

# Negative Attitudes, Network and Education

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# Introduction

- ▶ A 2006 OECD report reveals that immigrants' offspring at a very young age express equal or even higher motivation to learn mathematics than their native counterparts and very positive attitudes towards school and education in general.
- ▶ However, at the age of 15, immigrants and descendants tend to perform worse in school compared to their native peers taking their parental background into account (OECD 2006, Pisa 2006, 2012, Nielsen and Rangvid 2012).
- ▶ This may influence their choice of further education, and eventually their labour market outcome and performance.
- ▶ We are interested in factors which may influence natives and immigrants differently.
- ▶ Hence, this paper examines theoretically and empirically the impact on education for natives and immigrants in an environment where immigrants are subject to discrimination or negative attitudes towards them, and where networking increases workers' employment probability.

## The Model

- ▶ We assume there are educated workers with productivity  $y^h$  and uneducated workers with productivity  $y^\ell$  where  $y^h > y^\ell$ .
- ▶ We formulate a Becker-style taste discrimination model within a search and wage bargaining setting. Immigrants,  $I$ , face a random negative shock of negative attitudes towards immigrants,  $a^m > 0$ ,  $m = h, \ell$ , and the worker is not hired.
- ▶ Hence, Immigrants may face a lower transition rate than natives:  $(\theta^m)^\alpha (1 - a^m) < (\theta^m)^\alpha$ ,  $N$  denotes natives.
- ▶ We assume that workers have different abilities,  $e_i$ , and associated costs of obtaining education,  $c(e_i)$   $c'(e_i) < 0$ .
- ▶ The number of uneducated workers is given by  $\hat{e}_i$ , and the number of educated workers is given by  $1 - \hat{e}_i$ ,  $i = N, I$ .
- ▶ More immigrants makes it easier to obtain employment through networking. Networking  $\lambda_i^m$ ,  $i = N, I$ ,  $m = h, \ell$ , increases in the number of people of the same origin.
- ▶ Labour market tightness by the skill level,  $\theta^m$ , is increasing in vacancy supply and networking.

# Education

Individuals compare the value of acquiring education to the value of remaining uneducated. The marginal worker has the ability level,  $\hat{e}_i$ , which makes the worker just indifferent between acquiring education or remaining uneducated:

$$\rho U_i^h(\hat{e}_i) = \rho U_i^l, \quad i = N, I \quad (1)$$

The higher  $\hat{e}_i$  is, the higher is the ability level of the marginal worker acquiring education. Hence, fewer workers acquire education, and a smaller fraction of the workers will be educated.

- ▶ I.e.  $\hat{e}_i$  and  $1 - \hat{e}_i$  constitute the uneducated and educated labour forces, respectively.

We consider three cases.

## Negative Attitudes, Case 1

In case one, there is no networking,  $\lambda_i^m = 0$  and attitudes are present in both the high and low productivity sector,  $a^h = a^l = a > 0$ .

We use the value equations for workers and firms in equation (1), the bargaining condition together with the free entry condition, to obtain the following simplified conditions:

$$\left( y^h \theta^h - y^l \theta^l \right) k (1 - a) = c(\hat{e}_l) \quad (2)$$

$$\left( y^h \theta^h - y^l \theta^l \right) k = c(\hat{e}_N) \quad (3)$$

Equations (2) and (3) give  $\hat{e}_i$  as a function of the endogenous variables,  $\theta^m$ ,  $m = h, l$ .

We observe that the incentives to acquire higher education are higher for natives than immigrants, implying that natives acquire more education than immigrants,  $1 - \hat{e}_l < 1 - \hat{e}_N$ .

## Negative Attitudes, Case 2

In case two, there is no networking,  $\lambda_i^m = 0$ , negative attitudes are only present in the low productivity sector,  $a^h = 0, a^\ell > 0$ . In this case the education equations become:

$$\left( y^h \theta^h - y^\ell \theta^\ell (1 - a^\ell) \right) k = c(\hat{e}_I) \quad (4)$$

$$\left( y^h \theta^h - y^\ell \theta^\ell \right) k = c(\hat{e}_N) \quad (5)$$

Equations (4) and (5) give  $\hat{e}_i$  as a function of the endogenous variables,  $\theta^m$ ,  $m = h, l$ .

In this case, the incentives to acquire education are higher for immigrants than natives, and immigrants acquire more education than natives, that is,  $\hat{e}_I < \hat{e}_N$ , corresponding to the number of educated immigrants is larger than the number of educated natives:

$$1 - \hat{e}_I > 1 - \hat{e}_N$$

## Networking, Case 3

In case 3, negative attitudes are equal to zero and networking is higher for natives than immigrants,  $\lambda_N^h = \lambda_N^l > \lambda_I^h = \lambda_I^l$ , corresponding to their being more natives. In this case the education equations become:

$$y^h \theta^h \left( 1 + \frac{\lambda_I^h}{(\theta^h)^\alpha} \right) - y^l \theta^l \left( 1 + \frac{\lambda_I^l}{(\theta^l)^\alpha} \right) = \frac{1}{k} c(\hat{e}_I) \quad (6)$$

$$y^h \theta^h \left( 1 + \frac{\lambda_N^h}{(\theta^h)^\alpha} \right) - y^l \theta^l \left( 1 + \frac{\lambda_N^l}{(\theta^l)^\alpha} \right) = \frac{1}{k} c(\hat{e}_N) \quad (7)$$

Equations (6) and (6) give  $\hat{e}_i$  as a function of the endogenous variables,  $\theta^m$ ,  $m = h, l$ . In this case, the incentives to acquire education are lower for immigrants than natives, and immigrants acquire less education than natives, that is,  $\hat{e}_I > \hat{e}_N$ , corresponding to the number of educated immigrants is smaller than the number of educated natives:  $1 - \hat{e}_I < 1 - \hat{e}_N$ .

## More Immigration

*Suppose initially  $\lambda_N > \lambda_I$ . When the fraction of immigrants increases, this increases networking for immigrants,  $\lambda_I$  increases. This directly increases the number of educated immigrants,  $1 - \hat{e}_I$  increases.*

*This will increase the fraction of immigrants among the workers employed in the sector employing educated workers. This effect will tend to reduce labour market tightness in sector  $h$ , as immigrant workers are less attractive as long as we still have that  $\lambda_N > \lambda_I$ . The reduction is modified by that  $\lambda_I$  does increase, but amplified by that immigrant wages increase as they increase with  $\lambda_I$ . This reduction in labour market tightness facing educated workers,  $\theta^h$ , and thereby their transition rate, will modify the increase in the number of educated immigrants.*

*For natives, their networking will fall, which reduces the number of educated natives. This reduction will be amplified by the reduction in educated workers' transition rate, hence  $1 - \hat{e}_N$  falls.*



# Econometric Analysis - Data

- ▶ We consider data for Denmark (2011, 2015) and explore the variation between 95 municipalities. Our measure of **negative attitudes**:
  - ▶ Election: municipal fraction of votes for Dansk Folkeparti due to emphasis on reducing immigration.
- ▶ Our measure of **networking**: (i) shares of immigrants, (ii) share of employed immigrants and (iii) share of educated immigrants with same nationality.
- ▶ **Education**: we consider the high school decision (which is non-compulsory in Denmark) of prospective students.
  - ▶ Individual level: control for detailed household and parental factors
  - ▶ Immigrant defined as 1<sup>st</sup> and 2<sup>nd</sup> generation immigrant both male and female.

# Econometric Analysis - Opposite Signed Theoretical Predictions

- ▶ *Case one* and *case two* of theoretical model
  - ▶ Opposite signed theoretical predictions with respect to negative attitudes
- ▶ Which of two theoretical predictions is more plausible in data?
- ▶ Suggestive evidence rejecting *case one* of the theoretical model
  - ▶ Bound the estimated effect of negative attitudes on education away from zero
- ▶ Under reasonable assumptions, negative attitudes do not decrease 1<sup>st</sup> generation immigrant education

# Individual Level Summary Statistics

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Fraction Votes Dansk Folkeparti 2015	0.22 (0.06)
Fraction Votes Dansk Folkeparti 2011	0.13 (0.03)
Change Fraction Votes Dansk Folkeparti	0.092 (0.03)
Native (%)	92.1 (26.9)
First Gen. Immigrant (%)	1.45 (12.0)
Second Gen. Immigrant (%)	6.40 (24.5)
Native in Any HS <sup>†</sup>	85.4 (35.7)
1 <sup>st</sup> Gen. Immigrant in Any HS <sup>‡</sup>	79.5 (40.4)
2 <sup>nd</sup> Gen. Immigrant in Any HS <sup>‡</sup>	81.2 (39.1)
Male (%)	50.8 (50.0)
Mother's Education	14.4 (2.64)
Father's Education	14.3 (2.61)
Parents Married (%)	69.0 (46.2)
Father Employed (%)	86.7 (34.0)
Mother Employed (%)	82.9 (37.7)
Household Income/100000	8.61 (8.14)
Observations	115155

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born 1997/1998 in 2015 unless otherwise indicated. <sup>†</sup> native population, 106107, <sup>‡</sup> immigrant population, 1674 and 7374 respectively for 1<sup>st</sup> and 2<sup>nd</sup>

## High School Participation for Males and Females born in 1997 and 1998 by immigrant Status

	Native	Immigrant	
		1 <sup>st</sup> Gen.	2 <sup>nd</sup> Gen.
Frac Votes Dansk F.	-0.08 (0.11)	0.91** (0.39)	-0.05 (0.20)
Frac Own Nat.	0.09 (0.06)	-0.40 (0.74)	0.28 (0.21)
Frac Own Nat. Educ.			
Frac Own Nat. Empl.			
Parental Controls?	Yes	Yes	Yes
Municipality Controls?	Yes	Yes	Yes
Ori Country Dummies?	No	Yes	Yes
R <sup>2</sup>	0.06	0.10	0.07
N	106104	1674	7374

Standard errors clustered at municipality level. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

## High School Participation for Males and Females born in 1997 and 1998 by immigrant Status

	Native	Immigrant	
		1 <sup>st</sup> Gen.	2 <sup>nd</sup> Gen.
Frac Votes Dansk F.	-0.11 (0.10)	0.83** (0.38)	-0.07 (0.20)
Frac Own Nat.			
Frac Own Nat. Educ.	0.17 (0.27)	0.17* (0.09)	0.12* (0.07)
Frac Own Nat. Empl.			
Parental Controls?	Yes	Yes	Yes
Municipality Controls?	Yes	Yes	Yes
Ori Country Dummies?	No	Yes	Yes
R <sup>2</sup>	0.06	0.10	0.07
N	106104	1674	7374

Standard errors clustered at municipality level. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## High School Participation for Males and Females born in 1997 and 1998 by immigrant Status

	Native	Immigrant	
		1 <sup>st</sup> Gen.	2 <sup>nd</sup> Gen.
Frac Votes Dansk F.	-0.10 (0.103)	0.90** (0.39)	-0.03 (0.20)
Frac Own Nat.			
Frac Own Nat. Educ.			
Frac Own Nat. Empl.	0.08 (0.10)	0.02 (0.10)	0.09 (0.07)
Parental Controls?	Yes	Yes	Yes
Municipality Controls?	Yes	Yes	Yes
Ori Country Dummies?	No	Yes	Yes
R <sup>2</sup>	0.06	0.10	0.07
N	106104	1674	7374

Standard errors clustered at municipality level. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

# Conclusion

The main empirical findings of the paper are:

- ▶ More severe negative attitudes in a region do not decrease the fraction of immigrants attending high school, supporting the case that negative attitudes mainly exist among uneducated workers (*case two*).
- ▶ Potential male immigrant high school students have higher incentives to attend high school in an area where many of their own nationality lives (and are educated) as it improves their networking chances (*case three*).