

# 1 Descriptive Statistics

The following section presents some interesting descriptive features of the data set. We provide complete summary statistics in Appendix A.

Timing and educational choice after dissolutions of apprenticeship contracts are similar to previous studies. A majority of contracts was dissolved during the first year of the apprenticeship (63%). Late dissolutions (3rd and 4th year) are quite uncommon. Nearly 80 % of all youths decided to continue their education, but one fifth decided to quit the educational system and work as unskilled workers or end up unemployed.

We find a familiar descriptive result with respect to previous level of schooling:<sup>1</sup> the higher it is, the lower is the youths' risk of dropping out of the schooling system. While more than 40% of teenagers without any school-leaving certificate dropped out, only 6% of the ones holding an *Abitur* did so. Inversely, they chose much more often to upgrade, probably also due to the fact that they are the only ones among the respondents who can enter university directly.

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<sup>1</sup>The German schooling system tracks pupil into three different schools after 4 or 6 years of primary school. The lower secondary school (*Hauptschule*) lasts 5 years while the middle secondary school (*Realschule*) lasts 6 years and the upper secondary school (*Gymnasium*) lasts either 8 or 9 years and pupils graduate with an *Abitur*. The latter is the only type of school whose graduates are allowed to study at a university. However, there are also various possibilities to gain a *Fachabitur* (that allows its holders to study only in a certain field) or *Fachhochschulreife* (in order to study at a polytechnic) outside the *Gymnasium*.

Table 1: Choice by prior level of schooling

	None	Hauptschule	Realschule	Fachabitur	Abitur
Changers	55.17%	71.69%	79.09%	78.72%	67.53%
Upgraders	3.45%	2.25%	6.46%	11.7%	26.62%
Dropouts	41.38%	26.06%	14.44%	9.57%	5.84%
<i>n</i>	58	756	727	94	154

There are also remarkable differences for youths in apprenticeship with different training durations. Those in two-year apprenticeships are much more likely to drop out as opposed to change than those in three-year and longer apprenticeships. The numbers for upgraders are quite similar for all three different apprenticeship durations.

Table 2: Choice by apprenticeship duration

	2 years	3 years	3.5 years
Changers	55.83%	73.55%	71.74%
Upgraders	7.5%	7.35%	7.25%
Dropouts	36.67%	19.1%	21.01%
<i>n</i>	120	1361	138

Finally, a look at the choice of terminating youths depending on the timing of their termination of contract shows that the early terminations seem to be less problematic than the late ones: while only 16% of the terminations during probation time led to a dropout, 37% of the terminations during the third year did so. This result is mirrored by the development of changing behavior, which decreases heavily for the later terminations. This shows that time seems to matter crucially for educational choices.

Table 3: Choice by Timing

	Probation	First year	Second year	Third year	Fourth year
Changers	74.39%	76.03%	77.13%	60.13%	40.00%
Upgraders	9.42%	7.39%	3.74%	2.61%	6.67%
Dropouts	16.20%	16.58%	19.13%	37.25%	53.33%
<i>n</i>	531	609	481	153	15

As already mentioned, the data set contains information on the regional origin of respondents, and patterns of behavior across the regions vary remarkably. The following table summarizes the inter-regional differences.

Table 4: Choice by Region of Origin

	Aachen	Augsburg	Darmstadt	Flensburg
Changers	73.05%	78.50%	61.36%	77.38%
Upgraders	5.39%	5.21%	11.36%	4.76%
Dropouts	21.56%	16.29%	27.27%	17.86%
<i>n</i>	167	307	44	168
	Frankfurt/O.	Freiburg	Gera	Karlsruhe
Changers	77.98%	77.84%	84.85%	76.64%
Upgraders	4.59%	11.98%	3.03%	6.54%
Dropouts	17.43%	10.18%	12.12%	16.82%
<i>n</i>	109	167	33	107
	Kiel	Krefeld	Leipzig	Osnabrueck
Changers	70.80%	59.78%	79.37%	78.02%
Upgraders	5.47%	12.85%	6.35%	2.2%
Dropouts	23.72%	27.37%	14.29%	19.78%
<i>n</i>	274	179	63	91
	Rostock	Entire Sample		
Changers	75.00%	74.18%		
Upgraders	3.75%	6.6%		
Dropouts	21.25%	19.23%		
<i>n</i>	80	1789		

Dropout rates are highest in Darmstadt and Rostock, while they are lowest in Freiburg and Gera. The size of regional labor markets could provide an explanation for the different dropout rates. We will test this hypothesis in the empirical part of our paper.

## A Complete Summary Statistics

Table 5: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	<i>n</i>
1 = non-native parents	0.0786	0.2692	0	1	1789
appr.wage/wage for unskilled worker	0.3210	0.0912	0	0.7893	1059
1 = boy in occupation with more than 60% females	0.2243	0.4172	0	1	1789
1 = girl in occupation with more than 60% males	0.2095	0.4070	0	1	1789
1 = no school leaving certificate	0.0324	0.1772	0	1	1789
1 = Realschule graduate	0.4107	0.4921	0	1	1789
1 = Fachabitur holder	0.0522	0.2225	0	1	1789
1 = Gymnasium graduate	0.0858	0.2801	0	1	1789
1 = contract termination in business-related occupation	0.3018	0.4592	0	1	1789
1 = contract termination in crafts occupation	0.2820	0.4501	0	1	1789
1 = contract termination in technical occupation	0.2380	0.4260	0	1	1789
1 = firm size between 10 and 49 employees	0.3458	0.4758	0	1	1789
1 = firm size between 50 and 99 employees	0.1028	0.3038	0	1	1789
1 = firm size between 100 and 499 employees	0.0935	0.2912	0	1	1789
1 = firm size over 500 employees	0.0671	0.2502	0	1	1789
1 = bad prospects as a reason for termination	0.0439	0.2051	0	1	1789
1 = bad income prospects as a reason for termination	0.0616	0.2404	0	1	1789
1 = bad career prospects as a reason for termination	0.0439	0.2051	0	1	1789
1 = exam nerves as a reason for termination	0.0379	0.1911	0	1	1789
1 = financial distress as a reason for termination	0.0539	0.2258	0	1	1789
% of youths in full-time school for dually provided occupation	0.1520	0.1668	0.0208	0.6169	1789
working age population density	0.1857	0.1389	0.0548	0.5555	1789
public transport density	0.2697	0.1898	0.0559	0.7376	1789
local unemployment rate	0.0891	0.0459	0.0468	0.2008	1789

## B Additional Estimation Results

Table 6: Full Results

	Upgrade I	Dropout I	Upgrade II	Dropout II
d1	0.693 [0.715]	0.036*** [0.011]	0.672 [0.413]	0.082*** [0.017]
d2	1.309 [1.339]	0.100*** [0.029]	1.054 [0.650]	0.148*** [0.031]
d3	1.562 [1.633]	0.289*** [0.079]	1.003 [0.648]	0.291*** [0.062]
apprenticeship wage/wage unskilled	0.001*** [0.002]	0.004*** [0.005]		
1 = non-native parents	0.956 [0.487]	1.421 [0.403]	0.971 [0.351]	1.499* [0.322]
1 = female	0.437** [0.161]	0.672 [0.181]	0.460*** [0.130]	0.697* [0.131]
1 = male in occupation with more than 60% females	0.456** [0.182]	0.82 [0.174]	0.509** [0.151]	0.838 [0.139]
1 = female in occupation with more than 60% males	1.662 [0.629]	1.506 [0.405]	1.272 [0.359]	1.189 [0.224]
1 = school dropout	1.041 [1.109]	1.667 [0.588]	1.559 [1.185]	1.925** [0.497]
1 = Realschule	2.364** [0.859]	0.592*** [0.116]	2.226*** [0.647]	0.602*** [0.088]
1 = Fachabitur	3.586** [2.039]	0.236** [0.140]	4.840*** [2.009]	0.381** [0.153]
1 = Abitur	8.222*** [3.631]	0.203** [0.128]	11.329*** [3.690]	0.334*** [0.123]
1 = apprenticeship in business occupation	1.896 [1.263]	1.221 [0.413]	1.648 [0.536]	0.889 [0.170]
1 = apprenticeship in crafts occupation	0.64 [0.472]	1.193 [0.443]	0.684 [0.289]	0.723 [0.149]
1 = apprenticeship in technical occupation	0.743 [0.515]	0.619 [0.230]	0.959 [0.357]	0.581** [0.127]
1 = firm size betw. 10-49 employees	1.213 [0.416]	1.286 [0.262]	1.189 [0.317]	1.205 [0.181]
1 = firm size betw. 50-99 employees	2.804** [1.213]	1.395 [0.416]	2.647*** [0.853]	1.088 [0.247]
1 = firm size betw. 100-499 employees	1.213 [0.550]	1.002 [0.319]	2.143** [0.727]	1.125 [0.259]
1 = firm size over 500 employees	1.282 [0.634]	1.269 [0.472]	1.559 [0.580]	1.202 [0.319]
1 = bad prospects reason for termination	0.375 [0.324]	1.289 [0.587]	1.004 [0.565]	0.957 [0.356]
1 = bad income prospects reason for termination	0.782 [0.472]	1.648 [0.564]	0.862 [0.390]	1.489 [0.390]
1 = bad career prospects reason for termination	1.945 [1.077]	0.597 [0.317]	1.486 [0.658]	0.689 [0.278]
1 = exam nerves reason for termination	0.364 [0.379]	1.081 [0.352]	0.221 [0.226]	0.987 [0.231]
1 = financial distress reason for termination	0.823 [0.621]	2.565*** [0.679]	0.598 [0.363]	1.769*** [0.361]
local percentage of youth in out-of-firm training	14.7 [132.361]	0.000 [0.000]	29.728 [195.902]	16.711 [82.084]
local population density	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
local supply-demand ratio on the job market for apprentices	0 [0.000]	1.959 [2.336]	0 [0.000]	3.436 [2.846]
local density of public transport	0.926 [1.038]	8.225 [7.226]	0.686 [0.553]	2.075 [2.084]
local unemployment rate	0.843 [6.388]	43.165 [215.227]	0.009 [0.046]	96.791 [327.153]
Hessen	5.425 [31.280]	391.402 [1516.900]	0.076 [0.315]	96.565 [251.649]
Baden-Wuerttemberg	2.325 [16.132]	109.849*** [511.199]	0.026 [0.127]	37.358 [118.425]
Sachsen	0.116 [1.639]	0.000*** [0.000]	1,180.85 [12,150.594]	0.000** [0.000]
Brandenburg	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
Niedersachsen	0.188 [0.535]	115.029*** [211.722]	0.089 [0.181]	2.251 [2.869]
Thueringen	0.083 [0.941]	0.000*** [0.000]	326.355 [2,688.231]	0.000** [0.000]
Mecklenburg-Vorpommern	0.097 [1.799]	0 [0.000]	305.72 [410.568]	0 [0.000]
n	1967		3389	
LogL	-789.456		-1386.96	

Table 7: Complementary log-log model

	upgrade I	dropout I	upgrade II	dropout II
d1	1.168 [1.176]	0.056*** [0.015]	1.008 [0.598]	0.114*** [0.020]
d2	1.938 [1.939]	0.143*** [0.033]	1.468 [0.874]	0.195*** [0.034]
d3	2.11 [2.157]	0.377*** [0.083]	1.335 [0.832]	0.368*** [0.064]
apprenticeship wage/wage unskilled	0.002*** [0.004]	0.009*** [0.009]		
1 = non-native parents	0.713 [0.382]	1.415 [0.354]	0.861 [0.309]	1.473** [0.286]
1 = female	0.477** [0.166]	0.758 [0.185]	0.485*** [0.128]	0.740* [0.129]
1 = male in occupation with more than 60% females	0.449** [0.176]	0.846 [0.161]	0.502** [0.145]	0.847 [0.128]
1 = female in occupation with more than 60% males	1.624 [0.580]	1.431 [0.348]	1.282 [0.343]	1.163 [0.202]
1 = school dropout	1.099 [1.156]	1.48 [0.466]	1.487 [1.117]	1.570* [0.366]
1 = Realschule	2.516** [0.912]	0.616*** [0.109]	2.390*** [0.693]	0.618*** [0.084]
1 = Fachabitur	4.074** [2.262]	0.260** [0.140]	5.127*** [2.068]	0.279*** [0.119]
1 = Abitur	8.685*** [3.693]	0.187*** [0.112]	11.570*** [3.665]	0.299*** [0.106]
1 = apprenticeship in business occupation	1.763 [1.149]	1.149 [0.350]	1.611 [0.502]	0.899 [0.157]
1 = apprenticeship in crafts occupation	0.558 [0.408]	1.14 [0.383]	0.657 [0.272]	0.722* [0.137]
1 = apprenticeship in technical occupation	0.774 [0.525]	0.653 [0.221]	0.996 [0.354]	0.600** [0.122]
1 = firm size	1.075 [0.356]	1.214 [0.223]	1.108 [0.285]	1.15 [0.159]
betw. 10-49 employees	2.464** [0.993]	1.277 [0.340]	2.491*** [0.752]	1.044 [0.218]
1 = firm size	1.201 [0.517]	0.996 [0.281]	2.060** [0.663]	1.081 [0.224]
betw. 100-499 employees	1.191 [0.546]	1.231 [0.414]	1.476 [0.511]	1.165 [0.278]
1 = firm size	0.373 [0.306]	1.372 [0.562]	1.01 [0.539]	0.964 [0.332]
1 = bad prospects	0.789 [0.447]	1.547 [0.460]	0.849 [0.364]	1.498* [0.354]
reason for termination	1.883 [0.948]	0.644 [0.311]	1.459 [0.594]	0.709 [0.266]
1 = bad career prospects	0.372 [0.382]	1.031 [0.286]	0.231 [0.234]	1.004 [0.205]
reason for termination	0.738 [0.547]	2.355*** [0.526]	0.565 [0.337]	1.695*** [0.300]
1 = financial distress	22.278 [195.028]	0.000* [0.000]	56.52 [361.893]	34.825 [162.216]
local percentage of youth in out-of-firm training	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
local population density	0 [0.000]	1.706 [1.867]	0 [0.000]	2.4635 [1.837]
local supply-demand ratio on the job market for apprentices	0.801 [0.860]	6.721 [6.581]	0.682 [0.529]	1.794 [0.871]
local density of public transport	0.182 [1.311]	84.584 [381.965]	0.009 [0.047]	41.843 [131.605]
Hessen	1.442 [7.930]	95.664 [334.918]	0.071 [0.285]	38.077 [92.389]
Baden-Wuerttemberg	0.498 [3.293]	246.516 [1042.449]	0.026 [0.125]	16.191 [47.905]
Sachsen	4.126 [55.399]	0 [0.000]	293.15 [217.085]	0 [0.000]
Brandenburg	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
Niedersachsen	0.135 [0.371]	67.790** [113.040]	0.107 [0.212]	1.554 [1.856]
Thueringen	1.708 [18.297]	0.000*** [0.000]	616.51 [4,893.068]	0.000* [0.001]
Mecklenburg-Vorpommern	8.365 [147.042]	0 [0.000]	443.28 [572.249]	0 [0.000]
Var. of gamma mixture distribution	0.0002	0.4229	0.0004	0.0594
S.E. of gamma mixture distribution	0.0368	0.7124	0.0389	0.4519
LR test of Gamma var. = 0	-0.0004	0.4302	-0.0002	0.0169
LR test > $\chi^2$	0.5000	0.2560	0.5000	0.4483
n	1967		3389	
LogL	-252.512	-538.118	-433.201	-949.027