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ABSTRACT

Local Labour Market Conditions on Immigrants' Arrival and Children's School Performance*

In this paper we analyse the impact of labour market conditions at immigration on school performance for the immigrants' children. First, we establish the direct effect of initial labour market conditions on later labour market performance for the father. Along with several other studies in this field we find that later labour market performance of the father (measured by labour earnings and accumulated work experience) depend significantly initial labour market conditions. Second, we find evidence that this initial effect feeds into the children's school performance. Concretely, for the sons, we find a positive impact of initial favourable labour market conditions of the father on the grade point average in lower secondary school. Daughters' school performance seems to be unrelated to the same initial labour market conditions.

JEL Classification: I20, J18, J61

Keywords: educational outcomes, immigration, local labour market conditions

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1. Introduction

While the school performance of second-generation immigrants in compulsory school is slowly approaching the performance of natives, a significant performance gap can still exist (Statistics Norway 2016). There is a large literature analysing school performance among second-generation immigrants, and its determinants (see e.g., Bratsberg et al. 2012). In this paper, we focus on the importance of one particular determinant, namely the labour market conditions at the time of the parents' arrival. Concretely, we analyse the impact of labour market conditions at time of immigration of the parents on school performance in lower secondary school for the immigrants' children.

There is a large literature on the effects of initial labour market conditions on immigrants' labour market earnings and employment (Åslund and Rooth 2007, Godøy 2017). The results seem to agree that difficult initial labour market conditions can have lasting direct effect for the exposed immigrants. In this paper, we go one-step further and analyse how initial labour market conditions at the time of arrival affects the children of immigrants, measured by their educational attainment and performance in the labour market.

The paper also relates to the literature analysing persistent effects of labour market conditions at immigrant's arrival. Åslund and Rooth (2007) use Swedish data to analyse the long-term effects on immigrant earnings and employment of labour market conditions upon arrival. They find that early earnings assimilation depends on a favourable national labour market. Exposure to high local unemployment rates also affects individuals for at least ten years. Godøy (2017) uses Norwegian data to analyse how local conditions at the time of immigration affects later outcomes for refugee immigrants, exploiting the quasi experiment nature of the Norwegian system for "quota" refugees. The study finds that being placed in a labour market where other immigrants do well increases a person's own labour earnings up to six years after immigration.

The paper also relates to the literature analysing the effect of parental demand shocks on children outcomes. Rege et al. (2011) study the impact of parental job loss thorough plant closure on children's school performance. Their results suggest that paternal job loss has a negative effect on children's school performance.

The paper is also related to the literature studying how business cycles at the time of labor market entry on wages. Long-term effects of initial unemployment could occur for instance if there are scarring effects of unemployment (Arulampalam, 2001). Papers studying the effects of college students graduating in a recession have found effects both in the short and long nun (Oreopoulos et al. 2012, Kahn 2010, Raaum and Røed 2006).

Generally, if there is an effect of initial labour market conditions for the fathers' own future labour performance, this effect may work through at least two channels: First, potential long lasting scarring effects of initial labour market conditions and, i.e. a potential long lasting effects of initial "shocks", and second: a combination of persistence of local labour market conditions and low regional mobility of the immigrants. To settle in a labour market region with favourable or not favourable labour market conditions may then have long lasting effects if there is persistence in local labour market conditions and some immigrants are reluctant to leave these regions.

If initial labour market conditions affect fathers future labour market opportunities, this may in turn affect the child's educational performance through several mechanisms. If initial labour market conditions affect future income of the father and the family, a reduction in economic resources could have a directly negative effect on school performance (Blau, 1999). Reduced economic resources may also cause mental distress on the parents (Kuhn et al. 2009, Annanat et al. 2017) which in turn may affect the children. Reduced labour market opportunities may also have negative effect on the marital stability of the household (Charles and Stephens, 2004).

Estimating a causal relationship between initial labour market conditions of the father and children's' school performance faces at least one large challenge: the potential impact of unobserved selection. We need to control for the fact that most immigrants individually decide when and where to settle in the receiving country. Immigrants typically seek out regions with promising labour market conditions (Borjas, 2001). If immigrants with unobserved characteristics that are positively related to future labour market careers seek out the economically most promising regions, the impact of initial local labour market conditions will be biased. To circumvent this potential problem we focus on immigrants that arrive from typical asylum and refugee countries. Secondly, we limit the sample further by using information on emigration push factors in the different sending countries. Concretely, we use information from the Terror scale from Amnesty International and the US State department, and we limit the sample to children of immigrants from countries and periods where the level on the terror scale is at its highest level.

We extend the paper by Åslund and Rooth (2007) and Godøy (2017) by analysing the intergenerational impacts of immigrants' initial local labour market conditions. Our results show first (along with several other studies in this field) that later labour market performance of the father (measured by labour earnings and accumulated work experience) depend significantly on favourable initial labour market conditions. Second, we find evidence of this initial effects feeds into the children's school performance. Concretely, for the sons, we find a positive impact of initial favourable labour market conditions of the father on the grade point average in lower secondary school. Daughters' school performance seems to be unrelated to the same initial labour market conditions.

The paper proceeds as follows: the next section presents some contextual information on Norwegian migration history and policies. Section 3 presents the data, the sample, and

variables. Section 4 presents the empirical framework. Section 5 presents the results, while section 6 concludes.

2. The distribution of refugees between regional labour markets

Our ambition is to identify a causal relationship between the condition of the labour market in the region of the immigrants' first settlement and the educational performance of their children. Thus, a main concern is to find exogenous variation in the labour market conditions experienced by the immigrants when they arrived in Norway. That is, to avoid that unobserved characteristics of the immigrants we study affect both the business cycle experienced in their first labour market and the later educational achievement of their children.

Our strategy is to explore the difference between children whose immigrant parents came to Norway through the humanitarian channel, i.e., as asylum seekers or as resettlement refugees selected by the UN. We will argue that this group of immigrants both due to their motive for leaving their home country and due to the Norwegian reception policy - for our purpose - are (more) randomly distributed between regional labour markets. This assertion will to some extent be elaborated and substantiated in the methodological chapter. In this section, we briefly describe the Norwegian resettlement policy, which applied to immigrants who were granted a residence permit as refugees or due to some subsidiary form of protection status. Since we analyse the educational outcome of children whose parents arrived in Norway from 1975 to 1999 the focus is on the policy, which applied during that period.

Broadly speaking Norway received two types of immigrants through the humanitarian channel: First, resettlement refugees selected by the UN and the Norwegian authorities. These individuals are accepted as refugees and granted a residence permit before arriving in the country. Second, asylum seekers who are people turning up at the border asking for protection from persecution in the home country. As a signatory of the 1951 Refugee Convention, Norway

is obliged to consider if they meet the criteria to become a refugee or to receive subsidiary forms of protection. If this is the case they are granted asylum and a residence permit. While having their applications for residence processed the asylum seekers have to spend a considerable amount of time in a reception center which is appointed by the Norwegian authorities. If the application is turned down, they should – in principle -leave the country. They may appeal the negative verdict, which implies an extension of period living in the reception center.

When they have received the residence permit both kinds of humanitarian immigrants (refugees) may – in principle – settle down wherever they want. The national authorities, by The Norwegian Directorate of Immigration, where during the period in question, responsible for finding local municipalities willing to settle accepted refugees and their families. The municipalities could be strongly urged, but not forced to accept the call from the national authorities. However, those who accepted received an integration grant to cover expenses in the first five years. During the period in question, it was a persistent problem that that the municipalities accepted too few refugees and that the period they had to stay in the detention centers, accordingly, became prolonged.

The refugees who need some kind of financial support from the public authorities must accept to settle down in the municipality, which is appointed to them. During the first years as residents in Norway, both the UN resettlement refugees and the asylum seekers get financial assistance to cover life expenses and are provided with basic housing by the authorities. In addition, they receive different types of training which should prepare them for the Norwegian labor market. The design of these support schemes have changed over time but have always been conditional on compliance with the settlement program, i.e. that the refugees are living in the municipality they are assigned to by the authorities. Brochmann (2003: 176) claims that the refugees who arrived during the seventies and early eighties – due to their dependency on public support - had very little influence with regard to the location of their residence.

We have not been able to find statistics about the degree to which refugees during the period in question chose to be completely self- reliant in these matters. In 2008, only approximately 100 out of nearly six thousand refugees settled in a municipality followed this path (IMDi 2008).

However, the majority who did comply with the residence program may also have had some influence on the decision regarding the location of their first settlement. The extent of this influence most probably vary between the two types of humanitarian immigrants. The resettlement refugees have very little contact with the authorities that handle their residence case before it is settled. In addition, their prior knowledge about regional differences in Norway most probably is limited, i.e. since their place of residence before arrival. Thus, it is reasonable to believe that this group of refugees had very small possibilities to choose their first settlement based on considerations regarding the labor market conditions in the region.

While waiting the asylum seekers may receive information about regional labor markets in Norway and form preferences about where to live. After the residence permit has been issued the refugees may - in principle- influence the outcome of the settlement process through communication with their caseworkers. Based on interviews with refuges and the responsible employees in the municipalities, Djuve and Kavli (2000) evaluate the public settlement policy at work during the nineties. They describe that the national authorities followed a set of main guidelines: *First*: To make the residence pattern more sustainable, people form the same origin should be settled close to each other and, in particular in the vicinity of family and friends, *second*: to limit the period the refugee had to stay in the detention the process should be as fast as possible. Refugees should be spread all over the country, and *third*: The preferences of the refugees should be followed if possible.[1]

[1] These guidelines are also described in public documents from the period: The Parliamentary White Paper (Asyl- og flykningepolitikken i Norge Stortingsmelding nr.17, 2000-2001) about asylum and refugee policy in Norway, Chapter 6.

According to the informants of Djuve and Kavli (2000) the first two guidelines; closeness to people from the same origin and to speed up the process, had highest priority among the responsible national authorities in The Norwegian Directorate of Immigration. The preferences of the refugees themselves – in isolation – had relatively low priority[2].

The yearly number of resettlement refugees is set by the Norwegian parliament. From 1990 to 2000 the number of refugees who was settled in a municipality varied between a few hundred and nearly fifteen hundred. The influx of asylum seekers started in the mid- seventies with Chileans and Vietnamese citizens seeking protection from violent upheavals and suppression in their home countries. People coming as asylum seekers soon became the dominant part of the inflow through the humanitarian immigration channel. Between 1990 and 2000, the number of people who were settled in a municipality from a detention center varied between close to seven hundred, in 1997, and nearly ten thousand five hundred in 1994. In 1995, the number was around four thousand. However, the high numbers in the middle of the nineties were exceptions in the aftermath of the war in Bosnia-Herzegovina. During the rest of the decade the yearly mean of refugees settled from a detention center was around fifteen hundred and the total ratio between resettlement refugees and asylum seekers approximately 0.5.

3. Data, sample and variables

We exploit rich individual register data, collected and organised by Statistics Norway. The sample consists of second and first generation immigrants that immigrated with their parents before the age of seven. The sample of second generation consists of those born 1975-1999. The sample of first generation immigrants consists of those born 1969-1999.[3]

[2] See Figure 2.1 and the related text.
[3] First generation immigrants are defined as individuals born outside Norway with two foreign born parents. Second generation immigrants are defined as individuals born in Norway, with two foreign born parents.

The overall sample we use in the analyses consist of children of first generation male immigrants who immigrated to Norway in the period 1975-1999. The fathers immigrated either alone or together with the mother. Approximately 50 per cent immigrated alone and 50 per cent together with the mother.[4]

We choose 1975 as the first year since this the year the "Immigration stop" was implemented (see section 2). We present analyses using two samples: the first sample consist of children of immigrants from 28 typical refugee and asylum countries.[5] The second sample is a trimmed sample, where we use information on emigration push factors in the different sending countries. Concretely, we use information from the "Terror scale" from Amnesty International and the US State department, and we limit the sample to children of immigrants from countries and periods where the level on the terror scale is at its highest level (Level 5). This index captures direct threats to safety: the degree to which the population is exposed to power abuse from the authorities (or by their lack of protection against such abuse) via imprisonment, torture, political murders, acts of war, and ethnic cleansing.[6] This latter sample is designed to increase the likelihood of having a sample of immigrants that arrive for purely humanitarian reasons. The conditions of the local labour market are unlikely to be the motivation for their first settlement in Norway. The sample of countries and periods are presented in Appendix, Table A1.

The geographical unit used is a labour market region, an aggregation based on commuting patterns between municipalities (Bhuller 2009). In total, there are 46 labour market regions in Norway.

[4] It is rare that the mothers immigrate alone as first immigrants. In our data (before limiting the sample), approximately 15 per cent of the sample consist of lone first immigrant mothers.
[5] The countries are Afghanistan, Somalia, Bosnia-Hercegovina, Sri-Lanka, Vietnam, Chile, Iraq, Iran, Ethiopia, Serbia, Kosovo, Eritrea, Croatia, Montenegro, Sudan (and South Sudan), Makedonia, Lebanon, Pakistan, Uganda, Rwanda, Kenya, Algeria, Congo, Palestine, Kuwait, Philippine, Morocco, Saudi Arabia.
[6] The source is US State Department. A description is available at: http://www.politicalterrorscale.org/about.php. Amnesty International produces a very similar index, which is strongly correlated with the one we use but available for fewer country-years.

The key explanatory variable is the measure of the local labour market condition at time of immigration. One possibility would be to use official unemployment rates for the total population. However, unemployment rates for the total population may not reflect the labour market condition for newly arrived immigrants. Furthermore, this measure is based on persons that have registered as unemployed job seekers. Some immigrants may have low incentives to register as unemployed if they have low labour market attachment and therefore do not qualify for unemployment benefits. Instead, we construct a measure of the local labour market condition at time of immigration by local employment rates, measured by the share of immigrant already residing in the local area aged 18-60 that are registered with earnings at least 2 times the base amount in the social security system.[7] This measure is meant to proxy for the local labour market opportunities for newly arrived immigrants.[8]

The main dependent variables for the children are the grade point average at the end of lower secondary school (GPA). GPA is a measure of the aggregate school performance from lower secondary school, and consists of grade scores from 10 main courses. The GPA is the criterion for admission to further studies in upper secondary school, and therefore should be considered a school performance measure of high importance. In addition, it is the first high stake school performance measure in the Norwegian educational system. In addition to measures of GPA, we also include school performance in 5^{th} grade, taken from national tests in calculus and language (English). These teste are not used as criterion for further development in the educational system, but they are well established tests, and they will give us further evidence about the effects of local labour market conditions and school performance. In all regressions, the scores are standardised with mean 0 and standard deviation 1.

[7] For example in 2010, the base amount was equal to 75,641 Norwegian kroner, which equal approximately 8,000 EURO.
[8] This measure is similar to the measure used in Godøy (2017).

For the father we include the following dependent variables: yearly earnings, and work experience. Yearly earnings include labour market earnings. Work experience is measured by the number of years the immigrant has with earnings above the base amount in the social security system.

As control variables for the children we include information on number of siblings, whether the child is the oldest born child or not, birth year, and whether he or she is first or second generation immigrant. As control variables for the father we include information on year of immigration, age at immigration, birth country, marital status, level of education (compulsory school, secondary school, higher education, unknown education). We include the same variables for the mother.

Table 1 presents some descriptive statistics for the father (upper half) and the children (lower half). We distinguish between full sample and trimmed sample. For the children we split by gender (since we split by gender in the empirical analyses).

Table 1. Descriptive statistics. Fathers and children. Mean values

	Father			
	Full sample		Trimmed sample	
Age at immigration	28,64		29,24	
Married	0.57		0.58	
Compulsory school	0.19		0.17	
Secondary school	0,29		0.33	
Higher education	0.20		0.24	
Unknown education	0.32		0.28	
Local employment rate	0.70		0.70	
Years since migration at first birth (years)	4.09		3.54	
N	7836		4933	
	Children			
	Full sample		Trimmed sample	
	Boys	Girls	Boys	Girls
Nation test calculus 5th grade	25.28	23.37	25.54	23.41
Nation test language (English) 5th grade	23.10	23.10	23.10	23.10
Grade point average (GPA)	3.74	4.10	3.74	4.11
Number of siblings	3.00	3.02	2.86	2.88
Oldest born	0.33	0.34	0.35	0.37
Second generation immigrant	0,75	0.75	0.69	0.70
N	8971	5158	8541	4894

For the father, the average age at immigration is 29 years. More than six out of ten are married. Regarding education at immigration, the largest share are those with secondary school as the

highest attained education level. A notably large share of individuals has missing data on education. This is unfortunately a common problem for newly arrived immigrants to Norway. Regarding the initial labour market condition, there are no differences between the two groups; both arrive in regions where the employment rate is 70 per cent.[9]

For the children, girls have a higher GPA than boys. This gender difference is well established and is also found among natives. Still, we note that the gender difference is established in lower secondary school. In 5th grade, boys are at the same level or better than girls. This latter finding is also well established from earlier research. Finally, more than two out of three children in our sample are second generation immigrants.

4. Empirical specification

For child i we estimate variants of equation (1):

$$(1) \qquad y_i = \alpha_1 + \alpha_2 LocEmpl_i + \alpha_3 X_i + \alpha_3 Z_i + \varepsilon_i$$

where X is controls for child i, including year of birth, level of education (in some specifications), number of siblings, whether child i is the oldest among the siblings, and whether the child is first or second generation immigrant. Z is parental controls for child i, including level of education, marital status, age at arrival, arrival year, and birth country, measured for both father and mother. Education and marital status are potentially endogenous variables affected by the initial labour market conditions; therefore, they are measured at time of immigration. The key explanatory variable is $LocEmpl_i$, measuring the employment level in the local labour market region when the father of child i immigrated. The key parameter to be

[9] Descriptive statics for OECD-immigrants (not presented), show that the comparable average employment rate in their first settlement region is 73%, suggesting that they are more sensitive to the state of the local labor market in their first settlement. In Table 3, we return to a simple comparison when we include OECD-immigrants.

estimated is α_3. Previous studies have found that parental effects on children might have different effects on boys and girls (see e.g. Rege et al. 2011), therefore, equation (1) is estimated separately for boys and girls.

The important channel through which local labour market conditions at immigration for the father potentially affects the children, is that initial labour market conditions matter for the fathers performance in the labour market, i.e., there is a direct effect for the father. We need to present evidence on this direct effect. To do that we estimate variants of equation (2):

$$(2) \quad y_{jk} = \beta_1 + \beta_2 X_j + \beta_3 LocEmpl_j + \varepsilon_j$$

where y_{jk} is a measure of labour market performance for father j, k years after immigration (goes from 2 to 15). We run separate regression for each k. X includes variables for the father and the mother (year of immigration, age at immigration, country of birth, marital status, level of education). The key variable is *LocEmpl*, measuring the short and long term impact of initial labour market conditions. The key parameter to be estimated is β_3.

An important assumption in the whole paper is that there is no sorting on unobservables, which means that initial local settlement should not be related to unobserved future labour market performance. This is not testable in our setting. However, we approach this potential problem; first by limiting the sample of immigrants to typical asylum and refugee sending countries, and by using push factors in the sending countries (using the terror scale). Second, we check for selection on observables, i.e., how observable characteristics at time of immigration is related to the state of the local labour market. Concretely, we estimate the following model:

$$(3) \quad LocEmpl_j = \alpha_1 + \alpha_2 X_j + \varepsilon_j$$

where X includes observable characteristics of the father and the mother at the time of immigration that may have an effect of future labour market performance.

Table 2 presents key estimates for the father from estimating equation (3). We present results for two samples; the full sample with all asylum and refugee countries, and a trimmed sample, using terror scale information (see data section for details). To look at the importance of birth countries of the father, we present estimates with and without controlling for birth country.

Table 2. Initial settlement and observable characteristics

	Full sample		Trimmed sample	
Variables	Coefficients (Standard error)	Coefficients (Standard error)	Coefficients (Standard error)	Coefficients (Standard error)
Married	0.00185 (0.00151)	0.00166 (0.00149)	-0.0000500 (0.00196)	0.000281 (0.00194)
Secondary school	-0.00149 (0.00129)	-0.00131 (0.00133)	-0.000760 (0.00227)	-0.000772 (0.00237)
Higher education	-0.00176 (0.00240)	-0.00124 (0.00244)	-0.000229 (0.00346)	-0.0000983 (0.00350)
Unknown education	0.000628 (0.00136)	0.000676 (0.00135)	0.00299 (0.00187)	0.00273 (0.00188)
Age at arrival	0.000134 (0.000112)	0.000147 (0.000111)	0.000231 (0.000155)	0.000248 (0.000160)
Birth country control		X		X
Observations	7760	7760	4910	4910
R^2	0.215	0.221	0.184	0.187

Note: Additional controls include: birth country, year of arrival and whether immigrated with a child or not. Level of significance: ***: 1 per cent, **: 5 per cent; *: 10 per cent.

All estimates are small and not significant. It is reassuring that education and age at arrival are not significantly related to the employment level at the time of immigration for the residing immigrant population, as these are variables that are typical positively related to labour market performance. Furthermore, the coefficients are not sensitive to inclusion of birth country controls, and the explained variance (R^2) is also insensitive to inclusion of birth country controls.

The estimates in Table 2 suggest that selection on observable does not play an important role. Even if we are not able to check for selection on unobservables, these results are reassuring as they are likely to be are correlated with unobservables, and they are positively correlated with future labour market developments.

Another indicator of the degree of randomness in the first settlement is the resettlement pattern . If the first settlement is unrelated to local labour market conditions one would expect the resettlement share to be relatively high, i.e., a large share would choose to move to another region after some time. Table 3 presents descriptives on the share that have moved out of the first settlement region after 2 and 5 years. We include the full sample and the trimmed sample. For comparison we also include a third column with immigrants from OECD-countries, which to a larger extent consists of individuals that have immigrated to Norway for labour market opportunities.[10]

Table 3. Share that has moved out of the settlement region

Years since immigration	Full sample	Trimmed sample	OECD – immigrants
Two years	0.22	0.28	0.07
Five years	0.37	0.43	0.18
N	7,835	4,933	790

Note: The OECD countries include: Sweden, Denmark, Finland, Australia, Belgium, Canada, France, Greece, Ireland, Iceland, Italy, Japan, Luxembourg, USA, Austria, Netherlands, New Zeeland, Portugal, Spain, UK, Switzerland, and Germany.

Among the full sample, 22 per cent have moved out of the initial settlement region within the first two years after immigration, compared to 28 per cent in the trimmed sample. This difference may suggest that the trimmed sample is more randomly distributed between regions, and therefore more unrelated to local labour market conditions. Their first settlement region

[10] Note that the OECD sample is rather small. This is because this sample is constructed the same way as the full sample and the trimmed sample, i.e., they must have children. A large share of immigrants from some of the OECD-countries typically are young immigrants without children, this is especially so for immigrants from the Nordic countries, for example Sweden.

will therefore most likely be less optimal with respect to labour market opportunities. The same pattern applies after five years. Interestingly, the share that has moved is much smaller among the OECD immigrants, only 6 per cent has moved out of the first settlement region after two years. This is as expected, since their first settlement would be more optimal with respect to labour market opportunities.

5. Results

We start by presenting results for the effect of initial local labour market conditions on short and long-term labour market outcomes for the father, i.e., this is the direct effect. Concretely, we estimate variants of equation (2).

Table 4 presents estimates for yearly earnings and work experience; 2, 5, 6, 7, 8, 9, and 10 years after immigration. For the earnings estimations, we also include individuals with zero earnings. Earnings are measured in current Norwegian kroner (NOK). All models include the full set of controls but we only present the results the local labour market indicator. We proceed by presenting results separate for the full sample (upper half) and the trimmed sample (lower half).

Table 4. The direct effects of initial labour market conditions for the father. The dependent variable: Yearly wages and work experience. OLS

				Full-sample			
				Earnings			
	Two years	Five years	Six years	Seven years	Eight years	Nine years	10 years
Local employment rate	147037.6***	146697.6***	127881.5***	91247.9***	95319.2***	90148.1***	80607.0**
	(29965.4)	(25910.3)	(29424.4)	(28539.0)	(27561.7)	(29844.3)	(32973.2)
Observations	12231	12231	12231	12231	12231	12231	12231
R^2	0.231	0.258	0.258	0.248	0.250	0.241	0.214
				Potential experience			
	Two years	Five years	Six years	Seven years	Eight years	Nine years	10 years
Local employment rate	2.942***	4.609***	4.822***	4.916***	4.890***	4.993***	5.052***
	(0.595)	(0.889)	(0.921)	(0.915)	(0.925)	(0.959)	(0.991)
Observations	12172	12226	12217	12213	12209	12201	12199
R2	0.380	0.384	0.378	0.370	0.371	0.355	0.347
				Trimmed sample			
				Earnings			
	Two years	Five years	Six years	Seven years	Eight years	Nine years	10 years
Local employment rate	116348.2***	136596.3***	116938.4***	85490.3***	95549.6***	93387.4***	76310.5**
	(31720.4)	(26419.3)	(27253.6)	(26208.1)	(23547.3)	(29155.5)	(31495.6)
Observations	7346	7346	7346	7346	7346	7346	7346
R2	0.236	0.285	0.291	0.284	0.277	0.263	0.221
				Potential experience			
	Two years	Five years	Six years	Seven years	Eight years	Nine years	10 years
Local employment rate	2.434***	3.916***	4.085***	4.142***	4.107***	4.252***	4.310***
	(0.664)	(0.945)	(0.975)	(0.947)	(0.953)	(0.964)	(0.949)
Observations	7315	7345	7335	7336	7333	7327	7325
R2	0.333	0.359	0.362	0.363	0.375	0.363	0.360

Note: Level of significance: ***: 1 per cent, **: 5 per cent, * 10 per cent. Standard errors are clustered at the level of the labour market region.

Results in Table 2 suggest that initial labour market conditions matter. Arriving to a local labour market where the employment rate is high, has both short and long term positive effects on future labour market earnings. Results suggest that the effects are still present 10 years after immigration. The effects are sizeable. For the full sample, the point estimate after 10 years is approximately 80 thousand NOK. This implies that if you initially settle in a labour market

region with a 10 % point higher employment rate among the existing immigrant population, you will on average earn 11000 NOK more 10 years after immigration.

The same pattern applies when using accumulated work experience as the dependent variable. Arriving to a region with favourable local labour market conditions has positive effects on accumulated work experience, many years after immigration. The work experience effect does seem to reach a plateau at approximately eight years since immigration. The experience variable is measured in years, this implies that if you initially settle in a labour market region with a 10 % point higher employment rate among the existing immigrant population, you can expect to gain 0.5 more years of work experience after 10 years. The positive effects on earnings and experience are found for both samples.

5.2. The effects for the children

Table 5 present the main estimates for the full sample and for the trimmed sample, separately for boys and girls. We include the full set of controls but we only present the estimates for the local employment rate.

The outcome variables are test scores in 5^{th} grade in calculus and language and grade point average at the end of compulsory school. All the dependent variables are standardised with mean 0 and standard deviation 1.

Table 5. Main regression results. Educational outcomes. GPA and national tests in 5th grade. Estimated coefficients and standard errors in parenthesis. Boys and girls

	Boys		Girls	
	Full sample	Trimmed sample	Full sample	Trimmed sample
	National test 5th grade- calculus			
Local employment rate	0.687*	0.845**	0.483	0.603*
	(0.396)	(0.412)	(0.337)	(0.352)
Observations	1987	1185	1967	1229
R2-adj	0.213	0.220	0.199	0.247
	National test 5th grade- language			
Local employment rate	1.028**	0.996*	0.349	0.743*
	(0.417)	(0.499)	(0.341)	(0.432)
Observations	1984	1187	1943	1210
R2-adj	0.212	0.235	0.228	0.271
	GPA			
Local employment rate	0.325***	0.357**	0.0723	0.0901
	(0.116)	(0.175)	(0.107)	(0.142)
Observations	8971	5158	8541	4894
R2-adj	0.197	0.233	0.209	0.245

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent, * 10 per cent. Standard errors are clustered at the level of the labour market region.

The estimates for national tests shows positive and significant effects for boys; for both calculus and language. The calculus results for boys using the full sample suggest that increasing the local employment rate with 10 percentage points increases the calculus score with 6.87 % of a standard deviation. The corresponding effect for the trimmed sample is 8.45% of a standard deviation. The results for language are somewhat larger in size. We find no significant effects for girls, except for a significant effect (at 10 per cent) for 5th grade language.

The GPA-estimates for boys also show positive and significant effects, suggesting the positive effect of initial favourable labour market conditions of the father on educational performance of sons are sustained and feeds into higher GPA. The positive effect is found for both samples. The point estimates suggest that if the father initially settles in a labour market region with a 10% point higher employment rate among immigrants, this increases GPA by approximately 3% of a standard deviation. Hence, the size of the effects is smaller for GPA at

age 16 than for test scores in 5th grade at age 10. Again, the significant effects are limited to boys, for girls we find much smaller and not significant effects.

The results for the control variables are in line with previous research; the oldest sibling gets the better grades, and high educated parents have children with better grades. This latter result applies for both fathers and mothers. Age at immigration – for both parents – are also positively related to school performance.[11]

Heterogeneity analyses

We have established that initial labour market conditions have an effect on school performance in both primary school and lower secondary school, and for both immigrant groups. In the rest of the paper we focus on school performance in lower secondary school, and for the trimmed sample.

In this section we present results for different subgroups, and we present results using two alternative measures of initial local employment opportunities. Column 1 and 2 presents results for first- and second-generation immigrants separately. Thereafter, we present results using characteristics of the mother, and characteristics of the local labour market at the mother's arrival. This estimation is limited to observations where the mother arrives first. Then, in column 4 and 5 we present results from an early (1975-1992) and late (1993->) period of arrival. Finally, column 6 and 7 present results using alternative measures of local labour market conditions at arrival. Column 6 defines local employment rate as the share with income above 1G, opposed to 2G in the original definition. One potential critique of the 2G definition is that it may pick up differences in income between regions, and not only employment opportunities. By lowering the threshold, we investigate this issue. Finally, column 7 uses local unemployment

[11] We have also estimated a model including the size of the local population (both natives and immigrants) as an extra explanatory variable (not shown). That did not reduce the size of the estimate for the local employment rate.

rate. The unemployment measure is constructed from individual administrative register information. This information is only available from 1992. Therefore, the analyses in column 7 is limited to arrival cohorts from 1992 and onwards. The upper half in Table 6 presents results for boys, the lower half for girls.

Table 6. Regression results by subgroups. Educational outcomes. GPA. Estimated coefficients and standard errors in parenthesis. Boys and girls

				Boys			
	(1) First generation	(2) Second generation	(3) Mother characteristics	(4) Early period 1975-1992	(5) Late period 1993->	(6) >1G employment	(6) Unemployment
Local employment rate	0.309	0.326*	-0.297	0.216	0.958*	0.527**	
	(0.444)	(0.172)	(1.036)	(0.158)	(0.542)	(0.239)	
Unemployment rate							-0.546
							(0.632)
Observations	1616	3542	375	3385	1773	5158	2210
R^2-adj	0.252	0.232	0.440	0.208	0.284	0.270	0.270
				Girls			
	(1) First generation	(2) Second generation	(3) Mother characteristics	(4) Early period 1975-1992	(5) Late period 1993->	(6) >1G employment	(6) Unemployment
Local employment rate	0.110	0.0828	-0.654	0.163	-0.446	0.188	
	(0.404)	(0.143)	(0.715)	(0.146)	(0.386)	(0.202)	
Unemployment rate							0.255
							(0.451)
Observations	1481	3413	417	3172	1722	4894	2135
$R^{2\text{-adj}}$	0.312	0.233	0.482	0.202	0.325	0.456	0.296

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent, * 10 per cent. Standard errors are clustered at the level of the labour market region.

The first two columns show that there are no differences in effects for first and second-generation boys. Furthermore, there are no effects of local initial employment rates when we use mother's arrival year. When splitting the period, we see that the positive impact of favourable initial labour market characteristics are much larger in the late period (1993→). This

result reflect that the time span, from arrival to the time for measurement of GPA is smaller for immigrants' that arrive in the late period (remember that the first years with GPA observations is 2002). A separate regression (not shown), including an interaction term between initial local employment rate and years since migration (YSM) for the father at birth, shows a negative interaction term between local employment rate and YSM, suggesting that the impact of the local employment rate is higher for low YSM.

Finally, for boys, we still find a positive and significant effect of the employment rate on GPA using the alternative employment rate definition. We also find a sizeable negative impact of the local unemployment rate on school performance. However, due to high standard errors, the effect is not significant. The non-significant estimate may partly be due to the shorter time period, which results in fewer observations. Furthermore, we argued earlier that there are some weaknesses of using this measure for our sample, namely that to be included among the unemployed you must register at the local employment office. The economic incentive for doing that is low for some immigrant groups since they are not eligible for unemployment benefits. For girls, the results are generally small and not significant, as presented earlier.

Robustness checks

School quality in lower secondary school may vary in some unobserved way, and this may affect individual school performance. In Table 7, we control for unobserved time fixed school quality by including school fixed effects in the estimation. In Table 7, we also control for years since migration (YSM) for the father at birth. Table 1 showed that the mean value of YSM for second-generation immigrant children is approximately four years. For first generation children, YSM takes negative values, with -6 years as minimum. Finally, the observed relationship between initial local labour market conditions and school performance may also reflect that regions with favourable labour market conditions tend to also have a more

resourceful immigrant population, a better local economy, better language training for immigrants, etc. We shed light on this question by adding a control for the local employment rate at the time of completion of lower secondary school, i.e., at age 16. Column 3 in Table 7 presents results from this exercise.

Table 7. Robustness checks. Educational outcomes. GPA. Estimated coefficients and standard errors in parenthesis. Boys and girls

	(1) Boys	(2) Boys	(3) Boys	(1) Girls	(2) Girls	(3) Girls
Local employment rate	0.366**	0.367**	0.366**	0.181	0.183	0.182
	(0.159)	(0.159)	(0.159)	(0.167)	(0.167)	(0.166)
School FE	X	X	X	X	X	X
YSM at birth of child		X	X		X	X
Local employment rate at age 16			X			X
Observations	5024	5024	5024	4768	4768	4768
R^2	0.374	0.374	0.374	0.370	0.371	0.371

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent, * 10 per cent. Standard errors are clustered at the level of the labour market region.

The results for boys are not sensitive to controlling for school fixed effects; we still find positive effects of initial favourable labour market conditions for the father. Furthermore, controlling for YSM of the father at the birth year of the child does not alter the coefficients. Finally, controlling for the local employment rate at age 16 does not change the main estimate for the father's local employment rate at the time of arrival. For girls, the results are small and not significant.

The effects presented so far are total effects, consisting of at least two potential effects: first a scarring effects, i.e. a potential long lasting effect of the initial "shock" (Arulampalam, 2001, Nilsen and Reiso 2014). To settle in a region with bad labour market opportunities, may reduce the labour market opportunities in the short run. This may also have long lasting effects if the bad experience in the short run sends a negative signal to potential employers. Second, an

effect may come through a combination of persistence of local labour market conditions and low regional mobility of the immigrants. Then, experiencing bad labour market conditions initially would increase the likelihood of experiencing bad labour markets conditions also in the future, and this will reduce labour market opportunities.

The above mechanisms are direct mechanisms, potentially affecting the father. Below we analyse if we can distinguish between these effects when it comes to the impact on the children. We shed light on this issue by estimating a modified version of equation (1):

$$(4) \qquad y_i = \alpha_1 + \alpha_2 LocEmpl_i + \alpha_3 X_i + \alpha_3 Z_i + \alpha_4 LocEmpl_{i(t)} + \varepsilon_i$$

where the extension compared to equation (1) is $LocEmpl_{i(t)}$, measuring the local employment rate among immigrants in the initial settlement region of the father t years after immigration. We choose t=5 and t=10. If scarring effects exist we should expect the estimate of α_2 should be sustained, after controlling for contemporaneous effects.

The correlation between the initial employment rate and the employment rate after 5 and 10 years are 0.69 and 0.59 respectively. Table 8 presents the results. The upper half when controlling for employment rate at t=5, the lower half when controlling for the employment rate at t=10.

Table 8. Robustness checks. Educational outcomes. GPA. Estimated coefficients and standard errors in parenthesis. Boys and girls

	(1) Controlling for employment rate at t=5 Boys	(2) Controlling for employment rate at t=10 Boys	(3) Controlling for employment rate at t=5 Girls	(4) Controlling for employment rate at t=10 Girls
Local employment rate	0.546***	0.669***	0.217	0.544**
	(0.199)	(0.243)	(0.188)	(0.242)
Observations	5158	5158	4894	4894
R^2	0.233	0.234	0.244	0.246

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent,

After controlling for contemporaneous effects in t=5 and t=10 we still find a positive and significant effect of initial labour market conditions of the father for boys. This suggests that the initial estimate of α_2 measures initial scarring effects. In general, the point estimates of α_2 increases in size after including future local employment rates. This reflects that initial and future local employment rates are positively correlated and both affect GPA positively. For girls the effects are still not significant. One exception is the estimate after controlling for local employment rate after 10 years.

Next, we analyse whether the results are sensitive with respect to three types of selection. First, the sustained impacts of initial employment conditions for the fathers in Table 2, may suggest that part of this pattern is explained by some immigrants with a high initial earnings capacity. We check for the severity of this by leaving out immigrants with fathers who had a yearly labour income which was among the top 5 per cent in our sample, two years after arrival. Second, we might be worried about state dependence for the fathers, i.e., the effect of past outcomes on current ones. To shed light on that issue, we include an individual variable for the father, measuring whether he was employed or not two years after immigration. Employment is defined as having yearly earnings of at least two times the basic amount in the social security system. Whether the father was employed or not, two years after immigrants, is of course a

potentially endogenous variable, measuring a combination of effects of past outcomes, and unobserved selection. It should therefore be interpreted with some caution.[12] Thirdly, we look at the issue related to fathers' movement out of the initial settlement region. As presented earlier among the trimmed sample, 28 per cent have moved out of the initial settlement region within the first two years after immigration. We control for father's initial mobility by including a between local labour market regions mobility dummy variable as an extra explanatory variable. Table 9 presents the results.

Table 9. Robustness checks. Educational outcomes. GPA. Leave out top earners, controlling for fathers own employment, and controlling for fathers initial mobility. Estimated coefficients and standard errors in parenthesis. Boys and girls

	(1) Leaving out high earning fathers	(2) Controlling for initial employment of the father	(3) Controlling for mobility of the father	(4) Leaving out high earning fathers	(5) Controlling for initial employment of the father	(6) Controlling for mobility of the father
	Boys	Boys	Boys	Girls	Girls	Girls
Local employment rate	0.316*	0.331*	0.370**	0.0660	0.0438	0.0363
	(0.175)	(0.175)	(0.167)	(0.142)	(0.146)	(0.141)
Observations	4936	5158	5158	4662	4894	4894
R^2	0.228	0.234	0.233	0.239	0.246	0.244

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent,

Leaving out high earning fathers reduces the estimates for boys somewhat, but the reduction is modest, and the effect is still significant. Controlling for initial employment of the father does not alter the main estimates much either. Finally, the estimate for boys are not affected by the inclusion of a regional mobility variable of the father, we still find positive and significant

[12] An alternative approach would be to instrument individual employment, for example by the initial local unemployment rate. This is the approach chosen in Åslund and Rooth (2007)

effects of the local employment rate in the father's initial settlement region. The estimates for girls are still not significant.

Mechanisms

We end by shedding light on some potential mechanisms, focussing on the effects of local initial labour market conditions on household income and marital stability. We established in Table 3 that father's labour income was directly affected. In this section we analyse if the same pattern applies when using household income. The distinction may be important if there are adjustments in the household in response to the initial labour market conditions, for example if the wife adjusts her labour supply in response to the father's earnings, potentially smoothing the household income. If so, the impact from the father will be dampened, and the argument for the importance of initial labour market condition will be reduced. Second, as mentioned earlier, marital stability of the household may be affected by difficult labour market conditions, which in turn may affect school performance of the children. We check if marital stability is affected by initial labour market conditions.

The two dependent variables are family labour income and marital stability. Family income is just the sum of the labour income of the father and the mother. Marital status is a dummy variable taking the value 1 if the father and mother of the child are still married, and zero otherwise. In both estimations we limit the sample to those fathers that initially are married to the mother of their child. Furthermore, in the estimation of family income, we limit the sample to couples that still are married in the respective years since migration (YSM). We estimate separate regressions for each YSM (we limit the presentation to 2, 5, and 10 YSM). Table 10 presents the results, with household income in the upper half, and marital stability in the lower half.

Table 10. Mechanisms. Household income and marital stability. Estimated coefficients and standard errors in parenthesis.

	Household income		
	2 years	5 years	10 years
Local employment rate	127688.2**	176127.3**	183273.8**
	(50196.2)	(69615.1)	(73643.5)
Observations	3118	3111	3037
R^2	0.250	0.330	0.346
	Marital stability		
	2 years	5 years	10 years
Local employment rate	-0.0281	-0.0374	-0.0594
	(0.0854)	(0.0852)	(0.0830)
Observations	3342	3342	3342
R2	0.624	0.620	0.586

Note: All models include the full set of controls. Level of significance: ***: 1 per cent, **: 5 per cent,

The upper half of the table shows that household income is significantly affected by initial local labour market conditions. To settle in a favourable local labour market has positive effects on the aggregate household income, both in the short and in the long run. This adds to the results in Table 3 by stating that it is not only the father's income that is affected. This result suggests that initial labour market conditions affect family income and thereby the family's economic resources, which could have a direct effect on school performance of the children. When estimating the same model for the same sample, but for fathers' income only, estimates (not shown) suggest that the income impacts for the father constitute approximately 70 per cent of the total impact for the family. Thus, the lion's share of the effects come from the father.

The lower half presents results for marital stability. In short, we find no effects of the initial local labour market conditions on marital stability. We cannot rule out that local labour market conditions affect the well-being and mental stress within the family, but we find no indications of it leading to marital dissolution.

6. Conclusion and discussion

The school performance of immigrants (both first and second-generation immigrants) in compulsory school is below those of natives (Statistics Norway 2016). There is a literature analysing school performance among second generation immigrants, and its determinants (see e.g., Bratsberg et al. 2012). In this paper we focus on the importance of one particular determinant, namely the local labour market conditions at the time of the parent's immigration. Concretely, we analyse the impact of labour market conditions at immigration on school performance for the immigrants' children. The school performance measure is the grade point average at the end of lower secondary school (GPA). GPA is a measure of the aggregate school performance from lower secondary school, and consists of grade scores from 10 main courses. The GPA is the criterion for admission to further studies in upper secondary school, and therefore should be considered a school performance measure of high importance.

The paper relates to the literature analysing effects of labour market conditions at immigrant's arrival (Åslund and Rooth 2007, Godøy 2017). These studies typically find that early earnings assimilation depends on a favourable initial labour market. We build on these papers and ask whether these effects also affect the next generation. Using that approach the paper also relates to the research literature analysing the effect of parental demand shocks on children's outcomes (see e.g., Rege et al. 2011).

Using high quality individual register data with a panel dimension and a unique parental-child identifier, we establish several findings: First, we establish the direct effect of initial labour market conditions on later labour market performance for the father. Along with several other studies in this field we find that later labour market performance of the father (measured by labour earnings and accumulated work experience) depend significantly on favourable initial labour market conditions. Second, we find evidence that this initial effect has knock on consequences for the school performance of the children. Concretely, for the sons, we find a

positive impact of initial favourable labour market conditions of the father on the grade point average in lower secondary school. Daughters' school performance seems to be unrelated to the same initial labour market conditions.

The results are robust with respect to several robustness checks; specifically we establish that the effect is most probably due to long lasting effects of initial scarring effects. This conclusion is based on the finding that the results do not disappear after controlling for contemporaneous effects, measured by future employment rate in the settlement region. Results are also sustained after controlling for selection issues, by leaving out high earning fathers, and controlling for father's own employment in the second year after immigration.

Our finding that sons are more sensitive than daughters to "shocks" in a family situation is supported by existing literature. A meta-analysis of studies looking at the causal effect of father absence (McLanahan, 2013) concludes that there is substantial evidence that father absence negatively affects children's social-emotional development, and educational performance at school and that these effects tend to be more pronounced for boys than for girls. More specifically, Lundberg (2017) finds that boys are relatively more likely to experience problems in school, including school suspensions, when their father is absent. Whereas girls are more likely to respond to father absence with increased indicators of depression, and are much less likely than boys to perform badly at school as a result of father absence.

Furthermore, studies looking at families where parents have a low socioeconomic status also find that boys are more negatively affected than girls. Brenøe and Lundberg (2017) use Danish register data to study how family characteristics affect children's outcomes. They find that family disadvantage, particularly low maternal education, has more negative effects on school outcomes of boys relative to girls. In a related study, Autor et al (2016) investigate the impact of family socioeconomic status (SES) on children's outcomes. They find that relative to their sisters, boys born in low SES households have a higher incidence of truancy and

behavioural problems throughout elementary and middle school, perform worse in standardized tests and are less likely to graduate high school and are more likely to commit serious crimes as juveniles.

Previous studies have also found that parental employment and income has a more significant effect on sons in comparison to daughter. Bratberg et al (2014) look at how parental disability pensions affects the probability that children also claim a disability pension later on in life. They find the strongest and most significant effect of an intergenerational correlation in disability pensions for the father-son link. When it comes to income, a number of studies have used exogenous changes in child income support to investigate the effect of parental income on children's outcomes. Milligan and Stabile (2011) exploit changes in child benefits in Canada to identify a causal link between parental income and children's educational and health outcomes. The authors find that for boys, parental benefits have much stronger effects on educational outcomes and physical health measures. For girls, benefits have much stronger effects on mental health measures but no significant impacts on test scores. Dahl and Lochner (2012) use a change in parental benefit in the US to investigate the link between family income and children's outcomes. They find that an exogenous family income increase of 1000 dollars raises children's test scores by 6% of a standard deviation and the effect of income for boys is twice as large as that for girls,. It is therefore not surprising that we also find significant effects of the initial local labour market conditions of the father on boys and not girls.

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Appendix

Table A1. Countries and period for immigration when the Terror Scale is at its highest level (5)

Country	Periods
Afghanistan	1979-1999
Somalia	1988-1996
Bosnia -Hercegovina	1992-1995
Sri Lanka	1983-1996
Vietnam	1976-1979
Chile	1986-1987
Iraq	1983-1999
Iran	1981-1989, 1995
Ethiopia	1976-1980, 1986-1988, 1998-1999
Serbia +Kosovo	1991-1984, 1998-1999
Eritrea	1998
Croatia	1992, 1995
Sudan	1988, 1991-1995
Makedonia	1994-1996
Rwanda	1991-1992, 1994-1999
Algeria	1993-1999
Congo	1993-1999
Kuwait	1990-1991