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## Self-selection into teaching: the role of teacher education institutions

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The Role of Teacher Education Institutions**

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# **Self-Selection into Teaching: The Role of Teacher Education Institutions**

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## **ABSTRACT**

### **Self-Selection into Teaching: The Role of Teacher Education Institutions**

Good teachers are critical for a high-quality educational system. This in turns leads to the question of who is interested in going into the teaching profession. Although research has been done on the professional careers of teachers, the issue of self-selection into teacher education has been mostly overlooked until now. The analyses contained in our study are based on a representative sampling of over 1500 high-school students in Switzerland shortly before graduation. The findings indicate that there is a self-selection process with regard to courses of study at teaching training institutions, which is reinforced by institutional and structural characteristics of the types of higher education institutions and the courses of study they offer. This can clearly be seen in comparison with high-school students preparing to study at another type of higher educational institution (university). Accordingly, the findings of this paper tend to indicate that the choices made by future teachers depend to a large extent also on where and how teachers are trained.

JEL Classification: I2, I28, J24

Keywords: teacher education, teacher training, teacher education colleges, self-selection, study choice, occupational choice

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## 1. Introduction

Recent research on the effectiveness of educational systems underscores the importance of good teachers in ensuring the quality of an educational system (see for example Wössmann, 2002; Nye et al., 2004; OECD, 2005; Hanushek, 2008). To produce good teachers, there is a need for high-quality teacher education, with measures such as entrance examinations or aptitude tests to ensure that suitable candidates are selected. However, the quality of the teachers available to work within a given educational system primarily depends on who opts for a career in teaching. Consequently, the question of who decides to go into teaching, although it has not been extensively researched, is extremely important in terms of educational policy.

Although some studies have been conducted on the occupational choice of prospective teachers as well as active teachers who leave the teaching profession<sup>1</sup>, almost no research has focused on what makes students opt for teacher training. This question becomes crucial in educational systems where teachers (for all educational levels or only for some) are trained at specific training sites, or in other words in systems where teacher education offers an alternative to a university degree (see OECD, 2005). In countries with consecutive teacher education systems, the issue differs somewhat.

This article researches this topic on the basis of new data. The training and career choices of prospective teachers are analysed and the determinants of self-selection are identified. Here, the key question is whether teacher training in a specialized teacher education institution affects students' self-selection, and if so, which characteristics of the institute for higher education or course of studies are decisive.

Findings which support the hypotheses of a non-random and not necessarily positive self-selection into teacher education are provided by a previous study on the

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<sup>1</sup> See Wolter & Denzler, 2004 for this type of research in Switzerland and a corresponding overview of literature on studies from other countries.

career choices of high-school students on the verge of taking their school-leaving exams in the canton of Berne (see Denzler et al., 2005). However, because of time and geographical constraints, this study did not go into the influence of institutional factors on teachers' choice of studies.

The article is broken down as follows: after a short presentation of teacher education in Switzerland, the research hypotheses are placed in their theoretical and empirical context. After a section on methodology, the empirical results are discussed, followed by the final conclusions.

## **2. Teacher education in Switzerland**

To cope with the increasing demands placed on teachers, teacher education in Switzerland has become much more professional, characterized inter alia by university qualifications and a scientific orientation. As a result, following a comprehensive reform at the end of the 90s, teacher education in Switzerland was raised to the tertiary level. A stronger scientific emphasis was designed to enhance the value of teacher education and improve its quality – one of the prerequisites for international recognition of school-leaving certificates. Since 2002, primary and lower secondary school teachers in Switzerland have received standardized training at about 15 teacher education institutions<sup>2</sup> (see Lehmann et al., 2007); as a rule, a high school-leaving certificate is required<sup>3</sup> to take up study at these institutions. However, teacher education colleges do not generally administer entrance examinations or aptitude tests, implying that persons who meet university entrance requirements can in principle start teacher training studies immediately.

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<sup>2</sup> These teacher training institutes at the university level, in German called «Pädagogische Hochschulen», in French «Hautes écoles pédagogiques», though in Switzerland given the official English denomination «Universities of teacher education» are in this paper referred as «teacher education colleges». We use this term that is more commonly used in Anglo-Saxon countries, where the term «college» is used for higher education institutes offering bachelor's or master's degrees only in some *particular fields*.

<sup>3</sup> School-leaving examination required to enter university.

This is generally the case with Swiss institutions of higher education, which only apply entrance restrictions (*numerus clausus*) for medical studies.

Most teacher education colleges offer full time courses for future primary school-teachers, including kindergarten, and lower secondary schools, while some also offer teacher training for upper secondary schools. Students in the latter section qualify for the teaching profession but must have completed previous specialized studies - as a rule at university.

Teacher education colleges represent an additional higher education option<sup>4</sup> alongside regular universities and universities of applied sciences (*Fachhochschulen*)<sup>5</sup>. Teacher education colleges differ from other institutions of higher education in various ways. For example, today's teacher education colleges, with their vocational training mandate and institutional structure, are a type of university of applied sciences, which differ from the academic university institutions in terms of courses of study, duration of studies, scientific reputation, staff qualifications and the right to award doctoral degrees. It is open to question whether potential students interpret this to mean that scientific standards are lower at a teacher education college than at a traditional academic university.

### **3. Theoretical framework and empirical findings**

Most of the theoretical approaches to the choice of studies and career describe forms of self-selection in training-related decisions. Self-selection is influenced by not only social, cultural and economic background, but also by inclination and interest. Consequently, in the literature findings are documented from various sci-

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<sup>4</sup> In Switzerland, in addition to universities there are two Swiss Federal Institutes of Technology, which have similar profiles to universities and enjoy world-class reputations.

<sup>5</sup> Universities of applied sciences (*Fachhochschulen/Hautes écoles spécialisées*) are institutions of higher education at the tertiary level whose primary difference from universities is above all that students usually enter with vocational school qualifications. They are comparable to similar institutions in Austria, Germany, Finland or the Netherlands. Universities of applied sciences in Switzerland are not authorized to award doctoral degrees.

entific disciplines showing the mechanisms of self-selection for students or prospective students.

One of the key hypotheses that can be deduced from these approaches is that of class-specific self-selection in the choice of studies. In terms of human capital theory, class-specific choice of studies can be explained by such factors as duration of studies, direct entry into the job market (direct professional qualifications), employability and cost of studies (direct training and living costs as well as the opportunity costs of not working). In human capital theory, the expected returns on a given type of training are weighed against the costs. Individual demand for training thus depends on the individual evaluation of costs and benefits, which varies according to socio-economic position, scholastic ability, academic discipline and personal preference (see Becker, 1964; Freeman, 1986). The impact of these factors is heightened by class-specific differences in time preference. As a rule, students from lower socio-economic classes have a stronger preference for the present; therefore, they attach greater importance to financial factors when choosing their course of studies. As far as the different types of institutions of higher education in Switzerland are concerned, on the basis of duration of studies and professional qualifications, it would appear that those who opt for a teaching career tend to come from lower socio-economic classes.

Yet economic factors do not suffice to explain class-specific choice of studies. Sociological approaches explain social selectivity in choice of studies by positing that different courses of studies and careers are linked to differences in social status or power. Members of higher socio-economic classes try to avoid loss of social status for their children by means of high-status schooling and studies (see Boudon, 1973[1984]). It is unlikely that either the teaching profession or studies at a teacher education college carry the same social prestige as, for example, professions which require the study of medicine or law. It can therefore be assumed that precisely students on the verge of taking their school-leaving exams with parents who have university degrees will opt less often for teacher training, be it solely to maintain their status. In this case, it would be the self-selection into uni-



versities by children of parents with university degrees that would lead to an over-representation of students from much lower social classes in teacher education colleges.

The hypothesis of social disparities as a factor in the choice of studies is broadly borne out by recent research: various authors show that study intentions are determined by class – both choice of type of higher education institute (for example, university vs teacher education college) or academic discipline (see for example Butlin, 1999; Becker, 2000a; Becker, 2000b; Christofides et al., 2001; Deauvieu, 2005; Maazn et al., 2006 or Trautwein et al., 2006). Beginning students from academic families tend to prefer university, opt more frequently for medicine or law and less so for linguistics or teaching, and often choose longer studies (see Maaz, 2006; de Jiménez & Salas-Velasco, 2000; Schnabel & Gruehn, 2000; Watermann & Maaz, 2004). Moreover, research in Switzerland to date points to class-specific choice of a teaching career. Data from high-school students on the verge of taking their school-leaving exams in the canton of Berne showed that teaching candidates from non-academic households evinced a significantly higher propensity to choose teacher training (Denzler et al., 2005). It would therefore appear that in the new system of higher education institutions as well, teachers continue to come from lower-status social milieux.

The above-mentioned cost-benefit analysis has to be placed against the backdrop of personal interests, inclinations and abilities. Motivations and preferences, subjective importance, intrinsic value and the expected non-monetary benefits of a training course as well as the anticipated probability of success are all factors that must be taken into consideration when examining training-related decisions (for example Lent, Brown & Hackett, 1994; Eccles, 2005). Evaluations of benefits vary depending on the academic discipline (Smits, Vorst & Mellenbergh, 2002) and origin (Becker, 2000a). It can therefore be supposed that prospective teachers also differ systematically in this respect from other students. If the expected probability of success with university studies is low or if the cognitive costs are viewed as too high, the tendency to choose a teacher education college should in-

crease. Examples of negative self-selection with regard to intellectual potential may be found in Giesen & Gold, 1993, who studied the performance prerequisites of teacher education students, or Fischer, 2002. Researchers have long studied the link between cognitive performance and choice of a teaching career, particularly in the United States of America. Such studies have found a majority of evidence to support negative self-selection with regard to cognitive performance in the teaching profession (see Manski 1987; Murnane et al., 1991; Hanushek & Pace, 1995; Webbink, 1999; Stinebrickner, 2001; Podgursky, 2004). As far as the German-speaking countries are concerned, the findings are less clear-cut. Various studies describe the recruitment of teachers as a negative selection with regard to cognitive abilities (for example, Giesen & Gold, 1993 or Spinath, van Ophuysen & Heise, 2005), while others question this hypothesis. For example, Bergmann & Eder, 1994 did not find any difference in cognitive abilities between high-school graduates wishing to become teachers and others.

Analyses within the framework of the so-called TOSCA study provide indications that students who apply to teacher education colleges attach significantly less priority to a scientific orientation than students wishing to pursue university studies (Trautwein et al., 2006).

Moreover, given the majority of women in the teaching profession, it seems that this career choice is ways and means of reconciling family life and professional commitments. In this respect, teaching, with the possibility of part-time work, flexibility and free time, is ideal – a factor that probably is a key professional motive for women in particular. These aspects do not absolutely have to lead to a negative selection. However, it is open to question to what extent suitable persons are attracted to the profession, if reconciling family and career is a key factor in the choice of career.

In addition, by using matching theories (see for example Holland, 1995; Holland, 1997) or relying on economic models of social identity (see Akerlof & Kranton, 2000) it can be inferred that those interested in a teaching career are predominantly socially oriented, communicative and caring persons. Various studies on the career of teachers emphasize positive examples whereby activities in the field of youth work were a decisive factor in the choice of a teaching career. Of course, such factors are also key aspects for exercising the teaching profession, but they do not replace the need for intellectual analysis during studies at a teacher education college.

Finally, the local availability of institutions of higher education can affect the choice of studies on both economic and social grounds. The distance to the nearest university has a direct cost impact on the individual concerned. For people who live outside the catchment area of a university, opting for university studies implies added expense in the form of higher living costs from living away from home, but also non-monetary costs, such as the loss of social networks – factors which generally lower the inclination to study (see, for example, Frenette, 2006). In Switzerland, teacher education colleges are more decentralized, forming a denser network than universities. It may therefore be assumed that the preference for studying at a teacher education college is higher for people who live in the catchment area of a teacher education college but not a university. However, if students opt for a teacher training course because studying at a distance university is too complicated or expensive, we cannot assume that the choice of a teaching career is based on particularly solid factors.

#### **4. Hypotheses**

To sum up and based on the previous reflections, the following hypotheses will be empirically tested:

1. Self-selection into teaching is partly determined by origin (according to social, economic and cultural background).
  - a. Those interested in studying at a teacher education college come from lower socio-economic and cultural levels;
  - b. They evince a higher preference for the present than those interested in other courses of study and are therefore more inclined to do a short training course;
  - c. They tend to live near a teacher education college but not a (full) university offering a usual range of academic disciplines.
2. Moreover, self-selection into teaching is based on certain inclinations and interests such as lack of scientific inclination, a social orientation, a family bias and a practical bent, all of which are generally less pronounced with university students.
3. Many of the above-mentioned study and career motivations (for example the short duration of training, the practical orientation, the lack of scientific interest) are only relevant for students studying at teacher education colleges with a view to teaching at primary and lower secondary schools, but not or less so for those interested in teaching in upper secondary schools and who have to study a discipline at an academic university first. The differences should therefore be reflected by characteristics specific to institutions and careers. Although training for lower secondary schools teachers is organized by discipline, it differs from training for high-school (upper secondary school) teachers in terms of duration of studies and scientific approach. It is assumed that students wishing to teach on this level differ in terms of social background from prospective high-school teachers, but differ from prospective primary school teachers in terms of professional motivations.

As mentioned at the start, differences between students at teacher education colleges and students at academic university institutions are not relevant provided they do not defeat the purpose of such training. However, the hypothesis to be tested assumes that there are structural factors on the one hand, such as the duration of studies, which would provide an indication that students at teacher education colleges have rather decided *against* studying at another type of institute of

higher education than *for* their present studies. On the other hand, motivations are supposed, such as a lack of interest in scientific work, which more or less directly defeat the purpose of teaching training on the post secondary level. In addition, it can be inferred from the supply-induced demand (proximity to the teaching training institution) that what is involved is not so much a decision in favour of the teaching profession as a decision against academic disciplines that could only be pursued at a more distant institution of higher education.

## **5. Methodology**

For a long time, research into the motivations and professional career of teachers was geared to a socio-historical and career biographical approach (e.g. Oesterreich, 1987; Terhart et al., 1994) or focused on issues relating to professional satisfaction (for an overview, see Enzelberger, 2001). However, these studies could not make any reliable statements about a potential self-selection into teaching: first, research was often based on non-representative random samples; second, control groups were hardly ever used; and third, teachers already in the profession were sometimes surveyed and asked to justify their choice of career in hindsight. The present study attempts to systematically remedy each of these shortcomings.

### *5.1 Random sampling*

In the present study, great efforts were taken to ensure a representative random sample. Accordingly, over 1500 male and female high-school students from nine German-speaking cantons were surveyed shortly before taking the school-leaving examination to obtain their «Matura», or school-leaving diploma. This survey population therefore consists of the pool of potential candidates for teacher training and guarantees that potential teachers can be compared with people who could also have opted for teaching but decided instead to pursue another career or line of study. Furthermore, the study took place at a point in time when the majority of

students completing high school were faced with a concrete decision concerning the line of study. Thus, the evidence gathered is based not on a choice of studies already made, but on a concrete, directly desired but theoretically still open choice.

A multilevel cluster sample was designed for the survey, with systematic selection of high schools in some cantons and inclusion of all high schools in small cantons. On the second level, inside schools, individual graduating classes were chosen at random.

### *5.2 Data collection*

Data was collected in March 2006 by circulating printed questionnaires in the selected graduating classes. The survey was conducted using standardized criteria during regular school hours, under the supervision of the teachers responsible for the classes in question. This approach was intended to guarantee the highest possible data quality and relatively homogenous class samples with a low drop-out rate<sup>6</sup>. The adjusted random sample contains 1459 observations (descriptive data see in appendix 2).

All students were asked what type of career they wished to pursue and what type of training they wanted to undergo. The data contains further information concerning the person (sex, age, family circumstances, and leisure activities), socio-economic origin (education, socio-professional status and type of parental housing) and the current school situation (track chosen, marks for German, French and mathematics). In order to test the influence of the geographical proximity of available study opportunities on the choice of studies, a categorial variable was

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<sup>6</sup> Owing to missing data from schools, it was not possible to perform a non-response analysis. However, a distortion can be ruled out on account of the very low drop-out rate. In addition, classes with a response ratio of less than 0.66 due to distorted participation (absences of pupils due to other courses) were eliminated from the random sample.

introduced to represent the supply of institutions of higher education<sup>7</sup> within the canton of residence as well as a proxy variable indicating the distance to the nearest university<sup>8</sup>. In addition, predetermined items were used to collect information on various motivations, attitudes and preferences in relation to the choice of studies and career as well as general goals in life. First, the structure of motivations was examined using explorative factor analysis<sup>9</sup>. Next, four different scales for the following constructs were designed to test the hypotheses put forward: scientific inclination, practical bent, family bias and social orientation, as well as time required for studies (see overview in the appendix 1). These scales correspond basically to the most important dimensions emerged from the explorative factor analysis of the motivational structure, yet offer a more reliable and thematically more consistent interpretation of the regressions.

## 6. Empirical analysis

Complex random samples such as the cluster samples used here refute the assumption of the statistical independence of the survey units. It must be assumed that elements from the same cluster are more similar than elements from different clusters. Consequently, random sampling errors with parameter evaluation cannot be estimated using the usual standard procedure. In cluster random samples, standard estimation errors tend to rise in tandem with increases in the homogeneity of the elements within a cluster in relation to the homogeneity of the elements of different clusters. To avoid this kind of cluster effects, a corrective procedure was used with all regression analyses which factors in the structure of the available

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<sup>7</sup> A distinction was made between (a) university colleges with more than four faculties (full university as in the *universitas litterarum*); (b) university colleges with a limited number of courses on offer (less than four faculties, for example, only economics and law); and (c) teacher education colleges.

<sup>8</sup> As a proxy for the distance between the place of residence and the university, the minimum travel time using public transport between the high school and the nearest university (full university) was calculated.

<sup>9</sup> Principal component factor method with orthogonal rotation.

random sample and corrects the current estimates accordingly. In addition, weights were used to deal with differences in cluster size.

### *6.1 Descriptive statistics*

Of the 1344 high-school students on the verge of taking their school-leaving exams who provided information on their career intentions, 138 people (10.3%) expressed an interest in teaching at the pre-school, primary school or lower secondary school level (compulsory schooling). To simplify matters, these individuals are grouped together in the following section under the heading «compulsory school teaching staff». Clarifications between the various levels (primary, lower and upper secondary) are clearly stated each time. As expected, women account for a very large share (89%). Some 13% of prospective teachers have a father with a university degree, compared with 40% for their fellow students intending to pursue other lines of studies. Almost half of all prospective teachers were in a music and fine arts or in an education sciences (psychology and pedagogy) track in high school. In the following analysis, this combination of subjects was grouped together<sup>10</sup>.

The collected marks vary astonishingly little<sup>11</sup> between the profiles of the individual high-school graduates, although it is well known that the choice of track is also determined by ability and performance. We must therefore assume that marks are profile-specific, that is, information on marks is only related to the performance differences within a given track and cannot be compared between the various subject profiles at high school level. Nor is there any performance difference, when measured by the marks average between students who prefer teaching

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<sup>10</sup> This refers to the fact that these tracks (majors in music and the fine arts or the education sciences pedagogy or psychology) originated as erstwhile teaching seminars (institutes of teacher training at the upper secondary level). Even today, several high schools which used to be teacher seminaries only offer these two high-school tracks.

<sup>11</sup> The arithmetic mean of the marks in mathematics varies between 4.38 (modern languages track) and 4.54 (mathematics and natural sciences track); the mean comes to a constant 4.5 for all tracks.



and students who pursue other study goals. However, these results do not disprove the hypothesis of cognitive negative selection into teaching, as the information on marks – as set out – is hardly comparable.

## 6.2 Regression analyses

The hypotheses set out, which explain self-selection into teaching as a rational choice based on class-specific cost/benefit analyses, motivational disposition and institutional factors should be tested subsequently. The following model (1) was used as the foundation for empirical analysis:

$$y_i^T = \beta_0 + \beta_1 X_i + \beta_2 F_i + \beta_3 M_i + \beta_4 I_i + \varepsilon_i \quad (1)$$

The dependent binary variable for career wishes ( $y^T$ ) with the value of 0 for non-teachers and 1 for teachers is regressed onto a series of covariates: whereby  $X$  represents a vector of personal characteristics;  $F$  is a vector of variables relating to family origin;  $M$  is a vector of motivation-related factors;  $I$  stands for institutional factors, such as high-school education, track, and available institutions of higher education; and  $\varepsilon$  is the stochastic error term. This regression function is estimated by means of a probit model.

The differences between the various levels targeted were analysed in a second phase using multinomial logistic regression – a technique which makes it possible to simultaneously evaluate a single nominally scaled dependent variable with several non-ordered response categories.

## 6.3 Results

The results of the probit regression (compulsory school teaching staff) are shown in Table 1. The empirical model is specified step by step. The first not very surprising effect is that of the variable sex (1=female), and this effect remains throughout all specifications. Women are about three times as likely as men to opt for a teaching career at the primary and lower secondary school level.

The findings also confirm the hypothesis of a class-specific preference for teacher training. The variables relating to socio-economic background (father's educational level, mother's employment) are significant above and beyond all specifications, pointing to the previously mentioned signs: high-school students on the verge of taking their school-leaving exams with academic parents are less likely to choose a career in teaching, while students with non-working mothers are more inclined to become teachers<sup>12</sup>. This constellation of background-related variables tends to indicate that prospective teachers do not necessarily come from the low end of the social spectrum (where more women work as a rule) but rather from non-university-educated middle-class families, which continue to be characterized by a traditional division of roles between men and women. This finding is also consistent with the observation that prospective teacher education students plan less frequently to work during their studies.

Lower socio-economic status usually goes hand in hand with a stronger time preference, as expressed for example in the choice of a shorter training course. The significantly positive coefficient of the variable short studies thus indirectly bears out the hypothesis of the stronger time preference of high-school students on the verge of taking their school-leaving exams who are interested in a teacher education college. The variable represents an indicator for a preference for short studies as well as fewer demands on time during the studies. However, this effect does not appear to be only due to limited resources for higher education studies, but also to a general preference for fewer time constraints during teacher education.

*(Table 1 about here)*

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<sup>12</sup> By way of example, a female student from the canton of Zurich on the verge of taking the school-leaving examination with a non-university-educated father and a stay-at-home mother is around three times more likely to become a primary or secondary school teacher than her fellow students from an academic family (marginal effect of the variable "university-educated father": -3.5 percentage points; overall probability in this model is 5.2%).

With regard to regional differences, high-school graduates from rural cantons without a university are more likely to choose a teaching career. According to the hypothesis put forward, this is a stable pattern, not a random observation: choice of studies is influenced by the availability of institutions of higher education and the distance to the nearest university. Therefore: the greater the choice of institutions of higher education, the lower the probability that high-school graduates will be interested in teaching<sup>13</sup>. The effect is robust, as can be seen when a distance variable is further specified (see Table 1, column 5): the further the nearest university, the more likely that students will opt for a teacher education college<sup>14</sup>. Thus, differences in the availability of institutions of higher education and geographical distance to a university explain by and large the regional differences observed.

Interestingly, the effect of a music and fine arts or education sciences track in high school<sup>15</sup> is due to a certain extent to the variables of motivation-related disposition: the effect declines clearly after checking for motivational disposition but remains significant. This implies that the choice of these subjects is due on the one hand to socio-economic factors and on the other hand to the inclinations and interests of the students<sup>16</sup>. Other studies have also examined the importance of the choice of a high-school track on the choice of future studies. For example, Schnabel & Gruehn, 2000 show that the gender-specific choice of studies is also traced

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<sup>13</sup> Negative coefficient of the variable «Supply of higher education institutions at place of residence» (the variable is coded as follows: 0 = no university, 1 = limited university (fewer than 4 faculties), 2 = regular university with more than 4 faculties).

<sup>14</sup> Positive coefficient of the variable distance; the variable gives the minimum travel time (in hours) via public transport between the high school and the nearest (full) university. The effect is relatively strong: for example, if the trip to the nearest university lasts *half an hour* longer than students' average travel time of some 40 minutes, students are about one-third more likely to opt for a teacher training college (marginal effect of 3 percentage points).

<sup>15</sup> In comparison to students with a language track, high-school graduates with the music and education sciences track corresponding to the erstwhile teacher seminaries are twice as likely to opt for a teaching career.

<sup>16</sup> A probit regression of these tracks (music/fine arts; education sciences) based on a series of regressors assumed to be relevant for entry to high school portrays students with these tracks as people from families with lower social status who are primarily defined by creative and musical activities. These are persons with a clear social career orientation.

out through the choice of track in upper secondary school. Likewise, socialization- and peer effects (see for example de Giorgi, Pellizzari & Redaelli, 2007) are also relevant factors which influence the choice of studies, and it can therefore be assumed that students on the verge of taking their school-leaving exams from the different high schools with different tracks experience this “academic” socialization differently.

In addition, those who opt for a teaching career are above all people who are not interested in scientific training but who are socially inclined, action-oriented, interested in direct professional qualifications and used to working with young people, for example, as Scouts. Finally, the desire to reconcile family life and career is a relevant factor in the choice of a teaching career, as supported by earlier findings (see for example Fischer, 2002 or Denzler et al., 2005).

#### *6.4 Training-specific or occupation-specific self-selection into teaching?*

If self-selection into teaching is primarily due to occupation-specific characteristics, there should not be, as already shown, any differences between teachers at different teaching levels trained in different types of institutions. An effort was therefore made to determine whether and to what extent teachers from the different teaching levels (primary school, lower and upper secondary school) differed. The study hypotheses were tested by means of multinomial logistic regression controlling not only for sex, origin and major profile but also for motivation factors for the choice of studies and career (see Table 2).

The results of the two restricted models (1 and 2) confirm the assumptions set out at the start: the preference for teaching at the primary school or lower secondary school is above all class-specific and gender-specific. However, the significance of the gender effect disappears when the motivation-related disposition and cantonal availability of institutions of higher education are taken into consideration (in models 3 and 4), even though the sign of the coefficient points once again to women’s preference for teaching. The background effect, that is, a non-

university-educated father, remains constant for prospective teachers in lower secondary schools, and the high-school track effect can be observed with prospective primary school teachers. As expected, an interest in short studies influences the preference for teaching at the primary and lower secondary school level, for which students train at teacher education colleges. If this motivation is interpreted as an expression of a strong preference for the present, it supports the thesis of class-specific self-selection into teacher training at teacher education colleges – supplemented by the observation that lack of availability of institutions of higher education at the place of residence also pushes students to opt for a teacher education college, whereas this factor has no significant impact on the choice of study of graduates intending to teach at upper secondary level. This is a further indication that the local availability of a training institution explains some of the demand for teacher training.

The hypothesis of a stronger practical bent and a weaker scientific inclination can only be confirmed by the prospective primary school teachers, that is, teachers who follow subject-specific studies (lower and upper secondary school levels) are no different from other high-school students as far as their interest in scientific work is concerned. Finally, the motivation of family bias provides a further indication of the gender-specific aspect of decisions to become a primary school teacher.

*(Table 2 about here)*

On the whole, the findings suggest the conclusion that the decisive elements in the choice of career are largely based on training- and hence institution-specific factors; in other words, the preference for a given career comes from not only the career itself but also the characteristics of the planned studies and the institution where the studies can be undertaken in particular. The fact that the choice of studies and hence career is influenced by the institution-specific characteristics of

higher education institutions is borne out by an additional comparison of self-selection in the various tertiary institutions, between university, the Swiss Federal Institutes of Technology (ETH), universities of applied sciences and teacher education colleges (see Table 3): the choice of a teacher education college is influenced by gender- and class-specific factors. People who are less scientifically inclined and are seeking a more practical education choose the two more vocationally oriented types of institutions of higher education – universities of applied sciences and teacher education colleges. The practical bent is consistent with the approach of both types of institutions of higher education, whereas the lack of scientific inclination could be problematic in the case of studies at a teacher education college or even a university of applied sciences. Furthermore the results for people who prefer the ETH option show that there does not have to be a trade-off between a practical bent on the one hand and scientific inclination on the other hand: here, both coefficients are significantly positive (see Table 3, column 1).

*(Table 3 about here)*

## **7. Conclusion**

The present study shows that those interested in teaching in primary school or lower secondary schools differ significantly in terms of social background and gender from those studying other subjects. That we can find significant differences in social origin between those opting for teaching and those who opt for other lines of study within a relatively homogenous group of high-school graduates is surprising but not totally unexpected.

Social selectivity and gender exert a strong influence, already in the choice of a music and fine arts or education sciences track in high school. This track, combined with less pronounced scientific interest, boosts the propensity to opt for teaching at the primary or lower secondary school level. Thus, the typical high-school student who has this career goal tends to be a woman from a non-academic

family who is interested in a professional career that is socially oriented, practical and compatible with family commitments. Moreover, they perceive the primary benefit of the desired course of studies as its short duration, practical orientation and flexibility to combine family and working life. In addition to the importance of geographical proximity to a teacher education college, many of these motives argue in favour of an institution-related choice of studies and career, underscored by the fact that prospective teachers for upper secondary schools (not studying at teacher education colleges) do not differ from students studying other subjects at university as far as these factors are concerned.

In the literature, the choice of career has to date been primarily understood as a decision *for* teaching and a teaching career; however, in view of our research findings, it could also be a decision *against* alternative courses of studies or careers.

Even though the tertiarization of teaching has brought the teacher education colleges within the educational system up to a par with universities, this recently created type of higher education institution differs from universities in several respects. As a result, such differences – whether they are perceived objectively or subjectively – will lead some students to opt for a teacher education college and others to prefer university. It would therefore also be interesting to analyse whether similar results would be found in countries where teacher education is more integrated in the traditional university model.

If, as the findings tend to indicate, self-selection of teacher education colleges largely depends on institutional characteristics, it is open to question whether the creation of a new type of institution for higher education specifically for teacher education, in response to increased intellectual training and teaching demands, has indeed ensured the optimum composition of the new student population.

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## TABLES

**Table 1: Probit estimation, dependent variable: career choice teacher (compulsory schooling)**

	(1)	(2)	(3)	(4)	(5)
Gender (1=female)	0.89 (0.19)***	0.87 (0.16)***	0.53 (0.20)**	0.57 (0.19)**	0.56 (0.19)**
Father university education	-0.55 (0.18)**	-0.59 (0.15)***	-0.50 (0.16)**	-0.53 (0.17)**	-0.51 (0.17)**
Mother not working	0.37 (0.18)*	0.43 (0.18)*	0.53 (0.20)*	0.50 (0.20)*	0.51 (0.20)*
Student has to work	-0.50 (0.16)**	-0.53 (0.16)**	-0.45 (0.17)*	-0.40 (0.18)*	-0.41 (0.18)*
Mathematics/ Natural sciences track		-0.23 (0.30)	0.03 (0.34)	0.07 (0.34)	0.07 (0.34)
Economy/Law track		0.03 (0.26)	0.18 (0.28)	0.17 (0.28)	0.16 (0.28)
Music/Education sciences track		0.64 (0.13)***	0.48 (0.18)**	0.44 (0.19)*	0.43 (0.19)*
Youth work		0.14 (0.05)**	0.11 (0.04)*	0.11 (0.04)*	0.11 (0.04)*
Sports		-0.01 (0.01)	-0.03 (0.01)*	-0.03 (0.01)*	-0.03 (0.01)*
<i>Motivational Orientations</i>					
<i>Short studies</i>			0.38 (0.06)***	0.37 (0.06)***	0.37 (0.06)***
<i>Scientific orientation</i>			-0.17 (0.08)*	-0.17 (0.07)*	-0.16 (0.07)*
<i>Practical orientation</i>			0.21 (0.08)*	0.20 (0.08)*	0.20 (0.08)*
<i>Social orientation</i>			0.37 (0.09)***	0.36 (0.08)***	0.35 (0.08)***
<i>Family orientation</i>			0.26 (0.09)**	0.26 (0.10)*	0.27 (0.10)*
Regional Dummies	yes	yes	yes	no	no
Supply of HE-institutes				-0.26 (0.09)**	
Distance to University					0.01 (0.00)**
Constant	-2.05 (0.21)***	-2.38 (0.20)***	-2.61 (0.25)***	-1.96 (0.26)***	-2.52 (0.23)***
F	3.50**	10.11***	12.81***	19.65***	19.41***
x-bar*b	0.41	0.58	0.41	-0.19	0.36
N	1344	1344	1344	1344	1344

Survey probit regression using probability sampling weights; Standard errors (in parenthesis) are adjusted for clustering on school. Reference groups are High-school students from the Canton of Zurich that are in a language track

Legend: + p<.10; \* p<.05; \*\* p<.01; \*\*\* p<.001

**Table 2: Multinomial logistic regression, dependent variable: Career choice with different response categories**

	(Model 1)			(Model 2)			(Model 3)			(Model 4)		
	1	2	3	1	2	3	1	2	3	1	2	3
Gender (1=female)	2.35 (0.68)**	1.37 (0.54)*	0.44 (0.43)	2.03 (0.62)**	1.53 (0.72)*	0.28 (0.47)	1.25 (0.65)+	1.07 (0.84)	0.11 (0.53)	1.24 (0.65)+	1.00 (0.80)	0.08 (0.53)
Father university education	-1.02 (0.43)*	-1.68 (0.57)**	-0.13 (0.45)	-0.89 (0.43)*	-1.63 (0.58)**	-0.14 (0.45)	-0.52 (0.47)	-1.43 (0.58)*	-0.26 (0.41)	-0.49 (0.48)	-1.37 (0.59)*	-0.22 (0.41)
Mother not working	0.76 (0.38)+	0.56 (0.45)	-0.36 (0.41)	0.82 (0.39)*	0.60 (0.45)	-0.35 (0.40)	0.96 (0.46)*	0.74 (0.44)	-0.26 (0.41)	0.96 (0.47)*	0.73 (0.45)	-0.26 (0.41)
Mathematics/ Natural sciences track				-1.26 (0.57)*	0.68 (0.99)	-0.60 (0.54)	-0.76 (0.64)	0.99 (0.97)	-0.27 (0.56)	-0.87 (0.60)	0.80 (0.89)	-0.33 (0.57)
Economy/Law track				0.15 (0.68)	0.30 (0.69)	-0.25 (0.37)	0.45 (0.70)	0.58 (0.66)	-0.06 (0.39)	0.37 (0.69)	0.45 (0.69)	-0.11 (0.39)
Music/Education sciences track				1.33 (0.35)**	0.74 (0.41)+	-0.21 (0.40)	0.90 (0.42)*	0.46 (0.44)	-0.04 (0.39)	0.91 (0.42)*	0.48 (0.40)	-0.04 (0.38)
<i>Short studies</i>							0.65 (0.14)**	0.58 (0.20)**	-0.10 (0.22)	0.66 (0.14)**	0.60 (0.20)**	-0.10 (0.22)
<i>Scientific orientation</i>							-0.49 (0.16)**	-0.21 (0.25)	-0.22 (0.17)	-0.48 (0.17)**	-0.20 (0.26)	-0.22 (0.17)
<i>Practical orientation</i>							0.33 (0.20)	0.24 (0.26)	-0.75 (0.13)**	0.35 (0.20)+	0.26 (0.26)	-0.74 (0.13)**
<i>Social orientation</i>							0.91 (0.28)**	0.63 (0.22)**	0.36 (0.15)*	0.90 (0.29)**	0.62 (0.21)**	0.36 (0.15)*
<i>Family orientation</i>							0.56 (0.22)*	0.35 (0.26)	0.28 (0.20)	0.57 (0.22)*	0.36 (0.25)	0.28 (0.20)
Supply of HE-institutes										-0.37 (0.18)*	-0.59 (0.22)*	-0.18 (0.17)
Constant	-4.49 (0.67)***	-4.24 (0.43)***	-3.22 (0.42)***	-4.69 (0.59)***	-4.76 (0.73)***	-2.92 (0.51)***	-5.31 (0.64)**	-5.10 (0.78)**	-3.21 (0.55)**	-4.74 (0.72)**	-4.19 (0.80)**	-2.91 (0.64)**
F	F(9, 32) 2.16			F(18, 23) 3.55			F(33, 8) 23.51			F(36, 5) 13.62		
N	1344			1344			1344			1344		

1=Preschool and Primary school, 2=Secondary school I (lower secondary level), 3=Secondary school II (upper secondary level), 0=Non-Teaching occupations (base category)

Survey probit regression using probability sampling weights; Standard errors (in parenthesis) are adjusted for clustering on school. Reference groups are High-school students from the Canton of Zurich that are in a language track.

Legend: + p<.10; \* p<.05; \*\* p<.01; \*\*\* p<.001

**Table 3: Multinomial logistic regression, dependent variable:  
form of higher education institution**

	1	2	3
Gender (1=female)	-0.85 (0.26)**	0.32 (0.22)	1.94 (0.47)***
Father university education	0.39 (0.31)	-0.54 (0.30)+	-1.32 (0.42)**
Mother university education	-0.37 (0.37)	-0.74 (0.36)*	-0.98 (0.64)
Mathematics/ Natural sciences track	1.69 (0.42)***	0.64 (0.28)*	0.94 (0.77)
Economy/Law track	-1.03 (0.33)**	0.07 (0.21)	0.49 (0.50)
Music/Education sciences track	0.12 (0.43)	0.97 (0.26)***	1.30 (0.38)**
<i>Short studies</i>	-0.32 (0.19)	0.19 (0.15)	0.74 (0.18)***
<i>Scientific orientation</i>	0.59 (0.13)***	-0.52 (0.16)**	-0.59 (0.10)***
<i>Practical orientation</i>	0.46 (0.12)***	1.07 (0.18)***	0.96 (0.20)***
<i>Family orientation</i>	0.31 (0.10)**	-0.06 (0.10)	0.43 (0.21)*
<i>Social orientation</i>	-0.78 (0.12)***	-0.14 (0.18)	0.60 (0.24)*
Constant	-1.67 (0.31)***	-1.67 (0.28)***	-4.51 (0.63)***
F	F(33, 8) 23.91		
N	1271		

Survey probit regression using probability sampling weights; Standard errors (in parenthesis) are adjusted for clustering on school. Reference groups are High-school students from the Canton of Zurich that are in a language track

Response categories: 1=Swiss Federal Institute of Technology (ETH); 2=Universities of applied sciences (FHS); 3=Teacher education colleges (PH); 0=University (=base category)

Legend: + p<.10; \* p<.05; \*\* p<.01; \*\*\* p<.001

## Appendix 1: Motivational dimensions

<i>Scale</i>	<i>Example item</i>	<i>Number of items</i>	<i>Cronbach's Alpha</i>
Scientific orientation	I'm interested in scientific findings.	4	0,66
Practical orientation	I'm interested in an action-oriented, practical training.	4	0,64
Social orientation	I'm interested in a social and communicative occupation.	4	0,70
Family orientation	I'm interested in reconciling family life and career.	4	0,64
Short studies	I'm interested in rather short studies.	2	0,61
<i>Pattern Matrix*</i>		<i>FI</i>	<i>h<sup>2</sup></i>
<b>Scientific orientation</b> (variance explained: 50%)			
	I'm interested in scientific findings.	0.80	0.64
	I'm interested in having the opportunity to work scientifically.	0.78	0.60
	I can profit from my scientific and theoretical knowledge for my future occupation.	0.64	0.41
	I have a preference for theoretical and conceptual approaches.	0.58	0.34
<b>Practical orientation</b> (variance explained: 53%)			
	My career goal is a predominantly practical occupation.	0.80	0.64
	I'm interested in an action-oriented, practical training.	0.76	0.57
	I generally prefer practical exercises.	0.73	0.53
	«Learning by doing» is the best way in achieving my career goal.	0.62	0.38
<b>Family orientation</b> (variance explained: 82%)			
	I'm interested in reconciling family life and career.	0.83	0.69
	One of my aims in life is having a family with children.	0.80	0.64
	In my occupation, I'm interested in acquiring skills that are useful for future family duties.	0.68	0.46
	I care about the possibility of part-time work in my aspired occupation.	0.42	0.18
<b>Social orientation</b> (variance explained: 53%)			
	I'm interested in a social and communicative occupation.	0.80	0.65
	I'm interested in an occupation where I can care for other people.	0.75	0.56
	One of my aims in life is to advocate for community and other people.	0.72	0.52
	I consider myself being a social person.	0.64	0.41
<b>Short studies</b> (variance explained: 72%)			
	It is important for me that my studies are short.	0.85	0.72
	As to my training, I'm interested in having enough room for other activities.	0.85	0.72

\* Principal component factor analysis with orthogonal rotation (Varimax) with one-factor solutions.

## Appendix 2: Descriptive Statistics

### a) Dependent Variables

<i>Variable</i>	<i>Observations</i>	<i>Mean</i>	<i>Std.Dev.</i>
Teacher for compulsory schooling (Pre-school, primary, secondary I)	1344	0.103	0.304
Primary School Teacher (Pre-school & primary school)	1344	0.069	0.254
Lower Secondary School Teacher (Secondary I)	1344	0.034	0.180
Upper Secondary School Teacher (Secondary II)	1344	0.047	0.211

### a) Independent Variables

	Teachers (138 Obs.)		Non-Teachers (1209 Obs.)		Full sample (1459 Obs.)	
	<i>a.m.</i>	<i>s.d.</i>	<i>a.m.</i>	<i>s.d.</i>	<i>a.m.</i>	<i>s.d.</i>
Gender (1=female)	0.901	0.30	0.533	0.50	0.550	0.50
Father university education	0.133	0.34	0.400	0.49	0.375	0.48
Mother university education	0.070	0.26	0.154	0.36	0.149	0.36
Mother not working	0.342	0.48	0.226	0.42	0.231	0.42
Student has to work during studies	0.084	0.28	0.174	0.38	0.170	0.37
High school track: languages	0.298	0.46	0.358	0.48	0.351	0.48
High school track: mathematics & sciences	0.077	0.27	0.232	0.42	0.225	0.42
High school track: economics & law	0.142	0.35	0.218	0.41	0.210	0.41
High school track: music & fine arts or education sciences	0.483	0.50	0.192	0.39	0.214	0.41
Youth work (hrs. p. week)	1.357	2.47	0.527	1.71	0.579	1.76
Sports (hrs. p. week)	2.945	2.84	3.702	3.98	3.588	3.87
Music (hrs. p. week)	2.143	2.68	1.811	2.97	1.782	2.88
Supply of HE-institutions at place of residence	1.390	0.74	1.599	0.68	1.580	0.68
Distance to nearest Uni- versity (travel time in hrs.)	0.55	0.49	0.36	0.49	0.38	0.49
<i>Motivational orientations (factors)</i>						
Short studies	0.815	1.05	-0.101	0.95	-0.001	1.00
Scientific orientation	-0.578	0.85	0.060	0.99	0.020	1.00
Practical orientation	0.710	0.68	-0.064	1.00	-0.028	0.99
Social orientation	0.777	0.65	-0.070	0.97	-0.018	0.97
Family orientation	0.645	0.84	-0.116	1.02	-0.058	1.01