Diversion or insertion: horizontal occupational mismatches and early career outcomes in Croatia

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Abstract

In this paper, the possible implications of the common job search theories are explored under assumption that different fields of study provide distinct skill set, socialization and attract pupils with specific preferences. So far, it was established that, compared to jobs where occupation matches the completed field of study, horizontal mismatch usually stands for worse jobs and less training and greater propensity to change jobs, greater risk of status mismatch and lower wage, and skill underutilization. However, the point of inquiry here is identifying whether the mismatch is a temporary episode, an refuge that bridges the unemployment and is soon followed with a matching job, or does it lead back to unemployment and further mismatches as the specific skills gathered through education wither away. The existing research is followed up by observing the determinants and role of the horizontal mismatches at the beginning of career in a dynamic perspective using the competing risk job entry and job exit models applied on 2008 Croatian school leaver survey.

The observed patterns of horizontal occupation mismatches seem to support the assignment model of labor market matching, in particular the assumption about several labor sub-markets where different skills and/or signals contribute to productivity/trainability. In particular it is the first transition that seems to lock-in the (mis)match of further career, as subsequent transitions to occupations matched with initial training is rare. Therefore horizontal mismatch should not be conceived a temporary event "bridging" the rough times until the match is to be found.

The analysis of entry patterns revealed that transitions to matched jobs are more frequent during the early months of job search, and are associated with level of education, study success and out of school training. On the other hand, transitions to a horizontally mismatched job as opposed to remaining in unemployment are stochastic with respect to education competences and signals. There is modest support for "push" into mismatched jobs (instead remaining in unemployment) due to lack of resources.

Such a pacing and patterns of covariates indicate possibility of sorting process akin to "zipper" allocation, where candidates compete for available jobs in the appropriate sub-market, and those less successful have alternative between competing for other jobs (where they do not carry educational credentials) or searching on and retaining unemployed.

Diversion or insertion? Horizontal occupational mismatches and early career outcomes in Croatia

There is a persistent streak in public and policy awareness about a mismatch in output of education system and needs of the labour market (current e.g."Bologna beyond 2010. Report on the development of the European Higher Education Area," 2009; "New Skills for New Jobs. Anticipating and matching labour market and skills needs," 2008; *Employment in Europe 2008*, 2008). Yet, the academic interest is primarily focused on the vertical aspect of the phenomena, in particular overeducation (see overviews in Groot & Brink, 2000; Hartog, 2000; McGuinness, 2006), making it a well explored field even in transitional countries (Kogan & Unt, 2005).

Though, large segment of secondary education system in numerous countries and majority of higher education anywhere has a stated mission of preparing students for specific vocations or professions. This is as well as belief of general public and students. Though, there is not much academic inquiry or theoretical discussion whether and why field of study and occupation fit? Dedicated papers exploring the horizontal aspect of mismatch, the one between field of education attended and subsequent occupations, are few and far apart (Witte & Kalleberg, 1995; Solga & Konietzka, 1999; Wolbers, 2003; Nordin, Persson, & Rooth, 2009).

In this paper, I'll first try to explore the possible implications of the common job search theories under assumption that different fields of study provide distinct skill set, socialization and attract pupils with specific preferences. Then it is my intention to follow up the previous research and observe the role of the horizontal mismatches at the beginning of career in a dynamic perspective using the competing risk job entry and job exit models. Thus I'll try to establish the patterns and covariates of entry to matched and mismatched jobs in Croatia, and what are the outcomes of such employment later in the career. So far, it was established that, compared to jobs where occupation matches the completed field of study, horizontal mismatch usually stands for worse jobs and less training and greater propensity to change jobs (Wolbers, 2003), greater risk of status mismatch (Solga & Konietzka, 1999) and lower wage (Witte & Kalleberg, 1995; Nordin et al., 2009), and skill underutilization (Allen & van der Velden, 2001). As well, those with secondary education seem more

susceptible to horizontal mismatch than tertiary education graduates, whereas vocational apprenticeship is associated with lower mismatch risk (Heijke, Meng, & Ris, 2003; Solga & Konietzka, 1999; Witte & Kalleberg, 1995; Wolbers, 2003). However, the point of inquiry here is identifying whether the mismatch is a temporary episode, an refuge that bridges the unemployment and is soon followed with a matching job, or does it lead back to unemployment and further mismatches as the specific skills gathered through education wither away. The more evidence for the later, the greater the reason to be concerned about the setup of educational system.

Routes not taken

Lately there are some signs of a "sectoral turn" in sociological research of school-to-work transition, where fields of study were introduced as an important explanatory element of the outcomes (Garcia-Espejo & Ibanez, 2006; A. Kim & K. Kim, 2003; Reimer, Noelke, & Kucel, 2008; Reimer & Steinmetz, 2007, 2009; Shwed & Shavit, 2006; van de Werfhorst H.G., 2002; Wolbers, 2003; Ortiz & Kucel, 2008)[1].

It is likely that structural conditions, like variation in shares of supply and demand for some fields and occupations affects dynamics of labour market entry, as well as chances of overeducation for graduates from any given field (Ortiz & Kucel, 2008; Witte & Kalleberg, 1995), but it will not be discussed in this paper.

As well, stratification and selectivity of some fields might signal higher capabilities of graduate (Reimer et al., 2008), whereas the "transparency of occupational qualifications" (van de Werfhorst, 2004) could boost or hinder entry from some fields. Such conceptualizations effectively bridge the qualitative differences between the fields of study, but retain the assumption of single labour market and generally applicable skills/signals.

On the other end of the spectrum, there are papers that explore outcomes related to fields of study in terms of inventory of skills and competences reported by graduates paired with their statements about requirements of the job (Allen & van der Velden, 2001; van de Werfhorst & Kraaykamp, 2001; van de Werfhorst H.G., 2002; Allen & de Weert, 2007). Such efforts do manage to open up the black box of skill

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[1] Apart from the last three references, others studies are entirely focused on the field of study of tertiary education graduates, prompted by the great expansion of the tertiary education since 1980s.

content, but in doing so they increasingly rely upon self-evaluations and interpretations of respondents, while moving interpretation one step detached from the education system itself.

In this paper, I'll take the institutional package at the face value, assuming that there is a systematic variation in capabilities aptitudes of students enrolled in different courses and that every field of study provides specific set of skills and competences. But to explore labour market consequences of such a setup, a revisiting of job matching theories is in order.

Field of study, matching and job search

A conceptual framework or general mechanism is needed that would account why and how the field of education itself matters for the labour market outcomes. Structural issues aside, what do they provide to the students and what are they telling the employer? This is the subject of the following inquiry.

Human capital approach

Human capital theory sees educational attainment as a specific kind of investment in human resources. Becker himself sees education as "an institution specializing in the production of training", offering training in either broader or more specialized set of skills (Becker, 1962, p. 25). He makes a distinction between non-transferable firm-specific skills learned on-job, and the general skills (learned either on-job or in the school). Yet, as all the examples he provided demonstrate, his notion of general (transferable) skills does not mean a skill applicable to any productive activity, but their transferability is limited to other jobs within the given industrial sector (e.g. trade, agriculture) or occupation (e.g. lawyer, engineer, bricklayer, typesetter) (Becker, 1962, pp. 12-13) . Having this in mind, it might be more accurate to consider most of school-based human capital as not being general but having different, occupation-relevant (or sector-centred) "flavour", and providing specific occupational or sectoral resources characteristic of certain fields of education (e.g. van de Werfhorst & Kraaykamp, 2001). In this case, the field of education that one carries might be considered as a proxy for the structure of the learned human capital (educational attainment as an investment in heterogeneous human resources). This in

particular applies to countries where skill production regime is coordinated in such a way to provide industry-specific human capital (Estevez-abe, Iversen, & Soskice, 2001).

Yet, such conceptualization deals away with the assumption of is in line with core human capital canon where productivity is basically supply-based, determined by worker traits only. This holds only in the case if there is a job for every set of skills. But specific sets of skills add productivity only in certain industries, therefore introducing job traits as relevant, leading us within the scope of assignment theories (Sattinger, 1993) .

As well, Becker stresses the complementarily of school-based and job-based training. That is, lack of general (or industry-specific) skills can be compensated by training in the workplace, including daily working routine practices of work. As employees in mismatched job gathers human capital from different occupation that one trained for, thus making a specific human capital investment (s)he is about to be less likely to reach a job that matches the initial education later on in the career (**H1**).

Signalling/Screening approach

For the current purpose I will conflate the two approaches where education does not primarily increase productivity itself, but serves as a signal for the productive capacity – upon which employers might rely when screening for suitable candidates (Bills, 2003; Spence, 1973; Stiglitz, 1975) .

Productivity in various jobs depends on various characteristics to various extent (being it endurance, perception, communicative or cognitive capability). To put it more succinctly, "a characteristic may be a signal with respect to some types of jobs but not with respect to other" (Spence, 1973, p. 359). Screening process has to include the field of education in consideration – if the field of education signals the productivity or eligibility for a certain job or sector.

Regardless of the skill content that the field of education might (or might not) provide, the choice of field and success in graduating from it conveys signals about job-seeker's **aptitude** (capability to finish it) and **attitude** (commitment to choosing it

and following along its rules) for the given field. Therefore, the signal provided by education is not universal, each field (or course) signaling different types of "productive capability".

If education signals are in some part field-specific, and trainability for any given occupation is dependant on specific signals, the ordering of candidates for any job queue will be occupation-specific. Preferred outcomes for both job seekers and the employers would be that of a congruence of skills acquired through (or signalled by) the field and those needed on the job (van de Werfhorst H.G., 2002). Therefore, sociologists would rank low in queues for construction jobs, as would bakers or bankers for kindergarten care positions (and in turn, most of them would rank those jobs as unattractive when considering available jobs). Closed positions in the labour market might be particularly susceptible to occurrence of occupation-specific queues (Sørensen, 1983).

Assignment approach

Assignment theories, as elaborated by Sattinger (1993) allow for labour sub-markets, with their specific job demand and skill supply, as well as job-seekers' preferences for participation in them. In general, they assume that productivity is determined both by job and worker traits. Consequently, job seekers' position in job queue is different, depending in which labour sub-market it is competing. Though, job search being an effort-demanding activity, the information at hand is limited and job search is at any point in time limited among a few preferred options.

One convenient application of assignment model in any given job submarket is the "zipper allocation" (Teulings, 1995, according to Hartog, 2000, p. 141) "Workers are ranked top-down by quality (skill), jobs are ranked top-down by quality (complexity), and the equilibrium allocation zips them top-down together. The best worker goes to the most complex job, and the zipper slides down to match the two sides, until at least one side is exhausted (generating underemployed labour or vacant jobs at the bottom)." If field of study provides significant occupational skills or reliable signals, it is highly likely that such "zipper allocation" would be filled first with the candidates whose field of education matches the job. Those trailing behind in abilities relevant for the job (e.g. educational performance) would be more likely not

to get matched **(H2)**, especially if demand is more restricted than labour supply for the given job. As those candidates would have even worse ranking in the other sub-markets which have different requirements they have not been trained for, such job-seekers are likely to end up unemployed or in jobs where demand exceeds the competent supply. The greater the discrepancy between supply and demand, the lower the chance of realizing a fit between education and job (Solga & Konietzka, 1999).

With jobs outside of the matching field, the achieved labour market outcomes would be less favourable for the job seeker, since its productivity and/or trainability would be lower. This claim has received some empirical support, as Wolbers (2003) demonstrated with the LFS2000 ad hoc module data, or van de Werfhorst (2002) by exploring the effect of field-specific educational resources.

Initial search duration and consequent job change

The foremost concern of this article being dynamics of school to work transition, the aforementioned approaches do not address the temporal dimension. How do matches and mismatches unravel themselves over time after leaving education?

Since the job and worker information available is imperfect, whichever the assignment principle both employers and job seekers have to invest time into learning about the opportunities before the job is taken, and evaluating the match once the employment relationship has started. According to Jovanovic (1979) during the job search, the prospected job is a search/inspection good where its suitability is guessed based on signals before job is taken (Spence, 1973). Post recruitment into a job, it becomes an experience good, where productivity is over time revealed to all sides involved (Jovanovic, 1979).

Thus two distinct periods could be established. After leaving the education up until the first job is found, job seekers seek for employers who would employ them in fitting jobs. Such search is commonly sectoral, aimed at the sub-market fitting job seekers skill set and preferences (Sattinger, 1993). Since commonly supply of workplaces is limited, and initial preferences and reservation wages might not be

appropriate due to lack of information about the labour market, getting a matched (or mismatched) job is seldom immediate. Time spent in initial job search brings better labour market information to job seeker, but likewise the duration of unemployment since leaving education acts as a negative signal to prospective employer and skills are prone to obsolescence (Witte & Kalleberg, 1995; Wolbers, 2003). Therefore during the first months of job search it is more likely that job seeker will search (and get) to a job in the occupation that matches the education field. As initial expectations are relaxed, over time it becomes more likely that first time job seeker does seek and accept a job outside the field of study **(H3)** rather than remain unemployed. On-job training during the education might enhance available information (and social capital) therefore job seekers faster getting to their initial job (either matched or mismatched) **(H4)**. As well, if job seeker is lacking in resources, it might speed up change in search strategy from "matching job" to "any job available", and mismatches should occur more regularly **(H5)**. Tertiary education graduates have an option to compete for the less demanding occupations in their own field of study, where their competences or signals might remain valid, thus ending up overeducated, but in the "native" field. As secondary education graduates have no such "bumping down" option (Borghans and de Grip, 2000, according to Wolbers, 2003), they are more likely to end up horizontally mismatched **(H6)**.

Once the job is found, the theory of turnover (Jovanovic, 1979) assumes that workers true productivity in the job will be gradually revealed and that employees are more likely to remain in the jobs where their productivity turns out to be high. Following this search and matching framework, mismatches are likely to be only a temporary situation in the labour market (Hartog, 2000). Indeed, it is a common find that overeducation decreases with experience (Groot & Brink, 2000; Hartog, 2000; McGuinness, 2006). Relationship with tenure is more complex, but in the population of youth working in their first job it is trivial since tenure equals work experience.

„With sectoral choice made through search (and with many sectors), workers do not usually end up in the sector that absolutely maximizes their earnings." (Sattinger, 1993, p. 858). If horizontally mismatched jobs are less productive than those where field of education and occupation are matched, it follows that such workers would exit the job to more matching one as soon as better match becomes available. "With voluntary job mobility, experience will bring about an increase in job

level." (Hartog, 2000, p. 139). Though, if the productivity is indeed lower than it should be and if employer realizes it and finds a more suitable match sooner than employee does, the mismatched worker might exit to unemployment. In this case, horizontally mismatched workers would have greater propensity to exit both to unemployment and inactivity than one with occupation-education match **(H7)**. Though, if "zipper" assignment process has already dumped worker in mismatched occupation because of lack of competences or signals for job in matched ones, it is unlikely that mismatched workers will make many successful transitions to another jobs **(H8)**.

If while searching for a first job school leavers were selected out of the matching field due to worse positions in occupation-specific queue, this means that their occupational human capital (or relevant signals) was rather low. Although such workers' skills are underutilized in a mismatched job, unless a major expansion of occupational sub-market happens, it is unlikely that the following jobs will match the initial training **(H9)** since all the specific human capital gathered by on-job training in mismatched job relates to another field. Thus the candidate position in all the subsequent job queues in the field of initial training will be comparatively worse, whereas "survival" in the mismatched field might be due to either revealed productivity or the human capital gathered in the field.

How to measure matches?

In the literature dealing with mismatches, there are three ways they are commonly assessed (Hartog, 2000). First, "Job Analysis" approach identifies mismatch according to administrative or expert evaluation on appropriate education needed for certain jobs. As every vocational and most academic courses have a clear occupational set they are aimed at, such objective criteria is actually easier to use for determining horizontal mismatches than for overeducation or undereducation, and was applied by several researchers exploring field of study and occupation matches (Nordin et al., 2009; van de Werfhorst H.G., 2002; Wolbers, 2003; Solga & Konietzka, 1999).

Worker self-assessment of match is another approach equally applicable while exploring horizontal and vertical mismatch. It can either take form of self report about skill utilization or report on typical skills needed when entering job (thus putting the worker in shoes of job analyst). When applied to overeducation and undereducation they are shown to exhibit greater level of upward bias, and are more likely to portray greater overeducation and less undereducation (Groot & Brink, 2000; Hartog, 2000). The question about field of study required for the current job is a common way of measuring horizontal mismatch (Allen & van der Velden, 2001; Witte & Kalleberg, 1995; Garcia-Espejo & Ibanez, 2006; Heijke et al., 2003; Allen & de Weert, 2007). Comparing subjective and objective estimates of horizontal mismatch, Witte and Kaalleberg (1995) established that they mostly overlap, but subjective reports reveal less horizontally mismatched jobs.

Third approach in vertical mismatch research, "realized matches" which calculates mismatch based on deviation from average or modal education group for some occupation is hardly applicable for horizontal mismatches, as unlike level of education, fields of study are not ordinal. In reduced form it could mark only the modal destinations as "matches", but such estimate would be highly sensitive on how broadly occupations are classified.

I am taking the institutional setup at the face value, accepting that educational institutions select pupils and teach skills relevant to the occupations they claim to, and that employers in given occupations accept the educational credentials as relevant not only for the level but for type of skills when recruiting. Therefore, in this paper the objective match criteria will be used, assuming jobs and education to be horizontally matched if the occupation is within the scope of occupations for which the completed field of education claims to prepare. Thus administrative systematization of education becomes the matching criteria.

Persistence of fields over levels of education

As most of literature regarding the field of study focuses exclusively on tertiary education graduates, the decision to treat field as independent of the level of education requires some justification. "Bumping down" explanation itself lies upon

assumption that graduates from higher level of education but the same field of education are capable of replacing the secondary educated students from related vocations. Therefore, they have the same sets of skills (or signals), but on higher level. But why should it be so?

The educational content provided at different levels varies vastly in terms of complexity and level of abstraction. What common traits could justify the lumping of certain programmes together within particular "fields" that permeate through the hierarchy of educational levels? On the educational side, the most common classification – that of International Standard Classification of Education (ISCED), groups programmes by their closeness in subject matter content[2] (Andersson & Olsson, 1999). Subject matter is linking the education of craft photographer and movie director, secretary and manager, locksmith and engineer, nurse and doctor. They all share the subject matter and environment of their work, as well as basic dispositions, knowledge and work-related mores specific for the field. Not less important, they have at least basic understanding of work and capabilities of "others" from the same educational field thus reinforcing the reliability of signal when recruiting a person trained in the field. As far as analytical verification is concerned, van de Werfhorst and Kraaykamp (2001) explored presence of four types of educational resources: cultural, economic, communicative and technical and found differences between fields of study persistent over the educational levels. Jackson et al (2005) have found that employers demand different traits from different, education level not being the foremost. All this should give a cue towards a persistent, field-related effect on the labour market outcomes net of the education level.

Country background

Almost two decades into transition, Croatia has all the institutional preconditions to test the above-mentioned assumptions. Thus all the tertiary education graduates and substantial majority of labour market entrants with upper secondary education do indeed have specialist educational background. The education was system was initially modeled after German tradition, vocational component at the

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[2] This including, in order of descending importance: the theoretical content, purpose of learning, objects of interest, methods and techniques, and tools and equipment

secondary level was stressed during the socialism, and retained after its fall, with about three quarters of secondary education students completing vocational education. Tertiary education, on the other hand, is strongly subject-specific and profession-oriented, what should lead to high transparency of education signals. It is rather common to find some firm-based training in curriculum at all levels, however very little coordination between the education system and employers (both state and private sector). Thus, education signals could be transparent, but their reliability might be less than perfect. On the labour market side, youth unemployment is persistently about 2.5-2.8 times higher than general unemployment, and synthetic cohorts of school leavers need about six years to catch up with the general unemployment risk, whereas precarious employment is a regular way to start a career (Matković, 2008a, 2008b). This is indicative of rather bumpy matching process and limited supply of workplaces for school leavers. Mismatches between occupational profiles "produced" and those "needed by economy" is a common rallying point for both employers and policy-makers. Such concerns should not be taken at the face value, but as a sign of recognition of fields of study as relevant for recruitment decisions.

Data and methodology

The data used in this study originates from the 2008 "Survey on educational and employment careers of the Croatian youth", a joint effort of the United Nations Development Programme Croatia, the Ministry of Health and Social Welfare and Faculty of Law, University of Zagreb, based upon research priorities established by the Croatian Joint Inclusion Memorandum. The survey design itself was modeled after the ETF school leaver surveys used in Ukraine and Serbia (Kogan, 2008) as well as the LFS Ad-hoc module 2000 "Transitions from education to work".

The survey, completed in autumn 2008, observed up to first five years of careers of youth who completed or left their initial education between 2003 and 2008, The survey was applied in autumn 2008, with realized sample size of 2554 (about 2% of the given population). For the most part, the survey was retrospective, collecting detailed education history, a monthly activity calendar, and detailed information about respondents' significant jobs during their studies, their first job after leaving education and their current labor market status. This allowed precise identification of matching

outcomes with respect to search for first job after leaving education, as well as mid-term outcomes related to that job.

Respondents whose last field of study was general education or unknown were not included in the analyses, since there is nothing to match to. Those who at the time of leaving education already held a significant job were excluded as well, since their job search/match happened under different circumstances and would merit a separate analysis about working students.

The horizontal match was determined with respect to fit between the two-digit ISCED code for last field of study in which the respondent received a significant amount of education (more than one year)[3] and three-digit ISCO code of the job. Matching scheme is laid out in annex table A1a.

Two-digit "narrow fields of study" were chosen as the level at which study programs are still broadly congruent – and their graduates might compete for the same groups of occupations (e.g. teacher training, humanities, law, business, computing, construction). If match was to be established for detailed field of study or individual study programs, the matching criterion would become stricter and number of mismatches greater, yet such operationalization runs risk of narrowly compartmentalizing the labor submarkets down to isolated study programmes, each related to its prescribed occupation(s).

The relaxed matching criteria was used, considering the occupation "matched" with field of education if any of courses present in the field fit any of the occupations within the three-digit occupational group. Managerial positions are considered to be "match" whatever the field of study. It is rather straightforward to assign horizontal matching in this fashion with respect to face validity. While matches established ins such a fashion would suffer from "false positives" (i.e. potential mismatches being classified as matches), it is fairly safe to claim that few matches would be classified as

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[3] Not everyone manages to finish their secondary education, and dropping out of tertiary in Croatia is almost as usual as finishing it. In the school leaver survey, this was case with 3% of secondary education students and about 41% of those who started tertiary education. Still, if credentials were not only mechanism of job assignment, some education in the field should provide some competences and signals.

mismatches with such procedure. Therefore, such relaxed matching procedure produces an "lower bound" of horizontal mismatch incidence[4].

Observing the period after leaving education for events of entry to first job in so defined horizontally matched and mismatched jobs, an competing risks piecewise constant exponential duration model was fit, estimating baseline hazard for each six-month segment and covariate effects for both outcomes.

Covariates included for outcomes of job search include the educational background in terms of level and track of completed education, experience of substantial period out-of-school training (3 months or more) as part of education, broad field of education[5], as well as individual background in terms of school success (standardized for each level and track), family resources in terms of parental occupation and employment, respondents gender and settlement size.

For those that managed to find a job during the reported period, another competing risk model is fitted, whether this spell of employment ended in other job or unemployment. Mismatch indicator is used as an independent variable here, and set of controls consists of indicator on vertical mismatch (derived from standard education requirements for major ISCO occupational groups)[6], duration of job search prior to finding the job (as proxy for level of information about the labour market and own productivity), as well as job traits condensed in occupational ISEI, broad industrial sector and contract type (in order to capture the potential heterogeneity of the labor market position).

The final analysis is not a duration model, but logistic regression on the subsample of persons currently employed in job other than their first job – i.e. those who have made the transition explored in the previous analysis and managed to get to job. The outcome of interest is whether the current job is horizontally matched or mismatched, whereas the set of predictors is selection of ones used in the previous

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[4]Construct validity was tested by crosstabulating matches calculated in this fashion with respondents statement about the field of study requirements put forward by employers for those jobs. Observed fit is moderately high, as 75% of jobs where employers required "same or related field of study" were classified as matches, whereas 72% of jobs where employers required another field of study or no field in particular were classified as mismatches. This is about the same level found by Witte and Kalleberg (1995) with respect to subjective and objective assessment of match.

[5] Detailed field of study itself is not introduced as a control since it would add little to understanding the issue at hand.

[6] Admitedly, this is a crude objective measure of mismatch, but it is consistent with the approach used to determine horizontal mismatch in this paper.

analysis, plus duration of the first job and a set of dummies whether respondent got the current job due to internal promotion, left the first job for another job (i.e. most likely voluntary) or went into unemployment before finding the current job (i.e. involuntary). Distribution of outcomes over all used covariates is portrayed in annex tables A2a and A2b (continuous variables were split into quartile groups).

Entry to mismatch

What is dynamics of entry to matched and mismatched jobs? Figure 1 compares cumulative hazard of entering horizontally matched and mismatched job over time since leaving education, provided that no other event has happened before. Hazard of reaching matched job is higher during the early months (especially during first 6 months, but up to 1 yr), and peaks at about 9% difference in cumulative hazard 1 to 2 years after leaving education. Then about month 20, transitions to mismatched jobs becomes more common and difference in cumulative hazards starts decreasing down to about 3% four years after leaving education.

Figure 1: Survivor functions for entry in horizontally matched and mismatched jobs. Superimposed Kaplan-Meier survival estimates.
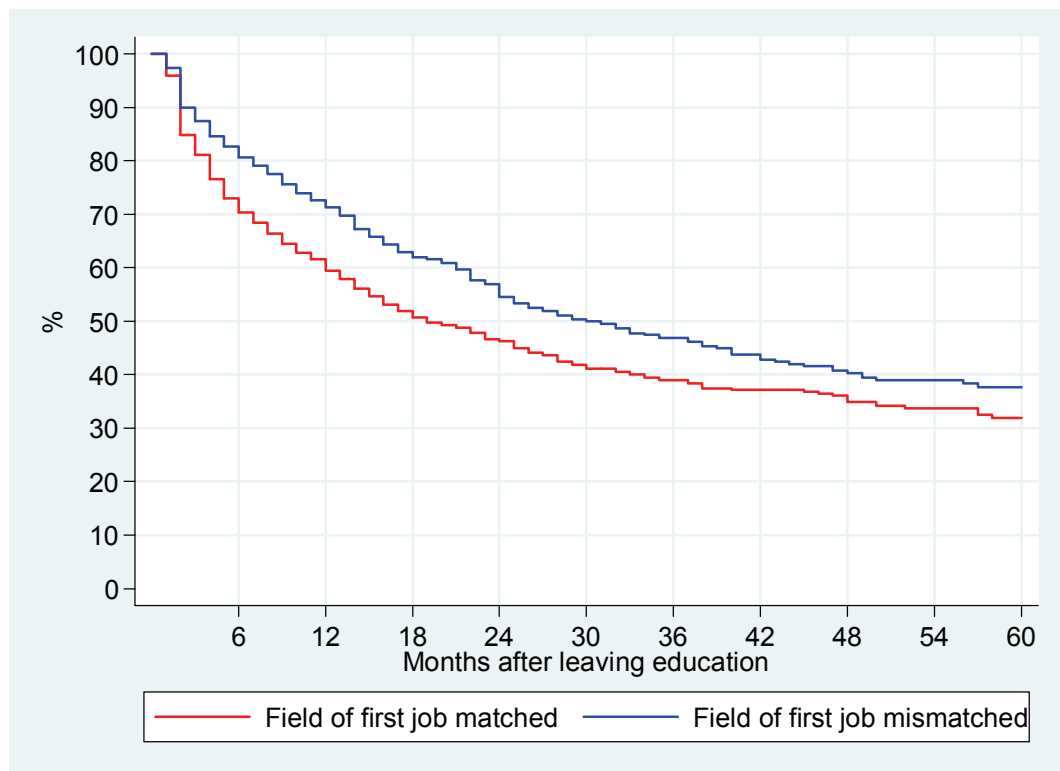
This gives some support to hypothesis 3. As duration of job search increases, it becomes more likely that first time job seeker does seek and accept a job outside the field of study. Competing risks piecewise constant exponential duration model estimates provide support for this hypothesis, as even after controlling for covariates, decrease of baseline hazard over time for entry to matched jobs is steeper than the one for mismatched jobs[7]. This is consistent with discrete-time duration model applied by Witte and Kalleberg (1995), finding that switch to matched job is most likely in the year immediately after leaving initial training.

Table 1: Entry to first job. Competing risks piecewise constant exponential duration model

	Entry to horizontally matched job		Entry to horizontally mismatched job	
Time since leaving education				
Months 1-6	-3.59***	(-26.85)	-3.08***	(-22.45)
Months 7-12	-4.24***	(-28.40)	-3.70***	(-23.39)
Months 13-18	-4.28***	(-26.50)	-3.50***	(-21.44)
Months 19-24	-4.74***	(-23.15)	-3.61***	(-19.38)
Months 25-30	-4.41***	(-21.49)	-3.87***	(-17.15)
Months 31-36	-5.31***	(-15.61)	-4.43***	(-13.56)
Months 37-42	-5.45***	(-13.70)	-4.00***	(-13.53)
Months 43-48	-5.39***	(-11.62)	-4.65***	(-10.02)
Months 49 and on	-5.46***	(-14.53)	-4.53***	(-12.67)
Achieved education				
Unfinished secondary	-1.17***	(-3.73)	-0.42**	(-2.20)
Vocational secondary	0.37***	(3.75)	-0.14	(-1.34)
Technical secondary	(ref)	(ref)	(ref)	(ref)
Unfinished tertiary	0.10	(0.68)	-0.15	(-0.97)
Professional tertiary	0.87***	(4.83)	-0.23	(-1.03)
Academic tertiary	1.12***	(7.17)	-0.41**	(-2.13)
GPA (standardized)	0.11***	(3.08)	-0.04	(-1.06)
Substantial amount of workplace training during education	0.29***	(3.19)	0.02	(0.20)
Employment experience during education	0.45***	(5.71)	0.46***	(4.92)
Field of education – upper secondary				
Business, law and social sciences	0.12	(1.05)	-0.50***	(-3.67)
Engineering	(ref)	(ref)	(ref)	(ref)
Services and health	0.23**	(2.42)	-0.19*	(-1.74)
Field of education – tertiary				
Business, law and social sciences	-0.15	(-1.16)	-0.08	(-0.46)
Engineering and science	(ref)	(ref)	(ref)	(ref)
Other fields	-0.25*	(-1.72)	0.11	(0.61)

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[7] Gap in particular seems to be widening between months 13 and 24.

Demographics and social background				
Female	0.02	(0.25)	-0.07	(-0.75)
Rural upbringing	0.12[*]	(1.69)	-0.09	(-1.07)
Parental occupation when 15				
Managers and professionals	0.01	(0.09)	-0.25[*]	(-1.68)
Intermediate	(ref)	(ref)	(ref)	(ref)
Machine operators, agricultural and unskilled occupations	-0.27[***]	(-2.58)	0.02	(0.16)
None employed	-0.21	(-1.52)	-0.11	(-0.76)
Both parents employed when 15	-0.01	(-0.07)	-0.05	(-0.54)
N	5457		5457	
Ll	-2250.47		-1850.94	

t statistics in parentheses. Outcomes are controlled for broad field of study at secondary and tertiary level, gender and rural upbringing[8].
[*] $p < 0.1$, [**] $p < 0.05$, [***] $p < 0.01$

There is a neat effect of track and level of education and workplace-based training with regard to entry in matched jobs, consistent with the school-to-work theory canon (e.g. Müller, 2005; Müller & Gangl, 2003). As well, better students are somewhat more likely to get to matched jobs than are those who graduated with bad grades (as found for vertical mismatch in Garcia-Espejo & Ibanez, 2006).

But there is no such association with respect to getting into mismatched jobs. Although number of exits to horizontally mismatched jobs is close to number of exits to matched ones, level, track, training or grades achieved during education are not associated with chances of getting into mismatched job as opposed to remaining in unemployment[9].

Such a pairing of hazard functions provides some support for all the job-entry related hypotheses. Effect of grades (as proxies for either skill or trainability) fits the assignment theory assumptions (**H3**). In line with "zipper allocation", job seekers with higher grades have a greater tendency to enter job in a matched field, but those grades are not telling of relevant skills/signals when competing in other labor submarkets, so their association with entry to mismatched job is nil (e.g. grades from hairdresser course are largely irrelevant for getting a waiter job).

Same mechanism applies for level of education, where hazard to enter mismatched job over time is similar for graduates with any and all degrees, but

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[8] As for controls included, broad field of education modest effect at secondary, weak to none at tertiary level, but does not contribute to major extent in explaining dynamics of assignment to matched and mismatched jobs. Gender is not relevant for first job entry dynamics, whereas rural residence might lead to slightly higher chance in finding a job matched with education.
[9] The hazard is somewhat lower for those with most and least education, but size of the coefficient is modest.

achieved degree greatly affects hazard of getting into matched job (**H6**). The finding that highly educated have greater chances of entering matching job (as well Wolbers, 2003) is supportive, but not conclusive of "bumping down" hypothesis, as such outcomes might result from tighter occupational requirement, more restricted supply or greater demand for jobs for tertiary-educated seekers. Though, provided that person fails to find a job in the matching field, the advantage provided by the degree largely disappears, as there is only slight difference in chances of getting job in mismatched field, which supports the assumptions about field-specific skills and signals required in different labour sub-markets (Sattinger, 1993).

In similar line, on-job training does indeed help in finding a matched job faster, but is not relevant for mismatched jobs. This does not invalidate H4 on usefulness of training in subsequent job search, as labour market experience and information gathered by training during education applies only for jobs in occupations the initial education trained for. On the employer side, the facilitating screening function of training is only useful for employer who hired the apprentice and its social network (where recommendations would hold some plausibility), that is, mostly within the same occupational field. Thus, car mechanic apprenticeship might speed up getting a job as mechanic in some town, but would have little to do with getting job as a cashier. On the other hand it seems that real work experience during the education speeds up entry to both matching and mismatching jobs, as it equips school leaver with substantive information about employment prospects, not necessarily within the field. Though, both the decision to work during education and rapid transition to any job after its completion might be influenced by financial hardship.

Measured via parental employment status when respondent was 15[10], the lack of resources turned out to be of little consequence for getting any kind of job after leaving education. However, parental occupational class turned out to matter, as children of salariat had modestly greater chances of getting into horizontally matched jobs than others, whereas children of parents working in simple, agricultural and machine operator occupations were more likely to end up in mismatched job than others. This provides some support to the hypothesis **H5** that lack of resources might force the job seeker to chose mismatched job over unemployment.

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[10] This indicator is more valid for understanding education choices than school to work transitions, as parents themselves often went through transition to unemployment or inactivity (most likely retirement) during the intervening decade, substantially changing the family economic considerations.

Exit from (mis)match

Once the job is found, it can be lost. Or it can be left for another. As discussed above, matching process does not end with the first employment, so it is a sensible strategy to observe separations from the job over time with respect to initial horizontal match achieved.

Table 2: observed outcomes for respondents with initially matched and mismatched jobs

	First job matched	First job mismatched
Initial job retained during the observed period	57.9	49.2
Exit to another job	20.4	19.8
Exit to unemployment or inactivity	21.7	31
Subsequent job is horizontally mismatched	25.2	68.5

Exit to another job is a transition where employee either took voluntary (or preemptive) action to change existing job (likely because more suitable or secure job was found), or where new job had started right after lapse of the previous. Such smooth transitions when worker-initiated are likely to lead to better, more fitting jobs (Hartog, 2000). Although Wolbers (2003) has found more intensive job search activities amongst horizontally mismatched recent school leavers, in we found no actual difference in outcomes. Survival functions for this outcome between workers whose first job was horizontally matched and for ones whose job was not (fig 2)[11]. This is contrary to expectations (**H7**) that mismatched workers would be more likely to move on when the opportunity shows up as their skills (and thus potential productivity) are not fully utilized.

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[11] Though, a difference using Wilcoxon test was established when only portion after 24 months was observed, where KM graph suggests departure of function for matched and mismatched jobs.

Figure 2: *Survivor functions: Exit from first job to another job by the match between field of initial education and occupation. Kaplan-Meier survival estimates*
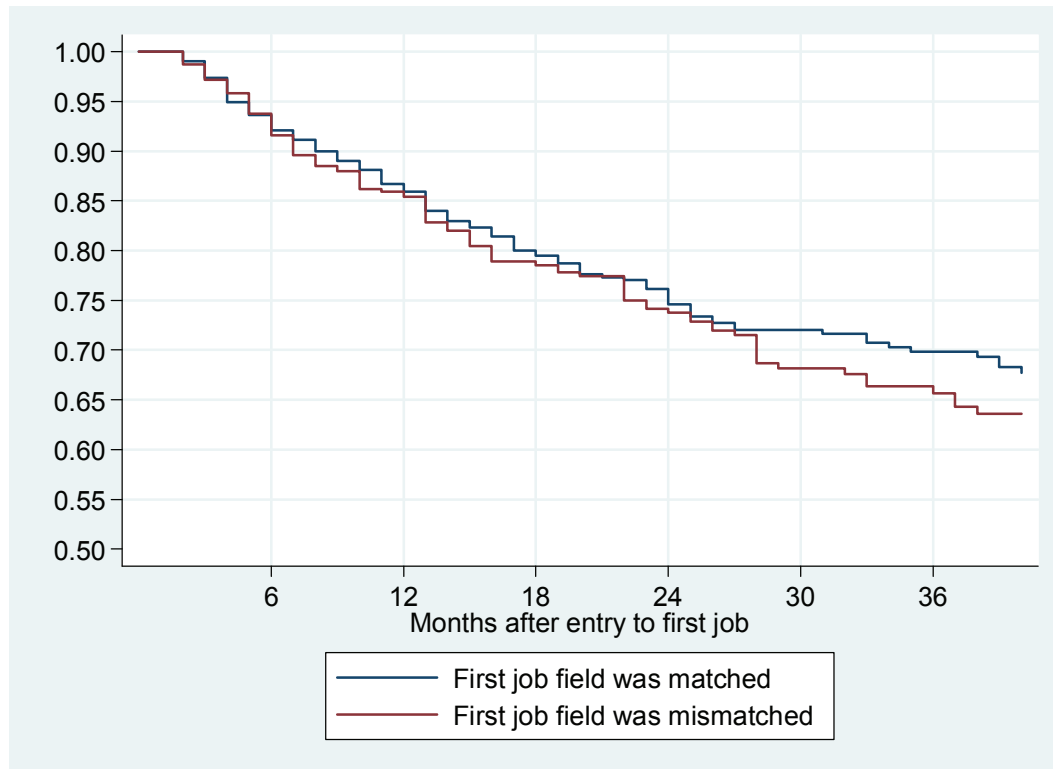
Exit to inactivity or unemployment is very unlikely to be a result of voluntary exit or an adequate match. For such an outcome (fig 3), there is a visible departure of survival functions between workers in horizontally matched and mismatched jobs, supported tests for equality of survivor functions. This is analogous with negative relationship between tenure and mismatch established by Wolbers (2003) and in line with both interpretation (**H7**) that in mismatched jobs insufficient productivity (or skill deficit) is more likely to be discovered (Allen & van der Velden, 2001), as well as with assumption that such employees were already filled from the tail end of "zipper allocation" (**H8**), both making involuntary separations more likely.

Figure 3: *Survivor functions: Exit from first job to unemployment or inactivity by the match between field of initial education and occupation. Kaplan-Meier survival estimates*
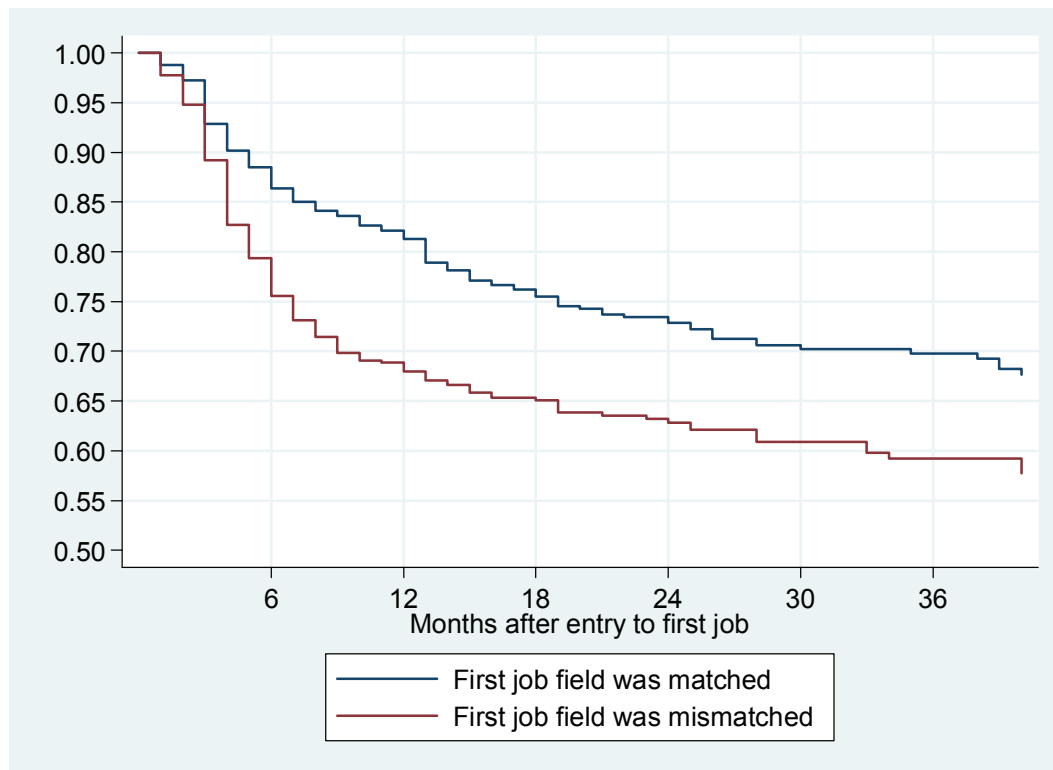
Though, gross observed differences in separation might happen due to compositional effects, stemming from lower quality (as found by Wolbers, 2003), demographic or sectoral concentration of mismatched jobs (see table A2). As well, horizontal mismatch might be confounded with effect of overeducation or undereducation. Thus, a piecewise constant exponential duration model was fitted in order to control for those covariates[12].

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[12] The competing risk model comparing patterns for both exit to another job and inactivity is provided in annex table A3.

Table 3: Exit from the first job to unemployment or inactivity. Piecewise constant exponential duration model

	Exit to another job		Exit to unemployment or inactivity	
Months 1-6	-3.59***	(-42.07)	-4.09***	(-13.25)
Months 7-12	-4.57***	(-33.19)	-4.91***	(-15.08)
Months 13-18	-4.93***	(-26.25)	-5.18***	(-14.89)
Months 19-24	-5.76***	(-17.96)	-5.97***	(-13.77)
Months 25-30	-5.59***	(-16.55)	-5.70***	(-12.84)
Months 31-36	-6.43***	(-11.09)	-6.49***	(-10.05)
Months 37 and on	-5.99***	(-17.75)	-5.98***	(-13.57)
Match				
First job horizontally mismatched	0.50***	(4.82)	0.23**	(2.11)
Overeducated for the job			0.14	(0.95)
Undereducated for the job			0.55*	(1.93)
Duration of search for first job			0.01	(1.20)
Job traits				
First job ISEI			-0.03***	(-5.15)
Temporary or informal job			1.70***	(11.06)
Industrial sector				
Extractive (AB)			0.06	(0.17)
Manufacturing and utilities (CDE)			(ref)	(ref)
Construction (F)			0.05	(0.21)
Sales and hospitality (GH)			0.43***	(2.94)
Transport (I)			-0.02	(-0.06)
Business services (JK)			-0.33	(-1.05)
Education, health, government (LMNQ)			0.24	(1.09)
Other services (OP)			-0.02	(-0.10)
Demographics				
Female			0.06	(0.54)
Rural upbringing			0.03	(0.27)
N (subjects)	1452		1452	
Ll	-1213.00		-1078.52	

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

With respect to exit to unemployment or inactivity, insertion of covariates halved the effect of horizontal mismatch from 0.50 to 0.23, making it modest but still noticeable. High ISEI protects from exit to unemployment, as does working under permanent contract (though it was present among only a third of first jobs), whereas jobs in sales and hospitality (where a full third of respondents found their firs job) are more likely to end with unemployment. In comparison to those covariates, association of horizontal mismatch and job exit is modest, equal to 8 points of ISEI or half the effect of working in retail or hospitality sector. Thus support for hypotheses about less favorable early career patterns of workers with horizontally mismatched jobs (**H7**) should not be overstated.

Where does it lead to? Consequences of exit from mis(match).

Provided that the first job has lapsed, how does the initial mismatch affects the odds that subsequent jobs, if found, would be matched?

Limitations of data at hand allowed only observation of current job, if different from the first one. This is a highly selected group which had found, exited and found job again in less than five years since leaving education. Yet it seems that among the minority of youth who actually "switched" jobs during the observed period, those who had matched first job have 6.6 times greater odds to currently have occupation that matches their initial field of study in the current job, than those who had their first job horizontally mismatched.

Table 4: Logistic regression on current job being horizontally mismatched (only respondents who have changed their job since leaving education).

	With no controls		With controls	
First job horizontally mismatched	1.88	(9.23)	1.72***	(8.06)
Overeducated in first job			-0.06	(-0.23)
Undereducated in first job			1.15*	(1.79)
Duration of the first job			-0.00	(-0.32)
First job ISEI			-0.02***	(-2.64)
First job was temporary or informal			-0.01	(-0.06)
Current job different than first due to				
Promotion, reassignment within the firm			-0.38	(-1.01)
Exit to another job			(ref)	(ref)
Exit to unemployment			0.23	(0.96)
Female			-0.10	(-0.46)
Rural upbringing			-0.32	(-1.47)
_cons			0.16	(0.31)
N	485		485	
Pseudo R^2	0.142		0.169	

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Controlling for demographics, characteristics of the first job and the way it had ceased, horizontally mismatched outcome is somewhat more likely for those undereducated for the first job, those who left first job to unemployment as opposed to those who had reached the current position through internal mobility, and for those with low ISEI job (not unlike Solga & Konietzka, 1999), itself supporting the

bumping down assumption. It is noteworthy that neither duration of the first job neither time elapsed since leaving education (not shown) do not contribute to odds of match of the current job (similar to duration model in Witte & Kalleberg, 1995). Moreover, even in so controlled model the odds ratio for initial mismatch has barely dropped to 5.5[13], supporting the final hypothesis (**H9**) that for horizontally mismatched workers it is unlikely that the following jobs will match the initial training since they were negatively selected out of matching field during the initial assignment, while all the specific human capital subsequently gathered by on-job training in mismatched job relates to another field.

Conclusion

The observed patterns of horizontal occupation mismatches seem to support the assignment model of labor market matching, in particular the assumption about several labor sub-markets where different skills and/or signals contribute to productivity/trainability. In particular it is the first transition that seems to lock-in the (mis)match of further career, as subsequent transitions to occupations matched with initial training is rare. Therefore horizontal mismatch should not be conceived a temporary event "bridging" the rough times until the match is to be found.

The analysis of entry patterns revealed that transitions to matched jobs are more frequent during the early months of job search, and are associated with level of education, study success and out of school training. On the other hand, transitions to a horizontally mismatched job as opposed to remaining in unemployment are stochastic with respect to education competences and signals. There is modest support for "push" into mismatched jobs (instead remaining in unemployment) due to lack of resources.

Such a pacing and patterns of covariates indicate possibility of sorting process akin to "zipper" allocation, where candidates compete for available jobs in the appropriate sub-market, and those less successful have alternative between competing for other jobs (where they do not carry educational credentials) or searching on and retaining unemployed. As they are likely to get assigned to lower positions in the

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[13] Findings remained robust even when cases of within-job promotion were excluded.

other sub-markets, more precarious nature of such attained jobs explain away a better part of instability in further career related to horizontally mismatched jobs.

This effort has avoided institutional and structural (supply and demand-side) issues, although they certainly play a part shaping of extent and patterns of horizontal mismatch, and can play a large role in explaining it, as previous work demonstrated (Solga & Konietzka, 1999; Witte & Kalleberg, 1995; Wolbers, 2003). Nature of dataset at hand and single-country design would not allow for any substantive contributions in this field, while sidelining from the task at hand. This was only the second time (after Witte & Kalleberg, 1995) that duration models were used to explore horizontal mismatch, and first time (to our knowledge) that different competing outcomes were explored.

Though, the career outcomes observed in such a way are lacking true counterfactuals. With the current design it was not possible to explore whether the youth who entered horizontally mismatched jobs would be better off if they remained unemployed for a while and continued their job search. And this might be the crucial policy-related question. It is well possible that such mismatches are the best matches possible at the time, leading to more stable and productive outcomes than insistence on finding a job matching the initial education[14]. This shortcoming (as well as schematized and segmented nature of events observed here) could be overcome by tracking the comparable groups of matched, mismatched and unemployed over time, perhaps by carefully constructed propensity score matching models with duration functions as in Broadaty, Crepon & Fougere (2001).

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[14] Thus the "bridge vs. captivity" dichotomy might be a false one since in many sub-markets there might be no appropriate land for many aspirant bridge-builders to build at.

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Table A1 – Field of education and occupation matching criteria

ISCED	Field of study	%	Matching occupational ISCO codes									
14	Teacher training	3.2	233	234	235	331	332	333				
21	Arts	1.8	245	333	347	215	733	734	735	521		
22	Humanities	1.7	233	242	244	245	246	331	348			
31	Social and behavioural science	2.5	234	235	244	247	333	345				
32	Journalism and information	0.6	215	243	244	245	347	414	422			
34	Business and administration	22.0	241	244	247	341	342	343	344	411	412	413
			419	421	422	522	911	41				
38	Law	5.2	242	247	315	343	344	345	419			
42	Life sciences	0.5	221	233	311	315	321					
44	Physical sciences	0.3	211	233	311	313	315	815				
46	Mathematics and statistics	0.4	212	343	412							
48	Computing	6.1	213	214	312	313	412	724				
52	Engineering and engineering trades	12.2	214	215	311	313	713	721	722	723	724	731
			735	811	812	816	817	821	828	829	932	
54	Manufacturing and processing	7.1	214	711	732	741	742	743	744	813	814	815
			821	822	823	824	825	826	827	828	829	932
58	Architecture and building	4.1	214	311	315	712	713	714	735	931		
62	Agriculture, forestry and fishery	4.4	221	315	321	611	612	613	614	615	921	
64	Veterinary	0.9	222	315	322	612	615	741				
72	Health	5.7	222	322	323	513						
76	Social services	0.4	234	244	332	333	346	513				
81	Personal services	15.4	244	341	347	422	511	512	513	514	912	913
			914	916	91							
84	Transport services	4.7	214	314	315	413	414	831	832	833	834	915
			933									
85	Environmental protection	0.4	221	315	321	614						
86	Security services	0.2	244	345	515							

Note: All managerial occupations (111, 112, 114, 121, 122, 123, 131) are considered potential matches for any field of education, as are occupations in tertiary, upper secondary or specialist education (231, 232, 334)

Table A2a – Distribution of initial outcomes matches, job retention, exits and subsequent mismatches across educational and sociodemographic covariates.

	Entry to first job			Exit from first job			
	Horizontal match	Horizontal mismatch	Failed to find a job during the observed period	Job retained during observed period	Exit to another job	Exit to unemployment or inactivity	Subsequent job mismatched
Level of education							
Unfinished upper sec.	6.5	41.9	51.6	41.9	16.1	41.9	87.5
3-yr vocational	45.7	30.8	23.5	49.8	17.7	32.5	49.2
4-yr technical	32.2	38.1	29.7	51.7	19.2	29.2	41.9
Unfinished tertiary	25.9	40.0	34.1	47.2	20.5	32.3	64.8
Professional tertiary	46.1	29.1	24.8	50.0	34.2	15.8	34.0
Academic tertiary	55.8	21.6	22.6	61.5	24.0	14.5	28.0
Participation in out-of-school training							
No	36.0	32.9	31.0	52.9	22.2	24.9	43.8
Yes	44.0	32.3	23.6	51.1	19.4	29.5	45.0
Work experience during education							
No	37.1	32.1	30.8	54.6	17.8	27.6	44.1
Yes	47.1	34.1	18.9	46.1	27.7	26.2	45.0
Broad field of study							
Secondary engineering	33.2	42.1	24.7	54.2	16.5	29.2	59.6
Secondary business, legal and soc. sciences	39.7	25.6	34.7	50.2	18.5	31.2	28.4
Secondary Health, services	43.3	31.6	25.1	43.4	19.0	37.6	45.5
Tertiary engineering science	43.4	19.0	37.6	53.4	27.1	19.6	40.4
Tertiary business, legal and soc. sciences	45.4	26.2	28.5	58.3	23.9	17.8	28.9
Tertiary other fields	46.0	27.6	26.4	54.5	28.7	16.9	44.4
Gender							
Male	36.9	36.6	26.6	53.6	18.1	28.3	51.7
Female	42.4	29.3	28.3	50.6	23.3	26.1	38.0
Place of socialization							
Rural or small town	39.7	34.4	25.9	52.4	22.3	25.3	45.1
Urban	40.1	30.8	29.2	51.6	19.0	29.4	43.0
Parental occupation							
Managers and professionals	46.7	25.3	28.0	62.0	16.4	21.6	37.5
Intermediate	41.4	33.3	25.3	52.1	22.4	25.6	42.9
Machine operators, si	35.7	37.9	26.5	47.7	18.1	34.2	55.3
None employed	33.7	26.6	39.7	50.0	22.8	27.2	44.1
Parental employment							
One or no parents employed	37.0	34.5	28.5	46.7	21.7	31.5	46.6
Both parents working	42.6	30.9	26.5	56.9	20.0	23.1	42.4
GPA							
Below average (q1)	29.8	37.2	33.0	54.0	19.1	26.9	51.9
About average (q 2,3)	42.1	31.7	26.2	50.6	20.4	29.0	43.2
Above average (q4)	44.5	30.3	25.2	53.3	23.4	23.4	41.7

Table A2b – Distribution of initial outcome matches, job retention, exits and subsequent mismatches with respect to characteristics of the first job.

	First job found is		Exit from first job			Subsequent job mismatched
	Horizontal match	Horizontal mismatch	Job retained during the observed period	Exit to another job	Exit to unemployment or inactivity	
First job matched			57.9	20.4	21.7	25.2
First job mismatched			49.2	19.8	31.0	68.5
Current job different than first due to						
Promotion, reassignment within the firm						30.0
Exit to another job						44.0
Exit to unemployment						52.1
Level mismatch						
Job requires less education	39.4	60.7	45.8	26.0	28.2	50.5
Job matched	59.7	40.3	55.6	18.9	25.5	41.0
Job requires more education	42.6	57.5	53.2	23.4	23.4	53.9
Sector (NACE)						
Extractive (AB)	39.3	60.7	55.2	10.3	34.5	50.0
Manufacturing and utilities (CDE)	51.1	48.9	56.8	17.1	26.1	58.8
Construction (F)	54.7	45.3	59.9	20.4	19.7	41.2
Sales and hospitality (GH)	47.1	52.9	41.9	23.3	34.8	44.6
Transport (I)	48.0	52.0	66.7	9.8	23.5	46.7
Business services (JK)	61.7	38.3	69.5	19.9	10.6	35.6
Education, health, government (LMNQ)	81.2	18.8	59.2	21.4	19.4	22.1
Other services (OP)	61.3	38.7	53.6	21.6	24.8	51.2
Type of contract						
Permanent position	58.9	41.1	72.2	17.0	10.8	43.3
Temporary or informal	52.4	47.6	38.9	23.3	37.8	45.2
Occupational ISEI						
bottom quartile	40.4	59.6	50.9	14.8	34.3	61.7
2nd quartile	48.0	52.0	44.5	21.6	34.0	43.8
3rd quartile	54.0	46.0	52.9	23.1	24.1	43.0
top quartile	75.3	24.7	66.6	20.3	13.1	28.2
Job search duration						
Found job within 2 months (q1)	57.0	43.0	48.5	26.1	25.5	42.5
Found job within half year (q2)	60.1	40.0	50.1	20.0	29.9	43.8
Found job within a year (q3)	55.6	44.4	55.3	19.2	25.5	46.8
Found job after more than a year (q4)	46.7	53.3	56.4	16.0	27.7	48.3

Table A3: *Exit from first job. Competing risks piecewise constant exponential duration model.*

	Exit to another job		Exit to unemployment or inactivity	
Months 1-6	-5.12***	(-15.68)	-3.95***	(-12.75)
Months 7-12	-5.27***	(-15.70)	-4.77***	(-14.61)
Months 13-18	-5.41***	(-15.50)	-5.04***	(-14.48)
Months 19-24	-5.31***	(-14.93)	-5.82***	(-13.47)
Months 25-30	-5.87***	(-14.08)	-5.56***	(-12.56)
Months 31-36	-5.77***	(-13.32)	-6.35***	(-9.84)
Months 37 and on	-5.66***	(-15.41)	-5.84***	(-13.30)
Match				
First job horizontally mismatched	0.05	(0.44)	0.23**	(2.11)
Overeducated for the job	0.35**	(2.34)	-0.14	(-0.95)
Undereducated for the job	0.30	(0.94)	0.41	(1.60)
Duration of search for first job	-0.01	(-0.94)	0.01	(1.20)
Job traits				
First job ISEI	0.00	(0.79)	-0.03***	(-5.15)
Temporary or informal job	0.93***	(7.11)	1.70***	(11.06)
Industrial sector				
Extractive (AB)	-0.54	(-0.91)	0.06	(0.17)
Manufacturing and utilities (CDE)	(ref)	(ref)	(ref)	(ref)
Construction (F)	0.26	(1.04)	0.05	(0.21)
Sales and hospitality (GH)	0.35**	(1.98)	0.43***	(2.94)
Transport (I)	-0.67	(-1.28)	-0.02	(-0.06)
Business services (JK)	0.21	(0.83)	-0.33	(-1.05)
Education, health, government (LMNQ)	0.06	(0.23)	0.24	(1.09)
Other services (OP)	0.13	(0.52)	-0.02	(-0.10)
Demographics				
Female	0.12	(0.92)	0.06	(0.54)
Rural upbringing	-0.12	(-0.94)	0.03	(0.27)
N	4310		4310	
Ll	-908.64		-1078.52	