

Occupational Mobility after Apprenticeship in Switzerland

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Structure of the presentation

- Motivation
- Research Questions
- Theory
- Estimation Strategy
- The data
- Results
- Summary, Conclusion

Challenges for the model of dual apprenticeship training:

- Structural changes on the labour market (tertiarisation, technological change)
- Training activities of firms not necessarily correspond to the demand for skilled workers
- ➔ Is dual apprenticeship training too specific compared to other forms of education? Does it impose too heavy barriers to occupational mobility (unemployment / negative wage consequences for those who are forced to change occupation) ?

- Incidence and determinants of occupational changes after apprenticeship graduation?
- Wage-effects of occupational change?
- Different patterns for dual trained apprentices and fulltime vocational school graduates?

Data Source: TREE (TRansition from Education to Employment),

→ PISA2000 cohort, yearly survey up to 7 waves after PISA

Relevant sample:

- PISA2000, TREE t1-t5
- Apprenticeship graduates, N=2006
- Job within one year after graduation: N=1333
- Wage information: N=1049

Variables:

- information on apprenticeship: dual/full-time, training occupation, final grade of apprenticeship, professional baccalaureate, size of training firm, satisfaction, several assessments
- information on transition/jobs: wages, current occupation, firm size
- individual background variables: socio-economic index, PISA-test-scores, compulsory school level, migration status, sex, regional information

Definition of occupational change:

- Learned (training) occupation
 - Occupation in job after 1 year
- } coded according to the Swiss
Occupation Classification (SBN)

Change if *learned occupation* not equal to *job occupation*
at the 2-digit level of SBN (39 categories of occupations)

The data (III): Activity one year after graduation

Sample: All apprenticeship training graduates	N=2006	100%	
Transition to Employment	1333	66.1%	100.0%
Same occupation	1202	59.9%	90.2%
Different occupation	131	6.5%	9.8%
Transition to other status	673	33.9%	100.0%
Still in education	372	18.1%	55.3%
language study, travelling	77	3.8%	11.4%
Unemployed	141	6.9%	21.0%
Military Service	83	4.6%	12.3%

Descriptive and multivariate (multinomial logit) results show:

- Fulltime vocational school graduates are less likely to work, more likely to do further education, and more likely to be unemployed than dual trained ones

Data (IV): Type of training and incidence of occupational change



	<i>All Graduates</i>	<i>Workers</i>	<i>Occupational Change</i>
Full-time vocational school	0.18	0.10	27%
Dual: Firm-Stayer	0.29	0.43	2%
Dual: Not Firm-Stayer	0.53	0.47	13%
	1	1	9.8%

Results: mobility decision

	↓	↓
<i>Probit occupational change</i>	(1)	(2) [dual]
Full-time school	0.128*	
Dual trained firm stayer	-0.113**	-0.115**
BM1	-0.006	0.003
BM2	0.019	0.031
Final grade	-0.036	-0.060*
Test-Score PISA	-0.011	0.002
Soc-ec. Background	0.004	0.003
Unemployment rate in Occ./Region	0.016*	0.013*
General Satisfaction with education	-0.011	-0.007
Perceived perspectives		-0.034**
Female	-0.048**	-0.037*
Age16 at PISA 2000	-0.016	0.011
Immigrant (EU)	-0.021	-0.041
Immigrant (Other)	0.006	0.002
French speaking part	-0.046*	-0.023
Italien speaking part	-0.020	0.039
High-level compulsory school	0.036	0.014
<i>Training Occupation</i>	YES	YES
<i>Size of Training firm</i>		YES
N	1317	1165
pseudo R-sq	0.196	0.237

+ p<0.10, * p<0.05, ** p<0.01

Results: wage effects

	↓ OLS (all) ↓	↓ OLS (without firm-stayers)
Occupational Change	-0.031*	-0.040*
Full-time school	-0.033*	-0.032+
Dual trained firm stayer	0.017+	0.014
Occ-Change * stayer		0.083+
Occ-Change * full-time school		0.004
BM1	-0.005	-0.004
BM2	0.053*	0.052*
Final grade	-0.005	-0.004
Test-Score PISA	0.016**	0.016**
Soc-ec. Background	0.004	0.004
Female	-0.028**	-0.027**
Age16 at PISA 2000	0.020*	0.021*
Immigrant (EU)	0.013	0.014
Immigrant (Other)	0.002	0.000
French speaking part	0.007	0.006
Italien speaking part	-0.095**	-0.094**
High-level compulsory school	-0.009	-0.009
<i>Training Occupation</i>	YES	YES
<i>Size of current firm</i>	YES	YES
Constant	3.180**	3.177**
N	1049	1049
R-sq	0.302	0.304

+ p<0.10, * p<0.05, ** p<0.01

Results: wage effects

	OLS (all)		OLS (without firm-stayers	Treatment Effect	
				ln(wage)	Occ.Change
Occupational Change	-0.031*	-0.040*	-0.034*	-0.139*	
Full-time school	-0.033*	-0.032+	-0.047*	-0.026	0.940**
Dual trained firm stayer	0.017+	0.014			
Occ-Change * stayer		0.083+			
Occ-Change * full-time school		0.004			
BM1	-0.005	-0.004	0.003	0.002	-0.014
BM2	0.053*	0.052*	0.047+	0.038	-0.956
Final grade	-0.005	-0.004	-0.019	-0.029	-0.581*
Test-Score PISA	0.016**	0.016**	0.022*	0.018*	-0.141
Soc-ec. Background	0.004	0.004	0.014+	0.012+	-0.064
Female	-0.028**	-0.027**	-0.027+	-0.039*	-0.497*
Age16 at PISA 2000	0.020*	0.021*	0.016	0.014	-0.063
Immigrant (EU)	0.013	0.014	0.005	0.018	0.612
Immigrant (Other)	0.002	0.000	0.001	-0.007	-0.623
French speaking part	0.007	0.006	0.010	0.000	-0.402+
Italien speaking part	-0.095**	-0.094**	-0.077**	-0.078**	0.017
High-level compulsory school	-0.009	-0.009	-0.013	-0.004	0.444+
<i>Training Occupation</i>	YES	YES	YES	YES	YES
<i>Size of current firm</i>	YES	YES	YES	YES	YES
Constant	3.180**	3.177**	3.239**	3.303**	2.350+
Perceived perspectives					-0.768**
Lambda					0.063 (t= 1.64)
Rho					0.491
N	1049	1049	522	522	
R-sq	0.302	0.304	0.284		

+ p<0.10, * p<0.05, ** p<0.01

- Higher probability to change occupation for:
 - graduates of full-time vocational schools
 - males
 - those with lower final grades
 - those with lesser prospects in occupation (unemployment rate, perceived perspectives).
- On average, changing occupation is associated with a (small) wage loss, but OLS estimates seem to be upward biased.
- Accounting for endogeneity -> higher wage penalty.
- No evidence so far that full-time school graduates fare better than dual-trained apprentices when changing occupation.
- ➔ Lower incidence of occupational change for dual-trained apprentices is not evidence that they suffer more from limited mobility than full-time school graduates (duals also have a lower unemployment risk and higher wages).

THANKS FOR YOUR ATTENTION

The data (IV): Variable description

Characteristics of apprenticeship / first job (mean)		all	workers
Full-time vocational school	[0,1]	0.184	0.097
Prof. baccalaureate during apprenticeship (BM1)	[0,1]	0.173	0.182
Prof. baccalaureate after apprenticeship (BM2)	[0,1]	0.048	0.038
Firm-Stayer	[0,1]	0.298	0.476
Duration of apprenticeship training: 2 years	[0,1]	0.078	0.082
Duration of apprenticeship training: 4 years	[0,1]	0.237	0.221
Final Grade (Score) of apprenticeship graduation	[4;6]	4.809	4.815
Training occupation (26 dummies)	[0,1]	---	---
Firm size of training firm (7 dummies)	[0,1]	---	---
Vocational school intensity of training occupation (3 dummies)	[0,1]	---	---
Net costs (3 dummies)	[0,1]	---	---
Unemployment rate in occupation	[0;15.4]	3.679	3.596
Firm size of current firm (7 dummies)	[0,1]	---	---
Log (gross hourly wage)	[2.303; 3.688]	---	3.122

The data (IV): Variable description (ff)

Individual Background variables and attitudes (mean)		all	workers
PISA test score	[196.6;741.9]	506.0	502.9
Socio-economic background (isei)	[16;90]	46.5	45.5
Female	[0,1]	0.539	0.565
Age 16 at PISA 2000	[0,1]	0.238	0.261
Immigrant (EU)	[0,1]	0.097	0.089
Immigrant (others)	[0,1]	0.085	0.089
High level of compulsory school track	[0,1]	0.776	0.747
Language region: French speaking part of	[0,1]	0.324	0.255
Language region: Italian speaking part of CH	[0,1]	0.111	0.094
General satisfaction with education	[1;7]	5.453	5.502
Perceived perspectives in occupation	[1;4]	3.133	3.175

The data (III): the sample

Sample: All apprenticeship training graduates	N=2006	100%	
Transition to Employment	1333	66.1%	100%
Same oppcuation; same firm (dual trained)	563	27.9%	42.2%
Same oppcuation; different firm (dual trained)	545	27.0%	40.9%
Same occupation; first firm (fulltime school)	94	4.7%	7.1%
Other occupation; same firm (dual trained)	10	0.5%	0.8%
Other occupation; different firm (dual trained)	86	4.3%	6.5%
Other occupation; first firm (fulltime school)	35	1.7%	2.6%
Transition to other status	673	33.9%	100%
Still in education	372	18.1%	55.3%
language study, abroad	77	3.8%	11.4%
Unemployed	141	6.9%	21.0%
Military Service	83	4.6%	12.3%

} 91.1%
 } 9.9%

Results: mobility decision

Probit occupational change	(1)	(2) [dual]	(3) [dual]
Full-time school	0.128*		
Dual trained firm stayer	-0.113**	-0.115**	-0.111**
BM1	-0.006	0.003	0.004
BM2	0.019	0.031	0.034
Final grade	-0.036	-0.060*	-0.055*
Test-Score PISA	-0.011	0.002	-0.001
Soc-ec. Background	0.004	0.003	0.001
medium vocational school intensity			-0.019
high vocational school intensity			0.007
medium net-cost/benefit training			-0.000
high net-costs training			-0.061*
Training duration: 2 years			-0.005
Training duration: 4 years			-0.013
Unemployment rate in Occ./Region	0.016*	0.013*	0.015*
General Satisfaction with education	-0.011	-0.007	-0.010
Perceived perspectives in Occ.		-0.034**	-0.032**
Female	-0.048**	-0.037*	-0.018
Age16 at PISA 2000	-0.016	0.011	0.010
Immigrant (EU)	-0.021	-0.041	-0.036
Immigrant (Other)	0.006	0.002	0.010
French speaking part	-0.046*	-0.023	-0.019
Italien speaking part	-0.020	0.039	0.035
High-level compulsory school	0.036	0.014	0.013
<i>Training Occupation</i>	YES	YES	8 Groups
<i>Size of Training firm</i>		YES	YES
N	1317	1165	1165
pseudo R-sq	0.196	0.237	0.201



+ p<0.10, * p<0.05, ** p<0.01

Results: mobility decision

<i>Probit occupational change</i>	(4)	(5)	(4) [dual]	(5) [dual]
Full-time school	0.128*	0.154**		
Dual trained firm stayer	-0.113**	-0.111**	-0.115**	-0.111**
BM1	-0.006	-0.002	0.003	0.004
BM2	0.019	0.030	0.031	0.034
Final grade	-0.036	-0.040	-0.060*	-0.055*
Test-Score PISA	-0.011	-0.012	0.002	-0.001
Soc-ec. Background	0.004	0.004	0.003	0.001
medium vocational school intensity		-0.005		-0.019
high vocational school intensity		0.025		0.007
medium net-cost/benefit training		-0.004		-0.000
high net-costs training		-0.070*		-0.061*
Training duration: 2 years		0.005		-0.005
Training duration: 4 years		-0.042+		-0.013
Unemployment rate in Occ./Region	0.016*	0.015+	0.013*	0.015*
General Satisfaction with education	-0.011	-0.013+	-0.007	-0.010
Perceived perspectives			-0.034**	-0.032**
Female	-0.048**	-0.030+	-0.037*	-0.018
Age16 at PISA 2000	-0.016	-0.012	0.011	0.010
Immigrant (EU)	-0.021	-0.021	-0.041	-0.036
Immigrant (Other)	0.006	0.006	0.002	0.010
French speaking part	-0.046*	-0.039*	-0.023	-0.019
Italian speaking part	-0.020	-0.006	0.039	0.035
High-level compulsory school	0.036	0.035	0.014	0.013
<i>Training Occupation</i>	YES	8 Groups	YES	8 Groups
<i>Size of Training firm</i>			YES	YES
N	1317	1317	1165	1165
pseudo R-sq	0.196	0.177	0.237	0.201

+ p<0.10, * p<0.05, ** p<0.01

Results: wage regression [ln(wage)]

	OLS (without	Treatment Effect Model 1		Treatment Effect Model 2	
	firm-stayers	ln(wage)	Occ.Change	ln(wage)	Occ.Change
Occupational Change	-0.034*	-0.139*		-0.212**	
Full-time school	-0.047*	-0.026	0.940**	-0.013	0.926**
BM1	0.003	0.002	-0.014	0.003	-0.023
BM2	0.047+	0.038	-0.956	0.032	-0.733
Final grade	-0.019	-0.029	-0.581*	-0.037	-0.515+
Test-Score PISA	0.022*	0.018*	-0.141	0.016	-0.236*
Soc-ec. Background	0.014+	0.012+	-0.064	0.011	-0.049
Female	-0.027+	-0.039*	-0.497*	-0.047*	-0.543**
Age16 at PISA 2000	0.016	0.014	-0.063	0.015	-0.033
Immigrant (EU)	0.005	0.018	0.612	0.028	0.553
Immigrant (Other)	0.001	-0.007	-0.623	-0.013	-0.584
French speaking part	0.010	0.000	-0.402+	-0.007	-0.525*
Italien speaking part	-0.077**	-0.078**	0.017	-0.077**	-0.256
High-level compulsory school	-0.013	-0.004	0.444+	0.002	0.533*
<i>Training Occupation</i>	YES	YES	YES	YES	YES
<i>Size of current firm</i>	YES	YES	YES	YES	YES
Constant	3.239**	3.303**	2.350+	3.356**	2.802*
Perceived perspectives			-0.768**		
Liking the work/tasks in occ.					-0.435**
Lambda			0.063 (t= 1.64)		0.106**
Rho			0.491		0.775
N	522	522		522	
R-sq	0.284				

+ p<0.10, * p<0.05, ** p<0.01

Results: mobility decision

<i>Probit occupational change</i>	(4)	(4) [dual]	(5) [dual]
Full-time school	0.128*		
Dual trained firm stayer	-0.113**	-0.115**	-0.111**
BM1	-0.006	0.003	0.004
BM2	0.019	0.031	0.034
Final grade	-0.036	-0.060*	-0.055*
Test-Score PISA	-0.011	0.002	-0.001
Soc-ec. Background	0.004	0.003	0.001
medium vocational school intensity			-0.019
high vocational school intensity			0.007
medium net-cost/benefit training			-0.000
high net-costs training			-0.061*
Training duration: 2 years			-0.005
Training duration: 4 years			-0.013
Unemployment rate in Occ./Region	0.016*	0.013*	0.015*
General Satisfaction with education	-0.011	-0.007	-0.010
Perceived perspectives in Occ.		-0.034**	-0.032**
Female	-0.048**	-0.037*	-0.018
Age16 at PISA 2000	-0.016	0.011	0.010
Immigrant (EU)	-0.021	-0.041	-0.036
Immigrant (Other)	0.006	0.002	0.010
French speaking part	-0.046*	-0.023	-0.019
Italian speaking part	-0.020	0.039	0.035
High-level compulsory school	0.036	0.014	0.013
<i>Training Occupation</i>	YES	YES	8 Groups
<i>Size of Training firm</i>		YES	YES
N	1317	1165	1165
pseudo R-sq	0.196	0.237	0.201

+ p<0.10, * p<0.05, ** p<0.01

Excurs: the transition process

Multinomial Logit model for status after apprenticeship

	↓ Job	Education	Travelling	↓ Unemployed
Full-time school	-0.349**	0.284**	0.002	0.063*
Full-time school incl. BM	-0.343**	0.312**	0.044+	-0.013
Dual trained with BM1	-0.058+	0.054+	0.015	-0.011
Dual trained with BM2	-0.201**	0.234**	-0.003	-0.030
Final grade	0.035	0.063*	-0.010	-0.088**
Test-Score PISA	-0.026+	0.017	0.010	-0.001
Soc-ec. Background	-0.025*	0.024*	0.010*	-0.009
Training duration: 2 years	-0.183**	0.155**	-0.009	0.038
Training duration: 4 years	0.049	-0.011	-0.019	-0.019
General Satisfaction with education	0.022*	0.003	-0.007+	-0.018**
Female	0.037+	-0.023	0.005	-0.019
Age16 at PISA 2000	0.023	-0.020	0.007	-0.010
Immigrant (EU)	0.108*	-0.092**	-0.026+	0.010
Immigrant (Other)	-0.108*	0.090*	-0.013	0.031
French speaking part	-0.172**	0.137**	0.012	0.022
Italien speaking part	-0.147**	0.066*	0.030	0.051*
High-level compulsory school	0.007	-0.031	0.022	0.002
Training Occupations (SBN 1-digit):	YES	YES	YES	YES
N	1923			
pseudo R-sq	0.152			

+ p<0.10, * p<0.05, ** p<0.01, average marginal effects