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Opening doors for immigrants: The importance of occupational and workplace-based cultural skills for successful labor market entry

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Opening doors for immigrants: The importance of occupational and work-

place-based cultural skills for successful labor market entry

Chiara Zisler¹, Damiano Pregaldini², Uschi Backes-Gellner³

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Abstract

Young immigrants who often lack country-specific human capital face greater challenges in the transition from education to the labor market (e.g., lower employment probabilities, longer unemployment spells) than native adolescents. This paper analyzes the importance, for a successful transition, of occupational skills and workplace-based cultural skills that workers can acquire only at the work. We exploit the Swiss vocational education and training (VET) setting, in which students acquire occupational skills in one of two different types of vocational education programs: either dual programs with training in firms based on employment contracts and complemented by vocational schooling, or school-based programs without employment contracts. While well-defined curricula ensure identical occupational skills in both programs, the training of workplace-based cultural skills differs systematically. As young immigrants lack these essential workplace-related cultural skills compared to natives, we expect that additional workplace-based cultural skills training in dual VET improves immigrants' transition into the labor market and thereby their longer-term employment prospects. Using administrative data, we compare how both programs affect the labor market entry of immigrant groups with pronounced cultural disadvantages. To estimate causal effects on employment outcomes, we use differences in VET traditions across Swiss language regions as an instrument. Results show that completing dual VET leads to significantly reduced unemployment probabilities for young immigrants compared to natives in the first year after graduation, suggesting that beyond welldefined curricula for occupational skills, workplace-based cultural skills are crucial for immigrants' transitions from education into the labor market.

JEL Classification: J24, J61

Keywords: Age of arrival, Assimilation, Cultural distance, Immigrants, Labor market integration, Skills

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1. Introduction

Young adolescents' difficulties when entering the labor market lead to severe social and economic problems in many countries (Riphahn & Zibrowius, 2016; Ryan, 2001), with ethnic minorities and young immigrants in particular facing greater challenges (Heath et al., 2008). Young immigrants often face language barriers or find that host country institutions do not recognize the qualifications they acquired in their home country (Lee et al., 2022). Moreover, lack of knowledge about prevalent working values or the functioning of their host country's labor market often prevents young immigrants from easily securing employment (Joona & Nekby, 2012; Reinke & Goller, 2022). Given that both actual and expected difficulties in labor market transitions can not only impair employment prospects over the entire life cycle but also deteriorate skill development and human capital investments, reducing this host country native-immigrant gap is crucial (Riphahn & Zibrowius, 2016). To prevent losing immigrants' great economic potential, educational institutions must provide them with the skills essential to successfully navigating the critical transition phase from school to the labor market (Kogan, 2016).

Economic assimilation theory posits that the extent of immigrants' expected challenges in this transition phase depends on two immigrant-related factors. First, expected challenges are likely to vary by the cultural and linguistic distance from the immigrant's country of origin to the host country (Blume & Verner, 2007; Stewart & Hyclak, 1984). Second, immigrants' challenges also include their temporal distance, i.e., their length of stay in the host country (Card & Peri, 2016; Chiswick & Miller, 2012; Borjas, 1995). The actual degree of cultural distance when entering the labor market is closely tied to the temporal distance of immigrants. The longer they live in the host country, the more time they have to accumulate host countryessential knowledge, thereby reducing country-specific human capital deficiencies (Chiswick & Miller, 2012). Overall, the greater both distances are, the greater the deficiencies in countryspecific human capital, in turn exacerbating the expected challenges of young immigrants during their school-to-work transition. In essence economic assimilation theory suggests that the successful labor market entry of immigrants depends not only on *occupational skills* but also on *workplace-based cultural skills*. Occupational skills refer to the technical knowledge and abilities required to perform a specific job or task and theses skills are explicitly specified in well-defined national curricula. Contrastingly, workplace-based cultural skills are tacit, often unspoken norms, behaviors, and attitudes, contributing to successful integration and performance in a workplace environment. For example, for a bank clerk, "writing a loan contract" is an occupational skill, whereas effectively advising a client while adhering to local customer culture and country-specific workplace habits constitutes a workplace-based cultural skill. While several studies demonstrate the importance of language skills for immigrants' labor market outcomes (e.g., Bleakly & Chin, 2010; Chiswick, 1991; Dustmann & Fabbri, 2003), empirical evidence on other skill types critical for young immigrants' labor market integration remains scant. One recent exception is Akay and Yilmaz (2022), who investigate non-cognitive skills (e.g., personal attributes) but do not focus on school-to-work transitions. Thus most essential skill types for immigrants in this critical period remain under researched.

In this paper, we use administrative data from Switzerland to examine the relative importance of occupational versus workplace-based cultural skills for young immigrants' (hereafter, "immigrants") successful transition from the educational system to the labor market. Specifically, we estimate the effect of two different skill formation systems— providing either combined occupational and workplace-based cultural skills training or exclusively occupational skills training—on immigrants' unemployment within one year after graduation (Corseuil et al., 2019; Hanushek et al., 2017). Categorizing immigrants by their cultural and temporal distance from Switzerland, we investigate immigrant groups that are likely to face different challenges. Thus our analysis allows us to draw a very nuanced picture of the skills critical for the labor market success of particularly vulnerable immigrant groups. Switzerland offers an excellent setting for investigating both skill types for different immigrant groups. First, to shed light on the relative importance of workplace-based cultural skills compared to occupational skills, we can exploit the Swiss vocational education and training (VET) system. VET students in Switzerland can acquire occupational skills in one of two alternative types of vocational education programs: either *dual* VET programs—which combine both practical training in a training firm through an employment contract (approx. 80% of total training time) and education in a vocational school (approx. 20%)—or purely *school-based* VET programs, which comprise only academic education in vocational schools (Bolli et al., 2019; Cahuc & Hervelin, 2020; Corseuil et al., 2019).

Because of comprehensive and legally binding national VET curricula, we argue that given an identical occupation (e.g., a bank clerk), the acquired occupational skills are identical in both types of VET programs. These well-defined curricula ensure that students acquire the same occupational skills regardless of the type of VET program they are in. However, for work-place-based cultural skills, there is a marked difference between the two programs. Because of the practical, actual working environment exposure provided in dual VET programs, students automatically acquire the tacit, workplace-based skills as part of their in-firm training. In contrast, purely school-based VET programs, largely lacking direct workplace interaction, do not provide the same opportunity for students to develop the workplace-based cultural skills. Because these skills are tacit and inherently tied to the workplace, they are less effectively learned within a purely academic environment.

Therefore, while detailed, well-defined national curricula ensure that the extent and quality of the occupational skills is identical in both programs, the training of the tacit, work-place-based cultural skills differs systematically. By analyzing the effect of both VET programs on immigrants' labor market outcomes, we can identify the importance of both skill types and determine whether workplace-based cultural skills add value to occupational skills for their successful labor market entry.

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Second, Switzerland has an immigrant population, which is both sizeable and highly diverse compared to other OECD members (Meunier, 2011). According to a 2020 Swiss Federal Statistical Office report, 38% of the "permanent resident" population are immigrants or of immigrant descent (SFSO, 2020). Moreover, roughly 27% of the residents younger than 15 are foreign nationals and come primarily from Portugal, Germany, and Italy (with other from Kosovo, France, and Northern Macedonia) (SFSO, 2021). This large and diverse immigrant population generates variation in cultural distance (because immigrants come from countries that are more or less culturally distant) and thus offers an ideal setting for studying school-to-work transitions among immigrants.

For our empirical analysis we combine two administrative data sets from the Swiss Federal Statistical Office's LABB program ("Longitudinal analysis in education"). First, we exploit the data set containing longitudinal analyses resulting from linking and aligning various data sources from the Swiss education system, Swiss labor registers, and population and household statistics (STATPOP). Drawing on this rich data set, we can observe the educational participation of the entire Swiss population from primary through tertiary levels between 2011 and 2020, thereby tracking enrollment in dual or school-based VET programs at the individual level. Moreover, this data set allows us to extract information on all student's migration histories and retrace their individual age of arrival in Switzerland. Second, we use the LABB labor-related data sets to observe individual graduation dates and the employment status one year after graduation. We analyze nine Swiss cohorts graduating from either of the two VET programs between 2011 and 2019, including the graduating class of 2019.

To identify the effect of receiving additional workplace-based cultural skill training (instead of pure occupational skill training) on unemployment for different immigrant groups, we rely on two steps. In a first step, we estimate an interaction model that captures the type of VET program completed and use immigrants' country of birth and nationality as interaction terms. In this model we control for canton⁴ fixed effects, cohort fixed effects, occupation-specific fixed effects, gender, and age. However, as unobservable variables can affect the selection of immigrants into one of the two types of VET programs, we use in a second step an instrumental variable (IV) strategy to be able to estimate causal effects. As the Swiss language regions have systematically differing training traditions⁵, neither known nor relevant for immigrants' location decisions when they first arrive in Switzerland, we use the language region of the immigrant's residence as an instrument for the decision to choose either dual or purely school-based VET. In the German-speaking cantons of Switzerland dual VET programs predominate historically until today, while in the French- and Italian-speaking cantons school-based VET programs have been dominant until today.

Our results show that training the combination of occupational skills and workplacebased cultural skills in dual VET leads to better labor market entrance, i.e., reduced unemployment for immigrants within the first year after graduation. We investigate the heterogeneity of these effects along two crucial dimensions: the age of arrival in Switzerland and the country of origin. This approach allows us to focus our analysis on the group of immigrants experiencing the greatest temporal and cultural distances, that is those who immigrated at a relatively late age (after age 16) from a developing country. We find that immigrants born in a developing country and arriving after age 16 in Switzerland appear to benefit most and experience an unemployment reduction of 27 percentage points (pp.) compared to Swiss natives. For immigrants who arrive after age 5 but before age 13, we find that additional workplace-based cultural skill training, not exclusively occupational skill training, leads to a 15.4 pp. decrease in unemployment compared to Swiss natives. Our results thus suggest that acquiring workplace-based cultural skills in addition to occupational skills facilitates the labor market transition of vulnerable immigrant groups.

⁴ In Switzerland cantons are distinct administrative entities much like states in the US.

⁵ These divergent VET preferences derive from different valuations of a private or public provision of goods in the different language regions and were demonstrated, for example, by Aepli et al. (2021).

This paper contributes to the literature on immigrants' economic assimilation by being among the first to analyze the role of different skill types in successful labor market transitions among immigrants. Our study breaks new ground by effectively separating two types of skills that have traditionally been difficult to disentangle. By leveraging the distinctive VET system of Switzerland, we can clearly distinguish between occupational and workplace-based cultural skills and evaluate their respective contributions to immigrants' labor market entry. We demonstrate that, by receiving both workplace-based cultural skill training and occupational skill training, immigrants can increase their employment prospects at labor market entry—a finding providing valuable information for educational policy makers focused on integrating immigrants into the labor market.

The rest of the paper is structured as follows. Section 2 discusses the literature on immigrants' economic assimilation. Section 3 presents the data and explains the operationalization of the main variables. Section 4 describes the empirical strategy. Section 5 presents the results of both the analyses and the robustness checks. Section 6 concludes.

2. Theoretical background and related literature

Immigrants' economic assimilation

To uncover the disadvantages and challenges that immigrants face in their school-towork transitions, we draw on the literature strand on immigrants' economic assimilation. Alba and Nee (1997) describe the process of assimilation in general as a decrease in immigrant-native differentials. Upon arrival in the host country, immigrants differ from natives because they lack country-specific knowledge and skills (Borjas, 1985). For example, immigrants might not possess certain necessary educational credentials, be proficient in the host country's major language, or have implicit knowledge of the working environment (Heath et al., 2008). Moreover, they face difficulties in identifying critical information about the new labor market and obtaining access to social networks (Lee et al., 2022). Immigrants' economic assimilation thus reflects their success in reducing their country-specific knowledge deficiencies (Strøm et al., 2018). When immigrants reduce these deficiencies, they tend to face fewer challenges in the transition from school to the labor market, thereby reducing unemployment probabilities.

Nevertheless, according to economic assimilation theory, two critical factors affect the reduction of country-specific knowledge deficiencies. First, the cultural distance between the immigrant's home country and host country determines the economic assimilation process (Bredtmann et al., 2020; Raux, 2023). Lazear (1999) notes that common culture and language provide trust and induce immigrants and natives to establish contracts. The more distant the culture of immigrants' countries of origin from that of the host culture, the more effort they must make to build trust and engage with local natives—with the increased effort slowing the assimilation process. Several studies proxy cultural distance with language, creating distant language measures (e.g., Adserà & Pytliková, 2015; Bredtmann et al., 2020; Dustmann & Fabbri, 2003; Ginsburgh & Weber, 2022; Isphording & Otten, 2014; Strøm et al., 2018). These studies find that economic assimilation decreases with linguistic distance. One explanation for this negative relationship is the high educational and other costs that immigrants with a more distant first language face (Dustmann & Fabbri, 2003). Low linguistic proximity not only decelerates the acquisition of the dominant language in the host country but also requires greater investments for reducing country-specific knowledge deficiencies (Isphording, 2014).

Pineda-Hernández et al. (2022) emphasize that the working age population in industrialized countries comprises an increasing percentage of immigrants from developing countries. Integrating these immigrants and their children constitutes a critical condition for future economic and social development. In cultural and linguistic terms, immigrants from developing countries are more distant from Switzerland than those from developed countries (Naveed & Wang, 2021). These immigrants likely face greater country-specific knowledge deficiencies. Likewise, Dustmann and Frattini (2011) show that, in many countries, immigrants from nonEuropean countries (most of which are classified as developing) experience greater disadvantages relative to labor market integration than those from European countries. In this paper, we identify the skills necessary for successful labor market transitions among immigrant groups by taking into account the cultural distance between immigrants and the host country. We do so by distinguishing between immigrants from developing and non-developing countries.

Second, the length of time that immigrants have spent in the host country, also known as their temporal distance from the host country, determines their economic assimilation, in turn, affecting their cultural distance. As previously mentioned, immigrants arrive with a specific skill set not fully relevant in the host country. In addition, they find that certain skills acquired in their country of origin are not perfectly transferrable (Chiswick & Miller, 2012; Friedberg, 2000). Consequently, after moving to a new country, immigrants must invest in skills relevant for living in it. While these skill investments are usually highest immediately after arrival, they decrease with duration in the country and pay off over time. Overall, immigrants' assimilation and their labor market prospects increase with duration in the host country (Borjas, 1985; Chiswick & Miller, 2012). In addition, Chiswick and DebBurman (2004) highlight the marked difference in assimilation between immigrants receiving a major part of their education in the host country and those receiving almost none. Consequently, we expect that employment prospects at the transition from school to the labor market likely vary for immigrants who arrive younger or older.

Strong empirical evidence shows that immigrants arriving at older ages face greater disadvantages than those arriving in early childhood (Beck et al., 2012; Bleakly & Chin, 2010; Bratsberg et al., 2014; Hermansen, 2017, Hull & Norris, 2020). The literature on immigrants' age at migration, for example, posits a critical period for children to migrate to the U.S. at primary school age (Beck et al., 2012). Children exposed to a new language after this age lose their natural ability to effortlessly acquire native proficiency in that language (Clarke, 2019). Instead, they experience greater language-learning difficulties, which likely impede their assimilation process and increases their risk of dropping out of school (Bleakly & Chin, 2010). Therefore, we expect considerably fewer country-specific knowledge deficiencies for immigrants arriving at an early age than for those arriving older.

When investigating the educational attainment or economic integration of immigrants over time, most studies observe different generations of immigrants (e.g., Abrassart et al., 2020; Azzolini & Barone, 2013; Carlana et al., 2022; Pineda-Hernández et al., 2022; Siahaan et al., 2014). Yet the criteria for defining immigrant generations vary considerably, making a direct comparison of findings on immigrants' intergenerational evolution complicated (Pineda-Hernández et al., 2022; Laganà et al., 2014). Therefore, we choose to capture immigrants' temporal distance by their age at arrival.

Important skills for immigrants' labor market integration

Although the research on economic assimilation is both extensive and insightful, the importance of diverse skill types for immigrants to effectively integrate into the new labor market remains underresearched. Standard economic assimilation models often show immigrants' labor market outcomes as a function of home-country and host-country human capital acquisition (e.g., Borjas, 1985; Chiswick, 1978; Dustmann & Glitz, 2011). These models strongly emphasize skills acquired in formal education or retraining programs (i.e., occupational skills), while not focusing on other skill types, such as non-cognitive ones. For example, the importance of language proficiency as a formal skill has been well-established, with studies such as Dustmann and Fabbri (2003) and Chiswick (1991) finding a positive effect of fluency in English on employment probabilities for ethnic minorities in the U.K. and the U.S., respectively. Yet knowledge on the relative importance of different skill types for immigrants' labor market integration remains limited. This present study investigates the role of different skill types in facilitating immigrants' economic assimilation, with a particular focus on the relative importance of occupational and workplace-based cultural skills.

Few studies examine the role of non-cognitive skills (personal characteristics, attitudes and behaviors not directly related to cognitive skills or academic knowledge) in the migration context (Heckman, 2008). Hull and Norris (2020) analyze the cognitive and non-cognitive skill development of immigrant children in the U.S. by investigating immigrant children in elementary school. Although they do not observe labor market outcomes, they highlight the potential of non-cognitive skills for successfully entering the labor market. Another example is Akay and Yilmaz (2022), who proxy non-cognitive skills with the Big-Five model of personality to investigate their role in the labor market performance of immigrants. They find that extroversion and emotional stability reduce immigrants' employability disadvantages.

However, despite some overlap between non-cognitive skills and workplace-based cultural skills, they are not interchangeable. Whereas non-cognitive skills are more general and applicable to a wider range of work environments, workplace-based cultural skills are specific to the cultural environment in which an individual is working.

Overall, the literature on immigrants' economic assimilation shows that the greater an immigrants' cultural and the temporal distance, the more pronounced the gaps in country-specific knowledge and the greater the expected challenges for the school-to-work transition. Therefore, these challenges may depend less on the immigrant's solely occupational skills and qualifications and more on non-cognitive skill types such as workplace-based cultural skills, which are likely to play a crucial role in immigrants' transition into the labor market. Overall, we formulate two hypotheses:

H1: Additional workplace-based cultural skills training (in dual VET) helps immigrants better in reducing their cultural and temporal distance than occupational skills training (in school-based VET) alone.

H2: The greater the cultural and temporal distance from a host country, the greater the effect of workplace-based cultural skills training.

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3. Data and Operationalization

To analyze how receiving workplace-based cultural skills training in tandem with occupational skill training, as opposed to exclusive occupational skill training, affects immigrants' unemployment after graduation, we match two administrative data sets from the Swiss Federal Statistical Office's LABB program, which links several data sources. The LABB data comes from (a) a structural survey (SE), (b) the statistics of population and households (STATPOP), and (c) registry data on the education system. Moreover, it includes data from the Central Compensation Office (ZAS) and from the information system for employment services and labor market statistics (AVAM). The LABB program data offer two main advantages. First, they allow us to analyze the full population of students Switzerland. Second, we can extract reliable information on immigrants' transitions from education to the labor market.

Our data set covers the educational participation of the entire population in Switzerland from 2011 through 2020 and allows us to identify all individuals who chose either dual VET or school-based VET. Dual VET entails the parallel training of VET students in both a vocational school and a firm-based apprenticeship. The precondition for dual VET is a training contract between a training firm and the student. Moreover, we have vital information on individuals' occupational field, canton of residence, nationality, country of birth, gender, and age of arrival in Switzerland. The data also allows us to retrace the pathway of all students moving from VET to the labor market. Specifically, we observe the exact graduation dates and the number and duration of unemployment spells at the individual level within the first year after graduation.

Our analysis concentrates on individuals who are in the typical age range for completing VET, age 18-24. As the data does not yet capture the labor market outcomes of the cohort graduating from VET in 2020, we exclude this cohort. Thus we analyze nine Swiss cohorts of individuals graduating from a VET program between 2011 and 2019. Overall, we count 173,162 observations.

To build immigrant groups, we first use the information on immigrants' age of arrival in Switzerland. As previously mentioned, immigrants arriving at older ages experience greater disadvantages than those arriving in early childhood (Beck et al., 2012; Bleakly & Chin, 2010; Bratsberg et al., 2014; Hermansen, 2017). Because we focus on investigating the effect of additional workplace-based cultural skill training for immigrants with greater assimilation barriers, we categorize immigrants by their age of arrival and compare their unemployment outcomes. We define the categories corresponding to critical age periods in the compulsory part of the Swiss education system.

Table 1 illustrates our four immigrant groups. The first group comprises immigrants who arrive after age 0 and before age 5, a range representing the pre-school period in Switzerland. The second group comprises immigrants who arrive after age 5 and before or at age 13, the typical age range in the primary school level. The third group comprises immigrants who arrive after age 13 but before or at age 16, the lower secondary level. The fourth group consists of immigrants arriving after age 16, either at or after upper secondary level. For individuals' migration status we generate a variable that captures these immigrant groups and add a reference category for Swiss natives. We define Swiss natives as individuals who were born in Switzerland and are Swiss nationals.

Age of arrival in Switzerland	Immigrant group	
0< age of arrival <=5 (pre-school-level)	Group 1	
5< age of arrival <=13 (primary level)	Group 2	
13< age of arrival <=16 (lower secondary level)	Group 3	
age of arrival >16 (upper secondary level)	Group 4	

Table 1: Definition of immigrant groups by age of arrival

Notes: The age of arrival categories align with the critical age periods in the Swiss education system.

Second, we build even more precise immigrant groups based on the age of immigrants upon arrival in Switzerland and their country of birth. Several studies confirm that immigrants' country of birth plays a crucial role in their assimilation process (e.g., Brinbaum & Cebolla-Boado, 2007; Laganà et al., 2014). Analyzing the long-term labor market outcomes of immigrants in Norway, Bratsberg et al. (2014) identify monotonically increasing differentials between natives and immigrants from low-income countries while finding no substantial difference between native Norwegians and immigrants from high-income countries. Given this finding, we distinguish between immigrants from developing countries and those from non-developing ones. Table 2 shows how we extend the immigrant groups. To differentiate between developing and non-developing countries, we draw on the 2022 Development Assistance Committee (DAC) list, recording all countries eligible to receive official development assistance (OECD, 2022). Given our interest in the most vulnerable and distant immigrant groups, we focus in our main analysis on the four immigrant groups who emigrated from a developing country to Switzerland (i.e., groups 5, 6, 7, and 8 in Table 2).

Age of arrival in Switzerland	Country of birth: Non-developing country	Country of birth: Developing country
0< age of arrival <=5 (pre-school-level)	Group 1	Group 5
5< age of arrival <=13 (primary level)	Group 2	Group 6
13< age of arrival <=16 (lower secondary level)	Group 3	Group 7
age of arrival >16 (upper secondary level)	Group 4	Group 8

Table 2: Definition of immigrant groups by age of arrival and country of birth

Notes: The age of arrival categories align with the critical age periods in the Swiss education system.

Our main dependent variable is binary, indicating whether an individual is unemployed within one year after graduation. For this variable, we consider individuals as unemployed if they are "not in employment, education, and training" (NEET). In the LABB data the NEET status is subdivided into four categories: (1) individuals who registered officially as unemployed, (2) individuals who receive benefits from disability insurance, (3) individuals who receive benefits from income compensation programs, (4) and other. As category (3) covers such things as compensation for maternity or military service, it is not necessarily connected to our outcome of interest. Therefore, we exclude category (3) when defining the main dependent variable. In addition, we use individuals' unemployment duration in each period as an alternative measure. To calculate this variable, we summarize the length of each unemployment spell recorded for an individual within one year after the exact graduation date.

For the OLS interaction model, we define VET type and individuals' migration history as interaction terms. Again, variable VET type is binary, taking the value of 1 if the individual holds a dual VET degree and 0 for a school-based one. We also include several control variables in our interaction model.

Table 3 displays all relevant summary statistics for our estimation sample. On average, the subjects in our sample are 20 years old, and the share of males and females is 53.3% and 46.7%, respectively. While 92.9% hold a dual VET degree, 7.1% graduated with a school-based degree. About 8.2% of the subjects were unemployed within the first year after graduation. Our final sample comprises 151,683 Swiss natives (87.6%) and 21,479 immigrants (12.4%). Among the immigrants, 1,598 (0.92%) arrived after age 16 in Switzerland and 3,112 (1.8%) between ages 13 and 16. Most immigrants arrived between ages 0 and 5 and ages 5 and 13. Immigrants from developing countries and non-developing countries are almost equally represented at 6.79% and 5.61%, respectively.

Selection into VET is usually not random (Cavaglia et al., 2020, Matthewes & Ventura, 2022). Therefore, to avoid potential endogeneity problems, we additionally apply an IV approach. We use immigrants' language region in Switzerland (French, Italian, German) as an instrument for the interaction of choosing either dual or school-based VET and for migration history. This approach builds on the insights of previous studies (e.g., Aepli et al. 2021, Kuhn

et al., 2022), that the valuations of private versus public goods differ between the German and the French- and Italian-speaking regions, and that this different valuation makes school-based VET more common in the French- and Italian-speaking regions. As the LABB program data contains a variable that captures the language region of individuals' residencies, we use this variable to generate our binary instrument, which is 1 if the individual lives in the German-speaking region and 0 if not.

Table 3: Summary statistics

	Obs	Mean	SD	Min	Max
Dependent variable					
Unemployed	173,162	0.082	0.274	0	1
Unemployment duration	173,162	1.690	16.746	0	335
Explanatory variables					
Dual VET program (1=Dual)	173,162	0.929	0.257	0	1
Migration history					
Swiss natives	173,162	0.876	0.330	0	1
Immigrants 0< age of arrival	173,162	0.039	0.193	0	1
<=5 Immigrants 5< age of arrival <=13	173,162	0.058	0.234	0	1
Immigrants 13< age of arrival	173,162	0.018	0.133	0	1
Immigrants age of arrival >16	173,162	0.009	0.0956	0	1
Immigrants from DC & 0< age of arrival <=5	173,162	0.024	0.154	0	1
Immigrants from DC & $5 \le 13$	173,162	0.030	0.172	0	1
Immigrants from DC &	173,162	0.009	0.094	0	1
Immigrants from DC & age of arrival >16	173,162	0.004	0.066	0	1
Age of arrival in Switzerland	173,162	1.100	3.439	0	24
Country of origin					
Switzerland	173,162	0.876	0.330	0	1
Non-developing country	173,162	0.056	0.230	0	1
Developing country	173,162	0.068	0.252	0	1
Instrument					
Language region (1=German)	173,162	0.777	0.416	0	1
Age	173,162	20.017	1.358	18	24
Male	173,162	0.533	0.499	0	1
Female	173,162	0.467	0.499	0	1
Cohort	173,162	15.447	2.424	11	19

Notes: Authors' calculations based on LABB data, 2011-2019.

4. Empirical strategy

Our aim is to estimate the effect of completing both workplace-based cultural skills training and occupational skills training (rather than exclusive occupational skill training) on unemployment for individuals with different types of migration histories. Therefore, we estimate regression equations of the following form:

$$y_{isot} = \alpha + \beta D_i + \gamma M_i + \delta(D_i M_i) + \theta X_i + \eta_s + \phi_o + \rho_t + \varepsilon_{isot}$$
(1)

Where y_{isot} in equation 1 is one of our two measures for unemployment for individual *i* who resides in canton *s*, completed VET in occupation *o*, and belongs to cohort *t*. We measure unemployment either as a binary variable or as days in unemployment within the first year after VET graduation. The binary unemployment variable y_{isot} takes the value 1 if the individual has ever been unemployed within the first year following VET graduation and 0 otherwise. D_i and M_i represent the two interaction variables. While D_i is a dummy variable that is equal to 1 if the individual completed a dual VET and learned workplace-based cultural skills and equal to 0 if it was a school-based VET, M_i is a categorical variable indicating the individual's migration history. Interacting both variables allows us to measure the extent to which labor market outcomes for dual instead of school-based VET differ across immigrant groups. We control for vector X_i , which captures individual characteristics, i.e., age and gender. Moreover, we control for canton fixed effects (η_s), occupation fixed effects (ϕ_o) and cohort fixed effects (ρ_t). By including occupation fixed effects, we can compare dual versus school-based VET programs in the same occupation.

Our coefficient of main interest in the model is δ . As in Eggenberger et al. (2022), our main coefficient is an interaction term, not an isolated coefficient. We aim at identifying the interaction between the completed VET program and individual's migration history. If D_i and M_i were completely exogenous, δ would reflect the causal interaction effect of workplace-based

cultural skills training in addition to occupational skill training versus solely occupational skill training and migration history on unemployment.

Nonetheless, despite our controlling for individual characteristics and adding different types of fixed effects, our interaction model might not fully account for the selection of individuals into dual versus school-based VET. As with any type of education, estimating unemployment outcomes for dual and school-based VET is challenging. Above all, the main challenge originates from individuals' strong self-selection into certain educational pathways (Matthewes & Ventura, 2022). An individual's educational choice is likely to be concomitant with unobserved characteristics that, in turn, affect labor market outcomes such as unemployment.

As previously explained, we construct the variable migration history by using the variable country of birth and immigrants' age of arrival in Switzerland. While the variable country of birth is exogenous because an individual is not able to choose it, the age at which an individual migrates is endogenous. For example, the parents of immigrants could manipulate their children's age at migration. If immigrant parents relocate to other countries for economic opportunities, they might align the migration time with the stages of their child's schooling career. Examples include the time chosen for migration during the period when the child is not yet in school or has completed compulsory schooling. As manipulating the child's age at migration could have an impact on unemployment later in life, our variable for migration history is also endogenous.

To deal with these endogeneity issues and the sources of bias, we apply an IV strategy. One way of achieving causality is to use variation in the probability of completing a dual VET, a variation not otherwise correlated with the duration or probability of unemployment. We choose the Swiss language region of individuals' residence as an instrument and explain it in this section. Aepli et al. (2021) demonstrate oppositional valuations of public and private goods in German-speaking and non-German-speaking cantons of Switzerland, arguing that these oppositional valuations explain firms' decisions to provide dual VET. Likewise, Rupietta and Backes-Gellner (2019) find that German-speaking firms in Switzerland are more likely to advertise dual VET positions than Italian- or French-speaking firms.

Given the greater provision of dual VET in the German language region, we can expect immigrants settling in this region to be more likely to choose it. Moreover, if individuals prefer public over private goods, they might assign a higher value to VET in publicly provided vocational schools and attach less importance to training in firms. Therefore, the language region would be strongly associated with an individual's choice of a dual or purely school-based VET program. Upon arrival in Switzerland, young immigrants and their parents are not familiar with the Swiss VET system and the differences, opportunities, costs, or benefits underlying the dual or school-based VET option (Abrassart et al., 2020). However, as they live longer in the country, they learn about the educational pathways. Therefore, we argue that immigrants living in the German-speaking region of Switzerland are more likely to enroll in dual VET. At the same time, however, we expect immigrants in the French- or Italian-speaking regions to be more likely to choose school-based VET.

To implement the IV approach, we determine the Swiss language region, our instrument z, for each individual i. In our IV strategy, we follow the procedure of Eggenberger et al. (2022), whose coefficient of main interest, like ours, is the interaction of two endogenous variables. We adopt their strategy by using one single instrument to estimate the interaction effect of two endogenous variables.

To obtain meaningful estimates, our IV strategy must hold three assumptions. First, our instrument language region must be strongly associated with the binary treatment variable D_i (instrument relevance), i.e., cov $(z_i, D_i) \neq 0$. To test whether the first assumption holds, we report the Sanderson-Windmeijer F-statistics. Several studies using regressions with multiple endogenous regressors draw on these F-statistics to evaluate the power of their instruments (e.g., Akerman et al., 2022; Eggenberger et al., 2022). Second, our instrument must not be

correlated with the outcome y_{isot} apart from the possible indirect effect running through the treatment variable (instrument exogeneity), i.e., $cov (z_i, \varepsilon_{isot}) = 0$. In other words, the Swiss language region must not correlate with unemployment conditional on observed characteristics. Third, the identification of the interaction term of two endogenous variables requires that the variable migration history and the omitted variables are jointly independent of the instrument (Eggenberger et al., 2022; Nizalova & Murtazashvili, 2012).

Additionally, in section 5, we conduct a robustness check, in which we apply an alternative definition of immigrant groups, based on country of origin and nationality. By using this alternative definition for individuals' migration histories, we verify the consistency of our findings across different specifications.

5. Results

Main results

Table 4 reports the ordinary least squares (OLS) (columns 1 and 3) and the two-stage least squares (2SLS) estimates (columns 2 and 4) of the coefficients of $D_i \times M_i$ on unemployment for our different immigrant groups in comparison to Swiss natives. While outcome 1 captures our binary measure of unemployment, outcome 2 captures unemployment in days. The binary variable of unemployment is our preferred measure. In both OLS interaction models for our two unemployment outcomes, we control for canton fixed effects, cohort fixed effects, occupation-specific fixed effects, gender, and age. In the 2SLS models we instrument the interaction of the variable VET type and the variable migration history, i.e., $D_i \times M_i$, with the language region of the individual residencies z_i . For a straightforward overview, Table 4 reports our results only for immigrants from developing countries. With our focus on immigrants facing greater destination-relevant human capital deficiencies, we concentrate on these immigrant groups in our main analysis. Nevertheless, Table A1 in the Appendix reports the extensive results for all immigrant groups.

The results of the OLS model reveal for all immigrant groups that participating in additional workplace-based cultural skill training compared to solely occupational skill training correlates with a reduction in unemployment. The coefficients for the immigrant groups are all significant at the 1% level, except from the group arriving before age 5. The coefficient for this group is significant at the 5% level. For immigrants arriving from a developing country after age 16, we observe the highest coefficient: For them, completing dual VET relates to a reduction in unemployment by 15.4 pp compared to Swiss natives. For immigrants from a developing country arriving after age 13 but before age 16, completing dual instead of school-based VET relates to a reduction in unemployment by 8.17 pp compared to Swiss natives. For immigrants from a developing country arriving after age 5 but before age 13, we report a similar coefficient.

The OLS outcomes presented thus far suggest that the higher the immigrants' temporal distances from the host country, the greater the observed *reduction* in unemployment if they participated in a dual VET program, where they received additional workplace-based cultural skill training. This association is consistent with our second hypothesis (The greater the immigrant's temporal and cultural distance the greater the effect). Yet the pattern in the negative association between unemployment and having completed dual, not school-based, VET changes if we choose model 2, where the outcome variable is unemployment measured in days. In this model, while all coefficients remain negative, we do not observe a stronger reduction in unemployment days for immigrant groups with greater temporal distances from Switzerland.

As discussed in the empirical strategy section, we use the Swiss language region of individual residencies as an instrument for an individual's chosen VET program. To assess the first stage, we report the Sanderson-Windmeijer F-statistics for our two 2SLS models in the lower part of Table 4. As the F-values are large, our instrument appears to have strong predictive power.

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Column 2 in Table 4 reports the results of the second stage 2SLS regressions. For our binary unemployment variable, they show that participating in dual, rather than school-based, VET reduces unemployment for almost all immigrant groups. In line with the OLS results, immigrants from developing countries moving to Switzerland after age 16 experience the highest reduction in unemployment compared to Swiss natives. This reduction in unemployment corresponds to 27.00 pp with the effect significant at the 1% level. For immigrants from developing countries arriving between ages 5 and 13, unemployment drops by 15.4 pp. For immigrants from developing countries arriving before age 5, we again observe a stronger decline in unemployment of 26.7 pp. In contrast, the estimates show no significant effect for immigrants arriving from a developing country between ages 13 and 16. Our results support Aerne and Bonoli (2021) and Jørgensen et al. (2021), who theorize that practical training can accelerate immigrants' internalization of the norms, values, and unwritten rules of their host society. Moreover, consistent with the results from Hervelin and Villedieu (2022) and Neyt et al. (2020), we find enhanced chances of employment for adolescents who signal early job-related experience.

While these results clearly substantiate our first hypothesis, that immigrants benefit more if they acquire occupational and workplace-based cultural skills in dual VET instead of only occupational skills in school-based VET, they do not support our second hypothesis, that immigrants facing greater distances to the host country benefit even more. One possible explanation for the absence of such an increasing benefit for more distant immigrant groups could be the variation in the composition of immigrants' countries of origin. To test this explanation, in Table A3 we illustrate the composition of the immigrant groups by macrogeographic region. We extract the information that our second immigrant group (immigrants from developing countries arriving between ages 5 and 13) has a relatively high proportion of eastern European immigrants. As eastern European culture is, for example, closer to Switzerland than west African culture, this higher proportion could explain why we observe the smallest workplacebased cultural skills benefit for this immigrant group.

Further analyses

To test the robustness of our results, we conduct additional analyses, in which we apply alternative definitions for immigrant groups. First, we examine whether our results vary if we distinguish between immigrant groups solely according to their temporal distance from Switzerland. Reducing the definition in this way could yield insights into the composition of the beneficial effect of combining workplace-based cultural and occupational skill training on immigrants' employment prospects. Therefore, considering only the age of immigrants upon arrival, we keep four distinct groups (by age of arrival), for our analysis. Table 5 reports the OLS and 2SLS estimates for these four groups, again relative to Swiss natives. The results are robust for this alternative definition. We observe a reduction in unemployment for each immigrant group if they participate in dual VET, except for those arriving between ages 13 and 16. The 2SLS coefficients are significant at the 1% level and somewhat smaller than in the main analysis.

Second, we are interested in the effect of undergoing dual versus school-based VET if we categorize immigrants by their country of birth and nationality. Given that this definition largely conforms to that used by the Swiss Federal Statistical Office (SFSO), we integrate it as a robustness check. However, as our data lacks information on individual's parental background, we cannot apply the precise SFSO definition.

Again, we analyze the same four immigrant groups, illustrated in Table A2. The first group comprises individuals who were neither born in Switzerland nor have Swiss nationality (*non-Swiss-citizen immigrants*). The second group comprises individuals who are the children of non-Swiss-citizen immigrants and are not Swiss natives (*children of non-Swiss-citizen immigrants*). The third group consists of individuals who were born in Switzerland and are Swiss

natives (*Swiss natives*). The fourth group comprises (a) immigrants who have become Swiss nationals and (b) individuals who, while not born in Switzerland, are children of Swiss natives living abroad and who have returned to Switzerland (*Swiss foreign-born natives*).

Table A4 in the Appendix shows the effect of participating in dual instead of schoolbased VET on unemployment for these four groups. We observe a significant decline in unemployment for Swiss foreign-born natives and non-Swiss-citizen immigrants. These results buttress our first hypothesis and our main analysis. Moreover, we find the strongest unemployment reduction for the most distant immigrant group (non-Swiss-citizen immigrants), a finding consistent with our second hypothesis. If they graduate with a dual, not a school-based, VET degree, non-Swiss-citizen immigrants can reduce their unemployment by 16.1 pp. The effect is significant at the 1% level. However, for children of non-Swiss-citizen immigrants, we do not identify a significant effect.

	Outcome 1		Outcome 2	
	Unemployment (binary)		Unemployment duration (days)	
	OLS estimates	2SLS estimates	OLS estimates	2SLS estimates
Dual	-0.152***	-0.496***	-14.93***	-55.71***
	(0.00270)	(0.00991)	(0.318)	(1.171)
	()	()		
1 Immigrants from DC &	0.0691***	0.288^{***}	9 168***	13.08^{*}
$0 \le age of arrival \le 5$	(0.0149)	(0.0655)	(1.763)	(7,743)
	(0.011))	(0.0055)	(1.705)	(7.715)
2 Immigrants from DC &	0.120***	0 185***	11 67***	28 36***
5< age of arrival $\leq =13$	(0.0120)	(0.0466)	(1.436)	(5,504)
	(0.0122)	(0.0400)	(1.+50)	(5.504)
3 Immigrants from DC &	0 0900***	-0.0102	6 441***	-7 187
$13 \le age of arrival \le 16$	(0.0195)	(0.0829)	(2, 302)	(9,796)
	(0.01) <i>5</i>)	(0.002))	(2.302)	().790)
1 Immigrants from DC &	0 1/12***	0 235**	3 780	17 10
4. Infinite formulation $\Delta C \approx 16$	(0.0252)	(0.233)	(2.070)	(11.06)
age of allival >10	(0.0233)	(0.101)	(2.979)	(11.90)
dual-1 # 1 Immigrants from	0.0224**	0 267***	6 112***	10.04
$DC \approx 0 \le a = a \le c = minute 1 \le 5$	-0.0334	-0.207	-0.115	-10.00
DC & $0 < age of arrival <= 5$	(0.0155)	(0.0703)	(1.827)	(8.301)
last 1 / 2 January is month. Comm	0.001.4***	0 1 5 4***	0.022***	77 7 4***
dual=1 # 2. Immigrants from	-0.0814	-0.154	-9.033	-27.34
DC & $5 < age of arrival <= 13$	(0.0127)	(0.0507)	(1.500)	(5.990)
	0.0017***	0.0000	5 00 4***	0.201
dual=1 # 3. Immigrants from	-0.081/	0.0292	-5.984	9.301
DC & $13 < age of arrival <= 16$	(0.0206)	(0.0927)	(2.435)	(10.95)
1 1 1 // 4 1	0 1 - 4***	0.070**	4.050	01.15
dual=1 # 4. Immigrants from	-0.154	-0.270	-4.850	-21.15
DC & age of arrival >16	(0.0271)	(0.116)	(3.192)	(13.72)
Sanderson-Windmeijer F-Stat				
Dual		14271.40		14271.40
Dual # 1. Immigrants from		9999.24		9999.24
DC & 0< age of arrival <=5				
Dual # 2. Immigrants from		13169.42		13169.42
DC & 5< age of arrival <=13				
Dual # 3. Immigrants from		10230.87		10230.87
DC & 13< age of arrival<=16				
Dual # 4. Immigrants from		11240.57		11240.57
DC & age of arrival >16				
Constant	0.666***	0.980^{***}	56.64***	93.73***
	(0.00578)	(0.0103)	(0.682)	(1.212)
Observations	173,162	173,162	173,162	173,162
	-	· ·	,	,

Table 4: *The effect of additional workplace-based cultural skills training compared to exclusive occupational skills training on unemployment by immigrant group.*

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Notes: Dependent variable: unemployment measured as binary variable or in days within the first year after graduation. Columns 1 and 3 show the results of the OLS interaction model. Columns 2 and 4 show the results of the IV regression with language region as the instrument. Immigrant groups are categorized by country of birth (DC= developing country) and age of arrival. Base for VET program is dual. Base for migration history: Swiss natives. All estimations include the following controls: occupational field, age, gender, cohort. In the OLS interaction model, we control for canton fixed effects. The full table with estimations for immigrants from non-developing countries appears in Table A1 in the Appendix. Authors' calculations based on LABB data, 2011-2019.

	Outcome 1		Outcome 2	
	Unemployment (binary)		Unemployment duration (days)	
	OLS estimates	2SLS estimates	OLS estimates	2SLS estimates
Dual	-0.152***	-0.495***	-14.93***	-55.70***
	(0.00270)	(0.00990)	(0.318)	(1.170)
1. Immigrants 0< age of arri-	0.0458***	0.200^{***}	5.470***	10.42^{*}
val <=5	(0.0109)	(0.0458)	(1.289)	(5.411)
	0 0 707 ***	0 175***		a < a o ***
2. Immigrants 5< age of arri-	(0.0727)	0.1/5	5.344	26.50
val <-15	(0.00882)	(0.0394)	(1.041)	(4.052)
3 Immigrants age of arrival	0.0518***	-0.0128	3.036*	-4 264
13 < age of arrival <=16	(0.0143)	(0.0658)	(1.688)	(7 772)
	(0.0115)	(0.0050)	(1.000)	(1.112)
4. Immigrants age of arrival	0.136***	0.257***	5.889**	25.85***
>16	(0.0198)	(0.0823)	(2.341)	(9.725)
			× ,	· · · ·
dual=1 # 1. Immigrants 0<	-0.0153	-0.184***	-3.074**	-8.460
age of arrival <=5	(0.0114)	(0.0498)	(1.346)	(5.882)
dual=1 # 2. Immigrants 5<	-0.0395***	-0.150***	-2.856***	-25.82***
age of arrival <=13	(0.00922)	(0.0430)	(1.088)	(5.080)
dual=1 # 3. Immigrants 13<	-0.0419***	0.0304	-2.956*	5.318
age of arrival <=16	(0.0151)	(0.0730)	(1.779)	(8.629)
	0 1 - 0 ***	0 00 4***		~ ~ /~ ***
dual=1 # 4. Immigrants age	-0.150	-0.284	-7.473	-29.43
of arrival >16	(0.0209)	(0.0914)	(2.465)	(10.80)
Sandarson Windmaijar F. Stat				
Sunderson-windmeijer 1 ⁻ Sidi				
Dual		14270 55		14270 55
2		1.270.000		112/0.000
Dual # 1. Immigrants age of		10837.83		10837.83
arrival >0 & ≤ 5				
Dual # 2. Immigrants age of		9345.10		9345.10
arrival >5 & <=13				
		o (- 1 - 0		
Dual # 3. Immigrants age of		8674.53		8674.53
arrival > 13 & <= 16				
Dual # 1 Immigrants age of		10781 25		10781 25
arrival > 16		10/01.33		10/01.33
Constant	0 666***	0 979***	56 62***	93 74***
	(0.00578)	(0.0102)	(0.682)	(1.211)
Observations	173,162	173.162	173.162	173.162
) -	, -	2 -	2 -

Table 5: The effect of additional workplace-based cultural skills training compared to exclusive occupational skills training on unemployment by immigrant group.

Standard errors in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01

Notes: Dependent variable: unemployment measured as binary variable or in days within the first year after graduation. Columns 1 and 3 show the results of the OLS interaction model. Columns 2 and 4 show the results of the IV regression with language region as the instrument. Immigrant groups are categorized by age of arrival. Base for VET program is dual. Base for migration history: Swiss natives. All estimations include the following controls: occupational field, age, gender, cohort. In the OLS interaction model, we control for canton fixed effects. Authors' calculations based on LABB data, 2011-2019.

6. Conclusion

This paper analyzes the relative importance of occupational and workplace-based cultural skills for the successful transition of immigrants from school to the labor market. As the Swiss VET system offers both dual and school-based VET programs that provide identical occupational skills training but that differ systematically in workplace-based cultural skills training, it offers an ideal setting for contrasting the two skill types. By estimating the effect of participating in dual compared to school-based VET on immigrants' unemployment, we reveal whether they benefit from the additional training of workplace-based cultural skills in dual VET.

Instrumenting the interaction of individuals' migration history and completed VET type with the Swiss language region of their residencies, we identify a decline in immigrants' unemployment within the first year after graduation, if they chose dual, not school-based, VET. To disentangle potential heterogeneity effects, we examine immigrant groups with different degrees of cultural and temporal distance from Switzerland and compare them to Swiss natives. Indeed, we observe that the effect varies by immigrant group. Those migrating from developing countries at a relatively late school age (migration age >16), i.e., facing the greatest temporal and cultural distances, experience the strongest decline in unemployment (corresponding to 27.00 pp) if they learned workplace-based cultural skills in dual VET programs. Strikingly, at the other end of the spectrum, the least distant immigrant group (migration age <5) benefits to an almost equal extent. For those who arrived between ages 5 and 13, we find a reduction in unemployment by 15.4 pp, whereas for those who arrived between ages 13 and 16, we observe no significant effect. Overall, we find no clear pattern in the reduction effect.

We infer from these results that the combination of occupational and workplace-based cultural skill training in dual VET programs supports immigrants better in reducing their lack of country-specific knowledge and breaking down potential integration barriers. In turn, these immigrant groups experience smoother school-to-work transitions. We suggest two potential mechanisms by which workplace-based cultural skills may support immigrants. First, the development of workplace-based cultural skills can serve as a valuable tool for facilitating social integration. By leveraging these skills, immigrants are better equipped to establish a social network and access mentorship opportunities within their respective fields of interest. As a result of this social integration, immigrants may also experience a strengthened sense of belonging to the host country, in turn leading to improvements in selfconfidence and future employability. Second, as individuals learn to navigate the cultural nuances and expectations of their host country's labor market, workplace-based cultural skills training can also enhance their overall communication abilities.

We argue that the acquisition of these skills is a critical component of an immigrant's successful transition to the labor market. By fostering social integration, facilitating access to mentorships, and enhancing communication abilities, these skills can serve as a valuable additional resource for immigrants seeking to establish themselves in a new cultural labor market. Future research should further investigate these proposed mechanisms, for example, by analyzing how and to which extent workplace-based cultural skills shape the development of a labor-market related network and mentorships.

Our results provide important insights for policy makers focusing on immigrant integration into the labor market. Granting immigrants access to in-firm training, helps them acquire the necessary workplace-based cultural skills for making that transition, thereby improving their chances of entering the labor market. Moreover, teachers in secondary schools need to be sensitized to the benefits for young immigrants of the practical, in-firm training component of dual VET. Most importantly, young adult immigrants need to receive early and comprehensive information about either any host country educational system that can offer in-firm training (such as dual VET) or any similar labor market-acculturating training.

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Appendix

Robustness checks

	Outcome 1		Outcome 2	
	Unemployn	nent (binary)	Unemployment	t duration (days)
Dec-1	OLS estimates	2SLS estimates	OLS estimates	2SLS estimates
Dual	-0.152	-0.496	-14.93	-35./1
	(0.00270)	(0.00991)	(0.318)	(1.1/1)
1. Immigrants from NDC &	0.0206	0.135**	1.452	11.37
0< age of arrival <=5	(0.0156)	(0.0647)	(1.839)	(7.646)
	**	***		***
2. Immigrants from NDC &	0.0252**	0.193	-1.070	26.26
5< age of arrival <=13	(0.0123)	(0.0661)	(1.447)	(7.809)
3. Immigrants from NDC &	0.00910	-0.0129	-0.755	0.481
13 < age of arrival <=16	(0.0207)	(0.103)	(2.439)	(12.14)
C				. ,
4. Immigrants from NDC &	0.126***	0.279**	9.377**	35.99**
age of arrival >16	(0.0317)	(0.133)	(3.738)	(15.69)
5 Immigrants from DC & $0 <$	0.0691***	0 288***	9 168***	13 08*
age of arrival <=5	(0.0149)	(0.0655)	(1.763)	(7.743)
	(0.011))	(0.0000)	(1.705)	(7.7.13)
6. Immigrants from DC & 5<	0.120***	0.185***	11.67***	28.36***
age of arrival <=13	(0.0122)	(0.0466)	(1.436)	(5.504)
7 Immigrants from DC &	0.0000***	0.0102	6 111***	7 1 9 7
13< age of arrival ≤ 16	(0.0900)	(0.0829)	$(2 \ 302)$	(9,796)
	(0.0199)	(0.0027)	(2.302)	().770)
8. Immigrants from DC &	0.143***	0.235**	3.780	17.19
age of arrival >16	(0.0253)	(0.101)	(2.979)	(11.96)
1 1 1 1 1 1 1 1	0.00110	0.100*	0.000	11.50
dual=1 # 1. Immigrants from NDC $\theta_{10} \in 0$	0.00112	-0.130	-0.203	-11.72
NDC & $0 < age of arrival <= 5$	(0.0165)	(0.0/21)	(1.944)	(8.521)
dual=1 # 2. Immigrants from	0.00251	-0.177**	3.408***	-26.11***
NDC & 5< age of arrival	(0.0129)	(0.0725)	(1.516)	(8.564)
<=13				
dual=1 # 3. Immigrants from	0.00256	0.0290	0.481	-0.606
NDC & 13< age of arrival	(0.0217)	(0.113)	(2.564)	(13.39)
<=16				
dual=1 # 4. Immigrants from	-0 142***	-0 298**	-11 35***	-38 93**
NDC & age of arrival >16	(0.0329)	(0.143)	(3.885)	(16.92)
	((((((((((((((((((((((((((((((((((((((((*****)	()	()
dual-1 # 5 Immigrants from	0.0224**	0 247***	6 112***	10.04
$DC & 0 \le age of arrival \le 5$	-0.0334	-0.207	-0.113 (1.827)	-10.00
De a un age ut attivat 3	(0.0133)	(0.0703)	(1.027)	(0.301)
			-	• • • • • • • • • • • • • • • • •
dual=1 $\#$ 6. Immigrants from	-0.0814**	-0.154***	-9.033***	-27.34***
DU & $5 \le age of arrival \le 13$	(0.0127)	(0.0507)	(1.500)	(5.990)
dual=1 # 7. Immigrants from	-0.0817**	0.0292	-5.984***	9.301
DC & 13< age of arrival	(0.0206)	(0.0927)	(2.435)	(10.95)

Table A1: The effect of additional workplace-based cultural skills training compared to exclusive occupational skills training on unemployment by immigrant group

dual=1 # 8. Immigrants from DC & age of arrival >16	-0.154** (0.0271)	-0.270** (0.116)	-4.850 (3.192)	-21.15 (13.72)
Sanderson-Windmeijer F- Stat				
Dual		14271.40		14271.40
Dual # 1. Immigrants from NDC with age of arrival >0 & <=5		10811.08		10811.08
Dual # 2. Immigrants from NDC with age of arrival >5 & <=13		6280.99		6280.99
Dual # 3. Immigrants from NDC with age of arrival >13 & <=16		7462.91		7462.91
Dual # 4. Immigrants from NDC with age of arrival >16		10960.41		10960.41
Dual # 5. Immigrants from DC with age of arrival > 0 & <=5		9999.24		9999.24
Dual # 6. Immigrants from DC with age of arrival >5 & <=13		13169.42		13169.42
Dual # 7. Immigrants from DC with age of arrival >13 & <=16		10230.87		10230.87
Dual # 8. Immigrants from DC with age of arrival >16		11240.57		11240.57
Constant	0.666 ^{***} (0.00578)	0.980 ^{***} (0.0103)	56.64*** (0.682)	93.73 ^{***} (1.212)
Observations	173,162	173,162	173,162	173,162

Standard errors in parentheses * p < 0.1, ** p < 0.05, *** p < 0.01

<=16

Notes: Dependent variable: unemployment measured as binary variable or in days within the first year after graduation. Columns 1 and 3 show the results of the OLS interaction model. Columns 2 and 4 show the results of the IV regression with language region as the instrument. Immigrant groups are categorized by country of birth (NDC = non-developing country, DC= developing country) and age of arrival. Base for VET program is dual. Base for migration history: Swiss natives. All estimations include the following controls: occupational field, age, gender, cohort. In the OLS interaction model, we control for canton fixed effects. Authors' calculations based on LABB data, 2011-2019.

		Nationality	
Country of birth	Not Switzerland	Non-Swiss Non-Swiss-citizen immigrants	Swiss Swiss foreign-born natives
	Switzerland	Children of non-Swiss-citizen immigrants	Swiss natives

Table A2: Alternative definition of immigrant groups by country of birth and nationality

Notes: Definition of four immigrant groups according to the Swiss Federal Statistical Office (SFSO, 2020).

Table A3: The composition of the immigrant groups by macrogeographi	ical region
Macrogeographical region	1

	Eastern Eu- rope	Africa	Eastern Asia	Western Asia/ Middle East	To- tal
1. Immigrants from DC with age of arrival >0 & <=5	5.30%	46.06%	1.97%	46.67%	100 %
2. Immigrants from DC with age of arrival >5 & <=13	9.05%	49.68%	5.82%	35.45%	100 %
3. Immigrants from DC with age of arrival >13 & <=16	7.50%	64.01%	7.20%	21.29%	100 %
4. Immigrants from DC with age of arrival >16	4.95%	65.94%	7.43%	21.67%	100 %

Notes: Definition of macrogeographical regions according to the M49 standard for geographical regions used by the UN Statistics division (UN statistics division, 2022). Authors' calculations based on LABB data, 2011-2019.

	Sanderson-Windmeijer F-Stat	Unemployed (binary)
Dual	14368.09	-0.519*** (0.00864)
Dual#Swiss foreign-born na- tives	12877.41	-0.0887** (0.0406)
Dual# Children of non-Swiss- citizen immigrants	13491.49	-0.0193 (0.0314)
Dual# Non-Swiss-citizen im- migrants	8817.55	-0.161*** (0.0387)
Swiss foreign-born natives		0.103 ^{***} (0.0366)
Children of non-Swiss-citizen immigrants		0.0517* (0.0293)
Non-Swiss-citizen immi- grants		0.188 ^{***} (0.0356)
Observations	173,147	173,147

Table A4: 2SLS effects of receiving additional workplace-based cultural skills training compared to exclusive occupational skills training on unemployment (alternative definition of immigrant groups)

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01Notes: Instrumental variables 2SLS regression with language region as the instrument; Immigrant groups are categorized by immigrants' country of birth and age of arrival. Base for VET type: dual; Base for migration history: Swiss natives. All 2SLS estimations include the following controls: occupational field, age, gender, cohort. Authors' calculations based on LABB data, 2011-2019.