels or arithmetic, for example) of some members of their workforce, and they support or provide workplace education, which may occur on or off site, and may be completely or partially paid for by employers. In some cases, this type of training is done in a way to conceal the identity of the trainee who wants to avoid stigma. Note that workplace education may extend to higher-level subject matter such as foreign language skills, scientific disciplines, or advanced mathematics. General employee development consists of training in activities such as time management, problem solving, public speaking, leadership, working in teams, total quality management, customer relations, or other aspects that may be of use in the workplace.

In the parlance of economics, some of these types of training transactions yield positive externalities (or spillovers) to other workers in the firm⁴ and, of more importance for this analysis, to the general public. In general, the training transaction comprises employer investment in the worker in return for higher productivity and profitability. Each party to the transaction bears costs and receives benefits. Employers bear all or most of the costs of providing training, and generally receive benefits in the form of productivity that exceeds the wage rate. Employees may bear some costs in terms of a reduced “training” wage, leisure time, travel, or purchased materials, and in return, they may receive higher earnings. In any case, in certain instances, the training yields positive spillovers, which are posited in table 1.

Table 1 Spillovers to the Firm and to the Public, by Training Type

Training Type	Potential Spillover to Firm ^a	Potential Spillover to Public
(1) Workplace and company orientation	Co-worker familiarity	
(2) Learn and perform job tasks		
(3) Occupational safety; employee health/wellness	Reduce accident risk; reduce time loss and costs associated with employee health issues	Reduce accident risk; spillovers from better health outcomes
(4) Training to complement technology change, product change, process transfer	Team productivity	Reduce risk of downsizing/ closure; regional economic growth/ competitiveness
(5) Training to upgrade/ maintain occupational skills and knowledge		Reduce risk of worker dislocation; regional economic growth/ competitiveness
(6) Strategic training to gather information for innovation	Product/process improvement	Regional economic growth/ competitiveness; enhanced customer choice
(7) Awareness training	Reduce risk of litigation; promote teamwork	Improved customer satisfaction
(8) Workplace education and general employee development		Reduce risk of worker dislocation

^aThis column of the table is intended to identify benefits that accrue to the firm for reasons other than the productivity enhancement of the trainee. Typically the spillover takes the form of increased productivity of the trainee’s co-workers.

Apart from the reduction of catastrophic risk that results from safety training, the major spillover benefits of the various types of training are reducing the risk of worker dislocation⁵ and improving regional economic growth and competitiveness.⁶ The social costs of unemployment

⁴Note that the existence of spillovers to the firm may be part of the explanation for why firms finance general training, as is found in Loewenstein and Spletzer (1998), Acemoglu and Pischke (1999), and Barron, Berger, and Black (1999).

⁵In a simple static framework, labor is assumed to be homogeneous and training is undertaken to increase productivity. In a dynamic framework with technological change and extreme variability in skill levels, workers invest in training (especially types (8) and (5) in the table) for the purpose of job stability. It is essentially a form of insurance against layoffs. This motivation for training was mentioned numerous times in the qualitative interviews documented in Hollenbeck (1993) and Hollenbeck and Timmeney (2009). “Low road employers” will not invest in these types of training activities if they feel that they can hire replacement workers at a lower cost than training incumbent workers. (See Carnevale and Desrochers 2000).

⁶As noted earlier in the paper, states and regions may offer customized training as part of a subsidy package intended to attract business or retain business. As with many economic development initiatives, the (social) payoff is

are significant. These costs include income losses that are not insured by the Unemployment Insurance system; for example, lost productivity because of involuntary unemployment, external costs such as the deleterious effects on physical or mental health that may occur because of unemployment, loss of tax receipts and possible expenditure increases, and general deterioration of the state's productive capital stock.

Aside from the spillover argument for public subsidization of training are three other potential rationales for public subsidization. First is the notion that employers tend to avoid offering training that imparts general skills because of potential "poaching" by other employers. The classical Mincer/Becker model of training implies that if workers gain skills that are general, i.e., useful in other firms, then those workers will become recruitment targets for other firms that may need workers with those skills. Many studies document high returns to on-the-job training and suggest that these returns are inframarginal. Employers are underinvesting in training because of this risk (see Acemoglu 1997; Stevens 1996; Leuven 2005; Bishop 1994; Barron, Berger, and Black 1997). Public subsidies of training (and education) will partially compensate for this underinvestment by reducing the employer cost. This rationale may be especially relevant for frontline workers, whose training is typically general in nature. As noted in footnote 3, various studies have suggested that firms do, in fact, finance general training although the extent to which they do so may still be an underinvestment.

A second justification for public intervention in the market for training is that capital markets do not readily fund investments in human capital (Lynch 1997). Human capital accumulations are not valued on a company's financial statements. Human capital cannot be collateralized, and business financing has a short-term payoff bias (Gordon 2013) that militates against the funding of training.

A final rationale is an equity argument. Many studies have documented the low incidence of corporate training that goes to low-wage, entry-level employees. (See, for example, Relave 2003.) In a thorough analysis of training using three different national surveys, Barron, Berger, and Black (1997, 81) note, "Even after controlling for other factors, college graduates receive between 56 to 60 percent more training than high school graduates in the first three months of employment." Frazis et al. (1998, 11) note, "A smaller proportion of those in the bottom quartile [of weekly earnings] receive formal training than do higher earners . . . Hours of training also are lower for those in the bottom quartile: these individuals received an average of 4 hours of formal training, as opposed to 23 hours for those in the top quartile."

What is the Level of Public Support in the U.S. and Europe?

There do seem to be reasonable justifications for public support of training. So the question becomes, what is the level of that support? Estimates suggest that the private sector in the U.S. invests approximately \$50–\$60 billion a year in training.⁷ Several studies suggest that only a small fraction of this amount (perhaps about one percent) is publicly subsidized.

intended to go to the state or region and may come at the expense of other geographic locations. Thus the funding for these subsidies should emanate from the state or region, and not from federal sources.

⁷See *Training*, November/December 2012 issue.

However, all of these studies were conducted prior to the Recession of 2007–2009 and the subsequent fiscal “crunching” that has occurred in the states.

For example, Hollenbeck (2008) reports the results of a data collection effort that measured state spending on incumbent work training as classified into several types of support. These included WIA incumbent worker training that is funded out of the state’s 15 percent administrative allocation⁸ or from local allocations in states that have received a local waiver to use funding for such training; customized training for economic development purposes; state tax credits for training investments; programs that are funded by special taxes imposed by the state such as surcharges on employer unemployment insurance (UI) tax liabilities; and incumbent training programs funded by state general appropriations or bonds. The study excluded from its purview on-the-job training (OJT) contracts funded by WIA, vocational rehabilitation funded training, veterans’ programs, apprenticeships, retention and advancement programs funded through TANF, the U.S. Department of Labor’s High Growth Initiative, sectoral programs, and state- or federal-funded demonstration programs. In general, the study tried to include state-funded (or state-administered) efforts that were strategically targeted on firms, and to exclude programs that were primarily aimed at training individuals (WIA OJT’s, vocational rehabilitation, or apprenticeships). Furthermore, sectoral collaborations or intermediary efforts like the High Growth Initiative were excluded because it was extremely difficult to determine how much funding actually got invested in incumbent workers.⁹

The Hollenbeck (2008) study provides estimates of total state spending on each of the five types of programs. Overall, it estimates total incumbent worker training investments in the United States were about \$719.14 million (nominal dollars) in FY 2006. This is in line with other estimates. Hollenbeck and Klerk (2007) estimated total expenditures for FY 2001 through FY 2004 (nominal dollars) at \$815.2 million, \$661.5 million, \$613.6 million, and \$590.9 million, respectively. Duscha and Graves (2007) provide the following estimates for FY 2001 to FY 2006 (nominal dollars): \$633.5 million, \$607.5 million, \$584.4 million, \$513.2 million, \$552.0 million, and \$571.3 million, respectively.

The data presented below suggest that public support for incumbent worker training has waned somewhat after the Recession. As background for this paper, Upjohn Institute staff members conducted another data collection effort to estimate subsidized training expenditures in FY 2011 using a similar methodology as that used in the 2008 study. The appendix details the data collection effort and method for extrapolating to national estimates.¹⁰ Of interest was the extent to which training subsidies may have changed (decreased) during the Great Recession. In fact, estimates suggest that training subsidies did decline relative to the earlier estimates. We estimate that in FY 2011, the total subsidization of training amounted to \$576.4 million in nominal dollars. (See Table A5). This represents a 27.9 percent decrease in real terms from the

⁸Note that the 15 percent administrative set aside at the state level for WIA was reduced to 5 percent in the FY 2010 and FY 2011 federal budgets.

⁹Hollenbeck and Eberts (2006) find that the Michigan Regional Skills Alliances program offered virtually no training; rather, the effort primarily facilitated capacity building and informational flows between partners. Trutko et al. (2007) report that only a minority (6 out of 20) of the High Growth Job Training Initiative Grants examined in their study targeted incumbent workers, and not all of them got to the point of actual training delivery.

¹⁰Unfortunately, as described in the appendix, this data collection encountered considerable non-response from states. Thus the statistical error of the extrapolated data presented here is likely to be quite large.

FY 2006 estimate (a 19.9 percent decrease in nominal terms). In the more recent data for FY 2011, we estimate that approximately 940,000 workers were trained with the subsidized funds at approximately 13,120 firms. Thus the “typical” subsidy was about \$43,930 per firm or \$616 per worker.

In looking at changes in the particular funding streams between FY 2006 and FY 2011, our estimates suggest reductions in WIA incumbent worker training (28.7 percent decline in real terms), customized training from state economic development funds (18.2 percent decline in real terms), and training funded from UI payroll taxes (51.0 percent in real terms). Training that is funded out of general state revenues rose by about \$10 million in nominal terms, but this is a reduction in real terms of about 5.2 percent.

In short, we estimate that there has been a reduction in governmental subsidies of incumbent worker training over the last five years that has presumably occurred because of general fiscal tightening at all levels of government over the time period. However, with the exception of training funded by UI payroll taxes, the reduction has been in the 5 to 30 percent range in real terms. All in all, considering the estimates from this study and the prior published estimates, one can peg total annual public investments in the U.S. in incumbent worker training at a level of between \$550 to \$800 million with a fair degree of confidence. This is approximately one percent of what the private sector spends on training in that country.

Subsidized Training of Incumbent Workers in Europe

At one percent or less of total private sector training, the public investment in incumbent worker training in the U.S. might be characterized as modest. Many studies suggest that on-the-job training is inframarginal (i.e., an underinvestment with a high rate of return), and it is unlikely that the public subsidy is sufficient to move the training investment to its margin, where its returns would be equal to the return on other investments. For comparison purposes, we attempted to document European governmental support of firm-based training of employed workers. We were unsuccessful in obtaining an estimate of the level or share of private sector training of incumbent workers funded or subsidized by government sources. Indeed there appears to be considerable support, but we were unable to estimate its magnitude.

Brunello, Garibaldi, and Wesmer (2007) describe several extant policies directed at co-financing training with firms. They note that several countries in the European Union have levy-grant systems that require firms to pay a tax, whose revenues are used for grants that support training.¹¹ In particular, this study identifies Belgium, Spain, and Italy as having compulsory financing of a levy-grant system, whereas the Netherlands and Great Britain have sectoral participation.

An alternative to the levy-grant system is a “train-or-pay” policy. Used in France (and also Canada), this system imposes levies only if the firms’ training investments fall below a legal minimum share of payroll. Finally, a few countries (Austria, Italy, Luxemburg) use tax

¹¹This scheme is equivalent to the system used in several states in the U.S. that use a percentage of UI taxes to support training.

deductions in excess of 100 percent of training expenses to subsidize, and thus incent, training investments.

It should also be noted that incumbent worker training is among the 2007–2013 priorities of the European Social Fund (ESF). According to the ESF website (ec.europa.eu/social/esf_budget/results.cfm accessed in March 2013), approximately 2.5 billion € were allocated over the seven year time frame of the plan for the priority of “employment and training support for workers and companies” within the Convergence and Regional Competitiveness objectives of the plan. Operational programmes were identified in 20 of the 27 EC countries.

Policy Options for an Expansion of Federal Support of Incumbent Worker Training

Theoretically, the optimal level of public investment in subsidized employer-based training would occur when the marginal social benefit of the training equals the marginal social cost. As long as the (marginal) benefit-cost ratio exceeds one, then a case can be made for expanding the public investment. The literature suggests that employers may underinvest in training because of the lack of a mechanism to insure against turnover of trained workers and because of capital market imperfections. Furthermore, the empirical literature documents a bias toward provision of private sector training to high-wage, high-skilled workers. Public subsidization of training would be of value if it overcomes these problems.

A further motivation for public support of incumbent worker training is to reduce potential worker dislocation (or equivalently to enhance job retention). Then a major benefit received from the public investment is forgone (marginal) social costs of unemployment. These costs will vary considerably depending on the circumstances of the individuals. They will include the loss of tax revenue from forgone earnings. They may include the administrative costs and the costs of mediated services from the Employment Service and the unemployment insurance agency. They may include income maintenance benefits such as TANF or SNAP. They may include the costs of receiving WIA services.

Beyond these financial costs, unemployment imposes nonpecuniary social costs such as increased mortality (Sullivan and von Wachter 2009) and increased divorce (Charles and Stephens, Jr. 2004.) Hollenbeck and Huang (2013) examined workforce data for the State of Washington and estimated that the public cost of having a dislocated worker participate in WIA program activities is \$8,078(FY 2011\$) and that the average loss in tax revenue from forgone earnings was \$3,554 (FY 2011\$).¹² Using these data as the revealed preference of the public’s willingness to invest in an unemployed individual yields an estimate of \$11,632 as the marginal (social) benefit of preventing the unemployment of an individual.¹³

¹²Note that these figures are based on actual administrative data using individuals from the Employment Service as counterfactuals. Thus the figures implicitly use average durations of services and unemployment.

¹³Note that Mikelson and Nightingale (2004) document slightly lower costs for providing training to adult and dislocated workers. In their exhibit 4, they document that the average ITA between 1998 and 2003 was worth \$5,000, and in exhibit 5, they estimate a per trainee expenditure of \$3,187 (2002 \$) for dislocated and incumbent workers.

As noted above, the average investment in incumbent worker training was estimated to be \$616 in FY 2011. Undoubtedly, the marginal cost would be less than that figure, but even using figure suggests that the public investment in incumbent worker training of approximately \$600 million in FY 2011 would have paid off if it resulted in layoff prevention for about 5.3 percent of the workers who received the training.¹⁴

The case may be made for an increase in federal support of incumbent worker training may be made. Many studies have documented a large, presumably, inframarginal rate of return to on-the-job training suggesting that there is a serious underinvestment. Most of the current investment in the training of employed workers comes from the private sector. As noted above, studies estimate that only about one percent or less of such training is subsidized by the public; and most of that subsidization comes from state coffers. Furthermore, very conservative assumptions suggest that the public subsidization of incumbent worker training in FY2011 more than likely had a substantial benefit-cost ratio.

As described in the appendix, the incumbent worker training subsidies can be classified into four types: grants made by local or state workforce agencies using WIA funds, state customized training grants to attract business, grants using general state funds for supporting training, and grants using funds raised by additional fees on unemployment insurance taxes. A starting place and modest expansion of incumbent worker funding would occur if the federal government matched the states' investment in the latter two types of subsidies.¹⁵ Table A5 indicates that these subsidies totaled \$350 million in FY 2011.

Type of Training

This expansion of funding would be efficiently targeted on non-management (front-line) workers because those are the workers who have been shown to receive a less than proportional share of training and are likely to be most at risk of dislocation. The type of training would be primarily in the last category listed in Table 1, i.e., workplace education and general employee development. Hollenbeck (1993) and Hollenbeck and Timmeney (2009) document the payoff to basic skills training in the workplace. This training includes literacy and measurement. In many of the cases observed in those studies, employees were given release time for half of the training and invested their own time for the other half. Other types of training that warrant public subsidy include basic problem solving and customer relations. Employers would like to train workers on the basics of their operations—input, throughput, and output.

Osterman (2008) has proposed an innovative, federally administered “Low Wage Challenge Fund.” He proposes using the community college system as the infrastructure for educating and training low-wage workers because that system’s resources already exist. However, in studies that I have conducted, I have been told that most employers and employees prefer on-site training.

¹⁴The training potentially prevented layoffs of workers who did not receive the training also, so the target percentage would be less than 5.3 percent.

¹⁵I focus on those two types of funding because the first type of funding is already federal in nature, and the customized training grants are basically aimed at state economic development, and so they may not result in benefits to the nation as a whole.

Notwithstanding Osterman's suggestion, serious, careful planning needs to be invested in the problem of how to deliver substantially more training to frontline/production workers in the United States. This planning activity would seem to be a legitimate activity for the federal government (i.e., U.S. Department of Labor) to tackle, but it is also a topic that foundations may wish to and be able to fund.

Funding

A potential barrier to the expansion of incumbent worker training might be funding. Were funds available, it would be most efficient to invest these funds via competitive, matching grants, although that would depend on the administrative costs and potential deadweight costs of unsuccessful grantees.

One way to generate the revenue necessary to increase the level of training support would be for the federal government to use its Federal Unemployment Tax Act (FUTA) tax receipts, or impose a small surcharge on the tax, to fund incumbent worker training. The current effective annual tax rate for the federal portion of the UI system in most firms is 0.6 percent on a base of \$7,000 per worker, which works out to \$42 per employee. Currently this tax raises approximately \$6.7 billion, which is allocated to the administration of the UI and employment service systems, the funding of extended benefits, and support of the trust fund. Using the estimate of about \$350 million, it would take less than five percent of the FUTA receipts, or alternatively a 0.05 percent surcharge rate (total tax rate of 0.65 percent)¹⁶ to raise these funds. Alternatively, raising the base to about \$7,500 would raise enough funding to cover these costs.

Summary and Implications for Public Policy

This paper argues that a major theoretical justification for public support of the training of employed workers is from a social externality (or spillover) point of view. Other justifications include a concern about underinvestment in training by employers who worry about losing their trained workers to other employers (poaching), a concern about underinvestment in training due to imperfect capital markets, and a concern about equity. The paper presents an estimate that suggests that the public funding of training has decreased since the advent of the 2007–2009 recession, and that it appears as though public funding is on the order of one percent of private investments in training.

“Back of the envelope” estimates of the cost of unemployment suggest that the return to public investments in incumbent worker training is probably quite large. These estimates imply that, under conservative assumptions, public investments will pay off if about five percent of the workers who are trained retain their jobs. Given that in many instances, job retention is an explicit goal of subsidized training, it seems quite likely that retention exceeds five percent, and thus the (social) return on investment is significant.

¹⁶Note that this increased tax rate is considerably smaller than the one proposed by President Obama in his FY 2014 budget proposal.

The fact that we must rely on “back of the envelope” estimates points clearly to a need for better data collection and analyses of incumbent worker training subsidies. Presently there is no systematic collection of data on such subsidies in most states, even though the investments are made with public funds. Once data are available, then analyses should be undertaken to estimate the impact of such funding on outcomes such as job stability, productivity, and firm survival.

A large segment of the U.S. work force is likely being overlooked by the nation’s training “policy.” The preponderance of employee training is provided by the private sector, and the preponderance of private sector-provided training goes to individuals in professional and technical occupations. The largest share of publically funded training goes to unemployed members of the labor force, or individuals not in the labor force. However, literally tens of millions of individuals who might be characterized as holding frontline or production jobs are generally not even expected to participate in training or work-related education. Anecdotal observation and analyses of training programs suggest that the U.S. may be forgoing substantial economic and productivity growth by these low expectations and training participation rates.

I am certainly not the first to make this suggestion as noted by the following quotation taken from an article published in 2000:

Employer subsidies should be targeted on young, non-supervisory, and educationally disadvantaged workers, all of whom have the least access and can benefit the most from employer-based training. (Carnevale and Desrochers 2000, 306)

Given the need for the U.S. to compete globally and given the reservoir of productivity that can be drawn upon from front-line or production workers, it would seem reasonable to begin to move in the direction of raising expectations about the education and training of the American workforce, and one way to achieve those expectations is through increased levels of publicly subsidized incumbent worker training.

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DATA APPENDIX

In Fall 2012, we conducted a data collection exercise to attempt to estimate incumbent worker training support by states. Between September and November, we pursued the following tasks:

1. We Googled each state with the following two phrases:
State name incumbent worker training statistics FY 2011
State name customized training statistics FY2011
2. We telephoned the office(s) in the various state level departments that potentially administered employer subsidized training funding. In our previous data collection effort in 2008, we had archived names and contact information in all 51 states/jurisdictions (include District of Columbia). The phone contacts were intended to complete the interview matrix exhibited below.
3. We followed-up with multiple e-mails and telephone calls.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Does your state use/have?	Y/N	What agency administers it?	Expenditures in FY2011	Number of employers	Number of employees	Source of funds	Employer match reqd.? Details
1. WIA administrative (set aside) funding (5%) for incumbent worker training?						WIA	
2. Local waivers to use WIA \$ for incumbent worker training?						WIA	
3. Econ. Dev. Funding for customized training?							
4. A training fund/program financed by general state approps. or bonds?						NOTE: if bonds, details	
5. A training fund/program financed by a surcharge on UI taxes?						UI taxes (what is the surcharge rate?)	

In general, the response to the data collection efforts were mediocre. We got no information from 14 states/jurisdictions. In several states, we received information concerning some, but not all, of the funding streams for training. In general, our estimation strategy was to ratio adjust the collected data by the inverse of the fraction of states that responded with information. The following paragraphs document our precise estimation strategy. Because of the substantial nonresponse, the estimates reported here should be considered to have large statistical errors.

WIA Incumbent Worker Training

Thirty-three states responded to the first two questions, of which only seven indicated that they had spent FY2011 WIA funds on incumbent worker training. Of the seven respondents, only six provided data on total expenditures; four provided data on number of employers; and five provided data on the number of employees trained. The states that responded included large, populous states and small, less populous states, and the states exhibited significant geographic diversity. Thus we felt reasonably comfortable deriving the aggregate data by extrapolating by the number of states. In particular, since 21.2 percent of the states who answered the questions indicated that they supported this type of training, we assumed that about 21 percent of all states (i.e., 11) would have such training. Then we ratio-adjusted expenditures, firms, and employees by 11/(number of respondents). Table A1 presents the reported and estimated data.

Table A1 Reported and Estimated Data for WIA Incumbent Worker Training in FY2011

	Expenditures (n)	Employers (n)	Employees (n)
Reported	\$30.3 million (6)	148 (4)	27,648 (5)
Estimated	\$55.6 million	407	60,826

NOTE: 33 respondents provided information about the use of WIA incumbent worker training funds. Of these, seven indicated that such funds were spent in their state. The (n) represents the number of states out of 7 respondents. The estimates were derived by extrapolating the reported data by 11/(n).

Economic Development Funding for Customized Training

Twenty-three states responded to the question about economic development funding for customized training. Of these, 11 indicated that they had such expenditures in FY2011. Of the 11 respondents, eight provided data on expenditures, firms assisted, and employees trained. In particular, the eight states had spent around \$56.7 million, had assisted about 940 firms, and touched almost 100,000 employees. Again, the distribution of responding states had considerable variation, so we extrapolated to the nation as a whole by ratio-adjusting the reported data to a total of 24 states. (Eleven of the 23 responding states had customized training expenditures, which is about 48 percent; consequently we assumed that 48 percent of the 51 states/jurisdictions, i.e., 24 states, had such training.) Table A2 provides the precise reported and estimated data.

Table A2 Reported and Estimated Data for Customized Training Expenditures Out of State Economic Development Budgets in FY2011

	Expenditures (n)	Employers (n)	Employees (n)
Reported	\$56.7 million (8)	938 (8)	99,697 (8)
Estimated	\$170.1 million	2,814	299,091

NOTE: 23 respondents provided information about the use of economic development funds for customized training. Of these, 11 indicated that such funds were spent in their state. The (n) represents the number of states out of 11 respondents. The estimates were derived by extrapolating the reported data by 24/(n).

General State Support for a Training Fund/Programs

Twenty-five states responded to the question about using general state revenues to support a training fund or program. Of these, 17 indicated that they had such expenditures in FY2011. Of the 17 respondents, 13 provided data on expenditures, and 11 provided data on firms assisted and employees trained. In particular, the 13 states had spent around \$78.2 million, and the 11 states that reported such data had assisted almost 200 firms, and trained over 112,700 employees. Again, the distribution of responding states had considerable variation, so we extrapolated to the nation as a whole by ratio-adjusting the reported data to a total of 34 states. (17 of the 25 responding states had general revenue training funds, which is 68 percent; consequently we assumed that 68 percent of the 51 states/jurisdictions, i.e., 34 states, had such training.) Table A3 provides the precise reported and estimated data.

Table A3 Reported and Estimated Data for Training Funds Supported by General State Revenues in FY2011

	Expenditures (n)	Employers (n)	Employees (n)
Reported	\$78.2 million (13)	1,970 (11)	112,711 (11)
Estimated	\$204.6 million	6,089	348,379

NOTE: 25 respondents provided information about the use of general state revenues for training funds. Of these, 17 indicated that such funds were spent in their state. The (n) represents the number of states out of 17 respondents. The estimates were derived by extrapolating the reported data by 34/(n).

Training Funds Financed by Unemployment Insurance Taxes

Twenty-seven states responded to the question about administering a training fund based on taxes applied to unemployment insurance tax payments. Of these, 11 indicated that they had such expenditures in such a fund in FY2011. Of the 11 respondents, ten provided data on expenditures and eight provided data on firms assisted and employees trained with the funds. In particular, the 10 states had spent around \$91.3 million; the 8 states had assisted about 1,900 firms and funded over 113,400 employees. In this case, we used a reference guide rather than a simple extrapolation of the number of states. In particular, table 2-17 in “Comparison of State Unemployment Insurance Laws in 2011” published by the Office of Unemployment Insurance, Employment and Training Administration, U.S. Department of Labor lists states with taxes for UI administration or non-UI purposes. That table shows that an additional 5 states besides those that responded to our data collection effort used taxes for job training purposes. So, we adjusted the reported data to 16 states. Table A4 provides the precise reported and estimated data.

Table A4 Reported and Estimated Data for Training Funds from Unemployment Insurance Taxes in FY2011

	Expenditures (n)	Employers (n)	Employees (n)
Reported	\$91.3 million (10)	1,905 (8)	113,440 (8)
Estimated	\$146.1 million	3,810	226,880

NOTE: 27 respondents provided information about the use unemployment insurance tax payments for training. Of these, 11 indicated that such funds were spent in their state. The (n) represents the number of states out of 11 respondents. The estimates were derived by extrapolating the reported data by 16/(n).

Table A5 shows the estimated data for all 51 states/jurisdictions for FY2011 and for FY06. The latter data come from Hollenbeck (2008). All data are reported in nominal dollars.

Table A5 Estimated State-Funded Training in FY2006 and FY2011

Type of Training	Expenditures		Firms		Employees	
	FY2006	FY2011	FY2006	FY2011	FY2006	FY2011
WIA Incum. Worker Training	\$70.1 million	\$55.6 million	2,953	407	138,759	60,826
ED Custom. Training	187.0	170.1	10,964	2,814	424,069	299,091
General State Rev. for Training	194.2	204.6	8,939	6,089	289,772	348,379
UI Surtax Training Funds	267.8	146.1	7,057	3,810	463,149	226,880
TOTAL	\$719.1	\$576.4	22,864	13,120	1,315,749	935,176

Note: Both FY2006 and FY2011 estimates are subject to statistical error due to adjustment procedures for nonresponse. Hollenbeck (2008) documents the nonresponse in the FY2006 data, which was much less of an issue than for the FY2011 estimates.