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**Article**

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# What effect do vocational training vouchers have on the unemployed?

## Vouchers can create a market for training but may lengthen participants' unemployment duration

Keywords: voucher, assignment mechanism, consumer sovereignty, vocational training, unemployment

### ELEVATOR PITCH

The objective of providing vocational training for the unemployed is to increase their chances of re-employment and human capital accumulation. In comparison to mandatory course assignment by case workers, the awarding of vouchers increases recipients' freedom to choose between different courses and makes non-redemption a possibility. In addition, vouchers may introduce market mechanisms between training providers. However, empirical evidence suggests that voucher allocation mechanisms prolong the unemployment duration of training participants. But, after an initial period of deterioration, better long-term employment opportunities are possible.

### KEY FINDINGS

#### Pros

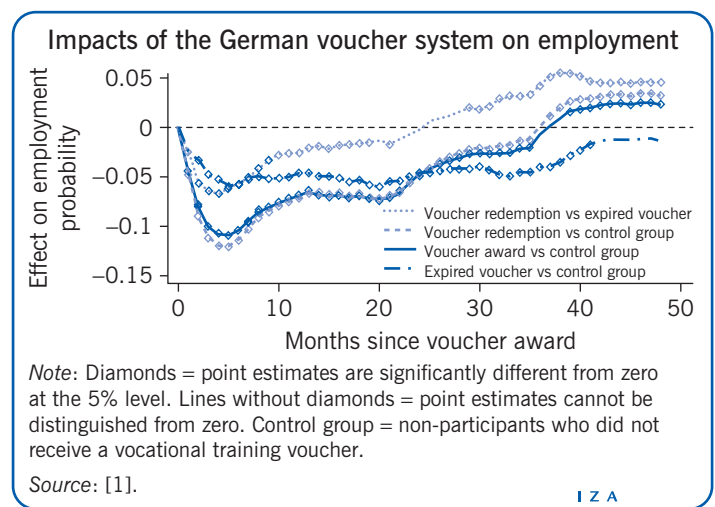
- ➕ Vouchers can increase consumer sovereignty, market transparency, and competition among training providers.
- ➕ Awarding vocational training vouchers improves recipients' long-term employment opportunities.
- ➕ In terms of long-term employment opportunities, participation in short-duration vocational training programs is found to be more effective with voucher provision than mandatory course assignment.
- ➕ More counseling by case workers during the course search phase is associated with higher earnings gains for training participants.

#### Cons

- ➖ Employment opportunities are lower for awardees during training participation than for non-voucher recipients.
- ➖ Vocational training under a voucher provision system can prolong unemployment duration compared to a mandatory course assignment system.
- ➖ The unemployed with expired vouchers have reduced short-term employment probabilities.
- ➖ Case workers' ability to sanction and supervise program participants is limited under many voucher provision systems.

### AUTHOR'S MAIN MESSAGE

Awarding vocational training vouchers may improve recipients' re-employment chances and earnings after an initial period of deterioration. Empirical evidence suggests that training participation under a voucher allocation system prolongs unemployment duration compared to a mandatory assignment system. Further efficiency losses could occur if participants are allowed to let their vouchers expire. However, these drawbacks may be compensated for by increased human capital accumulation, better employment chances, and higher earnings in the long term. Finally, policymakers should encourage counseling during course selection, as this seems to improve program returns.



## MOTIVATION

Common provision systems for publicly funded vocational training are based on statistical eligibility criteria or subjective case worker decisions. These provision systems are considered either inflexible or non-transparent, with each potentially leading to efficiency losses. Typically, the assignment is mandatory for recipients and tied to a specific course; this means that sanctions are imposed for non-participation.

In contrast, voucher provision systems certify an individual's eligibility for publicly funded vocational training. These vouchers allow recipients to choose between different vocational training courses and providers. Usually, redemption is voluntary. Vouchers increase an awardee's burden of responsibility for him/herself, which has implications for the motivation level of training participants. Vouchers may also enhance competition between training providers. Two large-scale voucher programs are the Individual Training Accounts (ITAs) under the Workforce Investment Act (WIA) in the US and the German Training Voucher system.

## DISCUSSION OF PROS AND CONS

### Vocational training voucher systems

Vocational training is an active labor market policy (ALMP). In contrast to passive labor market policies, ALMPs not only pay income maintenance, but also attempt to actively reintegrate participants into employment. Other ALMP examples include job search assistance or job creation schemes. Currently, OECD countries spend approximately 0.15% of their GDP on training for the unemployed, which represents 10.2% of their total expenditure on ALMPs. The stock of training participants is 1.33% of the labor force in OECD countries. Germany spends approximately €7 billion per year on training, which reflects 0.24% of GDP. In the US, yearly expenditure is US\$6 billion, or 0.04% of GDP, which is considerably lower [2]. While virtually all training participants in Germany receive income maintenance, less than 20% of training participants in the US receive unemployment benefits.

Vocational training provides participants with specific occupational skills in an attempt to reduce skill mismatch in the labor market. Vocational training programs may have conflicting goals, between rapid reintegration and high human capital accumulation. Although it is difficult to separate these two channels, short training programs may allow for rapid reintegration, but do not enable the development of a large stock of human capital. Training vouchers provide the unemployed with the power to choose between different training programs and providers. Therefore, the unemployed can (partly) resolve this conflict of objectives according to their own individual preferences. However, these individual preferences may not be aligned with the intrinsic objectives of the institution issuing the vouchers or, more generally, of society. It is assumed that human capital increases wages. Therefore, individuals could have a relatively strong preference for human capital intensive courses to improve their lifetime income, while society in general may have a relatively strong preference for rapid reintegration in order to reduce redistribution costs.

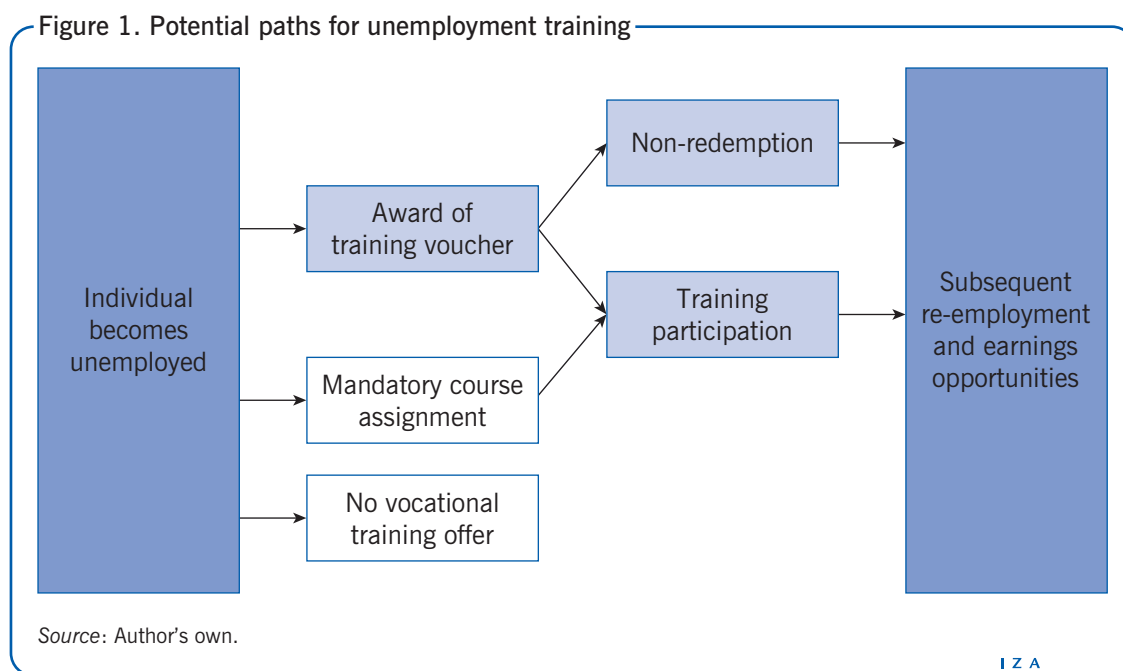
Typical examples of vocational training include courses on IT-based accounting or to obtain a driving license for pallet transporters. Courses can occur in a classroom or on-the-job and typically have durations of between one month and three years. Extremely

long courses can lead to a professional degree, for example, as an office clerk or an elderly care nurse. Accordingly, the human capital investment can be very substantive. Courses providing a professional degree are almost exclusively available in Germany, as part of its special apprenticeship system. In most other countries, the maximum training duration is less than one year.

Voucher systems may differ with respect to the degree of counseling offered by case workers and the set of choices available to voucher recipients. In the US, ITAs provide a fixed budget to WIA customers to pay for participation in vocational training. Accordingly, ITAs are similar to vouchers in that they certify the availability of a certain amount of money for the account (voucher) holder. These accounts can be used to pay for courses related to an occupation that is in demand in the local labor market (as defined by the local employment agency) at any eligible training provider [3]. WIA customers receive a considerable amount of counseling; however, the WIA customer chooses the content of the training. Thus, after a guided and mandatory decision process, the voucher recipient may decide, for example, to enroll in training to obtain IT skills instead of a pallet transporter driving license, regardless of the counselor’s advice [3].

In the German Training Voucher system, case workers are not allowed to provide guidance on how to choose a course. Certified training providers can place informational material inside local employment agencies and on an internet portal. Case workers can restrict the set of choices available to voucher recipients by specifying the educational goal and the maximum duration of training on the voucher. However, the educational goal is simply a handwritten note, which is, in most cases, ambiguous. Vocational training vouchers certify an individual’s eligibility for participation instead of allocating them a certain amount of money. Sanctions are not imposed for non-redemption in either the German or US voucher systems.

The evaluation of vocational training vouchers depends on the choice of the reference population. Potential reference populations are displayed in Figure 1. For example, when the



awardees are compared with individuals not participating in vocational training, then the results and implications are different from the comparison with individuals participating through a different assignment system. Furthermore, some unemployed receive a voucher, but do not participate in training (non-redeemers). This group is different from individuals who never receive an offer to participate, because the latter group is never involved in an unsuccessful course search and does not experience possible behavioral consequences. It is particularly interesting to compare voucher awardees to individuals without an offer to participate in vocational training, voucher redeemers to non-redeemers, and training participants with a voucher to mandatory-assigned training participants.

### Effects of receiving a vocational training voucher

Under a voucher system, the recipient has the option to let the voucher expire, thus not receiving any training. The effect of awarding a voucher is probably different if the voucher is redeemed or non-redeemed. Thus, the effect of awarding a voucher is an intention-to-treat effect for the actual training participation. The intention-to-treat effect is the weighted average of the effect of actual participation in vocational training and the effect of non-redemption. Intention-to-treat effects are relevant for political decision makers because they only have control over the decision to award vouchers. The subsequent redemption decision is out of their control.

Studies that evaluate vocational training programs typically find negative employment effects immediately after the award. The reason is that voucher recipients reduce their job search efforts while they look for a suitable program and during subsequent training participation. For German Training Vouchers, these negative lock-in effects last for as much as two years [3]. This long period can be attributed to participation in programs with extremely long durations. After a period of four years, the award of a German Training Voucher has positive employment effects. The unemployed who are awarded with a vocational training voucher exhibit a two percentage point increase in their employment chances compared to individuals who are not awarded a voucher and do not participate in vocational training. For the first four years, these effects are shown in the illustration on page 1 by the solid line. Unreported results show evidence for persistently positive effects until seven years after the award. The employment share of awardees is 62% and would be only 60% if the vouchers were not issued. Accordingly, awarding a vocational training voucher increases employment by 3% ( $= 2/60 \times 100\%$ ). With respect to earnings, the effect of awarding a voucher is immediately negative and subsequently fades. In certain studies, the earnings effect never becomes positive, though it is fairly close to zero and becomes insignificant after a period of seven years [3]. Other studies have slightly more positive findings, reporting monthly earnings gains of €40 in the long term [1]. The different results can be explained by different estimation techniques. The positive effects shown in the second study are driven by programs with long durations (greater than one year), for which the human capital investment can be very intense [1].

In the US, the redemption probability is high because training is a scarce resource. Therefore, the intention-to-treat effect is very similar to the effect of actual training participation. Separate results for actual participation in so-called “adult programs” (targeted at individuals with poor work histories) and in so-called “dislocated worker programs” (targeted at individuals who have been laid off) are available [3]. The adult

programs have large positive employment and earnings effects. The employment effect is between 8 and 13 percentage points, which represents a substantive effect. For example, this implies that participants experience an employment increase of 22%, for an employment share of 60% under non-participation and an employment effect of 13 percentage points ( $= 13/60 \times 100\%$ ). The quarterly earnings gains for participants are between US\$400 and US\$600. This finding corresponds to an earnings increase of 15% for men and 30% for women. However, approximately 10% of training participants receive unemployment benefits at the beginning of the program, and empirical evidence suggests that the effects of vocational training are lower in this subgroup [3]. The earnings increase for this subgroup does not exceed 5%.

For dislocated worker programs, the effect of training participation is much lower than for the adult programs. The earnings effects become positive after a two-year lock-in period, but never exceed 5%, or US\$200. A similar pattern is found for employment. After a one-year lock-in period, the employment gains converge to approximately five percentage points. The share of participants receiving unemployment benefits at the beginning of training is 30%. As previously, the effects of vocational training are moderately lower in this subgroup [4].

In the US, randomized experiments with different institutional settings and varying quantities of case worker counseling are conducted under the WIA. In one extreme setting, case workers have strong authority about the training assignments; they are permitted to direct customers to a specific course, award ITAs corresponding directly to customers' needs, and have the right to reject customers' choices [3]. Other settings give more choices to the customers rather than to the case workers. For example, one setting allows case workers to award all customers with the same fixed amount in their ITAs and provide counseling solely upon request. With regard to long-term labor market outcomes, participants in the different treatments are equally likely to be employed six to eight years after the experiment [3]. However, those with the greatest level of case worker guidance show the highest earnings [5]. This suggests that the lack of guidance after the voucher award by the case worker in Germany could play a role in the lower earnings effects compared with the US.

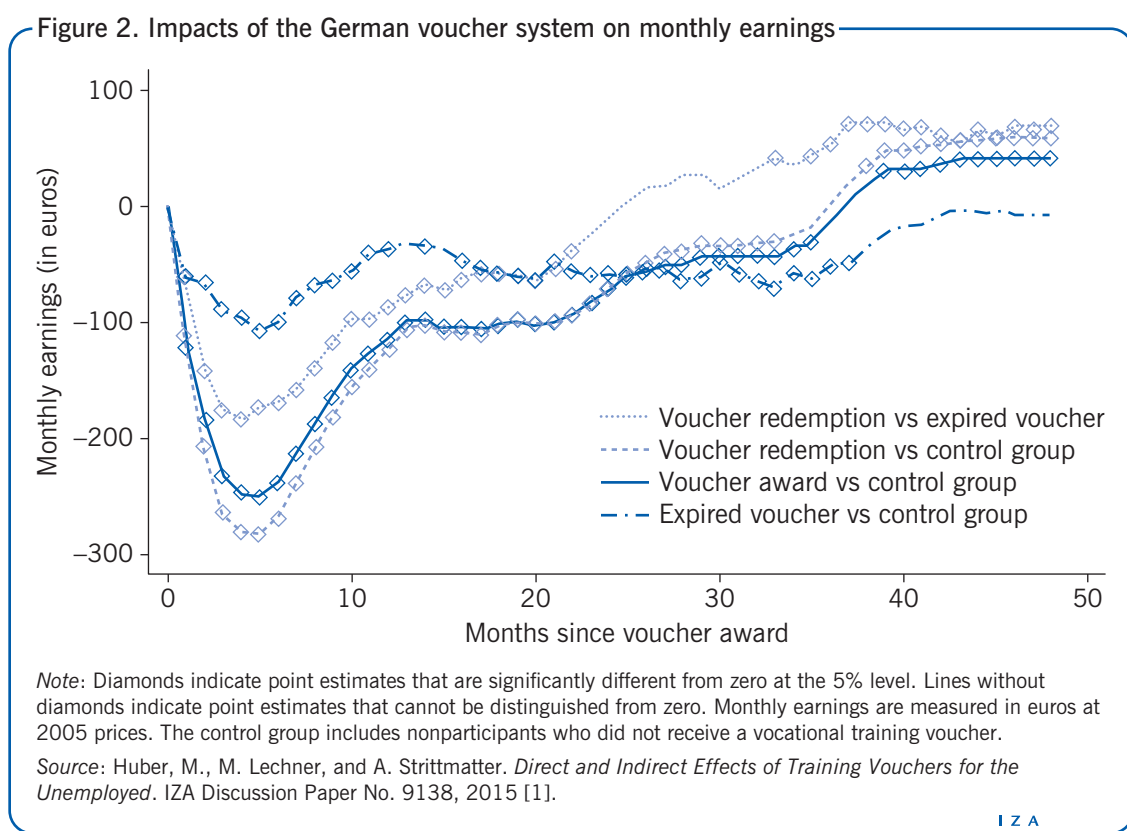
The lower effectiveness of the vocational training vouchers in Germany compared to the US may be related to the awardees' educational level. In Germany, the educational level of voucher recipients is higher than in the US, which could reduce training effectiveness. Empirical evidence for different effects with respect to education is mixed. Many studies find vocational training is more effective for participants with lower education levels [3], [6], while some studies find no differences in effects by education [7]. Regardless, empirical evidence showing that an individual's trainability increases with educational level is scarce. Accordingly, awarding vouchers specifically to those unemployed with high educational levels does not increase the effectiveness of vocational training programs. Unfortunately, certain performance measures for German case workers incentivize them to award vouchers to participants who have strong employment opportunities, even in the absence of training [3], including unemployed people with high educational levels. As such, these performance measures might be poorly designed. One reason for these types of incentives is the fear that low-educated voucher recipients may encounter problems finding appropriate vocational training providers and courses. However, these potentially negative non-redemption effects are not as strong as the overall positive returns to awarding a vocational training voucher to low-skilled individuals [3].

### Possibility of non-redemption

Another potential disadvantage for the effectiveness of vocational training vouchers is the possibility of non-redemption. Approximately 20% of all German training vouchers that are awarded are not redeemed. In the US, this is less of a concern because most ITAs are utilized. If a voucher is not redeemed, the awardee does not receive vocational training. Furthermore, the awardee may lose time while engaged in an unsuccessful course search. During this phase, job search intensity is likely reduced. In addition, German training voucher awardees may become comfortable in unemployment because during the validity of the voucher (approximately three months) other ALMP options (such as sanctions or job search assistance) are less strictly applied.

Empirical evidence suggests that the net effect of merely obtaining the voucher (without receiving training) is negative during the first three years after the award [1]. The illustration on page 1 shows the employment effects for each month during the first four years after the voucher award for Germany. If all awardees decide to allow their vouchers to expire, their employment chances would be five percentage points lower during the first three years after the award in comparison to not being awarded a voucher and not participating in vocational training (chain line). Moreover, awardees may reduce their job search effort while they search for a suitable training course. An initially short extension of unemployment duration can lead to state dependency, that is, the non-redeemers can be trapped in unemployment, because the unemployment duration itself has negative impacts on subsequent employment chances.

With respect to earnings, the negative short-term net effects of expired vouchers eventually fade. In Figure 2, monthly earnings losses of between €50 and €100 are reported,



corresponding to a maximum earnings decrease of 8%. Surprisingly, it is not found that expired vouchers increase the unemployment rate. Instead, awardees with expired vouchers exhibit a 10 percentage point higher probability of leaving the labor force, meaning they are no longer officially registered as unemployed [1]. Behavioral aspects could explain these results; for example, individuals who feel incapable of finding a suitable course could be demotivated with regard to their career and drop out completely.

The results show the potential efficiency losses of voucher award systems if individuals decide not to redeem their vouchers. The illustration on page 1 and Figure 2 reveal that the effectiveness of the vocational training voucher would be higher if all awardees redeem their vouchers (dashed line) than the actual observed redemption proportion of 80% (solid line). This is another explanation for why the vocational training voucher system is more effective in the US than in Germany. Policymakers should therefore consider the merits of allowing recipients the choice of non-redemption when designing a voucher award system.

### Participation under voucher provision vs mandatory course assignment

It is useful to compare the effectiveness of a training voucher system to a mandatory course assignment system. However, because empirical evidence for the US is not available, only the German voucher system can be used as a comparison.

Optimizing the assignment mechanism for vocational training is a nearly cost neutral means to improve overall returns to training. Therefore, picking the optimal provision system is essential when establishing a program. However, it is difficult to address the effect of the voucher provision system, as several channels potentially affect the system's overall returns to vocational training, in opposing directions.

First, behavioral issues have an impact on training, as the award of a voucher accommodates the recipient, which increases his/her patience when searching for a new job. The unemployed feel that a friendly service has been offered to them. Under the voucher system, sanctions cannot be imposed, and an assignment to onerous programs is impossible. This arrangement likely reduces awardees' job search efforts and increases reservation wages, which prolongs their unemployment duration [8], [9]. Both channels are also likely to appear under the mandatory assignment course system, but could be intensified under the voucher provision system due to the lack of sanctions or forced assignments. However, voucher awardees may be more motivated while participating in training programs because they can choose the course that is most convenient for them; this should increase human capital accumulation. Evidence shows that 7% of voucher redeemers dropout before finishing 80% of their course. Before introducing the voucher

#### Reservation wages

The lowest wage for which an individual is willing to provide labor. Below this wage, the individual would rather be unemployed. If the employment agency provides many good services (like vocational training vouchers) and at the same time delivers few sanctions or other tough measures, then the unemployed could feel relatively comfortable in unemployment. In this case, the negative consequences of unemployment decrease and reservation wages are likely to increase.



provision system, this dropout rate was 20% [10]. This finding suggests that training participants with a voucher take their courses more seriously.

Second, the match quality between training participants and courses could affect returns to vocational training because it is unclear whether voucher recipients or case workers find the best match. On the one hand, voucher awardees may know which courses best meet their needs. On the other hand, case workers could potentially identify more appropriate courses due to their accumulated experience and knowledge.

Third, the voucher system introduces market mechanisms that intensify competition between training providers. However, there is no guarantee that market mechanisms improve the returns to training. Under the voucher system, awardees can decide with which training provider to redeem their voucher. Therefore, providers must make an attractive offer to voucher holders. If training providers do not have sufficient course participants, they will ultimately lose profits. To avoid this, providers could exert greater effort to improve the quality of their courses in comparison to their competitors. But, regulations and certification systems must ensure that training providers only attract training participants because of reasons positively related with the quality of training. Monetary incentives or presents for potential course participants should be prohibited. Currently, the literature lacks evidence about the effects of training vouchers on training providers and the quality of training.

Under the mandatory course assignment system that was in place before the introduction of German Training Vouchers, case workers directly assigned training based on subjective measures. Case workers could, in principle, cut unemployment benefits completely for a maximum period of three months if the unemployed person refused to participate. However, this option was rarely implemented. Between 2000 and 2001, approximately 10,000 sanctions were imposed per year for refusing participation in ALMPs, which only corresponded to 0.4% of all unemployed persons at that time [11]. Training providers, which typically included unions and employer associations, negotiated directly with local employment agencies about the supply of courses; this was considered a non-transparent practice. In Germany, there were suspicions that the provision of vocational training had been primarily supply-side oriented [12]. Implicitly, this suspicion assumes an agreement to fill courses rather than finding the best course for unemployed people. This would not be in the best interest of the unemployed, or society at large, because it would not serve efficiency goals.

Empirical evidence indicates that training participation under the mandatory course assignment system is more effective in terms of re-employment and earnings than under the voucher provision system during the first two years after the start of a course [13]. Employment probabilities are approximately three percentage points lower under the voucher provision system. A possible explanation for this effect is that highly motivated training participants reduce their job search effort while engaged in training under the voucher provision system. After two years, the effects of the voucher award system become more positive than the mandatory assignment system. These positive effects persist during the ensuing five years. However, depending on the model specification, it is not possible to statistically distinguish these positive effects from zero. Similarly, the long-term earnings impacts are weakly positive. In the most positive specification, the voucher provision system improves employment probabilities by five percentage points and monthly earnings by €80 in comparison to the mandatory assignment system. These

results would suggest that training participants under the voucher provision system are able to accumulate more human capital than under a mandatory course assignment system. Accordingly, the voucher system prolongs unemployment duration, but may improve employment chances and wages in the long term. Further results suggest that the positive effects are strongest for courses with shorter durations.

In sum, determining the optimal assignment mechanism depends on societal preferences. If society is mainly interested in a rapid reintegration of the unemployed, then a mandatory course assignment system may be optimal. If long-term consequences are also relevant, the voucher provision system may be considered, particularly when employing short-duration vocational training programs.

## LIMITATIONS AND GAPS

Studies that focus on the empirical identification of labor market effects rely on strong assumptions. In the reviewed studies, it is assumed that the programs have no general equilibrium effects. This means vocational training programs do not affect the employment chances of non-participants, which may not be realistic for large programs. Moreover, the results of the reviewed studies cannot be transferred one-by-one to other economies with different institutional settings, because the external validity of the findings could be violated. Random experiments are rarely available for the evaluation of training programs because they are considered expensive and minimally socially acceptable. In order to overcome the lack of experimental evidence, most reviewed studies assume that they are able to control for the selection of participants into programs, to a certain extent. For example, if participants are selected based on their vocational education, then it would be necessary to control for this variable in such studies. As the selection into vocational training programs is typically complex, such studies require a rich data set, which is hardly available. In general, the assumptions underlying these non-experimental studies are non-testable in the data. Scientists have thus to provide (theoretical) economic arguments for the plausibility of non-experimental approaches.

Particularly, the comparison between the mandatory course assignment and voucher provision systems relies on quite heavy assumptions. In addition to the assumption regarding participant selection, this comparison assumes that the different components of the reform in the provision system can be added in a linear way. Furthermore, it is assumed that it is possible to adjust for time effects, which is often not the case due to diverging trends during a business cycle.

## SUMMARY AND POLICY ADVICE

The award of a vocational training voucher can have positive employment and earnings effects in the long term. These effects are mainly driven by the actual redemption of the voucher together with subsequent participation in a training program. This suggests that the quality of training is mainly responsible for the effectiveness of vocational training vouchers (operating through, for example, human capital accumulation), while other channels, such as the provision system, play only a secondary role. Accordingly, improving the quality of training should be the first priority of policymakers, but an improvement of the provision system may allow for additional (nearly cost-neutral) effectiveness gains. Participants with low vocational education levels, in particular, benefit from participation

in long-duration courses. Therefore, an appropriate selection of awardees may also improve the overall effectiveness of vocational training vouchers.

Awardees who receive counseling from a case worker with regard to course choice have higher returns to vocational training than awardees without guidance. Counseling can possibly help awardees to find courses better suited to their own needs and the needs of the labor market. If the vouchers expire, the unemployed are worse off because they tend to reduce their job search effort while they (unsuccessfully) seek a suitable training course. Therefore, the merits of allowing the possibility of non-redemption should be considered when designing a voucher award system.

The provision of vocational training programs through a mandatory course assignment system is tougher than through a voucher system. Accordingly, the voucher system more comfortably accommodates the unemployed than a mandatory course assignment system. This accommodation can have negative implications on the probability of finding a job, particularly in the short term, because, for example, voucher recipients reduce their job search efforts while they search for courses. If rapid reintegration into the labor market is the major goal of a certain training program, then an allocation via vouchers may not be the most appropriate mechanism. However, if the main objective is to improve long-term employment opportunities, then a voucher provision system may be well-suited, especially if short-duration courses are prioritized.

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### Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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## REFERENCES

### Further reading

Barnow, B. "Vouchers in US vocational training programs: An overview of what we have learned." *Journal of Labour Market Research* 42:1 (2009): 71–84.

Doerr, A., and T. Kruppe. "Training vouchers, local employment agencies, and policy styles." *Journal of Labour Market Research* 48:1 (2015): 41–56.

### Key references

- [1] Huber, M., M. Lechner, and A. Strittmatter. *Direct and Indirect Effects of Training Vouchers for the Unemployed*. IZA Discussion Paper No. 9138, 2015.
- [2] OECD. *Employment Outlook*. Paris: OECD, 2015.
- [3] Doerr, A., B. Fitzenberger, T. Kruppe, M. Paul, and A. Strittmatter. "Employment and earnings effects of awarding training vouchers in Germany." *Industrial and Labor Relations Review* (Forthcoming).
- [4] Heinrich, C., P. Mueser, K. Troske, K. Jeon, and D. Kahvecioglu. "Do public employment and training programs work?" *IZA Journal of Labor Economics* 2:6 (2013): 1–23.
- [5] Perez-Johnson, I., Q. Moore, and R. Santillano. *Improving the Effectiveness of Individual Training Accounts: Long-Term Findings from an Experimental Evaluation of Three Service Delivery Models*. Mathematica Policy Research Final Report, 2011.
- [6] Berger, M., D. Black, and J. Smith. "Evaluating profiling as a means of allocating government services." In: Lechner, M., and F. Pfeiffer (ed.). *Econometric Evaluation of Labour Market Policies*. Heidelberg: Physica, 2000; pp. 59–84.
- [7] Rinne, U., M. Schneider, and A. Uhlendorff. "Do the skilled and prime-aged unemployed benefit more from training? Effect heterogeneity of public training programmes in Germany." *Applied Economics* 43:25 (2011): 3465–3494.
- [8] DellaVigna, S., and M. Paserman. "Job search and impatience." *Journal of Labor Economics* 23:3 (2005): 527–588.
- [9] Huber, M., M. Lechner, and G. Mellace. "Why do tougher case workers increase employment? The role of programme assignment as a causal mechanism." *Review of Economics and Statistics* (Forthcoming).
- [10] Paul, M. "Many dropouts? Never mind!—Employment prospects of dropouts from training programs." *Annals of Economics and Statistics* 119–120 (2015): 235–267.
- [11] Hofmann, B. "Short- and long-term ex-post effects of unemployment insurance sanctions." *Journal of Economics and Statistics* 232:1 (2012): 31–60.
- [12] Rinne, U., A. Uhlendorff, and Z. Zhao. "Vouchers and case workers in training programs for the unemployed." *Empirical Economics* 45:3 (2013): 1089–1127.
- [13] Doerr, A., and A. Strittmatter. *Assignment Mechanism, Selection Criteria and the Effectiveness of Training Programs*. SEPS Discussion Paper No. 1421, 2014.

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