Additional Career Assistance and Educational Outcomes for Students in Lower Track Secondary Schools

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Motivation: Career Assistance (Berufsorientierung)

- Additional Career Assistance (**ACA**): Information, Mentoring, Coaching
  $\rightarrow$ reduces information asymmetries, realistic assessment of labor market chances, learning about one's strengths and weaknesses
- More than 300 occupations to choose: Difficult Decision at young age
- Higher educational attainment improve labor market chances
  $\rightarrow$ difficult to start apprenticeship with **LTSS (Hauptschule)** degree
  $\rightarrow$ educational upgrading rational: here information on MTSS-track coursework (**MTSS-CW**, Zusatzunterricht)
  $\rightarrow$ Dustmann, Puhani, Schönberg (2016, EJ) mobility between educational tracks
- Pre-vocational training (Übergangssystem): Remedial programs

Motivation: Behavioral Barriers, Literature

- Concerns about Capability-to-be-trained ('Ausbildungsreife'): High importance of cognitive and non-cognitive skills (Cunha und Heckmann 2007; Solga, Baas, Kohlrausch 2012)
- Lavecchia, Liu, Oreopoulos (2014); Koch, Nafziger, Nielsen (2015): [Behavioral Barriers] Students show a Present Bias and may take poor long-run decisions regarding education and career at young age
  $\rightarrow$ present bias reduces learning efforts among youth
  $\rightarrow$ barrier for improving long-run utility
- Relying on routine/risk aversion/social preferences: Continue Schooling (salient option) because of specificity of apprenticeship
- Inexpensive information treatments: Decision are maleable
- Here: intensive information treatment

Motivation: Behavioral Barriers, Literature

- Saniter and Siedler (2014): Introduction of Job Information Centers increases educational attainments and allow for a smoother transition into the labor market; no effects on individuals' earnings

- Fitzenberger and Licklederer (2015): LTSS in City of Freiburg, improvement in career planning and in GPA over last two years of schooling in situation with intensive career guidance policies do not result in a high rate of transitions into apprenticeship
  $\rightarrow$ transition to 'continuation of schooling' and 'pre-vocational training' dominate

Contribution: Medium Term Outcomes for LTSS Graduates

- Fitzenberger and Licklederer (2015) analyze first transition after LTSS for sample in City of Freiburg (treatment group for Additional Career Assistance, **ACA**)
- Survey: Use sample augmented by LTSS students from Surroundings of Freiburg
  $\rightarrow$ contrast in career guidance policies
- Analyze Medium-term (during first three years after LTSS) outcomes regarding educational upgrading (MTSS degree) and entry into apprenticeship
- Merge survey data with administrative employment records from IAB
  $\rightarrow$ allow to impute MTSS degree for many cases

Contribution: Results

- ACA no significant effect on final LTSS GPA and significantly negative effect on MTSS degree
- Strong Heterogeneity of Effect Estimates by MTSS-track Coursework (**MTSS-CW**)
- ACA improves final LTSS GPA for *no MTSS-CW* by .15 to .26 grade points / no effect for MTSS-CW
- Educational upgrading: MTSS delayed and reduced
  After 3 years: MTSS-CW strong negative effect (-16/-17 ppoints)
  no MTSS-CW positive effect (+ 7-11 ppoints), only for students without migration background

Survey in LTSS's in and around Freiburg

- Own survey among students, parents, and teachers
- Two cohorts of 8th/9th graders: 2007-2009 and 2008-2010
- Grade Point Average (GPA: German, Math)*
- Further education/start of an apprenticeship* based on IEB employment records
- n=664 observations (464 from City of Freiburg (CFR), 200 from Surroundings of Freiburg (SFR))
- Additional career assistance (ACA): Intensive treatment in CFR (160 extra hours per year), much less career guidance policies in SFR

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* When parents have agreed to using this information.

Additional Career Assistance (ACA) in CFR

- Intensive treatment (160 extra hours per year) on top of what is offered by teachers and job counselors
- Modules (classroom setting or individualized counseling):
  - Career Planning: SWOT (strengths, weaknesses, opportunities, threats) $\rightarrow$ desired occupation
  - Knowledge about training occupations and local labor market conditions
  - Job applications
  - Internships
  - Advising parents
  - Simulate practice firm
  - Preparation for assessment tests
  - Importance of cognitive and noncognitive skills

Location of Treatment (CFR) and Control (SFR) Group
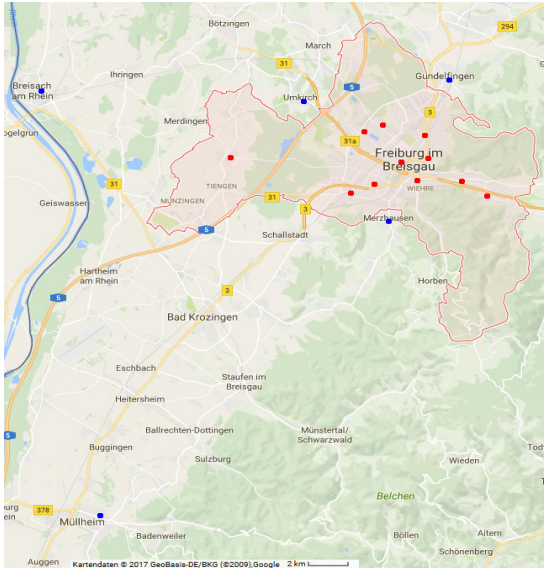
- Red area/dots:
CFR - treatment schools
- Blue dots:
SFR - control schools

Design of the Survey

½ year   2 years

| 8th grade | 9th grade |

8:1   8:2   9:1   9:2
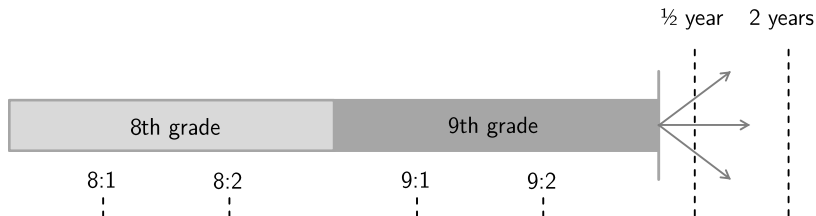
2 cohorts (graduated ´09 and ´10)
First cohort started survey at 8:2, second cohort started survey at 8:1

MTSS-CW and Transitions: Treatment Group (CFR)

treatment

10th grade	19%
vocational school	57%
apprenticeship	12%
pre-vocational training	12%

grade in german and math, teacher assessment

AGT 55%

no AGT 45%

10th grade	3%
vocational school	34%
apprenticeship	10%
pre-vocational training	53%

time line

end of grade 7	grade 8	grade 9
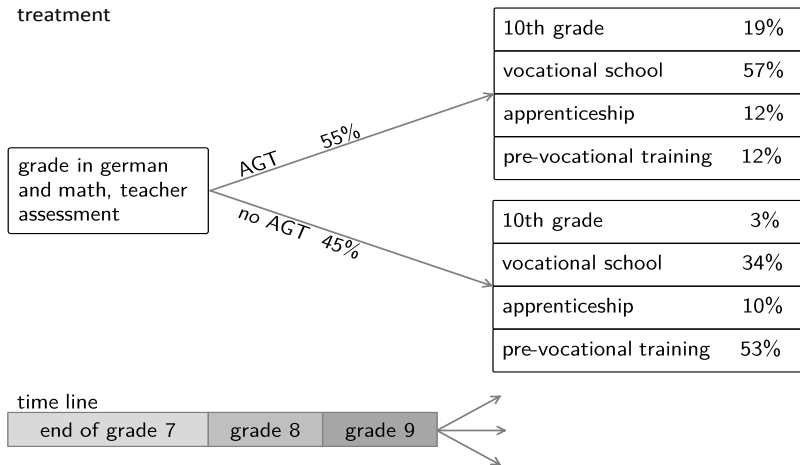
Source: Own survey and calculations. CFR: City of Freiburg.

Immediate Transitions after LTSS.

MTSS-CW and Transitions: Control Group (SFR)

control

10th grade	41%
vocational school	46%
apprenticeship	9%
pre-vocational training	4%

grade in german and math, teacher assessment

AGT 53%

no AGT 47%

10th grade	6%
vocational school	32%
apprenticeship	25%
pre-vocational training	37%

time line

end of grade 7	grade 8	grade 9
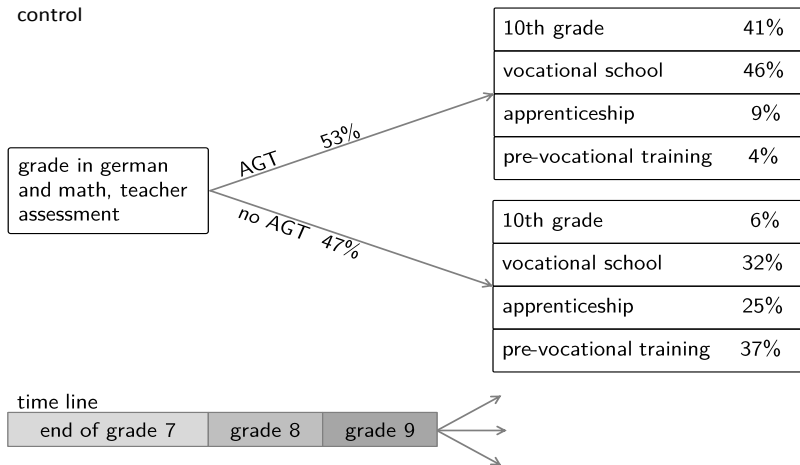
Source: Own survey and calculations. SFR: Surroundings of Freiburg.
Immediate Transitions after LTSS.

Table 1: Valid Responses: School based Surveys

Grade and semester	treatment	control	$\sum$
8:1	143	78	221
8:2	299	83	382
9:1	327	97	424
9:2	246	108	354
Total N (Persons)	464	200	664

Note: Only those agreeing to merge SIAB data. Only second cohort in 8:1.

Table 2: Valid Responses: After LTSS

year after LTSS	treatment	control	$\sum$
+1	445	153	598
+2	179	91	270
+3	178	91	269
+4	145	73	218

Descriptive Statistics by Treatment Status (Averages)

Variable	treatment group	control group	total	N-nomiss
female	.48	.40	.46	664
migration background (m)	.40	.27	.36	664
MTSS-track coursework	.55	.53	.54	664
father employed	.86	.90	.87	538
father medium/high education	.38	.43	.39	550
GPA Grade 7	3.06	3.09	3.07	644
social and personal competences (teacher)	.20	.25	.21	664
share of foreigners in residential area	14.0	9.0	12.5	664
10th grade available at LTSS	.63	.73	.66	664
N	464	200	664	

Notes: $N - nomiss$ number of observations for which variable is not missing in total sample. Including imputed values for MTSS-track coursework. Social/personal competences measured on a four-point Likert scale ranging from -1.5 to 1.5.

OLS Placebo - Final Grade at End of Grade 7

Dependent Variable:			GPA(7)			
treat	-.028	-	-.156	-	-.180*	-
	[.121]	-	[.092]	-	[.085]	-
treat*$\bar{m}$	-	-.062	-	-.139	-	-.177
	-	[.12]	-	[.118]	-	[.111]
treat*m	-	-.049	-	-.196**	-	-.187**
	-	[.12]	-	[.079]	-	[.074]
Migration Background	No	Yes	Yes	Yes	Yes	Yes
Other controls 8:1	No	No	Yes	Yes	Yes	Yes
Social/personal comp.	No	No	No	No	Yes	Yes
R-sq	.00	.02	.09	.09	.17	.17
N	644	644	644	644	644	644

$\bar{m}$: no migration background - m: migration background
$\rightarrow$ all outcome regressions will control for GPA(7)

OLS Placebo - Social and Personal Competences

Dependent Variable:	Social/Personal Competences (8)					
treat	-.056	-	-.060	-	-.102	-
	[.066]	-	[.067]	-	[.071]	-
treat*$\bar{m}$	-	-.104	-	-.113	-	-.135
	-	[.075]	-	[.076]	-	[.084]
treat*m	-	.029	-	.018	-	.021
	-	[.050]	-	[.050]	-	[.055]
Migration Background	No	Yes	Yes	Yes	Yes	Yes
Other controls 8:1	No	No	Yes	Yes	Yes	Yes
GPA Grade 7	No	No	No	No	Yes	Yes
R-sq	.00	.01	.08	.10	.13	.13
N	664	664	664	664	664	664

Social/pers. Competences: Teacher Assessment early Grade 8
$\rightarrow$ all outcome regressions will control for soc-pers-comp

OLS Placebo - MTSS-track coursework

Dependent Variable:				MTSS-CW				
treat	.036	-	.007	-	.018	-	.029	-
	[.068]	-	[.049]	-	[.057]	-	[.056]	-
treat*$\bar{m}$	-	.069	-	.028	-	.030	-	.046
	-	[.060]	-	[.051]	-	[.060]	-	[.060]
treat*m	-	.023	-	-.012	-	-.011	-	-.013
	-	[.077]	-	[.062]	-	[.061]	-	[.061]
Migration Background	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	No	No	Yes	Yes	Yes	Yes
GPA(7)	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Social/personal comp.	No	No	No	No	No	No	Yes	Yes
R-sq	.01	.03	.35	.36	.39	.39	.41	.41
N	664	664	664	664	664	664	664	664

$\rightarrow$ all outcome regressions will also control for MTSS-CW

MTSS-Degree: Actual versus Imputed Cumulative Incidence
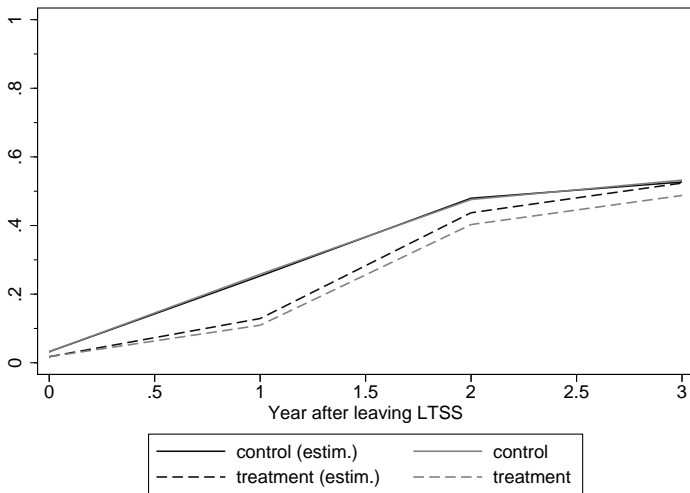
Note: Observed from survey data/Estimated including imputed shares.

OLS - Final *GPA*(9) when Leaving LTSS (Specification 1)

|			
treat	**-.0819**	female * MTSS-CW	-.0471
	[.06]		[.14]
migration background (m)	.1045	m * MTSS-CW	.1009
	[.10]		[.09]
female	.2528**	social/personal comp. s	-.1326**
	[.10]	(teacher, 8:1/8:2)	[.05]
m * female	-.0833	father employed	-.0001
	[.06]		[.08]
share of foreigners in	.0067	father medium/high edu-	-.0911**
		cated	
residential area	[.004]		[.04]
GPA(7)	.3786***	10th grade available	-.0533
	[.07]	at LTSS	[.06]
MTSS-track coursework	-.4733***		
	[.10]	Other controls	Yes
N	634	R-sq	.475

Note: Average GPA in German/Math. German grading scheme 1 to 6.

OLS - Final *GPA*(9) when Leaving LTSS

Specification 2		Specification 3	
treat * MTSS-CW	.0465	treat * MTSS-CW * m	.0199
	[.06]		[.15]
		treat * MTSS-CW * $\overline{m}$	.0568
			[.07]
treat * no MTSS-CW	-.228**	treat * no MTSS-CW	-.2609**
	[.09]		[.11]
		treat * no MTSS-CW * m	.0937
			[.18]
Other controls (as in Spec. 1)	Yes	Other controls (as in Spec. 1)	Yes
N	634	N	634
adj. R-sq	0.481	R-sq	0.481

Note: Average GPA in German/Math. German grading scheme 1 to 6. Regression includes dummies for missing data of questionnaires. m ($\overline{m}$): (no) migration background.

Completion of MTSS Degree by MTSS-CW and Treatment
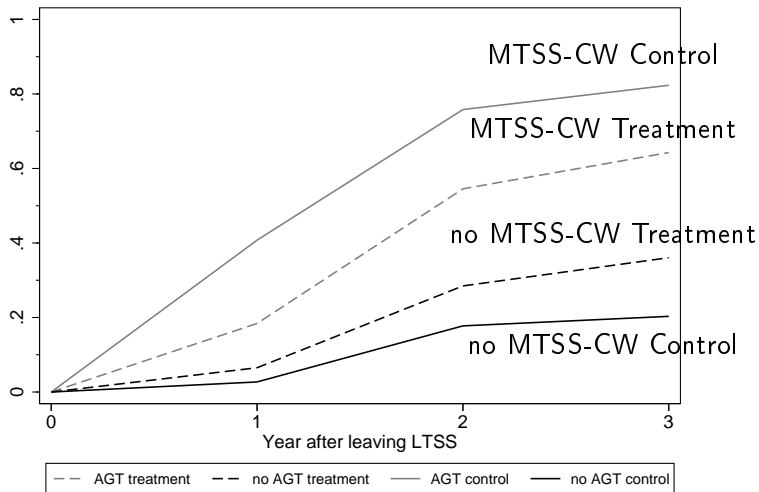
Treatment Effect on the Completion of MTSS Degree

Fractional Probit for MTSS based on imputed Data

$$P(mtss_{it} = 1 \mid X_i) = \Phi(\alpha + \tau \cdot treat + \gamma \cdot X_i + \eta_s \cdot imp_i + \eta_p \cdot imp_{\hat{P},i})$$

imp_i: imputation of MTSS degree from SIAB data

$imp_{\hat{P},i}$: imputation of MTSS degree
if still missing after imputation from SIAB

$imp_{\hat{P},i} = 0$: $mtss_{it} = 0, 1$
$imp_{\hat{P},i} = 1$: $mtss_{it} =$ estimated probability for MTSS

For n=52 individuals, we also impute information on participating at MTSS-CW estimated by probit regression (imputation dummy is included).

Fractional Probit (Average Marginal Effects)

Dependent variable: *mtss*	Year 1		Year 2		Year 3	
	(1)	(2)	(1)	(2)	(1)	(2)
Treat	-0.1025***	-0.0890***	-0.0857	-0.0669	-0.0647	-0.0426
	[0.04]	[0.03]	[0.08]	[0.05]	[0.06]	[0.04]
migration background (m)	-0.0281	-0.0781*	0.1974***	0.0881*	0.0775	0.0442
	[0.05]	[0.04]	[0.06]	[0.05]	[0.05]	[0.05]
GPA(7)	-0.0019	-0.0342	-0.1478***	-0.1583***	-0.1203***	-0.1278***
	[0.04]	[0.03]	[0.04]	[0.03]	[0.03]	[0.02]
MTSS-track coursework	0.1031	0.0472	0.2388***	0.1925**	0.2517***	0.2524***
	[0.08]	[0.06]	[0.09]	[0.08]	[0.08]	[0.08]
female * MTSS-CW	0.0731	0.1176*	0.0753	0.0882	0.0459	0.0152
	[0.09]	[0.06]	[0.07]	[0.07]	[0.06]	[0.07]
m * MTSS-CW	0.0523	0.0948*	-0.1871**	-0.1138*	-0.1050	-0.1073
	[0.07]	[0.05]	[0.09]	[0.06]	[0.09]	[0.08]
social and personal competences	0.0920***	0.0820***	0.0635	0.0804***	0.1029**	0.0912***
(teacher, 8:1/8:2)	[0.03]	[0.03]	[0.04]	[0.03]	[0.05]	[0.03]
father medium/high educated	0.0202	0.0058	0.1150***	0.1206***	0.1097***	0.1351***
	[0.04]	[0.03]	[0.02]	[0.02]	[0.04]	[0.02]
10th grade available	0.0592*	0.0269	0.0443	0.0098	0.0622	0.0565
at LTSS	[0.03]	[0.03]	[0.05]	[0.05]	[0.04]	[0.04]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
N	407	648	407	648	407	648

Note: Regression includes dummies for imputation based on IABS data or Probit.

Fractional Probit (Average Marginal Effects)

Dependent variable: *mtss*	Year 1		Year 2		Year 3	
	(1)	(2)	(1)	(2)	(1)	(2)
treat * MTSS-CW	-0.1558***	-0.1431***	-0.1706	-0.1746**	-0.1639*	-0.1680***
	[0.05]	[0.04]	[0.11]	[0.08]	[0.09]	[0.06]
treat * no MTSS-CW	0.0827	0.0645	0.0662	0.0913**	0.0735	0.1065**
	[0.08]	[0.05]	[0.08]	[0.04]	[0.07]	[0.05]
Fixed effects imputation MTSS						
imputation dummy MTSS IEB	Yes	Yes	Yes	Yes	Yes	Yes
imputation dummy MTSS Probit	No	Yes	No	Yes	No	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
N	407	648	407	648	407	648
Pseudo-Rsq	0.209	0.228	0.213	0.198	0.217	0.203

Note: Same specification as before, except that Treatment is interacted with
MTSS-CW.

Fractional Probit (Average Marginal Effects)

Dependent variable: *mtss*	Year 1		Year 2, 3	
	(1)	(2)	(1)	(2)
treat * $\overline{m}$ * MTSS-CW	-0.1941***	-0.1827***	-0.1416	-0.1688**
	[0.06]	[0.05]	[0.10]	[0.08]
treat * m * MTSS-CW	-0.0628	-0.0411	-0.2419**	-0.1870***
	[0.05]	[0.05]	[0.11]	[0.07]
treat * $\overline{m}$ * no MTSS-CW	-	-	0.1643***	0.1840***
	-	-	[0.06]	[0.04]
treat * m * no MTSS-CW	-	-	-0.0556	-0.0231
	-	-	[0.11]	[0.08]
Year 3 Dummy	-	-	0.0761***	0.0843***
	-	-	[0.01]	[0.02]
Fixed effects imputation MTSS				
imputation dummy MTSS IEB	Yes	Yes	Yes	Yes
imputation dummy MTSS Probit	No	Yes	No	Yes
Other controls	Yes	Yes	Yes	Yes
N	407	648	407	648
Pseudo-Rsq	0.220	0.237	0.218	0.203

Note: Same specification as before, except treatment interacted with MTSS-CW and *m*.

Conclusions I

- Survey data merged with administrative employment records using refined imputation provides unique opportunities to study path of post LTSS outcomes
- Contrast between Treatment (ACA: Intensive career guidance) and Nontreatment (Standard career guidance) $\rightarrow$ account for contrast City / Surroundings
- Interaction with MTSS-CW as intention of educational upgrading is crucial.
- ACA causes students to reverse their education/career plans $\rightarrow$ Heterogeneity of treatment effects by participation in *MTSS-CW*
- ACA improves final LTSS GPA for *no MTSS-CW* by .15 to .26 grade points / no effect for MTSS-CW

Conclusions II

- Educational upgrading: MTSS delayed and reduced
  After 3 years: MTSS-CW strong negative effect (-16/-17 ppoints)
  no MTSS-CW positive effect (+ 7-11 ppoints), only for students
  without migration background
- Effect estimates worse for students with migration background
- Further Robustness Checks:
  → Availability of 10th grade at LTSS no effect after 1st year
  → Results robust to including Distance from FR Center