

Labour Market Status of Hungarian Higher-Education Graduates

by Peter Galasi

1. Introduction

This paper is intended to analyse the determinants of the labour market status of Hungarian higher-education graduates. We treat the choice of labour market status in a labour-supply framework. According to the job-search variant of labour supply models (see Devine and Kiefer 1991 for a detailed summary) the potential worker is seeking for a job, and s/he evaluates job-offers by comparing the offered wage to his/her reservation wage. If the wage offer is equal to or greater than his/her reservation wage, s/he decides to accept the offer and starts working. For some papers, wages and working hours are simultaneously evaluated (see Gørgens 2002 for an example). Classical labour supply models (Heckman 1979, Killingsworth 1983) also consider reservation wage as the main determinant of participation in the labour market, and the reservation wage function contains hours of work as an argument. Reservation wages are mostly unobserved, the researcher can get information on offered and realised wages, that are interpreted as realised wage offers. The higher the wages offered, the more likely potential workers are willing to participate in the labour market at given hours of work. Whether hours of work increase or decrease participation probability depends on actual preferences of the potential workers. Preferences might be related to either consumption/leisure trade-off, or job-stability or riskyness of labour market environment in terms of stability of income stream associated with the job, and so on.

The literature provides no clear-cut answers on how to classify persons in terms of labour market status, that is, which categories of possible labour market states are behaviourally relevant. Applied job-search papers are mainly concerned with the unemployed and it is unclear, whether the two categories of the non-employed, namely the unemployed and persons out of the labour force are behaviourally distinct or not (Clark and Summers 1982, Flinn and Heckman 1983, Tano 1991, Gönül 1992, Micklewright and Nagy 1999). In most cases, classical labour supply models dismiss the problem. Here participation decision is generally considered only to control for selectivity bias for wage and hours-of-work equations. We distinguish five labour market states: employed, self-employed, unemployed, students and inactive persons, and one of our main concerns is to check whether they behaviourally differ.

This paper is devoted to the analysis of labour market status of Hungarian higher-education graduates on the basis of the two FIDÉV samples. The first takes a picture on the September 1999 labour-market situation of young career-beginners graduated from public higher education as full-time students in 1998 (FIDÉV1). The second one describes the 2000 labour market situation of persons graduated from higher education as full-time students in 1999 (FIDÉV2). FIDÉV1 comprises only public, FIDÉV2 includes private and church-run

institutions, as well. The questionnaires of the two surveys also differ to some extent. From FIDÉV1 we can get information about foreign-language and information-technology skills of the respondents, whereas from FIDÉV2 we know whether the individuals in the sample had some in-school labour market experience and whether they were students at cost-priced or state-funded places. So as to extract most of the information from the data sets, the analysis will be done separately for the two individual samples. The pooled sample (FIDÉV12) may also prove useful since greater sample-size might provide more precise estimations. We will use the pooled sample, as well.

The next section considers main labour market status indicators for the young over the period of 1993-2000. Then the empirical specification of our model is presented. Section four and five present and summarise estimation results.

2. Labour market status of the educated young 1993-2000

The transition process has been coupled with radical changes in the labour market due to massive job-creation and –destruction. These changes have resulted in a post-transition equilibrium path characterised by relatively low levels of employment and unemployment and a high level of inactivity. Main labour market status indicators are displayed in Fig. 1 comprising four labour market states (unemployment, employment, student and inactivity rates) for the period of 1993 to 2000. The data are from CSO's labour-force surveys, and the rates are calculated for the first quarter of the given year. Labour force survey data is available from 1992 only, and 1993 is chosen as the first year to be presented for it is the worst year in terms of unemployment for the whole transition period, thus it can be interpreted as the year indicating the end of the first (transition) shock. Unemployment and employment are defined according the ILO/OECD criteria, (full-time) students and other inactives are distinguished in order to see whether increasing enrolment rates for high-schools and higher education are reflected in the data. We can see that unemployment has been continuously declining over the period, and that it went hand-in-hand with a declining, then a slowly increasing employment level. Inactivity is increasing until 1998, then it reaches a 2-2.5 percentage point lower level for the last two years of observation. The proportion of students does not exhibit considerable changes, it oscillates between 9 and 10 per cent.

The young with higher-education diploma have been better off during the period in terms of increasing returns to education. Fig. 2, reporting labour market status indicators for the young (persons aged 20-24) with college and university diploma, shows that they have mostly benefited from the restructuring of the Hungarian labour market in terms of employment and unemployment, as well. The unemployment rates for the young college-educated are lower than the national average, and the same holds for those with university diploma except for 1995 and 1996, the year(s) indicating the end of the so-called privatisation shock (see Kézdi 2002 and Kertesi and Köllő 2002). For both groups, the rate is rather increasing between 1993 and 1996, and decreasing or stagnating from 1996 to 1999, and this is accompanied by a well visible jump at the end of the period. In most of the years the employment rate for the young educated is far above the value characterising the

Hungarian labour force that remains below 50 percent over the period. As regards the college educated, it exhibits a decreasing pattern (from 82 to 64 per cent) between 1993 and 1996, then it is moving around 80 per cent (with the notable exception of 1998). The same is observed for the university educated between 1993 and 1996, they also experience growing employment opportunities for 1997 and 1998, but the value of their indicator is decreasing for the last two years of the period in consideration. The proportion of students among the young with higher-education diploma is also higher than that among the whole work force. The rate moves upward between 1993 and 1996 for both groups, then it declines over the period for the young college educated except for a slight increase from 1997 to 1998, whereas for those with university diploma it produces higher and higher values in the last two years. The differences in national rates of inactivity and the ones for the better educated young is quite striking. The value of the national indicator oscillates between 35-40 per cent, and that for the young with higher-education diploma shows a one-digit rate of inactivity for most of the years. The rate for those with university diploma declines over the whole period, the young with college degree experience a threefold increase from 1993 to 1995, and then a decrease of similar magnitude (from 12 to 4 per cent).

All in all, the young and better educated persons are more willing and have better chances to be employed and attend schools, moreover they are less likely to become unemployed and out-of-the-labour-force than the Hungarian able-bodied persons as a whole. The time patterns of their labour market status indicators is consistent with, first, the radical restructuring of the Hungarian economy (1993 to 1995-1996) coupled with stagnating overall level of employment, and, then, a slight recovery resulting in a modest growth. There are some signs that during the period of restructuring the young college educated face better employment (and unemployment) conditions than those with university degree that might be due their better practical skills learnt in school.

The distribution of our two samples by labour market status is also in line with the situation described above, as reported in Table 1, where information for the pooled sample is displayed, as well. The employment rates are above 80 per cent. Unemployment rates are about 3 percentage point lower for university graduates, they amount to 5.3 – 5.5 per cent, whereas college graduates face a 8-9 per cent high rate. The number of inactives are very low (2 to 3 per cent), and 8 (college degree) and 9-12 per cent (university degree) of individuals continue studying after having obtained a higher-education diploma. The distribution of the two samples seems very similar, implying that no significant changes occurred on the labour market between 1999 and 2000, in this respect.

3. Variables, empirical specification

The models will be estimated by multinomial logit using a five-category classification (employed, self-employed, unemployed, students, other inactives), employed being the category of reference. This variable has been produced by self-classification of the respondents, so it is unclear whether and to what extent it is consistent with the standard ILO/OECD definition. Both employees and the self-employed have regular paid work, they

might be different in their preferences vis-à-vis labour market risks (stability of the job and income) and the autonomy of work. We assume that self-employment attracts persons who are less risk-averse and consider work autonomy more valuable, that might include stronger taste for shorter hours of work. An unemployed person is willing to work at the going market wage and hours of work but actually cannot find a job. The out of the labour force status might be chosen by persons not willing to get paid work at the going market wages and hours of work. It is an empirical question whether the data would reflect any difference in the behaviour of these two groups with no paid jobs. (Full-time) student is defined as one continuing his/her study after having obtained a higher-education diploma; this might be so because s/he expects more favourable labour market conditions by investing more in her/his human capital.

Our two key explanatory variables are wages and hours of work. It is assumed that school-leavers observe the going market wages and hours of work school-leavers with the same type of education can get. Both variables are computed from the FIDÉV samples. As for the working time variable, the natural log of the average monthly hours associated with a given type of education is used. This variable can be interpreted as the expected average hours-of-work offer when entering the labour market. As regards the wage variable, the natural log of median monthly wage associated with a given level and type of education is included. It is interpreted as the expected median wage offer in case of participation. We expect negative sign for the wage variable in the case of the unemployed and inactives since higher expected wages would induce them to search or search harder for paid jobs, that is higher wages would result in lower probability of remaining jobless. The probability of becoming a student might be positively or negatively related to wages. The potential student might consider actual observed wages too low to enter the labour market, but also s/he may think that although the observed wage is quite high but s/he will be able to obtain even better wage offers due to the additional investment in human capital. In the first case, higher wages would produce lower probability of becoming student, in the second one the reverse will hold. As regards the working time variable we have no prediction, since we have no assumption on the time/consumption preferences of the different groups.

Other explanatory variables inserted in all the equations to be estimated are the level of education and the occupational concentration index. The former would show whether school-leavers with college or university diploma differ in the choice of their labour market status at given expected wages and working time. The latter would provide information on how accessibility of jobs influences the participation decision (we have seen that this variable shows the relative number of occupations accessible to potential workers with given types of education). Finally, the variable measuring that the given individual has one or two fields of studies are also included.

Equations with the variables mentioned above are estimated for FIDÉV1, FIDÉV2 and the pooled sample, as well (base model). The equation for the pooled sample includes a dummy indicating that the person is from the FIDÉV1 or the FIDÉV2 samples. That would capture the effect changes in labour market situation of graduates between 1999 and 2000 might have on the choice of labour market status.

Extended models with additional variables such as foreign language skills (speaking German and English, FIDÉV1), in-school experience and cost-priced student (FIDÉV2) will be also estimated for the individual samples.

4. Results

Table 2 displays the marginal effects for the base model. As regards wages, higher expected wage offers increase the probability of employment and decrease that of being unemployed and out of the labour force for all the three estimated equations. Choosing self-employment status are not influenced by the level of expected wages, and, in some cases, higher wages induce some graduates to study further, meaning that they expect even higher wages with additional human capital. These results seem to be robust to model specifications since almost the same conclusions are arrived at when looking at the extended model (Table 3).

More hours of work are associated with higher probability of employment and the opposite hold true of self-employment, whereas no effect can be detected for the unemployed and out of the labour force for the base model. Out of the three equations two contain positive and significant coefficient in the case of students. The extended model exhibits the same patterns except for the unemployed in FIDÉV1, where we have a negative and significant parameter estimate. These results suggest that choosing self-employment is tantamount to preferring shorter working time as compared to becoming employed. It might be that the potential employee accepts longer hours of work in return to a more stable, less risky job. It seems that longer expected hours of work motivate some graduates to postpone their labour market entry.

As regards the education variable, self-employment attracts the more educated: all the parameter estimates for both base and extended models are significant and positive. This might be interpreted that graduates with university diploma are willing to choose more risky jobs at given wages and hours of work. Almost the same pattern emerges for graduates becoming inactives, and this might be explained by differences in leisure/consumption preferences among the less or more educated. It does not come as a surprise that it is more likely that persons with college diploma become unemployed. Level of education does not have an impact on being employed. The base model produces two positive and significant estimates for students, whereas the extended model does none.

The occupational concentration index performs well in terms of the number of significant coefficients. Graduates with types of education making more occupations accessible are more likely to become self-employed and unemployed and, except for one equation, remain students. For most of the estimated models, they less probably choose the employed and the out of the labour force status. Thus “broader” types of education facilitate to enter the labour market as self-employed, and at the same time they might result in higher probability of being unemployed or studying further. “Narrower” types of education ameliorate the labour market position of graduates in terms of obtaining a job, and they produce the same effect for

graduates with low level of occupational accessibility are more likely to be outside the labour market as inactives.

Whether the graduate has one or two fields of study does not seem to considerably influence his/her labour market status; the estimations have produced many non-significant parameter estimates. The only one exception is self-employment with negative and significant coefficients for all equations. This implies that more diversified skills in terms of the number of fields lower the probability of being self-employed.

Speaking English has a significant impact on labour market status except for those out of the labour force (FIDÉV1). Graduates having foreign language skills are more likely to be self-employed and remain student, and less likely to become employed and unemployed. That means that working in a more risky environment as self-employment requires the knowledge of English, and that it is worth accumulating additional human capital for those knowing a foreign language. Speaking German does not seem to affect the labour market status of graduates.

In-school labour market experience (FIDÉV2) positively affects the probability of employment and self employment, and lowers the chances for becoming unemployed and remaining student. This suggests then that labour market experience accumulated in school is an important asset for obtaining a job. Cost-priced students (FIDÉV2) are more likely to get employed, and they remain students with lower probability, implying that higher costs of education motivate graduates from cost-priced places to have a paid job after graduation. Otherwise this variable has no effect on the choice of labour market status.

5. Summary

This paper has been devoted to the analysis of labour market status of Hungarian higher-education graduates on the basis of the two FIDÉV samples. We have used the pooled sample, as well.

When analysing the labour market position of the young with higher-education diploma we have seen that they have mostly benefited from the restructuring of the Hungarian labour market in terms of employment and unemployment over the period of 1993 to 2000. The unemployed and persons out of the labour force are underrepresented among them. The distribution of our two samples by labour market status is also in line with this situation. Employment rates are above 80 per cent, unemployment rates are about 3 percentage point lower for university graduates, they amount to 5.3 – 5.5 per cent, whereas college graduates face a 8-9 per cent high rate. The number of inactives are very low (2 to 3 per cent), and 8 (college degree) and 9-12 per cent (university degree) of individuals continue studying after having obtained a higher-education diploma. The distribution is similar for the two samples.

We have estimated multinomial logit models with using a five-category classification (employed, self-employed, unemployed, students, other inactives) in order to analyse the determinants of different labour market states.

The results show that higher expected wage offers increase the probability of employment, and, in some cases, that of remaining student. It also decreases the probability of being unemployed and out of the labour force. More hours of work are associated with higher probability of employment and lower probability of self-employment. These results suggest that the potential employee accepts longer hours of work in return to a more stable, less risky job. It also seems that longer expected hours of work motivate some graduates to postpone their labour market entry.

As for the level of education, self-employment attracts the more educated. This might be interpreted that graduates with university diploma are willing to choose more risky jobs at given wages and hours of work. Almost the same pattern emerges for graduates becoming inactives, and this might be explained by differences in leisure/consumption preferences among the less or more educated. It is more likely that persons with college diploma become unemployed.

As regards the occupational concentration index, graduates with types of education making more occupations accessible are more likely to become self-employed and unemployed and remain students. In addition, they less probably choose the employed and the out of the labour force status. Whether the graduate has one or two fields of study does not seem to considerably influence his/her labour market status; the estimations have produced many non-significant parameter estimates. The only one exception is self-employment with negative and significant coefficients for all equations. This implies that more diversified skills in terms of the number of fields lower the probability of being self-employed.

Graduates having foreign language skills are more likely to be self-employment and remain student, and less likely to become employed and unemployed. In-school labour market experience positively affects the probability of employment and self employment, and lowers the chances for becoming unemployed and remaining student. Labour market experience accumulated in school is thus an important asset for obtaining a job. Cost-priced students are more likely to get employed, and they remain students with lower probability, implying that higher costs of education motivate graduates from cost-priced places to have a paid job after graduation.

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Tables

Table1 Distribution of respondents by labour market status and highest degree (%)

| | FIDÉV1 | FIDÉV2 | FIDÉV12 |
|-------------------|--------|--------|---------|
| College degree | | | |
| Employed | 78.1 | 79.7 | 78.8 |
| Self-employed | 4.1 | 2.8 | 3.5 |
| Unemployed | 7.9 | 7.1 | 7.5 |
| Student | 7.5 | 7.7 | 7.6 |
| Other inactive | 2.4 | 2.8 | 2.6 |
| Together | 100.0 | 100.0 | 100.0 |
| Unemployment rate | 8.8 | 7.9 | 8.4 |
| Employment rate | 82.1 | 82.5 | 82.3 |
| | | | |
| University degree | | | |
| Employed | 78.9 | 75.8 | 77.6 |
| Self-employed | 5.2 | 4.7 | 4.9 |
| Unemployed | 4.7 | 4.7 | 4.7 |
| Student | 8.5 | 11.7 | 9.9 |
| Other inactive | 2.8 | 3.2 | 3.0 |
| Together | 100.0 | 100.0 | 100.0 |
| Unemployment rate | 5.3 | 5.5 | 5.3 |
| Employment rate | 84.1 | 80.4 | 82.5 |
| | | | |
| Together | | | |
| Employed | 78.4 | 78.1 | 78.3 |
| Self-employed | 4.5 | 3.5 | 4.1 |
| Unemployed | 6.6 | 6.1 | 6.4 |
| Student | 7.9 | 9.3 | 8.5 |
| Other inactive | 2.6 | 2.9 | 2.7 |
| Together | 100.0 | 100.0 | 100.0 |
| Unemployment rate | 7.4 | 6.9 | 7.2 |
| Employment rate | 82.9 | 81.7 | 82.4 |

Table 2 Determinants of labour market status. Marginal effects from multinomial logits. Base model.

A) FIDÉV1

| Employed | | | | |
|----------------------------|--------|-----------|-------|-------|
| variable | dy/dx | Std. Err | z | P> z |
| University | -0.015 | 0.010 | -1.47 | 0.141 |
| Two fields of study | 0.042 | 0.012 | 3.53 | 0.000 |
| Occupational concentration | -0.458 | 0.070 | -6.58 | 0.000 |
| Working time | 0.341 | 0.058 | 5.88 | 0.000 |
| Wage | 0.079 | 0.025 | 3.16 | 0.002 |
| Self-employed | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.016 | 0.005 | 3.05 | 0.002 |
| Two fields of study | -0.014 | 0.005 | -2.60 | 0.009 |
| Occupational concentration | 0.082 | 0.036 | 2.26 | 0.024 |
| Working time | -0.154 | 0.030 | -5.20 | 0.000 |
| Wage | 0.007 | 0.013 | 0.57 | 0.568 |
| Unemployed | | | | |
| variable | dy/dx | Std. Err. | z | P> z |
| University | -0.022 | 0.006 | -3.88 | 0.000 |
| Two fields of study | -0.001 | 0.007 | -0.20 | 0.844 |
| Occupational concentration | 0.333 | 0.045 | 7.33 | 0.000 |
| Working time | -0.066 | 0.036 | -1.84 | 0.066 |
| Wage | -0.075 | 0.016 | -4.66 | 0.000 |
| Student | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.008 | 0.007 | 1.19 | 0.236 |
| Two fields of study | -0.023 | 0.008 | -2.78 | 0.005 |
| Occupational concentration | 0.068 | 0.047 | 1.46 | 0.144 |
| Working time | -0.107 | 0.039 | -2.72 | 0.006 |
| Wage | 0.038 | 0.016 | 2.39 | 0.017 |
| Other inactive | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.012 | 0.004 | 3.27 | 0.001 |
| Two fields of study | -0.004 | 0.003 | -1.22 | 0.222 |
| Occupational concentration | -0.025 | 0.017 | -1.48 | 0.140 |
| Working time | -0.014 | 0.016 | -0.93 | 0.355 |
| Wage | -0.050 | 0.009 | -5.61 | 0.000 |

B) FIDÉV2

| Employed variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | -0.047 | 0.012 | -4.10 | 0.000 |
| Two fields of study | 0.025 | 0.013 | 1.89 | 0.058 |
| Occupational concentration | -0.374 | 0.044 | -8.54 | 0.000 |
| Working time | 0.171 | 0.081 | 2.11 | 0.034 |
| Wage | 0.074 | 0.026 | 2.82 | 0.005 |
| Self-employed variable | dy/dx | Std. Err | z | P> z |
| University | 0.016 | 0.005 | 3.00 | 0.003 |
| Two fields of study | -0.011 | 0.005 | -2.25 | 0.024 |
| Occupational concentration | 0.102 | 0.021 | 4.85 | 0.000 |
| Working time | -0.105 | 0.031 | -3.42 | 0.001 |
| Wage | -0.005 | 0.011 | -0.46 | 0.642 |
| Unemployed variable | dy/dx | Std. Err | z | P> z |
| University | -0.015 | 0.006 | -2.35 | 0.019 |
| Two fields of study | -0.016 | 0.007 | -2.34 | 0.019 |
| Occupational concentration | 0.141 | 0.025 | 5.64 | 0.000 |
| Working time | 0.025 | 0.048 | 0.52 | 0.605 |
| Wage | -0.074 | 0.015 | -4.92 | 0.000 |
| Student variable | dy/dx | Std. Err | z | P> z |
| University | 0.039 | 0.008 | 4.70 | 0.000 |
| Two fields of study | -0.003 | 0.009 | -0.29 | 0.770 |
| Occupational concentration | 0.163 | 0.032 | 5.01 | 0.000 |
| Working time | -0.084 | 0.059 | -1.42 | 0.156 |
| Wage | 0.028 | 0.018 | 1.55 | 0.122 |
| Other inactive variable | dy/dx | Std. Err | z | P> z |
| University | 0.008 | 0.005 | 1.66 | 0.096 |
| Two fields of study | 0.005 | 0.006 | 0.86 | 0.392 |
| Occupational concentration | -0.032 | 0.013 | -2.43 | 0.015 |
| Working time | -0.007 | 0.028 | -0.25 | 0.799 |
| Wage | -0.024 | 0.012 | -2.03 | 0.042 |

B) FIDÉV12

| Employed | | | | |
|----------------------------|--------|----------|--------|-------|
| variable | dy/dx | Std. Err | z | P> z |
| University | -0.034 | 0.008 | -4.42 | 0.000 |
| Two fields of study | 0.034 | 0.009 | 3.81 | 0.000 |
| Occupational concentration | -0.399 | 0.037 | -10.69 | 0.000 |
| Working time | 0.270 | 0.046 | 5.93 | 0.000 |
| Wage | 0.091 | 0.018 | 5.09 | 0.000 |
| Wave | 0.022 | 0.007 | 2.96 | 0.003 |
| Self-employed | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.015 | 0.004 | 4.27 | 0.000 |
| Two fields of study | -0.012 | 0.004 | -3.29 | 0.001 |
| Occupational concentration | 0.101 | 0.019 | 5.24 | 0.000 |
| Working time | -0.134 | 0.020 | -6.60 | 0.000 |
| Wage | 0.002 | 0.008 | 0.29 | 0.774 |
| Wave | -0.008 | 0.003 | -2.36 | 0.018 |
| Unemployed | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | -0.020 | 0.004 | -4.95 | 0.000 |
| Two fields of study | -0.009 | 0.005 | -1.95 | 0.051 |
| Occupational concentration | 0.194 | 0.022 | 8.68 | 0.000 |
| Working time | -0.034 | 0.026 | -1.29 | 0.197 |
| Wage | -0.068 | 0.010 | -6.53 | 0.000 |
| Wave | 0.000 | 0.004 | -0.11 | 0.916 |
| Student | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.021 | 0.005 | 4.12 | 0.000 |
| Two fields of study | -0.011 | 0.006 | -1.82 | 0.069 |
| Occupational concentration | 0.132 | 0.026 | 5.14 | 0.000 |
| Working time | -0.110 | 0.032 | -3.43 | 0.001 |
| Wage | 0.035 | 0.012 | 3.07 | 0.002 |
| Wave | 0.014 | 0.005 | 2.85 | 0.004 |
| Other inactive | | | | |
| variable | dy/dx | Std. Err | z | P> z |
| University | 0.018 | 0.004 | 4.75 | 0.000 |
| Two fields of study | -0.002 | 0.004 | -0.45 | 0.654 |
| Occupational concentration | -0.028 | 0.014 | -1.99 | 0.047 |
| Working time | 0.008 | 0.017 | 0.46 | 0.643 |
| Wage | -0.061 | 0.009 | -7.02 | 0.000 |
| Wave | -0.027 | 0.004 | -7.77 | 0.000 |

University: college degree = 0, university degree =1

Two fields of study: one field of study =0, two fields of study =1

Wave: FIDÉV1 sample = 0, FIDÉV2 sample =1

Source: Table A1

Table 3 Determinants of labour market status. Marginal effects from multinomial logits. Extended model

A) FIDÉV1

Employed

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | -0.010 | 0.010 | -0.97 | 0.334 |
| Two fields of study | 0.041 | 0.012 | 3.52 | 0.000 |
| Occupational concentration | -0.467 | 0.069 | -6.77 | 0.000 |
| Speaking German | -0.006 | 0.010 | -0.61 | 0.542 |
| Speaking English | -0.049 | 0.011 | -4.46 | 0.000 |
| Working time | 0.333 | 0.057 | 5.83 | 0.000 |
| Wage | 0.091 | 0.025 | 3.63 | 0.000 |

Self-employed

| | | | | |
|----------------------------|--------|-------|-------|-------|
| University | 0.014 | 0.005 | 2.70 | 0.007 |
| Two fields of study | -0.014 | 0.005 | -2.61 | 0.009 |
| Occupational concentration | 0.085 | 0.036 | 2.37 | 0.018 |
| Speaking German | -0.003 | 0.005 | -0.64 | 0.520 |
| Speaking English | 0.018 | 0.005 | 3.47 | 0.001 |
| Working time | -0.151 | 0.029 | -5.16 | 0.000 |
| Wage | 0.004 | 0.013 | 0.31 | 0.760 |

Unemployed

| variable | dy/dx | Std. Err. | z | P> z |
|----------------------------|--------|-----------|-------|-------|
| University | -0.020 | 0.006 | -3.66 | 0.000 |
| Two fields of study | -0.001 | 0.007 | -0.21 | 0.834 |
| Occupational concentration | 0.327 | 0.046 | 7.19 | 0.000 |
| Speaking German | -0.017 | 0.006 | -3.09 | 0.002 |
| Speaking English | -0.016 | 0.007 | -2.27 | 0.023 |
| Working time | -0.076 | 0.036 | -2.11 | 0.035 |
| Wage | -0.065 | 0.016 | -4.04 | 0.000 |

Student

| | | | | |
|----------------------------|--------|-------|-------|-------|
| University | 0.003 | 0.007 | 0.50 | 0.615 |
| Two fields of study | -0.022 | 0.008 | -2.78 | 0.005 |
| Speaking German | 0.080 | 0.045 | 1.77 | 0.077 |
| Speaking English | 0.027 | 0.006 | 4.34 | 0.000 |
| Occupational concentration | 0.050 | 0.006 | 7.89 | 0.000 |
| Working time | -0.091 | 0.037 | -2.45 | 0.014 |
| Wage | 0.020 | 0.015 | 1.30 | 0.192 |

Other inactive

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.013 | 0.004 | 3.32 | 0.001 |
| Two fields of study | -0.004 | 0.003 | -1.22 | 0.221 |
| Speaking German | -0.026 | 0.017 | -1.51 | 0.132 |
| Speaking English | -0.001 | 0.003 | -0.27 | 0.786 |
| Occupational concentration | -0.003 | 0.004 | -0.63 | 0.525 |
| Working time | -0.015 | 0.016 | -0.94 | 0.348 |
| Wage | -0.049 | 0.009 | -5.51 | 0.000 |

B) FIDÉV2

Employed

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | -0.042 | 0.012 | -3.60 | 0.000 |
| Experience | 0.035 | 0.011 | 3.09 | 0.002 |
| Cost-priced student | 0.034 | 0.014 | 2.32 | 0.020 |
| Two fields of study | 0.022 | 0.013 | 1.77 | 0.076 |
| Occupational concentration | -0.355 | 0.043 | -8.33 | 0.000 |
| Working time | 0.192 | 0.079 | 2.44 | 0.015 |
| Wage | 0.063 | 0.026 | 2.44 | 0.015 |

Self-employed

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.014 | 0.005 | 2.74 | 0.006 |
| Experience | 0.027 | 0.006 | 4.79 | 0.000 |
| Cost-priced student | 0.007 | 0.007 | 1.10 | 0.269 |
| Two fields of study | -0.010 | 0.004 | -2.27 | 0.023 |
| Occupational concentration | 0.096 | 0.020 | 4.79 | 0.000 |
| Working time | -0.087 | 0.030 | -2.92 | 0.004 |
| Wage | -0.008 | 0.011 | -0.79 | 0.428 |

Unemployed

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | -0.013 | 0.006 | -2.07 | 0.038 |
| Experience | -0.023 | 0.006 | -3.69 | 0.000 |
| Cost-priced student | -0.001 | 0.009 | -0.14 | 0.891 |
| Two fields of study | -0.016 | 0.007 | -2.36 | 0.018 |
| Occupational concentration | 0.139 | 0.025 | 5.60 | 0.000 |
| Working time | 0.012 | 0.047 | 0.26 | 0.792 |
| Wage | -0.069 | 0.015 | -4.60 | 0.000 |

Student

| variable | dy/dx | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.033 | 0.009 | 3.84 | 0.000 |
| Experience | -0.042 | 0.007 | -5.80 | 0.000 |
| Cost-priced student | -0.052 | 0.008 | -6.26 | 0.000 |
| Two fields of study | -0.002 | 0.009 | -0.27 | 0.785 |
| Occupational concentration | 0.155 | 0.031 | 4.99 | 0.000 |
| Working time | -0.110 | 0.056 | -1.97 | 0.049 |
| Wage | 0.036 | 0.017 | 2.11 | 0.035 |

Other inactive

| | | | | |
|----------------------------|--------|-------|-------|-------|
| University | 0.008 | 0.005 | 1.73 | 0.084 |
| Experience | 0.003 | 0.005 | 0.57 | 0.571 |
| Cost-priced student | 0.013 | 0.007 | 1.73 | 0.083 |
| Two fields of study | 0.006 | 0.006 | 1.07 | 0.286 |
| Occupational concentration | -0.035 | 0.013 | -2.69 | 0.007 |
| Working time | -0.007 | 0.027 | -0.27 | 0.791 |
| Wage | -0.022 | 0.012 | -1.90 | 0.058 |

University: college degree = 0, university degree = 1; Two fields of study: one field of study = 0, two fields of study = 1; Speaking German: no = 0, yes = 1

Speaking English: no = 0, yes = 1

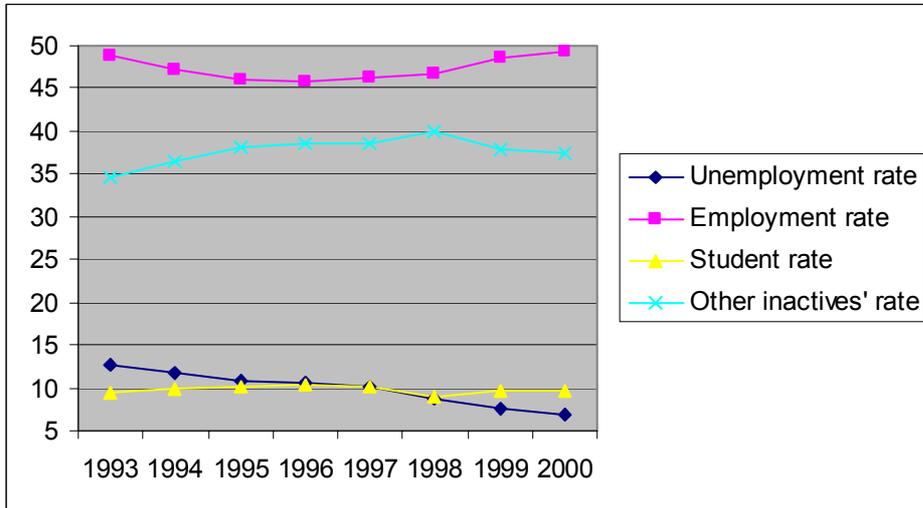
Experience: regularly working for pay during studies, no = 0, yes = 1

Cost-priced student: no = 0, yes = 1

Source: Table A2

Figures

Fig. 1 Labour market status indicators, Hungary, 1993-2000 (%)



Source: Labour force survey, Central Statistical Office, first quarter

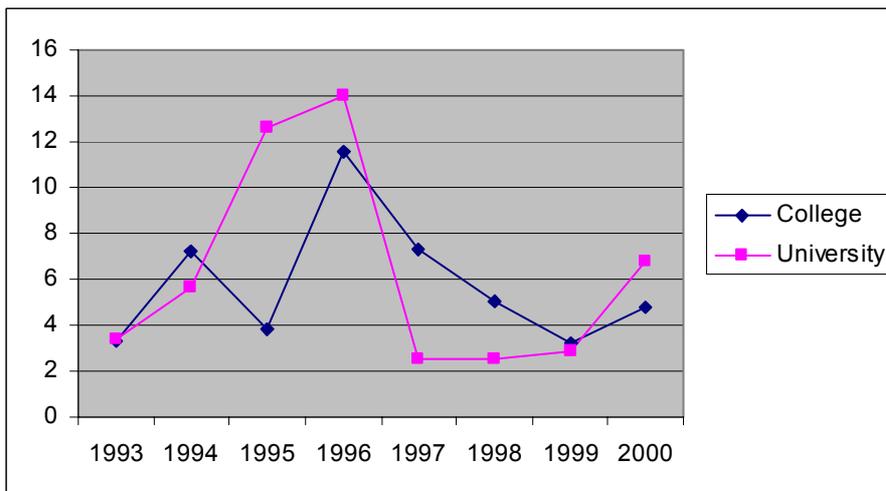
Base population: persons aged 15-74

Unemployed: ILO/OECD definition

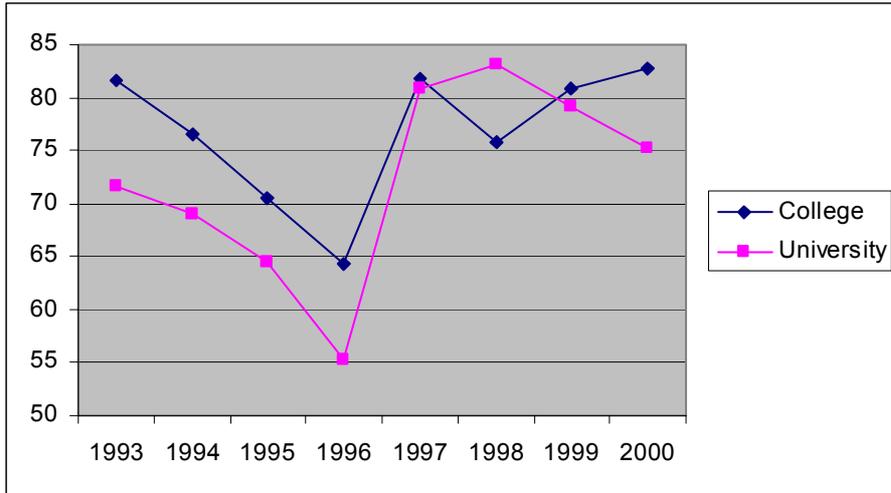
Student: full-time student

Fig. 2 Labour market status indicators for persons aged 20-24 with higher education diploma, Hungary, 1993-2000 (%)

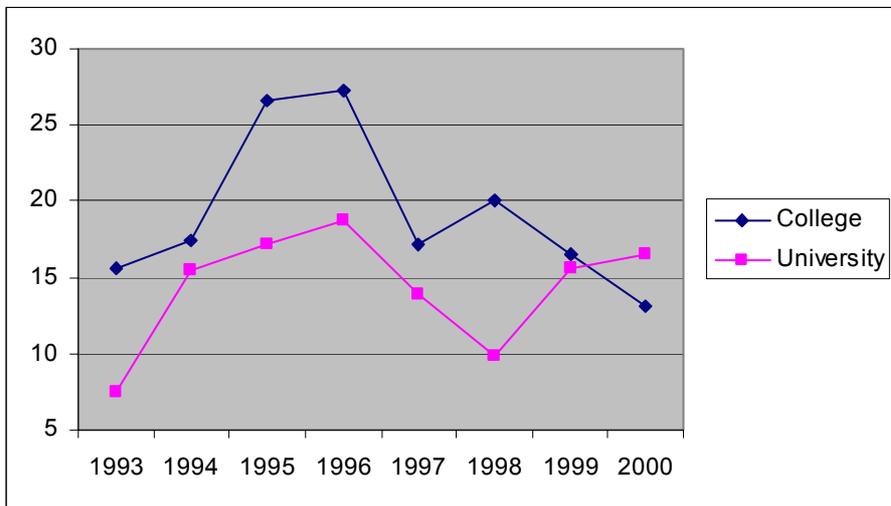
A. Unemployment rate



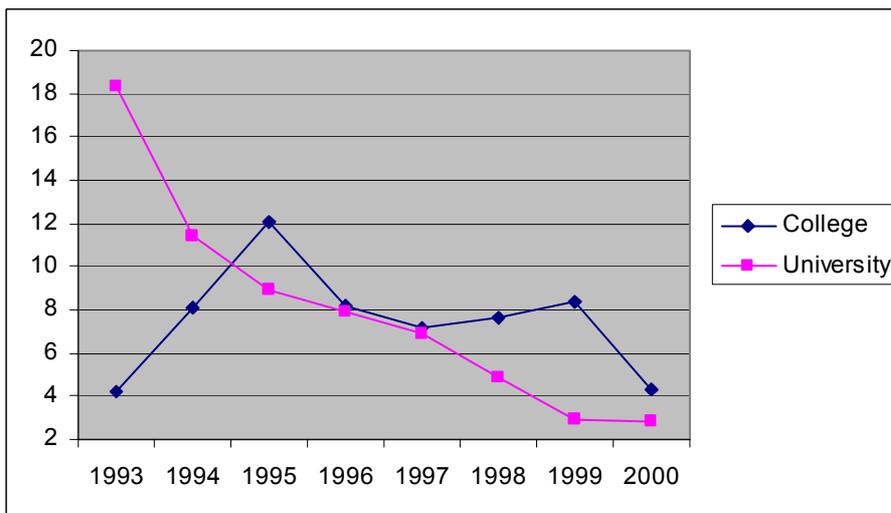
B. Employment rate



C. Students' rate



D. Other inactives' rate



Appendix

Table A1 Determinants of labour market status. Multinomial logit estimations. Base model.

| A) FIDÉV1 | | | | |
|----------------------------|---------|-----------|-------|-------|
| Self-employed | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.381 | 0.121 | 3.14 | 0.002 |
| Two fields of study | -0.414 | 0.163 | -2.54 | 0.011 |
| Occupational concentration | 2.475 | 0.892 | 2.78 | 0.006 |
| Working time | -4.009 | 0.753 | -5.32 | 0.000 |
| Wage | 0.072 | 0.315 | 0.23 | 0.818 |
| Constant | 15.006 | 3.059 | 4.91 | 0.000 |
| Unemployed | | | | |
| variable | Coeff. | Std. Err. | z | P> z |
| University | -0.361 | 0.109 | -3.33 | 0.001 |
| Two fields of study | -0.076 | 0.131 | -0.58 | 0.561 |
| Occupational concentration | 6.242 | 0.888 | 7.03 | 0.000 |
| Working time | -1.547 | 0.656 | -2.36 | 0.018 |
| Wage | -1.368 | 0.295 | -4.64 | 0.000 |
| Constant | 5.332 | 2.595 | 2.05 | 0.040 |
| Student | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.120 | 0.093 | 1.29 | 0.196 |
| Two fields of study | -0.368 | 0.135 | -2.72 | 0.007 |
| Occupational concentration | 1.435 | 0.644 | 2.23 | 0.026 |
| Working time | -1.772 | 0.542 | -3.27 | 0.001 |
| Wage | 0.380 | 0.220 | 1.73 | 0.083 |
| Constant | 4.042 | 2.333 | 1.73 | 0.083 |
| Other inactive | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.574 | 0.168 | 3.42 | 0.001 |
| Two fields of study | -0.269 | 0.194 | -1.39 | 0.165 |
| Occupational concentration | -0.626 | 0.822 | -0.76 | 0.447 |
| Working time | -1.119 | 0.764 | -1.46 | 0.143 |
| Wage | -2.478 | 0.486 | -5.10 | 0.000 |
| Constant | 11.907 | 3.336 | 3.57 | 0.000 |
| Number of obs | 7161 | | | |
| LR chi2(20) | 255.540 | | | |
| Prob > chi2 | 0.000 | | | |
| Pseudo R2 | 0.022 | | | |

B) FIDÉV2

Self-employed

| variable | Coeff. | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.534 | 0.155 | 3.45 | 0.001 |
| Two fields of study | -0.405 | 0.190 | -2.13 | 0.033 |
| Occupational concentration | 3.724 | 0.761 | 4.89 | 0.000 |
| Working time | -3.565 | 1.041 | -3.42 | 0.001 |
| Wage | -0.258 | 0.368 | -0.70 | 0.483 |
| Constant | 12.642 | 4.351 | 2.91 | 0.004 |

Unemployed

| variable | Coeff. | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | -0.209 | 0.126 | -1.66 | 0.097 |
| Two fields of study | -0.336 | 0.151 | -2.23 | 0.026 |
| Occupational concentration | 2.941 | 0.492 | 5.98 | 0.000 |
| Working time | 0.216 | 0.888 | 0.24 | 0.808 |
| Wage | -1.385 | 0.285 | -4.86 | 0.000 |
| Constant | -0.574 | 3.848 | -0.15 | 0.881 |

Student

| variable | Coeff. | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.484 | 0.097 | 5.00 | 0.000 |
| Two fields of study | -0.062 | 0.120 | -0.52 | 0.606 |
| Occupational concentration | 2.318 | 0.420 | 5.52 | 0.000 |
| Working time | -1.170 | 0.746 | -1.57 | 0.117 |
| Wage | 0.225 | 0.228 | 0.99 | 0.324 |
| Constant | 0.711 | 3.255 | 0.22 | 0.827 |

Other inactive

| variable | Coeff. | Std. Err | z | P> z |
|----------------------------|--------|----------|-------|-------|
| University | 0.338 | 0.169 | 2.00 | 0.045 |
| Two fields of study | 0.136 | 0.193 | 0.71 | 0.479 |
| Occupational concentration | -0.708 | 0.500 | -1.42 | 0.157 |
| Working time | -0.471 | 1.040 | -0.45 | 0.650 |
| Wage | -0.956 | 0.445 | -2.15 | 0.032 |
| Constant | 3.266 | 4.390 | 0.74 | 0.457 |

Number of obs

5604

LR chi2(20)

224.720

Prob > chi2

0.000

Pseudo R2

0.025

C) FIDÉV12

| Self-employed | | | | |
|----------------------------|---------|----------|-------|-------|
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.438 | 0.093 | 4.71 | 0.000 |
| Two fields of study | -0.394 | 0.123 | -3.20 | 0.001 |
| Occupational concentration | 3.243 | 0.567 | 5.72 | 0.000 |
| Working time | -3.975 | 0.596 | -6.67 | 0.000 |
| Wage | -0.051 | 0.238 | -0.21 | 0.830 |
| Wave | -0.239 | 0.094 | -2.53 | 0.011 |
| Constant | 14.858 | 2.452 | 6.06 | 0.000 |
| Unemployed | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | -0.319 | 0.081 | -3.93 | 0.000 |
| Two fields of study | -0.214 | 0.098 | -2.18 | 0.029 |
| Occupational concentration | 3.879 | 0.439 | 8.84 | 0.000 |
| Working time | -0.929 | 0.486 | -1.91 | 0.056 |
| Wage | -1.303 | 0.198 | -6.60 | 0.000 |
| Wave | -0.035 | 0.075 | -0.47 | 0.641 |
| Constant | 4.176 | 2.042 | 2.04 | 0.041 |
| Student | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.294 | 0.066 | 4.47 | 0.000 |
| Two fields of study | -0.185 | 0.089 | -2.08 | 0.038 |
| Occupational concentration | 2.119 | 0.348 | 6.10 | 0.000 |
| Working time | -1.688 | 0.432 | -3.91 | 0.000 |
| Wage | 0.316 | 0.155 | 2.04 | 0.041 |
| Wave | 0.142 | 0.065 | 2.17 | 0.030 |
| Constant | 2.990 | 1.875 | 1.60 | 0.111 |
| Other inactive | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.464 | 0.090 | 5.15 | 0.000 |
| Two fields of study | -0.089 | 0.109 | -0.81 | 0.415 |
| Occupational concentration | -0.177 | 0.361 | -0.49 | 0.624 |
| Working time | -0.145 | 0.451 | -0.32 | 0.748 |
| Wage | -1.624 | 0.235 | -6.93 | 0.000 |
| Wave | -0.703 | 0.095 | -7.38 | 0.000 |
| Constant | 5.169 | 1.983 | 2.61 | 0.009 |
| Number of obs | 13023 | | | |
| LR chi2(24) | 539.400 | | | |
| Prob > chi2 | 0.000 | | | |
| Pseudo R2 | 0.024 | | | |

Reference outcome: employed

Table A2 Determinants of labour market status. Multinomial logit estimations. Extended model.

A) FIDÉV1

| Self-employed | | | | |
|----------------------------|---------|-----------|-------|-------|
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.334 | 0.122 | 2.74 | 0.006 |
| Two fields of study | -0.415 | 0.163 | -2.55 | 0.011 |
| Occupational concentration | 2.587 | 0.895 | 2.89 | 0.004 |
| Speaking German | -0.065 | 0.118 | -0.55 | 0.581 |
| Speaking English | 0.551 | 0.169 | 3.25 | 0.001 |
| Working time | -3.965 | 0.748 | -5.30 | 0.000 |
| Wage | -0.021 | 0.317 | -0.07 | 0.948 |
| Constant | 14.644 | 3.053 | 4.80 | 0.000 |
| Unemployed | | | | |
| variable | Coeff. | Std. Err. | z | P> z |
| University | -0.349 | 0.109 | -3.20 | 0.001 |
| Two fields of study | -0.076 | 0.131 | -0.58 | 0.561 |
| Occupational concentration | 6.194 | 0.894 | 6.93 | 0.000 |
| Speaking German | -0.287 | 0.101 | -2.84 | 0.005 |
| Speaking English | -0.200 | 0.115 | -1.74 | 0.082 |
| Working time | -1.720 | 0.667 | -2.58 | 0.010 |
| Wage | -1.234 | 0.299 | -4.13 | 0.000 |
| Constant | 6.035 | 2.628 | 2.30 | 0.022 |
| Student | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.055 | 0.094 | 0.59 | 0.554 |
| Two fields of study | -0.368 | 0.136 | -2.71 | 0.007 |
| Speaking German | 1.639 | 0.652 | 2.51 | 0.012 |
| Speaking English | 0.368 | 0.092 | 4.00 | 0.000 |
| Occupational concentration | 0.874 | 0.139 | 6.27 | 0.000 |
| Working time | -1.616 | 0.536 | -3.01 | 0.003 |
| Wage | 0.153 | 0.222 | 0.69 | 0.490 |
| Constant | 3.035 | 2.325 | 1.31 | 0.192 |
| Other inactive | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.582 | 0.169 | 3.44 | 0.001 |
| Two fields of study | -0.268 | 0.194 | -1.38 | 0.167 |
| Speaking German | -0.636 | 0.822 | -0.77 | 0.439 |
| Speaking English | -0.034 | 0.156 | -0.22 | 0.826 |
| Occupational concentration | -0.058 | 0.185 | -0.31 | 0.755 |
| Working time | -1.117 | 0.765 | -1.46 | 0.144 |
| Wage | -2.464 | 0.488 | -5.05 | 0.000 |
| Constant | 11.913 | 3.340 | 3.57 | 0.000 |
| Number of obs | 7161 | | | |
| LR chi2(28) | 333.600 | | | |
| Prob > chi2 | 0.000 | | | |
| Pseudo R2 | 0.029 | | | |

B) FIDÉV2

| Self-employed | | | | |
|----------------------------|---------|----------|-------|-------|
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.504 | 0.161 | 3.13 | 0.002 |
| Experience | 0.741 | 0.149 | 4.98 | 0.000 |
| Cost-priced student | 0.192 | 0.203 | 0.95 | 0.343 |
| Two fields of study | -0.408 | 0.191 | -2.14 | 0.033 |
| Occupational concentration | 3.726 | 0.771 | 4.83 | 0.000 |
| Working time | -3.220 | 1.077 | -2.99 | 0.003 |
| Wage | -0.364 | 0.373 | -0.98 | 0.329 |
| Constant | 10.997 | 4.519 | 2.43 | 0.015 |
| Unemployed | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | -0.192 | 0.129 | -1.49 | 0.136 |
| Experience | -0.487 | 0.139 | -3.50 | 0.000 |
| Cost-priced student | -0.062 | 0.164 | -0.38 | 0.703 |
| Two fields of study | -0.336 | 0.151 | -2.22 | 0.026 |
| Occupational concentration | 2.909 | 0.493 | 5.91 | 0.000 |
| Working time | -0.018 | 0.891 | -0.02 | 0.984 |
| Wage | -1.302 | 0.288 | -4.52 | 0.000 |
| Constant | 0.444 | 3.859 | 0.12 | 0.908 |
| Student | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.430 | 0.099 | 4.34 | 0.000 |
| Experience | -0.600 | 0.116 | -5.16 | 0.000 |
| Cost-priced student | -0.861 | 0.188 | -4.59 | 0.000 |
| Two fields of study | -0.058 | 0.121 | -0.48 | 0.634 |
| Occupational concentration | 2.301 | 0.421 | 5.47 | 0.000 |
| Working time | -1.560 | 0.740 | -2.11 | 0.035 |
| Wage | 0.360 | 0.228 | 1.57 | 0.115 |
| Constant | 2.436 | 3.224 | 0.76 | 0.450 |
| Other inactive | | | | |
| variable | Coeff. | Std. Err | z | P> z |
| University | 0.354 | 0.176 | 2.02 | 0.044 |
| Experience | 0.054 | 0.173 | 0.31 | 0.756 |
| Cost-priced student | 0.364 | 0.213 | 1.71 | 0.087 |
| Two fields of study | 0.185 | 0.194 | 0.95 | 0.341 |
| Occupational concentration | 0.877 | 0.506 | -1.73 | 0.083 |
| Working time | 0.511 | 1.058 | -0.48 | 0.629 |
| Wage | 0.898 | 0.452 | -1.99 | 0.047 |
| Constant | 3.264 | 4.463 | 0.73 | 0.465 |
| Number of obs | 5589 | | | |
| LR chi2(28) | 333.940 | | | |
| Prob > chi2 | 0.000 | | | |
| Pseudo R2 | 0.037 | | | |

Reference outcome: employed