CPB Netherlands Bureau for
Economic Policy Analysis

Income differences across migrant groups in the Netherlands: an intergenerational perspective

This paper investigates income disparities across natives and the most prominent migrant groups in the Netherlands, those with a Moroccan, Turkish, Surinamese, or Antillean background. We use administrative data on incomes to estimate the relationship between child income and parental income for natives and each of the migrant groups separately.

On average, migrant children end up lower in the income distribution compared to native children, even if their parents have equal incomes.

CPB Background Document

Roel van Elk, Egbert Jongen en Patrick Koot

June 2019

1 Introduction

This paper investigates income differences across migrant groups in the Netherlands from an intergenerational perspective. In the Netherlands, incomes differ substantially across individuals with and without a migrant background. Studying such income differences is important, because structural disparities may point to unequal opportunities and, hence, underutilization of the full potential of the labour force. The persistence of income disparities across groups depends largely on the dynamics of income across generations. According to models of intergenerational mobility, income differences should disappear in the long run if migrant and native children have equal income distributions conditional on parental income (Becker and Tomes, 1979). The central research question of this paper, therefore, is how the income of the children is related to parental income. Do children with a migrant background have lower incomes compared to native children, conditional on parental income?

We focus on the four largest groups of non-Western migrants in the Netherlands: migrants from Turkey, Morocco, Surinam and the Netherlands Antilles. Migrants from Turkey and Morocco predominantly came to the Netherlands as labourers in the 1960s and 1970s, and in the 1970s and 1980s their families came over to be reunited. Surinam and the Netherlands Antilles are former Dutch colonies. Surinam became independent in 1975, the Antilles are still part of the Kingdom of The Netherlands. Most migrants from Surinam arrived in the years before and after independence (1973-1980). Together, these groups comprise 7.7 % of the total population in the Netherlands[1], and more than one third of the migrant population. These groups have been living in the Netherlands sufficiently long to enable us to track incomes of two generations.

We use administrative data on incomes to study intergenerational mobility by migrant group. In our main analysis we use data from children in birth cohorts 1983-1988. We measure children's income as their total (standardized) household income in 2016, when the children are aged 28-33. We measure their parent's income as their total (standardized) household income in 2003 (the earliest year in the data), when the children are aged 15-20. This measure reflects the economic resources available to the children when they are growing up. Standardized household income is informative on the welfare level of persons in a household and is the main measure used to determine income inequality in the Netherlands.[2] Since household income measures vary with marriage or cohabitation, we also present results using individual income measures for children.

Our empirical approach closely follows Chetty et al. (2018), who study racial disparities in intergenerational mobility in the United States by looking at the rank-rank relationship. We rank children based on their household income in 2016 and rank the parents of these children based on their household income in 2003. We then study intergenerational mobility patterns by regressing the children's income rank on a constant and their parent's income rank, for natives and each of the migrant groups separately. Such a rank-based approach is convenient from a statistical perspective because the conditional expectation of the children's income it yields is generally well approximated by a linear function of the parents' income (Chetty et al., 2014).

[1] See Jongen et al. (2019).
[2] Statistics Netherlands, see CBS (2018a).

We find that native children have a higher expected income level, conditional on parental income, compared to children from each of the four migrant groups. At the lowest parental income levels, native children on average end up 10 – 19 percentiles higher in the income distribution compared to migrant children. Income gaps diminish (a little) but stay present even at higher parental income gaps.[3] The estimated intergenerational income disparities are predominantly caused by income differences for males. The income of female migrants is much more comparable to that of native females, conditional on parental income. The finding that migrant children continue to fall behind native children even if their parents obtain equal income, suggests that income gaps will not automatically disappear.

The rest of this paper is organized as follows. Section 2 discusses the empirical approach we use to estimate the intergenerational mobility patterns for natives and each of the migrant groups. Section 3 describes the administrative income data, the estimation sample, and shows descriptive statistics. Section 4 presents the main empirical findings. These concern the estimated relationships between child income and parental income for natives and each of the migrant groups. Based on the estimation results, it also presents a long-run projection of income disparities across groups. Section 5 presents several supplementary analyses to assess the sensitivity of the main findings to using alternative income measures and different samples. Section 6 concludes.

2 Methodology

Following Chetty et al. (2014; 2018), we measure the level of intergenerational income mobility by assessing the correlation between the child income rank and the parent income rank. This rank-based approach to characterize intergenerational mobility patterns starts with ranking all children in our estimation sample based on their income and ranking the parents of these children based on parental income relative to all other parents with children in our estimation sample. Using these percentile ranks, we perform analyses at the individual child level by regressing his/her income rank on his/her parental income rank.[4] We estimate the following regression

$$y_{it} = \alpha_r + \beta_r y_{i,t-1} + \varepsilon_{it}, \qquad (1)$$

where y_{it} denotes child *i*'s percentile rank in the income distribution of children (generation *t*), and $y_{i,t-1}$ is child *i*'s parent percentile rank in the income distribution of parents (generation *t*-1). As we want to estimate this relation for each migrant group separately, *r* denotes the migrant group. The income ranks are always based on the entire estimation sample, even if we analyse subgroups. The main advantage of this rank-based approach is that the relationship between a child's income rank and his parent's income rank is well approximated by a linear function, in contrast to a log-log specification. This is statistically convenient and yields more stable estimates of the intergenerational mobility parameters (Chetty et al., 2014).[5]

[3] Only exception are Antillean children who reach income positions comparable to native children at the very top of the parental income distribution (see Section 4).
[4] Hence, one observation corresponds to one child in our sample. For each child, we use information on his/her (household or personal) income in 2016 and his/her parental (household) income in 2003 (see also Section 3).
[5] Many previous studies have estimated the intergenerational income elasticity by regressing log child income on log parent income (see e.g. Solon, 1999). A disadvantage of this approach is that the relationship between log child income and log parent income is generally not linear, which causes less robust estimates. Estimates of the intergenerational income elasticity are likely sensitive to the treatment of children with zero or small incomes (Chetty et al., 2014). The rank-rank slope is a closely related alternative measure of intergenerational income mobility which suffers less from this stability problem. See Chetty et al. (2014) for a more detailed description of the connection between the two measures.

The estimated parameters α_r and β_r can be interpreted as the absolute and relative rank mobility, respectively. Intercept α_r indicates the average income rank of children in migrant group *r*, whose parents have the lowest income position. A large intercept implies that children of parents in the lowest income percentile still reach a relatively high income position themselves. The slope β_r measures the correlation between a child's position in the income distribution and his/her parents' position in the income distribution. This parameter indicates how much the average child income rank increases if the income rank of the parents increases with 1 percentile. It takes values between 0 (highest relative income mobility) and 1 (lowest relative income mobility). If the slope equals 1, each child (on average) ends up at the same position in the income distribution as his/her parents. If the slope equals 0, all children (on average) end up at an equal position in the income distribution, no matter whether they grew up in a low income family or a high income family. Lower values of β_r thus imply higher relative intergenerational mobility, which means that child income is less correlated with parental income.

The intercept is, hence, informative on the (expected) outcome of children given a parental income level, whereas the slope is informative on the correlation between child income and parental income ('how much does the average child income rank increase if parental income goes up?'). In this paper we focus on differences in the estimated intergenerational parameters (intercept and slope) across natives and migrant groups. If the intercept varies (strongly) across natives and migrant groups, this implies (large) income differences conditional on parental income. More precisely, this indicates income differences across native and migrant children with parents in the lowest income percentile. If the slopes are (more or less) equal across groups, such income differences stay (more or less) equal over the entire parental income distribution. If the slopes differ across groups, income differences vary across the parental income distribution.[6]

The estimated parameters can be used to make a long run projection of the income differences across migrant groups. Assuming that the parameters are stable over generations, we can derive steady-state average income ranks for each of the migrant groups. From equation (1) it follows that the average income rank of migrant group *r* converges to a steady-state in which

$$\overline{y}_{rt} = \overline{y}_{r,t-1} = \overline{y}_r^{SS} = \frac{\alpha_r}{1-\beta_r} \qquad (2)$$

Stability of parameters over generations is given data limitations for the Netherlands an untestable assumption[7][8], especially regarding the relatively short period these migrant groups have been in the Netherlands. Hence, the quantitative predictions of the steady-state outcomes should be interpreted with caution. The steady-state results of this model are used as a way to provide insight into the future evolution of income disparities over generations (in case the intergenerational mobility mechanism does not change).

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[6] Please note that high relative mobility (a low value of the slope) within a migrant group could be the result of relatively good outcomes for children from low income families and/or relatively bad outcomes for children from high income families. Therefore, a high relative mobility need not be desirable if it is caused by worse outcomes for children from high income families.

[7] The administrative income data are available only from 2003 onwards. We have tried to test the stability assumption by focusing the analysis on second generation parents and their children. These 'third-generation' children are formally not defined as migrants by Statistics Netherlands since they are born in the Netherlands and both their parents are born in the Netherlands. The idea of using this group is that the relationship between income of 'third generation' children and their parents' income could provide a proxy for the future relationship between the incomes of second generation children and their children. However, this analysis turned out to be unfeasible due to the very low number of observations of 'third generation' children in most of the migrant subgroups. In addition, we have examined the use of other data from the income panel study (*IPO*). The income panel study has recorded incomes of panel members since 1985. However, as the study uses a sample of around 1.5% of the population, the number of observations within migrant subgroups is too small to perform meaningful analyses.

[8] Also in other countries, information on the development of incomes over multiple generations is very limited. The OECD reports that only two countries – Sweden and Belgium – have appropriate register data to study the relationship between labor market outcomes of children and labor market outcomes of their grandparents. These analyses suggest that gaps are persisting over generations (OECD, 2017).

3 Data

3.1 Data sources and sample definition

We use administrative data from Statistics Netherlands which contain information on household and individual income of all people living in the Netherlands. More specifically, we link information on (personal and household) income in 2003 - the earliest year available in the data - to information on (personal and household) income in 2016.[9] In addition to the income variables, our dataset also contains information on household composition (i.e. the members and their position in the household[10]), and information on migrant background, age and gender from the municipal population registers.

The main estimation sample consists of all children who (1) do not have a migrant background or have a Moroccan, Turkish, Surinamese or Antillean migrant background, (2) live at home with their parents in 2003, (3) have parents aged younger than 65 in 2003, (4) are born between 1983 and 1988, (5) live independently from their parents in 2016, (6) have strictly positive parental household income in 2003 and (7) have strictly positive own household income and non-negative personal income in 2016. An individual's migration background is based on his/her country of birth and his/her parents' country of birth. Individuals born abroad are qualified by Statistics Netherlands as *first generation migrants*. Their migration background is then defined as his or her country of birth. Individuals born in the Netherlands with at least one parent born abroad are qualified as *second generation migrants*. The migration background is then defined as his or her mother's country of birth, unless the mother's country of birth is the Netherlands. In that case, the migration background is defined as the father's country of birth. Using this definition we have selected children in households in 2003 who are either natives or have a Moroccan, Turkish, Surinamese or Antillean migrant background (first or second generation). Children of second generation migrants (the 'third generation') are not defined as migrants, but as natives by Statistics Netherlands. Hence, all children with a migrant background in our estimation sample are either first or second generation migrants.

We define 'parents' as the head of the household the child belongs to in 2003, and his or her partner. Hence, the child has been living with these adults at the moment we measure the parent household income, but these may not be the child's biological parents.[11] We select children who live with their parents in 2003, which implies that individuals living in an institutional household (such as homes for elderly, nursing homes or other health care institutions) or student household are excluded from the estimation sample. We also impose the restriction that parents are younger than 65 in 2003. This ensures that pension payments are not the main income source of the household and reduces the likelihood that grandparents serve as head of the household.

We select children born between 1983 and 1988. These children are aged between 15 and 20 in 2003, and aged between 28 and 33 in 2016.[12] We choose the birth cohorts 1983 – 1988 such that children are old enough to obtain a relevant income measure in 2016, while most of them still live in the parental household in 2003.

[9] The specific income files we merge are *IPI 2003*, *IHI 2003*, *INPATAB 2016* and *INHATAB 2016*.
[10] Position in the household is main wage earner, the (married or unmarried) partner of the main wage earner, child, or another member of the household.
[11] Hence the parent income is informative on the amount of available resources to the child when they are growing up. Since children do not necessarily grow up with the same parents during childhood (for example because of divorce), it is not a priori clear what is the best measure of the parent income to be informative on the available resources to a child during childhood. In case of migrants, linking children to their biological parents is not feasible due to missing information in the administrative files.
[12] Chetty et al. (2014) measure the incomes at similar ages. They measure parental income when the children are aged between 15 and 20, and child income when they are approximately 30 years old.

With a relevant income measure we mean one that is informative on lifetime income. If we would measure child income too early (say in their early twenties), it is probably not a good proxy for lifetime income. After all, highly educated children have higher expected lifetime income, but study longer, so that early career income likely underestimates the lifetime earnings potential. Measuring incomes at early ages could lead to biases in the estimated intergenerational income mobility parameters.[13] A potential drawback of this choice is that some of the (eldest) children in these birth cohorts already left the household in 2003, and hence, are not included in the estimation sample. This might affect our estimates if the fraction of home-leavers differs across migrant groups.[14] To assess the sensitivity of the results to the choice of the birth cohorts, we also report results when using birth cohorts 1986 – 1991. These children are between the ages of 12-17 in 2003 and likely all live at their parental home in 2003.

Furthermore, we impose that children live independently in 2016. This means that they neither live in an institutional household nor at their parental home. We remove children who still live with their parents in 2016 (11.7 % of the sample), because their household income then reflects the parent income rather than the child income.[15] Finally, we keep only children with a strictly positive parental household income in 2003 and a strictly positive child household income in 2016. We impose a child's personal income in 2016 to be nonnegative. These income restrictions exclude 1.5% of the sample.[16]

Our final estimation sample consists of 717,193 observations, of which 660,096 (92.0%) are natives, 16,016 (2.2%) have a Moroccan background, 15,578 (2.2%) have a Turkish background, 18,754 (2.6%) have a Surinamese background, and 6,749 (0.9%) have an Antillean background.

3.2 Variable definitions and descriptive statistics

In our main analyses we use standardized disposable household income as income measure for children and parents. The standardized disposable household income is the disposable income of the household, corrected for differences in household size and composition between households.[17] Correction for household size and composition is done such that the standardized disposable household income is the single-person household equivalent of the disposable income of the household. In this way, households can be compared in their level of welfare.[18] Below, we shortly use 'household income' to refer to the disposable household income. Alternatively, pre-tax incomes can be used instead of disposable income and non-standardized household income instead of standardized household income. In supplementary analyses we use unstandardized household income and pre-tax household income to assess the sensitivity of the results to the specific income measure. Since household income varies with marital status or cohabitation, we also use

[13] This bias is referred to as 'life-cycle bias' (Solon, 1999). Chetty et al. (2014) investigate the lifecycle bias by estimating rank-rank slopes for different ages at which the child income is measured. They find that the estimates stabilize around age 30.
[14] Estimates could be affected, for example if children with lower income mobility stay longer in the parental household.
[15] Hence, including these children would imply that we regress parental income in 2016 on parental income in 2003 for these children, which yields high correlation by construction.
[16] More precisely, we exclude children with a missing, negative or zero parental disposable household income or pre-tax household income. Only two observations have a zero reported household income. We also remove children with non-positive pre-tax household income to end up with a unique estimation sample for all analyses using different income measures (see Section 5). This restriction additionally excludes 19 observations. For the child household income in 2016 we impose similar restrictions. In addition we exclude children with a negative personal income in 2016. This leaves us with a single estimation sample we use for all analyses using either child household income or child personal income as outcome variable. Note that individuals with a zero personal income in 2016 are included in the estimation sample. These selections together exclude 1.5% of the sample. We exclude persons with negative (and a few zero) reported income because they are likely not representative of low income families, as they typically have higher wealth positions.
[17] Disposable household income consists of annual income from wages, self-employment, and wealth, plus benefits from income insurance and social benefits, minus paid income taxes and premiums.
[18] The parent standardized disposable household income is thus informative on the amount of resources available to a child.

personal child income as an alternative child's income measure.[19] This also allows us to investigate differences by gender.

Table 3.1 presents summary statistics for the estimation sample. It shows parental and child income measures and relevant background characteristics by migration background. The first row presents the mean parental household income (unstandardized) for natives and each of the migrant groups. Standard deviations are in parentheses. The second row presents corresponding parental household income ranks. Rows 3 and 4 show the same statistics for children. Rows 5-8 present the *standardized* household income measures similarly to rows 1-4. Household income is substantially larger for natives compared to migrants. This holds both for parental income and child income. The mean household income rank for migrant children is higher than the mean household income rank of their parents. Hence, migrant children on average end up higher in the income distribution compared to their parents. Differences between standardized and unstandardized income ranks can be attributed to differences in household size across groups. The average household size of Moroccan and Turkish parents (5.6 and 4.6 persons, respectively) is relatively large compared to natives (4.2 persons), while the average household size of Surinamese and Antillean parents (3.8 and 3.9 persons, respectively) is a little smaller compared to natives (row 11). Hence, the mean percentile income rank of Moroccan and Turkish parents based on the standardized household income is lower compared to their mean percentile income rank based on the unstandardized household income. Similarly, the percentile income rank of Surinamese and Antillean parents is a little higher if it is based on the standardized household income rank. This does not hold for child income ranks. The child income ranks differ less between the standardized and unstandardized measure, because the difference in household size (at age 28-33) across groups is much smaller (compare rows 12 and 11).

In addition to the household income measures, rows 9 and 10 also present personal income measures for the children. In section 4 we present analyses using the child personal income as outcome instead of the child household income. Natives have higher mean personal income compared to migrants. The average personal income ranks of migrants are reasonably in line with the household income ranks: they are a little higher compared to the standardized household income ranks; compared to the unstandardized household income ranks it depends on the specific migrant group which measure is larger.

The bottom panel also shows the percentage of first generation children and the percentage of children from single-parent families. First generation children are children who are born abroad and have come to the Netherlands together with their parents. Please note that both first and second generation children in our sample are children from first generation parents. The only difference between first and second generation children is the country they are born. First generation children are born abroad which implies that they have been in the Netherlands for a shorter period compared to second generation children. Especially among Antillean children a relatively large share (40.2%) is a first generation migrant. We define a child as being part of a single-parent family if he/she was living in a household with one parent in 2003. Natives are less likely to come from single-parent families compared to migrants. The fraction of single-parent families is especially large in Surinamese and Antillean families: around half of the Surinamese and Antillean children live in a single-parent household.

[19] Personal income represents income that can be attributed to an individual member of the household. It contains annual income from wages and self-employment, plus benefits from income insurance and social welfare, minus paid income insurance premiums.

Table 3.1 Descriptive statistics

	Dutch	Moroccan	Turkish	Surinamese	Antillean
1. Mean household income parents (€)	44,567 (32)	29,644 (109)	29,845 (133)	32,554 (111)	34,869 (281)
2. Mean percentile rank parents (based on household income)	52.4 (0.03)	25.7 (0.18)	26.6 (0.19)	32.0 (0.20)	34.2 (0.36)
3. Mean household income child (€)	42,887 (33)	33,477 (175)	36,991 (191)	35,855 (154)	34,885 (171)
4. Mean percentile rank child (based on household income)	51.5 (0.04)	35.4 (0.23)	40.9 (0.23)	39.4 (0.22)	37.7 (0.36)
5. Mean standardized household income parents (€)	22,637 (16)	13,392 (44)	14,778 (61)	17,483 (52)	18,510 (135)
6. Mean percentile rank parents (based on standardized household income)	52.6 (0.03)	17.1 (0.15)	22.7 (0.17)	34.0 (0.19)	35.6 (0.36)
7. Mean standardized household income child (€)	29,798 (21)	22,301 (109)	23,638 (104)	24,897 (92)	24,567 (171)
8. Mean percentile rank child (based on standardized household income)	51.8 (0.04)	31.2 (0.22)	34.9 (0.22)	38.5 (0.21)	37.0 (0.36)
9. Mean personal income child (€)	33,645 (39)	24,145 (153)	25,577 (188)	27,662 (163)	27,574 (286)
10. Mean percentile rank child (based on personal income)	51.6 (0.04)	34.6 (0.23)	37.4 (0.23)	40.9 (0.21)	40.2 (0.35)
11. Household size parent	4.2	5.6	4.6	3.8	3.9
12. Household size child	2.4	2.6	2.8	2.4	2.3
13. Percentage first generation children	-	26.3%	22.2%	19.4%	40.2%
14. Percentage single parents	13.2%	17.2%	20.8%	51.1%	48.0%
Number of observations	660,096	16,016	15,578	18,754	6,749

4 Main estimation results

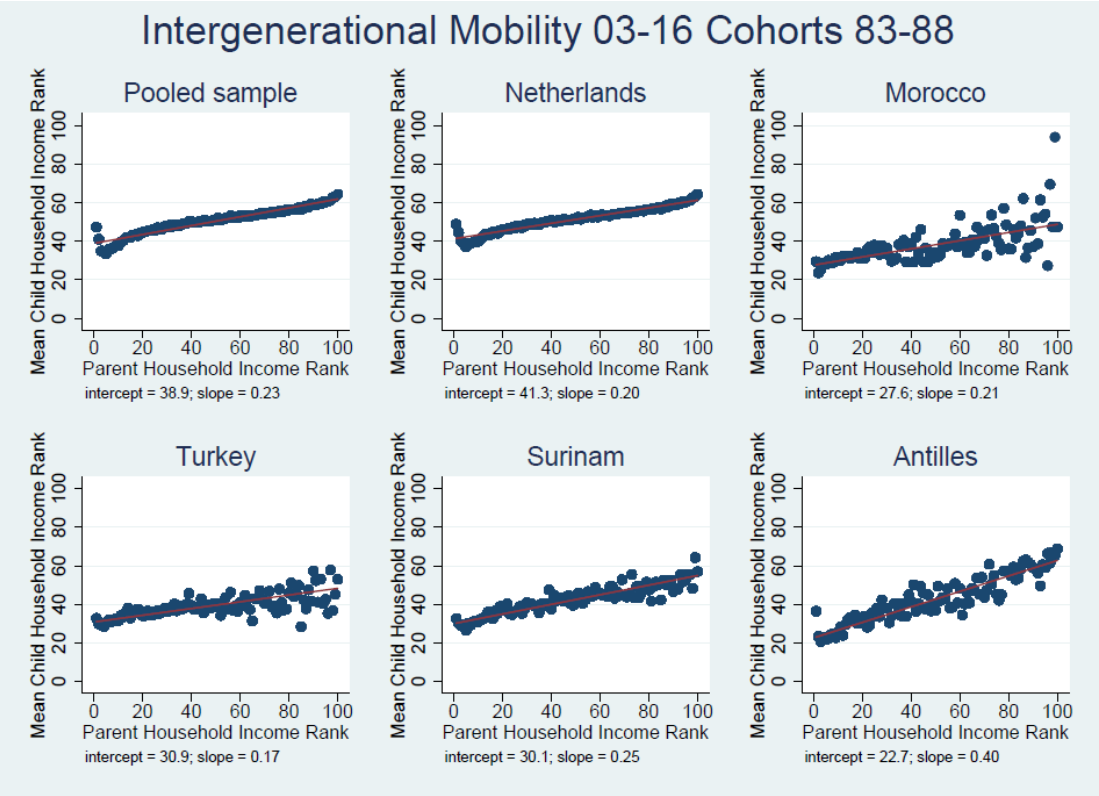
4.1 Estimated mobility parameters by migrant group

This section presents the estimated absolute and relative mobility parameters for each of the migrant groups. Figure 4.1 plots the mean standardized household income rank of children (vertical axis) at the standardized household income rank of parents (horizontal axis), for the pooled sample and for each of the migrant groups separately. It also presents the linear fit and the estimated constant (absolute mobility) and slope (relative mobility).

There is an almost linear relationship between the average child income rank and the income rank of the parents in the pooled sample. Only exception to this linear relationship is the very bottom of the parental income distribution. The mean income rank of children from the parents with the very lowest income ranks is relatively high compared to the mean income rank of children from other low income parents. This is likely

caused by parents with a significant wealth position and no or very little income from wages or self-employment.[20] For natives, the relationship is similar, because this group concerns 92 % of the estimation sample. The figures for the migrant groups show some more deviation around the linear approximation of the relationship. This is likely due to the lower sample sizes, and more precisely, to low densities at specific parts of the parental income distribution. The presented average child income ranks are then based on fewer observations, and hence show more variation. We especially observe large deviations for Moroccans at the right part of the income distribution, where very few Moroccan parents are located (see appendix A for the density plots for each of the migrant groups).

Figure 4.1 Intergenerational mobility by migrant group



In the pooled sample we find a relative income mobility of 0.23. This implies that a 10 percentile point increase in parent income is associated with an increase in the average child income rank of 2.3 percentile point. Chetty et al. (2018) report an estimated relative mobility of 0.35 for the United States. This indicates that the income of children is less dependent on the income of their parents in the Netherlands compared to the United States. The relative income mobility in the Netherlands is a little lower compared to countries such as Denmark and Canada. Chetty et al. (2014) present estimated rank-rank slopes of 0.18 and 0.17, respectively, for these countries.

Most migrant groups have relative income mobility comparable to natives. The estimated rank-rank slope for natives (0.20) is close to the estimated rank-rank slope for Moroccan (0.21), Turkish (0.17) and Surinamese (0.25) migrants.[21] The only exception is the much steeper slope for children with an Antillean background (0.40), which indicates that their income is much more strongly related to their parents' income.

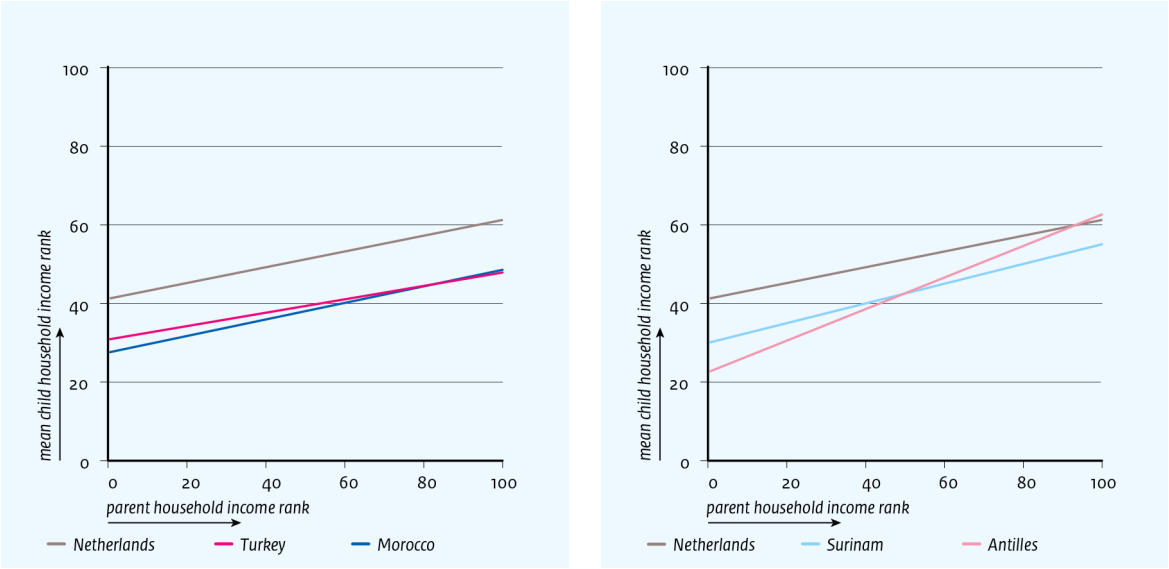
[20] The share of households with large wealth positions is relatively high among households in the lowest income classes (source: Statline, Statistics Netherlands, https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83835NED/table?dl=1F5FC). The results are not sensitive to the inclusion of the bottom 5 % of the parental income distribution. An additional analysis without these observations yields similar findings (for each of the migrant groups).

[21] The differences are small, but statistically significant (except for the difference between natives and Moroccan migrants).

In contrast, we find clear differences in absolute income mobility between natives and migrants. The estimated constant is substantially larger for native children compared to children with a migrant background. For natives the constant is 41, which implies that Dutch children from parents in the lowest income percentile (on average) still reach the 41th income percentile themselves. For Moroccan, Turkish and Surinamese individuals we find an estimated constant of 28, 31, and 30, respectively. Absolute income mobility is even lower for Antillean children, with an estimated constant of 23. Hence, native children from parents in the lowest income percentile end up 10 – 19 percentiles higher compared to children with a migrant background from parents in the same income percentile.

From the estimated parameters it follows that native children (on average) reach higher income levels compared to migrant children, conditional on parental income. The larger estimated constant for natives indicates income differences at the bottom of the parental income distribution. The more or less equal slopes between natives and migrants imply that these income differences persist across almost the entire income distribution. Figure 4.2 presents the estimated linear relationship between parent household income rank and child household income rank for natives and each of the migrant groups (shown in Figure 4.1) together in one graph. This presentation makes it easier to compare mean child income ranks between natives and migrants at a given parental income rank. We observe income gaps across the entire parental income distribution, except for the Antillean children at the top parental income ranks. The steeper slope for Antilleans implies that the income gap declines when moving up to higher parental income levels. At the top of the parental income distribution, income differences between Dutch and Antillean children are negligible. For all other migrant groups, income disparities remain even at the highest parental income levels.

Figure 4.2 Estimated relationships between child and parent household income ranks



The income gaps arise both from lower upward mobility and higher downward mobility for persons with a migrant background (Table 4.1). Table 4.1 presents the transitions between bottom and top quintiles of the parental and child income distribution for natives and each of the migrant groups. Among children with parents in the bottom quintile, 13.4% of the native children moves up to the top quintile, while only 5.5 – 7.8% of the children with a migrant background reaches the top quintile. Around half of the migrant children with parental income in the bottom quintile end up in the bottom quintile themselves, while only 30% of the native children do. Among children with parents in the top quintile, 12% of the native children fall back to the bottom quintile, while 14.3% (Antillean) to 29.3% (Moroccan) of the migrant children do.

Table 4.1 Transition matrix: upward and downward mobility by migrant group

	Netherlands	Morocco	Turkey	Surinam	Antilles
P (child in Q1 | parent in Q1)	29.6%	51.4%	44.9%	45.6%	56.1%
P (child in Q5 | parent in Q1)	13.4%	7.1%	7.8%	7.8%	5.5%
P (child in Q1 | parent in Q5)	12.0%	29.3%	27.4%	21.5%	14.3%
P (child in Q5 | parent in Q5)	30.1%	18.2%	16.6%	22.3%	35.8%

4.2 Personal incomes

Since the result of the analyses at the household level may partly be driven by differences in marriage or cohabiting behaviour across migrant groups, we now perform similar analyses using the personal income as outcome for the children. This corrects the income measure for the number of earners in a household and allows us to analyse differences between males and females. We regress the personal income rank of the child on the standardized household income rank of the parents. Figure 4.3 shows the estimated relationships for natives and each of the migrant groups and for males and females separately.

For males we find substantial income differences between native and migrant children conditional on parental income. These income differences are comparable to those found in the analysis at the household level. Among children with parents in the bottom income percentile, income gaps between natives and Moroccan, Turkish, Surinamese, and Antillean children are 16, 10, 13, and 18 percentiles, respectively. We also find that income gaps persist over the entire parental income distribution, although they decrease somewhat in magnitude at higher parental income levels. As in the prior analysis, we find that income gaps between native and Antillean males almost disappear at the top parental income levels.

The incomes of native and migrant females are much more comparable conditional on parental income. At the bottom parental income rank, Moroccan and Turkish females have expected income ranks which are 4 to 6 percentiles below expected income ranks of native females. These income gaps increase a little with parental income rank. Surinamese females reach very comparable income to native females conditional on parental income (over the entire distribution). This also holds for Antillean females, who have lower expected income compared to natives at low parental income levels, but higher expected income at high parental income levels.

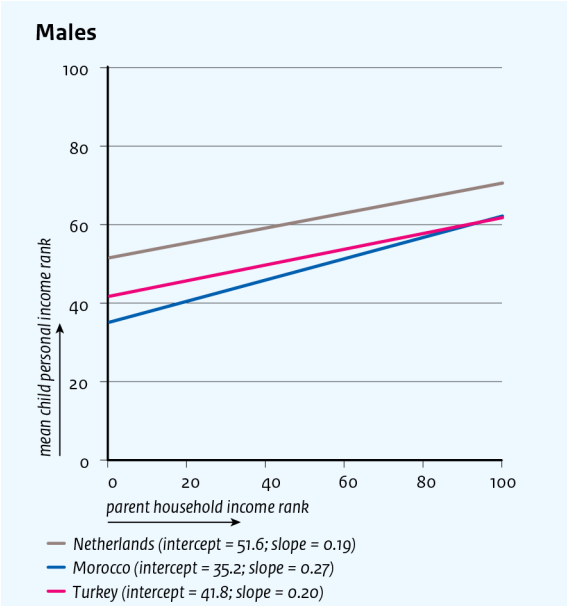
Hence, the intergenerational income differences across migrant groups at the household level are predominantly driven by males. This, however, does not mean that existing income disparities across female natives and migrants will automatically disappear, because women often choose a partner with the same migration background.[22]

[22] Statistics Netherlands, see CBS (2018b).

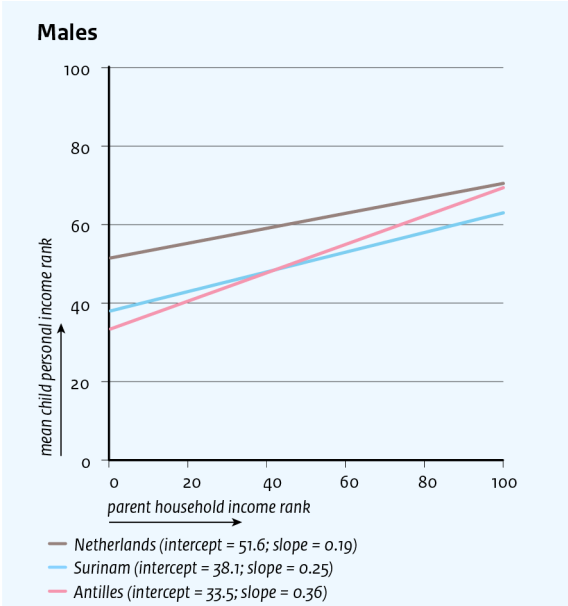
Figure 4.3 Estimated relationship between parent household income and child personal income (males and females)

Males

a) Natives, Moroccan, and Turkish

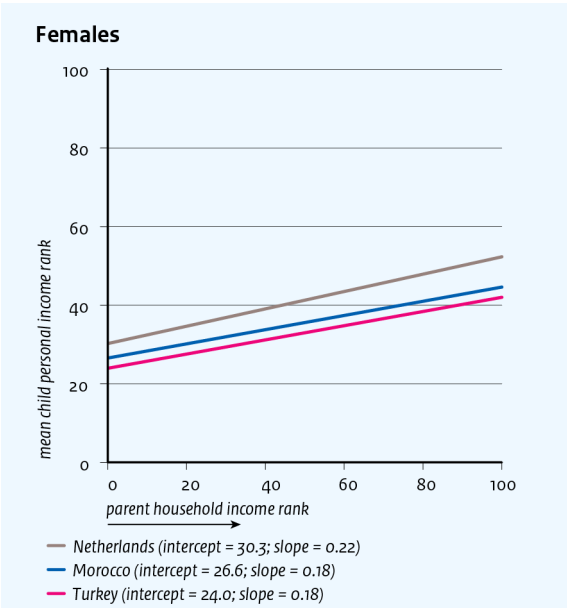


b) Natives, Surinamese, and Antillean

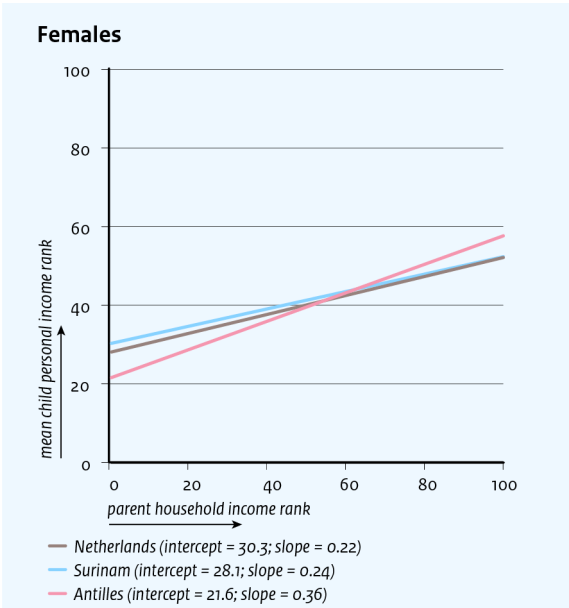


Females

a) Natives, Moroccan, and Turkish



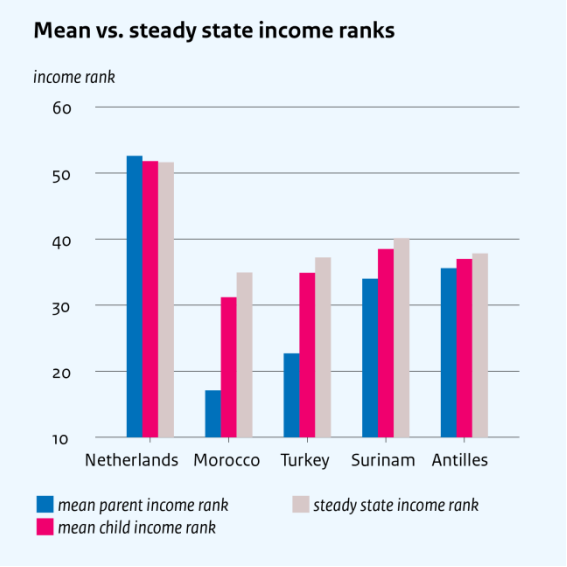
b) Natives, Surinamese, and Antillean



4.3 Persistence of income disparities

The estimated parameters provide insight into the evolution of income disparities, if these relations remain stable over future generations. If we assume that the connections between parental income and child income are stable over generations, we can make a projection of the long run income gaps. Plugging the estimated parameters presented in Figure 4.1 into equation (2) gives us the steady-state mean income ranks for natives and each of the migrant groups.[23] Figure 4.4 presents the mean income rank of the parents, the mean income rank of the children, and the steady-state mean income rank by ethnic group.

Figure 4.4 Mean parent income rank, mean child income rank, and steady-state income rank



The resulting steady-state income ranks suggest substantial income differences between natives and migrants also in the long run. The steady-state income rank for natives is 52, while the steady-state income ranks for individuals with a Moroccan, Turkish, Surinamese, or Antillean background equal 35, 37, 40, and 38, respectively. The persistence of the income gaps can be explained by the finding that migrant children continue to fall behind native children even if their parents obtain similar income levels (see Figure 4.2).

5 Sensitivity analyses

This section probes the robustness of our main findings, by using different income measures and estimation samples. Section 5.1 presents analyses using alternative income measures, and section 5.2 presents analyses using alternative samples.

[23] Note that the steady-state income rank for each group equals the intersection point of the 45 degree line with the linear relationship between parental and child income (presented in Figure 4.2).

5.1 Alternative income measures

The main outcomes are not importantly affected if we use other income measures. In the primary analyses we have used standardized disposable income as income measure for parents and children. Alternative income measures are the unstandardized disposable household income and the pre-tax household income. As discussed in Section 3.2, standardizing corrects the household income for the size and composition of the household. The income ranks based on unstandardized disposable income differ a little from those based on standardized income (see Table 3.1). Appendix B presents similar income statistics for parents and children based on pre-tax household income. The income ranks based on pre-tax household income are mostly well comparable to those based on unstandardized disposable income. To assess the sensitivity of the results to the choice of the income definition, we perform additional analyses using the other income measures.

Another issue is that we measure parent standardized disposable income in a single year (2003) in the main analyses. Previous studies have suggested that an average income over multiple years is preferable because income in a single year might be a noisy measure of lifetime income.[24] To address this issue we perform an additional analysis where we define parental income as the average standardized disposable income over the years 2003 and 2004.

Table 5.1 presents the results of estimating equation (1) with different income measures. The upper panel presents the estimated intercepts and slopes by migrant group. The first row replicates the main estimation results. The other rows report the estimated parameters for the alternative analyses, with parental and child income (both) based on unstandardized disposable household income (row 2), (both) based on pre-tax household income (row 3), or with parental income calculated as the average standardized disposable household income over the years 2003 and 2004 (row 4). The bottom panel presents the corresponding steady-state mean income ranks (that follow from the estimated parameters).

Table 5.1 Estimation results using different income measures

	Dutch	Moroccan	Turkish	Surinamese	Antillean
Estimated intercept and slope					
1. Baseline (standardized disposable household income)	41.3; 0.20	27.6; 0.21	30.9; 0.17	30.1; 0.25	22.7; 0.40
2. Unstandardized disposable household income	42.5; 0.17	31.6; 0.15	37.2; 0.14	33.2; 0.20	27.3; 0.31
3. Pre-tax household income	41.6; 0.19	30.9; 0.18	34.5; 0.17	31.7; 0.22	25.2; 0.35
4. Average standardized disposable household income over two years (2003 and 2004)	40.9; 0.21	27.7; 0.22	31.1; 0.19	29.9; 0.26	23.1; 0.41
Steady-state mean income ranks					
1. Baseline (standardized disposable household income)	52	35	37	40	38
2. Unstandardized disposable household income	51	37	43	42	40
3. Pre-tax household income	51	38	42	41	39
4. Average standardized disposable household income over two years (2003 and 2004)	52	35	38	40	39

[24] If income in a single year is not a good proxy for lifetime income, the estimates might suffer from attenuation bias (Solon, 1992). This attenuation bias can be reduced by averaging income over several years (Black and Devereux, 2010). Attenuation bias is only a concern with respect to the dependent variable (parental income) and not with respect to the independent variable (child income). A noisy measure in child income would not lead not to bias in the estimates (though it gives less efficient estimates).

Using unstandardized household income instead of standardized household income yields higher estimated intercepts and lower slopes for each of the migrant groups. The steady-state mean income ranks for migrants that follow from these estimates are higher compared to the baseline. The increase is, however, not substantial for most groups. Steady-state ranks increase by 2 percentiles for Moroccan, Surinamese, and Antillean people. Only exception is the steady-state rank of Turkish migrants, which increases by 6 percentiles. In sum, the income ranks of the migrant groups are higher when based on unstandardized incomes, but still, the analyses suggest substantial income gaps between natives and migrants. Using pre-tax household income yields comparable results to the analyses based on the unstandardized disposable household income. The intercepts are marginally lower and the slopes are a little higher. The steady-state mean income ranks hardly change when using pre-tax household income instead of unstandardized disposable household income. The estimated parameters are very similar when we calculate parental income as the average over two years. The corresponding steady-state ranks are almost identical to the baseline.

5.2 Different estimation samples

This section explores the robustness of the primary estimates by using different estimation samples. First, we use alternative birth cohorts of the children. We select younger children, as compared to the main analysis, who are born between 1986 and 1991. These children are aged 12 – 17 in 2003 and 25 – 30 in 2016. The choice of the birth cohorts is related to a trade-off. The advantage of including these younger children is that likely all of them still live in the parental household in 2003. The disadvantage is that a larger share of them has not left the household in 2016. Indeed, 24.7% of the children in these birth cohorts do not live independently from their parents in 2016 and, hence, is excluded from the sample.[25] Second, we further restrict the age of the parents to 35 – 55 in 2003. This increases homogeneity of the included households and reduces the risk of measuring income of the parents too late in their career to be informative on lifetime income.[26] Third, we investigate whether it matters if a child grows up in a single or two-parent household. Especially Surinamese and Antillean children often grow up in single-parent families (see Table 3.1). We explore how these differences across migrant groups affect the results, by restricting the sample to household with two parents. Fourth, we address differences between first- and second-generation children. First-generation children have (on average) been living in the Netherlands for a shorter period compared to second-generation children. Differences in the share of first-generation children across migrant groups (see Table 3.1) may influence the results. We explore this by including only second-generation children in the analysis.

Table 5.2 presents the estimated parameters and corresponding steady-state mean income ranks for each of the four alternative samples. The structure of the table is similar to Table 5.1. The main findings are robust to the use of different birth cohorts. Including children from birth cohorts 1986 – 1991 (instead of 1983 – 1988) yields only slightly different intercepts and slopes. The steady-state mean income ranks are well comparable to the baseline. Moroccan and Turkish migrants have a little higher mean income ranks, while Surinamese and Antillean migrants have a little lower mean income ranks. Restricting the age of the parents to 35 – 55 does not affect the estimation results. The estimated parameters are almost identical to the baseline. Selecting only children from two-parent households hardly affects the estimated parameters for the Moroccan and Turkish subgroups. Surinamese and Antillean migrants, among who the share of single-parent families is much larger, have higher estimated intercepts and lower slopes. In total, the Surinamese and Antillean migrants end up a

[25] Another disadvantage may be that we measure child income at earlier ages (25 – 30). Chetty and Hendren (2018) measure child income at similar ages. We are not able to test whether measuring the income at earlier ages leads to a lifecycle bias in our estimates, because the estimated parameters at different ages also reflect changes caused by differences in the included children who live with their parents in 2003 and live independently in 2016.

[26] Similar to the risk of measuring child income too early, measuring parental income too late might also induce a lifecycle bias. It is optimal to measure income somewhere in the middle of the lifecycle (Bohlmark and Lindquist, 2006).

little higher in the steady-state income ranking (compared to the baseline); the steady-state income rankings for the other groups are unaffected. This finding suggests that living in a single-parent family is a not a crucial determinant of long run income disparities. If we focus the analysis solely on second generation children, the estimated intercept and steady-state mean income ranks increase slightly for Moroccan, Turkish, and Surinamese migrants. The difference with the baseline outcome is largest for Antilleans, among who the share of first generation children is significantly larger compared to the other groups (see Table 3.1). For Antilleans the intercept is larger and the slope is lower, which results in a higher steady-state mean income rank.

Table 5.2 Estimation results using alternative samples

	Dutch	Moroccan	Turkish	Surinamese	Antillean
Estimated intercept and slope					
1. Baseline	41.3; 0.20	27.6; 0.21	30.9; 0.17	30.1; 0.25	22.7; 0.40
2. Birth cohorts 1986 - 1991	41.8; 0.19	29.6; 0.18	32.8; 0.17	29.0; 0.24	21.9; 0.36
3. Age of parents 35 - 55	41.4; 0.20	27.3; 0.22	31.4; 0.17	30.3; 0.25	23.0; 0.40
4. Two-parent households	42.5; 0.19	27.8; 0.21	31.1; 0.17	34.1; 0.21	25.3; 0.37
5. Second generation migrant children	41.3; 0.20	29.1; 0.21	32.0; 0.18	30.4; 0.26	28.7; 0.34
Steady-state mean income ranks					
1. Baseline	52	35	37	40	38
2. Birth cohorts 1986 - 1991	52	36	40	38	34
3. Age of parents 35 - 55	52	35	38	40	38
4. Two-parent households	52	35	37	43	40
5. Second generation migrant children	52	37	39	41	43

The overall picture that emerges from the set of sensitivity analyses is that the main findings are quite robust to the use of different samples. The estimates change a bit, depending on the specific subsample and migrant group. This causes differences in the mutual ranking of migrant groups based on their steady-state income positon. However, all sensitivity tests still yield substantial income gaps between natives and migrants.

6 Conclusions

This paper has investigated income disparities across natives and the most prominent migrant groups in the Netherlands - those with a Moroccan, Turkish, Surinamese, or Antillean background - by using administrative income data from Statistics Netherlands. We estimate the relationship between child income rank and parental income rank for natives and each of the migrant groups separately.

The main finding is that migrant children (on average) end up lower in the income distribution compared to native children, even if their parents earn equal incomes. The estimation results are robust to using different income definitions and various estimation samples.

The analyses suggest that income disparities between natives and migrants do not disappear if the estimated intergenerational parameters do not change. Assuming a stable relationship between child and parental income over generations, a long-run projection of the mean income ranks shows substantial income gaps between natives and migrants. The reason for this is that children continue to fall below their native peers even in case of similar parental income.

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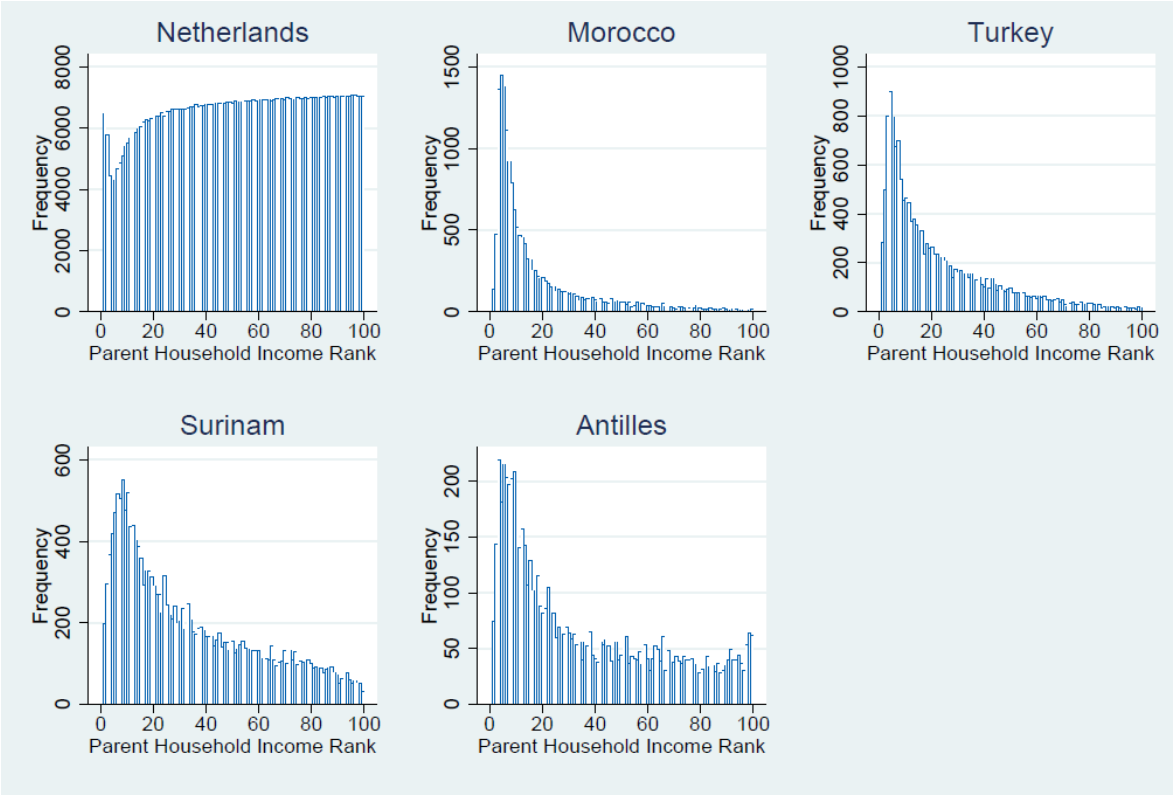
Appendix A

Figure A.1 Distributions of parent household income ranks by migrant group



Appendix B

Table B.1 Income statistics based on the pre-tax household income

	Dutch	Moroccan	Turkish	Surinamese	Antillean
Mean pre-tax household income parents (€)	74,642 (54)	40,504 (200)	43,812 (217)	51,304 (223)	56,109 (563)
Mean percentile rank parents (based on pre-tax household income)	52.5 (0.03)	21.6 (0.17)	25.1 (0.18)	32.4 (0.20)	34.6 (0.37)
Mean pre-tax household income child (€)	71,753 (61)	53,206 (311)	57,575 (339)	57,847 (295)	56,151 (516)
Mean percentile rank child (based on pre-tax household income)	51.6 (0.04)	34.8 (0.23)	38.7 (0.23)	38.9 (0.22)	37.1 (0.37)