

What kind of support do firms need to hire apprentices during recessions?*

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Abstract

Apprenticeship training is strongly developed in Switzerland: at the country level, two thirds of the students follow this educational path at the upper secondary school. That proportion is however substantially smaller in the canton of Geneva, where apprenticeship is only chosen by around one third of the students. During the Covid-19 crisis, training firms moreover faced severe difficulties and a number of them decided not to (or were unable to) hire apprentices or even to terminate their apprenticeship contract(s). To avoid dramatic consequences, authorities from the canton of Geneva introduced a series of measures to support apprenticeship in 2020, among which the following three key measures: (1) reimbursement of the first three months of an apprentice’s salary, (2) bonus of CHF 3,000 for firms who hire a new apprentice, (3) bonus of CHF 10,000 for firms who build a network to jointly hire an apprentice. Using a discrete choice experiment, answered by almost 800 firms, we investigate the firms’ preferences regarding the support measures. Our findings show that the most successful measure is the reimbursement of the apprentices’ wage, regardless of firm’s size.

Keywords: Apprenticeship training; VET; Covid-19; Discrete choice experiment; Conditional logit models. **JEL codes:**

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1 Introduction

Since the beginning of the Covid-19 crisis, governments in many OECD countries have implemented measures to promote youth employment (ages 15-29; [OECD \(2021\)](#)). As newcomers to the labor market or even still in their transition from school to work, young people have fewer firm-specific skills, are more likely to work on temporary contracts, and are therefore often the first to lose their job when there is a negative external shock to labor demand. Moreover, the Covid-19 crisis has disproportionately affected the sectors in which young people are relatively more present, such as the hotel and restaurant industry or leisure activities.

Like youth employment in general, but to a lesser extent, the supply of apprenticeship positions is sensitive to business cycles in a pro-cyclical way ([Brunello, 2009](#); [Wolter and Ryan, 2011](#); [Lüthi and Wolter, 2020](#)). The supply of youth employment in general would depend more than the supply of apprenticeship positions on firms' expectations of their level of output. If firms see youth employment as a specific human capital investment, it is reasonable to expect that a negative external shock to firms' demand for labor, such as the one generated by the Covid-19 crisis, would reduce the expected return on such investment. The lower sensitivity of the supply of apprenticeship positions to the business cycle may be explained by a better productivity-pay differential than youth employment in general. In this case, firms see apprenticeship more as a substitute for skilled (or unskilled) labor for current and not necessarily future production. The unemployment rate for the 15- to 29-year-olds has increased in many countries between the

last quarters of 2019 and 2020, such as in the United States or the United Kingdom, but to a much lesser extent in countries where apprenticeship is prevalent at the upper secondary level of the educational system, such as in Switzerland or Germany.

However, the Covid-19 crisis has prompted governments of the latter countries to introduce new measures to prevent companies from interrupting their apprenticeship contracts, while continuing to stimulate the demand for apprenticeship positions among young people. For Germany, (Muehlemann et al., 2020) have estimated a 6% reduction in signed apprenticeship contracts in 2020, due both to a substantial decrease in firms' offer of apprenticeship positions and in the number of applications from young people. Using data from the Swiss national administrative platform from apprentices vacancies between February 2020 and April 2021, (Goller and Wolter, 2021) find a strong correlation between the intensity of imposed restrictions to fight the Covid-19 and the number of search queries made by young people.

In this paper, we focus on firms' preferences for public support aimed at maintaining or creating apprenticeship positions. As in a more general setting, public support in this context can take the form of direct or indirect measures. In terms of direct public support, Germany, for example, doubled the annual bonus for firms that maintain their level of apprenticeship positions from 2,000 to 4,000 Euros per apprentice in spring 2020 (OECD, 2021). In Switzerland, no direct measures have been implemented at the national level beyond the usual employment measures. Instead, the federal government has set up a specific task force (see "Apprenticeship Perspectives" <https://taskforce2020.ch/>), which approved an apprenticeship promo-

tion program (“Covid-19 apprenticeship places”) in spring 2020. The funds released in this framework have made it possible to monitor and coordinate a number of projects implemented at the regional or cantonal level to improve the functioning of the apprenticeship market during the pandemic. These measures could be complemented by strictly cantonal initiatives, as has been the case in the canton of Geneva (OECD, 2021).

Compared to other Swiss cantons, Geneva has the lowest number of apprenticeship positions relative to employment. The risk of seeing this gap widen during the Covid-19 crisis encouraged the local authorities to set up a series of measures for firms in spring 2020 to maintain or even increase their supply of apprenticeship positions. Three measures in this program provided direct financial assistance to firms: i) reimbursement of the first three months of an apprentice’s salary, ii) bonus of CHF 3,000 for hiring a new apprentice, and iii) bonus of CHF 10,000 for the creation of a network of firms that would jointly hire a new apprentice. The fourth measure of interest allowed firms to postpone the hiring of an apprentice beyond the usual calendar deadlines.

Building on this local program, we conducted an empirical analysis of firms’ preferences with respect to the different public measures proposed to them. To do so, we implemented a discrete choice experiment (Schlöpfer, 2017) in order to identify the “trade-offs” between the different measures proposed. Our results show that the preferred measure is the reimbursement of a portion of the apprentice’s salary, regardless of the firm’s size. The bonus for a new hiring has a smaller but significant marginal effect too, and mainly for micro firms (i.e. less than 10 employees).

The rest of this paper is structured as follows. Section 2 presents the details of the public policy designed to foster the creation of apprenticeship positions. Section 3 introduces the survey and the discrete choice experiment. Section 4 details our econometric methodology and Section 5 presents the results of the analysis. Concluding remarks are provided in Section 6.

2 Institutional background

In May 2020, the Geneva State Council decided to support training firms in order to maintain the number of apprenticeship positions in the canton. Compared with other Swiss' cantons, Geneva has the lowest share of apprenticeship both among certification at the upper secondary level and among the employed workforce (OFS, 2020). In this context, four key measures have been developed to support the supply of apprenticeship positions:

- (i) Reimbursement of the first three months of an apprentice salary;
- (ii) Bonus of CHF 3,000 for hiring a new apprentice;
- (iii) Bonus of CHF 10,000 for a new network of training firms;
- (iv) Deferred start date and signing of contracts until November 30 (instead of August 31).

Measure (i) could be used either for an existing contract or a new one. The first three measures were mutually exclusive: A firm asking for the wage reimbursement could not ask for the bonus, even though it hired a new apprentice. Measure (iv) could be used independently or combined with

any of the three others and was left to the discretion of any firm hiring an apprentice.

In 2020, among the more than 40,000 firms (or establishments) located in Geneva, the apprenticeship measures were used by 411 only. The measures concerned 662 apprentices, or 40% of the total of 1,696 in December 2020 at the cantonal level. The vast majority of firms that used one of the measures (ii)-(iii) were already employing at least one apprentice. This raises the “standard” counterfactual question: How many of these firms and apprentices would have maintain or concluded an apprenticeship contract if the support measures had not been put in place? This situation is obviously unobservable and must therefore be evaluated on the basis of an empirical strategy.

Evaluating the preferences for the different measures (i)-(iv) and the trade-offs across them is the purpose of the survey we developed and sent to a large number of firms in the canton of Geneva. We were particularly careful not to reduce our sample to firms that were already employing one or more apprentices in the 2019-2020 academic year, because they are the most likely to opportunistically take advantage of the policy in place, creating deadweight effects. To this end, we split the population of firms located in Geneva in four types, depending on, first, whether or not the firms were already employing apprentices and, second, whether or not they used one of the three financial measures proposed.

3 Survey and discrete choice experiment

In order to elicit firms' preferences for apprenticeship support measures, we use a stated preference method, which consists in asking respondents (in this case firms, or more precisely their representatives or managers) about the decisions they would make in hypothetical situations. The stated preference method has a number of advantages, which are summarized in [Whitehead et al. \(2008\)](#). In particular, stated preferences are useful for the analysis of policies that are likely to lead to behavioral changes. In such cases, hypothetical choices may in fact be the only way to gather information and predict the impacts of the policies being considered. Also, thanks to the stated preference approach, the number of observations becomes high even when the sample is limited in size because each respondent is confronted with several similar hypothetical situations. The resulting panel data allows individual (or firm) fixed effects to be taken into account, thus limiting possible biases related to the hypothetical nature of the choices made.

Stated preferences seem thus well appropriate to address the potential decisions of firms, for example in the event that measures to sustain apprenticeship are changed. For firms having some experience with hiring employees and apprentices, respondents should have no difficulty in placing themselves into the hypothetical scenarios that are proposed to them. The changes from the current situation are therefore hypothetical in nature, but not unrealistic or uncommon for the respondents. Moreover, the discrete choice experiment makes it possible to evaluate the trade-offs between the various attributes.

The advantage of discrete choice experiment in our context is also that it reduces the risk of “strategic responses” by the respondents. It is indeed to be expected that (financial) support measures are valued by firms, which have an obvious interest in keeping them in place as long as possible. Simply asking a firm whether it would prefer the support measures to remain in force or not would likely result in overwhelmingly positive responses. Similarly, to ensure that the measures are maintained, some respondents might be tempted to say that they would certainly not have kept or hired an apprentice if the measures did not exist, even if this is not the case, but to strengthen the apparent benefit of the measures. In the discrete choice experiment, this kind of behavior is much more complicated, if not impossible, to implement since the method precisely aims at subjecting respondents to situations that impose trade-offs.

More concretely, the discrete choice experiment is implemented via an online survey. Invitations were sent by email and data collected between March and July 2021. The choice tasks that were presented to the respondents were similar to that illustrated in Figure 1. The attributes (characteristics presented in the first column) are given by the four apprenticeship measures. The levels (items presented in the following columns) vary from the usual situation (without the specific policy implemented during the pandemic) to slightly more favorable amounts than those actually offered in the measures. By varying (randomly) the levels of the attributes and repeating the question several times for each respondent and over a large number of respondents, it is then possible to determine firms’ preferences towards the support measures. Using additional characteristics collected during the survey, it is further pos-

sible to refine the analysis by determining which firm characteristics influence preferences. It is for instance probable that preferences differ systematically according to firm size.

Table 1 shows the set of attributes and levels used in the experimental design. The levels include the normal situation (underlined), the situation with the support measures as implemented in 2020 (in bold), as well as other situations (one between the first two, the other beyond). The experimental design was built with the help of *Ngene* software and the survey was coded in *Qualtrics* using the method developed by [Weber \(2021\)](#).

Figure 1: Example of choice task

Which of the following alternatives does your company prefer?

	Alternative 1	Alternative 2
Months of salary refunded	3	6
Bonus for hiring a new apprentice	CHF 0	CHF 3,000
Bonus for new network of training companies	CHF 10,000	CHF 0
Deadline for hiring	November 30	September 30

Your choice: Alternative 1 Alternative 2 None of the two

Table 1: Attributes and levels used in the DCE

Attributes	Levels
Months of salary refunded	<u>0</u> , 1, 3 , 6
Bonus for hiring a new apprentice (CHF 1,000)	<u>0</u> , 1, 3 , 5
Bonus for the creation of a network (CHF 1,000)	<u>0</u> , 5, 10 , 15
Deadline for hiring	<u>Aug 31</u> , Sep 30, Nov 30 , Dec 31

Note: Underlined levels indicate the normal situation. Levels in bold font indicate the situation with support measures in place in 2020.

4 Econometric strategy

In order to evaluate the stated preferences of firms in relation to support measures, our econometric strategy is based on [McFadden's \(1974\)](#) random utility theory. Each firm n is assumed to maximize utility U_{njt} by choosing the preferred alternative j in choice task t :

$$U_{njt} = V_{njt} + \varepsilon_{njt} \quad \text{with} \quad n = 1, \dots, N, \quad j = 1, 2, 3, \quad t = 1, \dots, 4 \quad (1)$$

Our sample consists of $N = 764$ firms having chosen between $J = 3$ alternatives in $T = 4$ situations. V_{njt} is called the representative utility and ε_{njt} is a random term assumed to be an iid extreme value. V_{njt} is modeled as a linear function of observable explanatory variables:

$$V_{njt} = \beta' x_{njt} \quad (2)$$

Vector x_{njt} represents the set of attributes of alternative j and could include characteristics of firm n . Because firm characteristics are constant, they must be interacted with other variables for the econometric analysis. The estimations are carried out using conditional logit models, whose es-

estimated coefficients indicate the impact of the attributes on firms' utility. Based on the coefficients, it is then possible to determine marginal effects, which indicate the impact of characteristics on the probability of choosing an alternative.

5 Empirical results

Table 2 shows the results of the logit estimation carried out on all responses collected. The effects of the first two measures are statistically highly significant. Each additional month of salary reimbursed would increase the probability of hiring (or not firing) an apprentice by 5.9 percents. Each increase of CHF 1,000 bonus for a new apprentice would increase the probability of hiring an apprentice by 1.2 percent. In contrast, the premium for building a network of training firms has no impact on the choice, with a coefficient very close to zero. As regards the delayed start (fourth measure), the estimated coefficient is negative and significant. This last result seems counter-intuitive, though, because it implies that delayed entry tends to exert a negative effect on the probability of hiring an apprentice.

In order to determine whether firms' preferences vary according to their size, we have carried out a series of complementary estimations in which the size of firms is introduced by interaction terms with the different support measures. This makes it possible to determine whether certain measures have a greater impact on small or large firms. We classified firms in three size categories: micro firms (up to 9 employees), small and medium firms (10 to 249 employees), and large firms (250 employees or more). The results of these

Table 2: Effects of support measures on firms' choices

	Coefficients	Marginal effects
Months of salary refunded	0.256*** (0.013)	0.057*** (0.002)
Bonus for hiring a new apprentice (CHF 1,000)	0.056*** (0.014)	0.012*** (0.003)
Bonus for the creation of a network (CHF 1,000)	0.005 (0.005)	0.001 (0.001)
Delayed start (months; Aug 31 = 0)	-0.029 (0.018)	-0.007 (0.004)
# Observations	3,360	
# Firms	774	
Log-L	-3,216.70	
BIC	6,470.28	

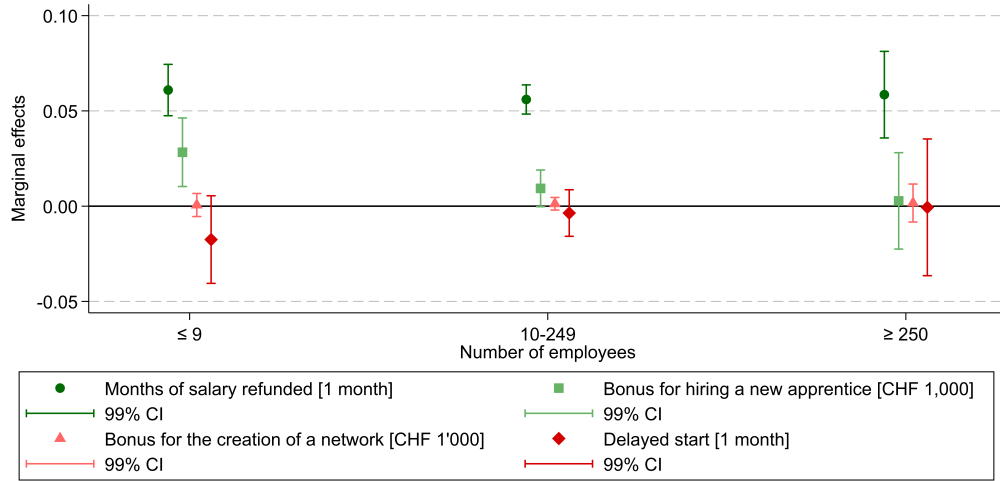
new estimates are shown in Table 3. Compared to Table 2, this estimation encompasses three times more coefficients, with one specific coefficient for each firm size category and for each measure. To facilitate interpretation, the marginal effects are also presented graphically in Figure 2 with 99% confidence intervals.

It can be seen that the most important measure remains the number of months of salary reimbursed, regardless of firm's size. For the bonus for hiring a new apprentice, however, this estimation reveals differences. Micro firms (up to 9 employees) are the most sensitive to this measure, while the estimated effect is not significant for the large firms (250 employees or more). The "network" measure is not significant for any firm size, while delayed entry seems to negatively affect micro firms only. In other words, extending the period of employment beyond the month of August (the standard deadline for starting new apprenticeship contract) would tend to reduce the incentive to hire or maintain an apprentice in micro firms. One possible explanation

Table 3: Effects of support measures on firms' choices, by firm size

	Coefficients	Marginal effects
Months of salary refunded		
≤ 9 employees	0.281*** (0.027)	0.061*** (0.005)
10-249 employees	0.249*** (0.015)	0.056*** (0.003)
≥ 250 employees	0.260*** (0.044)	0.059*** (0.009)
Bonus for hiring a new apprentice (CHF 1,000)		
≤ 9 employees	0.130*** (0.034)	0.028*** (0.007)
10-249 employees	0.041** (0.017)	0.009** (0.004)
≥ 250 employees	0.012 (0.044)	0.003 (0.010)
Bonus for the creation of a network (CHF 1,000)		
≤ 9 employees	0.003 (0.011)	0.001 (0.002)
10-249 employees	0.006 (0.006)	0.001 (0.001)
≥ 250 employees	0.007 (0.017)	0.002 (0.004)
Delayed start (months; Aug 31 = 0)		
≤ 9 employees	-0.081** (0.041)	-0.018** (0.009)
10-249 employees	-0.016 (0.021)	-0.004 (0.005)
≥ 250 employees	-0.003 (0.062)	-0.001 (0.014)
# Observations	3,360	
# Firms	764	
Log-L	-3,170.45	
BIC	6,451.37	

Figure 2: Marginal effects, by firm size



Note: The marginal effects of the different support measures by firm size represented here correspond to those reported in Table 3.

is that smallest firms, unlike larger ones, have less flexibility to adjust their staffing resources according to the calendar or the state of business. Hence, there is potentially a greater preference to have the apprentice on board from the “start”, Which is, in some sense, contradictory with a situation of partial unemployment.

6 Conclusions

Through an online survey, we sought to determine the impact of apprenticeship support measures and the preferences of firms for these measures. The response rate was high for a survey of this type addressing firms. The vast majority of firms (surveyed) stated that they were aware of the measures put in place by the State Council. The responses obtained through this survey on the utilization of these measures are consistent with the official fig-

ures. The two measures most frequently used were the reimbursement of the apprentice's first three months of wages and the bonus for hiring a new apprentice. Among the firms that benefited from either of these two measures, most stated that they would have hired an apprentice even without their existence. In contrast, more than one out of two firms that benefited from a delayed start would not have hired an apprentice without this measure.

A large majority of the firms surveyed believe that the measures should be renewed for 2021 and would like to see the measures made permanent. These results are as expected. Indeed, it is reasonable to assume that firms have a clear interest in keeping these measures in place as long as possible. In order to test the preferences of firms in an alternative way, and to reduce the possibilities of "strategic responses", we carried out a discrete choice experiment.

The results of the choice experiment confirm the preference of firms for the first two measures (reimbursement of the first three months of wages and the bonus for hiring a new apprentice). When differentiating the measured effects according to firm size, we can deduce that:

- Regardless of the size of the firm, the most important incentive is the reimbursement of apprentices' wages. Each month of salary reimbursed increases the probability of hiring an apprentice by almost 6%.
- Micro firms (1-9 employees) are slightly more sensitive than small and medium firms (10-249 employees) to the incentive provided by the bonus for hiring a new apprentice; large firms (≥ 250 employees) are not sensitive to such measure;

- The delayed start does not seem to affect the preferences of small, medium and large firms, while it seems to have a rather disincentive effect for micro firms.

References

- Brunello, G. (2009). The effect of economic downturns on apprenticeships and initial workplace training: A review of the evidence. *Empirical Research in Vocational Education and Training*, 1(2):145–171.
- Goller, D. and Wolter, S. C. (2021). “Too shocked to search” The COVID-19 shutdowns’ impact on the search for apprenticeships. *Swiss Journal of Economics and Statistics*, 157:6.
- Lüthi, S. and Wolter, S. C. (2020). Are apprenticeships business cycle proof? *Swiss Journal of Economics and Statistics*, 156:3.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In Zarembka, P., editor, *Frontiers in Econometrics*. Academic press, New York.
- Muehlemann, S., Pfeifer, H., and Wittek, B. (2020). The effect of business cycle expectations on the german apprenticeship market: estimating the impact of covid-19. *Empirical Research in Vocational education and Training*, 12(8):1–30.

- OECD (2021). *Quelles mesures ont été adoptées par les pays pour aider les jeunes face à la crise du COVID-19?* Organisation for Economic Co-operation and Development, Paris.
- OFS (2020). *Degré secondaire II : taux de certification*. Office Fédéral de la Statistique.
- Schläpfer, F. (2017). Stated preferences for public services: A classification and survey of approaches. *Journal of Economic Surveys*, 31(1):258–280.
- Weber, S. (2021). A step-by-step procedure to implement discrete choice experiments in Qualtrics. *Social Science Computer Review*, 39(5):903–921.
- Whitehead, J. C., Pattanayak, S. K., Van Houtven, G. L., and Gelso, B. R. (2008). Combining revealed and stated preference data to estimate the nonmarket value of ecological services: an assessment of the state of the science. *Journal of Economic Surveys*, 22(5):872–908.
- Wolter, S. C. and Ryan, P. (2011). Apprenticeship. In *Handbook of the Economics of Education*, volume 3, pages 521–576. Elsevier.