Segmented Paths of Welfare Assimilation

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Abstract

This paper investigates the extent to which first-generation immigrants in the Netherlands undergo segmented paths of welfare assimilation and its underlying mechanism. Using unique longitudinal panel administrative data (2007-2015) based on the entire Dutch population from the Statistics Netherlands (CBS), we estimate the trajectories of immigrant welfare utilization over the working-age life course, which is employed as an indicator of economic marginalization, vis-à-vis those of two base groups from the native populations representing different economic segments of the host country: average Dutch natives and Dutch natives with low education level. The results show that, while mainstream assimilation is the dominant trend, it is not a common path for all. The risk of persistent marginalization exists and concentrates among those marked by structural and human capital disadvantages in spite of upward intragenerational mobility. The worst scenario projected is a lack of assimilation to neither segment, suggesting prospective emergence of an ethnic underclass at the bottom of the economic ladder. The main policy implications are twofold. First, automatic closing of the immigrant-native gap over time should not be presumed if a level playing field is not provided for all regardless of their type of immigration and ethnic background. Second, the need for distinction between immigration policy and refugee policy should not be obscured by myopic rhetoric of immigrants as one homogenous group, as systematic discrepancy is being observed between refugees and other types of migrants in both the patterns and mechanisms of welfare assimilation.

1. Introduction

Immigration has emerged as one of the defining themes in the latest Dutch election where an unprecedented surge in populist parties materialized. In 2018, over 3.9 million people with a migration background reside in the Netherlands, comprising 23% of the total population. Despite contentious public discourse on the extent of immigrant-native gap in welfare utilization, which has profound policy implications with respect to the economic consequences of immigration, as well as the effectiveness of socio-economic integration of immigrants and their children, relevant scientific knowledge remains scant (Van de Beek, 2010). On one hand, the lack of disaggregation in existing evidence has obscured the vast heterogeneities of the immigrant populations. On the other hand, the empirical documentation of over-representation of non-western immigrants in welfare figures (e.g. CBS, 2016; Zorlu, 2013; SCP, 2009; SCP, WODC & CBS, 2005) and the subsequent attribution of immigrants' economic burden on the host country to their welfare costs (e.g. Roodenburg, Euwals & Rele, 2003) have been based, exclusively, on cross-sectional and static analysis.

The shortcomings of such methodologies have been well documented in the literature. On one hand, cross-sectional analysis of welfare use is subject to estimation biases, as identification of the effects of aging, cohort, period and selective remigration from assimilation effect is difficult if not impossible (see e.g. Borjas, 1994). On the other, initial labour market outcomes of migrants have been shown to be a poor approximation of their ultimate position in the future (Chiswick et al., 2005). Even with panel data, static models fail to capture dynamic processes (Akay, 2016) although they are used in most economic assimilation studies. The dynamic life-course approach, while avoiding such severe biases, brings to attention a question pivotal to the understanding of immigrant welfare use: Do immigrants tend to converge to the welfare utilization level of natives over time? If their utilization level will change with time spent in the country, the initial costs of welfare should not be used alone to infer the lifetime welfare costs of immigrants (Hansen & Loftstrom, 2003).

Existing research on welfare assimilation, as part of the broader process of economic assimilation, has yet to provide a uniform and conclusive answer to this question. With the majority of studies conducted in the American context, evidence on welfare assimilation is scarce for Europe and absent for the Netherlands, primarily due to a lack of quality panel administrative data. Most existing studies, guided by the immigrant assimilation hypothesis (IAH), dedicated almost exclusive attention to the effects of years since migration (YSM) (Chriswick, 1978) and human capital (Borjas, 1985) for explaining post-migration

experiences. The intuition behind this reasoning is that the longer immigrants reside in the host country, the more they accumulate skills, knowledge and experience specific to the destination country to improve their labour market position and lessen the use of social benefits. In other words, welfare and economic assimilation, meaning a trend of upward mobility towards average natives, is a natural process that should take place over time. However, empirical evidence seldom aligns with such predictions, as persistent differences in the economic integration outcomes of non-western immigrants has been consistently observed across country contexts even after 20 years of residence (see e.g. Akay, 2016, 2007; Hansen & Loftstrom, 2003). While successful economic and welfare assimilation achieved by western immigrants in host countries can be quite well explained, the theory appears insufficient for explaining the lack of assimilation.

Segmented assimilation theory, first put forward by Portes & Zhou (1993), offers new perspectives pointing to the potential diversity of the assimilation process. Diverting from the traditional view of a uniform assimilation process, it stresses that the relationship between YSM and assimilation depends on into which segment of the stratified host society immigrants are incorporated. For the first generation, differences in modes of incorporation in the receptive context and human capital are deemed decisive to whether assimilation to the middle class is achievable. This can perhaps extend our current understanding of welfare and economic assimilation and make sense of the empirical findings, especially regarding the observed divergence from average natives and the role of factors other than duration and human capital.

These have led us to pose three research questions. First, do first-generation immigrants undergo segmented paths of welfare assimilation over the working-age life course instead of a uniform path of mainstream assimilation? Second, are the prospects of upward mobility exclusive of the disadvantaged groups? Third, to what extent do structural and human capital disadvantages, namely negative modes of incorporation and low human capital, predict marginalization in spite of migrants' aspiration for integration?

According to the classification of persons with a foreign background (CBS, 2001), first-generation immigrants are defined as those who are born abroad with at least one parent born abroad, and Dutch natives are those with both parents born in the Netherlands. We will make use of longitudinal administrative data (2007-2015) based on the entire Dutch population from Statistics Netherlands (CBS) to simulate the welfare assimilation trajectories for the immigrant populations by their area of origin, entry category, education level and gender. To further identify the effects of human capital and modes of incorporation in the receptive context, we estimate adjusted predictions at mean values (APM) allowing variations only in the parameters of interest in order to isolate potential

influences of confounding factors. In this way, the limitations of descriptive analysis, which is suitable for providing a snapshot of the situation albeit parsimonious for explanatory analysis, could be overcome.

In this paper, the analysis of assimilation is confined exclusively to the economic domain due to the explicit focus of this research on predicting and explaining welfare assimilation. Economic assimilation and welfare assimilation refer to the speed and extent of reduction in the immigrant-native gap in economic outcomes and welfare utilization propensity respectively. The base groups for different assimilation outcomes will be discussed in Section 3.3.

This research provides the first longitudinal evidence on welfare assimilation for the Netherlands. From a theoretical perspective, it provides an alternative means of operationalization and empirical evidence on the first generation for segmented assimilation theory when most, if not all, studies of segmented assimilation have focused on the children of immigrants. Moreover, through bridging the economics and sociology literatures on immigrant integration, it complements the descriptive and explanatory functions of conventional welfare and economic assimilation models. From a methodological perspective, through undertaking a dynamic life-course approach, it addresses the shortcomings of static and snapshot analysis of welfare use.

The paper is structured as followed: the institutional background will be first outlined, followed by literature review and conceptual framework. Data description, methodology and empirical results from the data analysis will then be presented. The paper will conclude with robustness check and discussions on the findings.

2. Institutional Background: Welfare System and Reform in the Netherlands

The Dutch welfare system comprises three pillars: social insurance, social assistance and old-age pension (Blommesteijn & Mallee, 2009). This research focuses on five welfare programs available for the working-age populations. Of the largest scale are social assistance (bijstandsuitkering) and unemployment benefit (WW uitkering), the latter of which falls under the category of social insurance. Under these two programs are three specific income support schemes for the older unemployed. While official categorization places the Older Unemployed Workers Income Scheme (IOW) under the social assistance category, Income Provisions for Older Unemployed or Partly Disabled Workers (IOAW) and Income Provisions for the Older Unemployed or Partly Disabled Self-employed Persons

Income Scheme (IOAZ) are part of the unemployment benefit category. All five schemes are encompassed in our measure of welfare use, which will be broadly referred to as welfare unless specified otherwise.
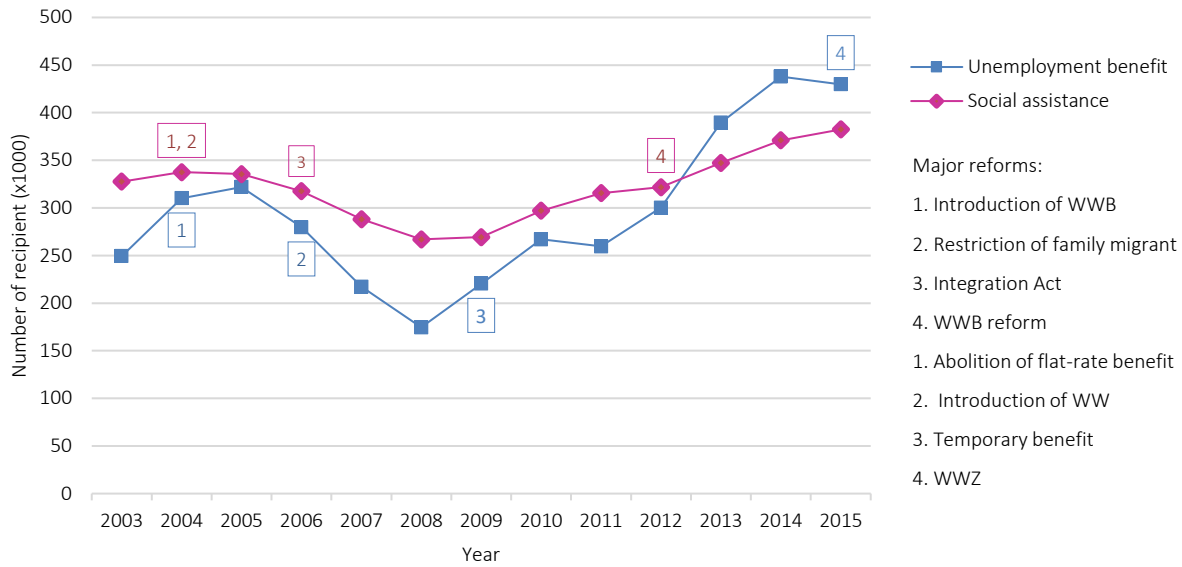
A series of fundamental reforms have been carried out in the 2000s, marking the shift of the Dutch welfare state from welfare to workfare, with the central objectives to reduce inflow to welfare and increase outflow to employment (Delson, 2010). Graph 1 and 2 below show the number of recipients in each program, and the timing of major policy changes concerning the working-age populations. The general eligibility, relevant reforms and their potential impacts of each program during the period from 2003 to 2015 will be discussed, with respect to their accessibility and duration.

Accessibility and duration of unemployment benefit have become increasingly stringent over the past decade. As of January 2004, to promote activation of unemployment benefit recipients and old-aged workers, the short-term flat-rate benefit for unemployment benefit recipients within two years after the end of the earning-related unemployment benefit and for old-aged workers who lose their job at 57.5 to claim for a maximum for 3.5 years was abolished. In 2006, the Unemployment Insurance Act (Werkloosheidswet, WW) reduced the maximum duration of unemployment benefit from 5 years to 38 months, depending on the length of employment history, and tightened the eligibility criteria to having worked 26 out of the preceding 36 weeks, instead of 39 weeks. Such contributory nature indicates that younger people, newly arrived immigrants, and refugees who have newly relocated out of the reception center would have no access to unemployment benefit. In response to the financial crisis, from January 2009 up to July 2011, the Ministry of Social Affairs and Employment temporarily allowed firms confronting a sharp reduction in the volume of trade to reduce working hours of its employees, who could receive a temporary part-time unemployment benefit (Knegt, 2012).

The Work and Security Act (WWZ) concerning the flex law, dismissal law and unemployment law came into effect as of the beginning of 2015. The maximum duration of unemployment benefit was further reduced from 38 to 24 months. After receipt for six months, which was initially a year, acceptance of any suitable job is compulsory, while income compensation would be provided for those who accept a job with salary lower than the unemployment benefit.
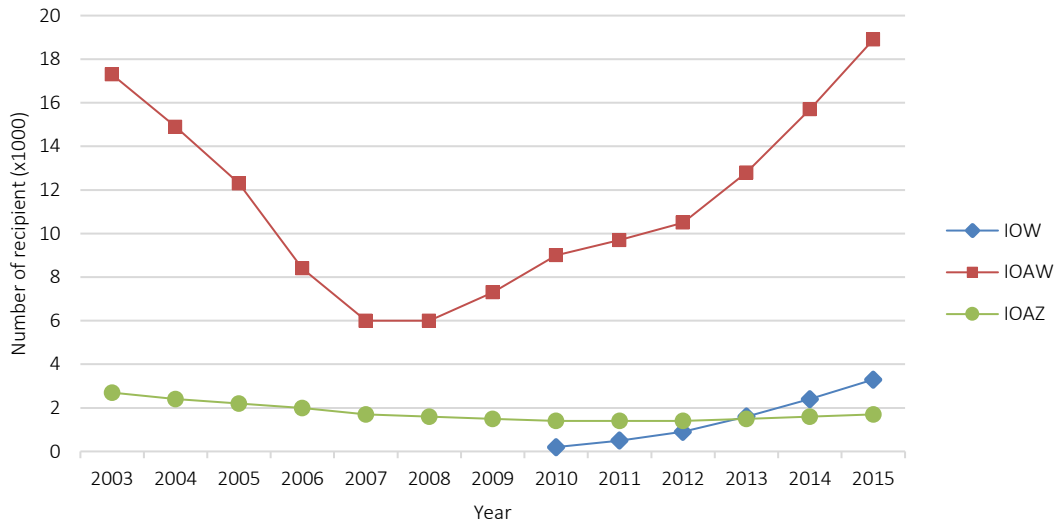
IOW, IOAW and IOAZ are three types of benefits for the older unemployed before the retirement age. IOAW and IOW are for those aged 50 and 60 years old or above respectively after termination of their unemployment benefit (WW) or sickness benefit for the partially disabled (WGA). IOAZ is for older self-employed persons who have to stop working because their company lacks sufficient revenue.

Graph 1: Major reforms and size of social assistance and unemployment benefit programs

Major reforms:

1. Introduction of WWB
2. Restriction of family migrant
3. Integration Act
4. WWB reform

1. Abolition of flat-rate benefit
2. Introduction of WW
3. Temporary benefit
4. WWZ

Source: Author. Adapted from CBS Data Portal (2018).

Graph 2: Size of IOW, IOAW and IOAZ programs

Source: Author. Adapted from CBS Data Portal (2018).

Only individuals who are ineligible for or have exhausted the unemployment benefit and disability benefit may have access to social assistance, a means-tested program which serves as a safety net. The Work and Social Assistance Act (WWB) introduced in 2004 grants a minimum income to all eligible individuals aged above 18 whose incomes or assets are insufficient to meet the essential living costs. Two features of the WWB are particularly relevant to the accessibility and duration of social assistance: decentralization

and its focus on activation. Municipalities have become financially responsible and thus incentivized for controlling the volume through activating social assistance recipients and restricting inflow. They can define their own target groups for special policies on exemptions and extra allowance. To note, the norms for social assistance payments are centralized to mediate the inter-municipal variations in payment levels.

In 2012, a few activation-focused amendments have been made to the WWB. Income assessment was tightened up to apply to the entire household. Stricter requirements apply for single parents to be exempted from job search with a maximum duration of five years. The WIJ scheme (Investing in Youth Act) intended for young people aged between 18 and 27 and the WWIK (Work and Income Act for Artists) were abolished and merged with WWB. Municipalities have the right to ask recipients of WWB, IOAZ and IOAW to do unpaid work in return. In 2015, the Participation Law further integrates WWB, WSW (Sheltered Employment Act) and WAJONG (Disablement Assistance Act for Handicapped Young Persons). WSW was terminated, and access to WAJONG was restricted to only young people who are permanently disabled with no potential for work capacity.

Access of immigrants to social assistance has been further limited indirectly due to changes in immigration and integration policies. The Linkage Act (1998) specifies that only immigrants with a regular residence permit for an indefinite period of time can receive social assistance, and those with a temporary permit could risk losing their residence if they apply for social assistance. A new restriction on family reunification and formation was introduced in 2004 requiring those who wish to bring a non-Dutch family member to the Netherlands to prove to have sufficient incomes and long-term employment. The Integration Act in 2006 specifies that earlier non-EU immigrants who are dependent on social assistance must pass integration tests to be entitled to permanent residence. In the same year, a new limitation was added to restrict the access of EU immigrants to social assistance within the first three months of stay in the Netherlands.

To account for the effects of major policy changes, several variables are included as controls. Firstly, province fixed-effects are controlled for to control for local effects beyond the local labour market conditions, such as subtle differences in local welfare policies on special exemption and availability of top-up benefit. To be noted, the welfare norms and eligibility criteria are centralized and thus uniform across local units. Given that there are 355 municipalities and 13 provinces in the Netherlands, we follow the practice of other assimilation studies to control for local effects at a higher geographical unit. In the analysis of the third research question, we assign the same observation year and province for each individual to control for influences from the reforms discussed above on the inflow, stock and outflow of these programs. Considering the generally less stringent immigration

requirements faced by migrants from earlier cohorts, the arrival cohort is assigned to be the same for all migrants.

3. Literature Review

3.1 Conceptual Framework: Bridging the Theoretical Approaches

Various approaches have been advanced from economics and sociology to study immigrant adaptation in the host country, from which we have identified three competing models for our study of welfare assimilation. Similarities and differences in their descriptive and explanatory functions will be discussed, with the goal to incorporate insights from existing models to formulate our hypotheses. Table 1 summarizes the main theories of the models.

Table 1: Competing models on economic assimilation

Competing model	Discipline	Major determinant(s)	Predicted patterns of assimilation
Classic assimilation theory	Sociology	YSM	Straight-line, or at most bumpy, assimilation to the mainstream of host society
Immigrant assimilation hypothesis (IAH)	Economics	YSM, conditioned by human capital	Immigrants with higher human capital assimilate more quickly to average natives
Segmented assimilation theory	Sociology	Modes of incorporation	Upward assimilation to the middle-class or downward assimilation to the underclass

Source: Author.

As pioneer of assimilation theories in the sociology literature, the classic assimilation model dates to the 1920s as sociologists of the Chicago School sought to understand the incorporation of European immigrants and their descendants in the U.S. Focused on the role of YSM, the theory predicts a uniform straight-line process of upward assimilation towards the mainstream over time (Park & Burgess, 1925). Convergence is assumed an inevitable destination for all immigrants and their children (Waldinger & Perlmann, 1998).

However, fundamental changes in the American society have brought the classic model into question regarding its applicability to the contemporary world (e.g. Portes & Rumbaut, 2001; Rumbaut, 1997; Portes & Zhou, 1993). On one hand, the composition of immigrant inflow to the U.S. before and after the WWII substantially differs. White European immigrants, who share relatively similar characteristics and skill levels as the native population, have been increasingly replaced by migrants from markedly diverse backgrounds – they are different not only in skin color, but also the type and amount of human capital they possess. On the other hand, economic restructuring gave rise to an hourglass economy with a bifurcated labour market, which has become arguably less receptive to

immigrants (Portes & Zhou, 1993). The model has been thereby criticized for its inability to explain the widening gap in the levels of opportunities and disadvantages between recent immigrant cohorts and the natives. Recent development of the theory (e.g. Alba & Nee, 2003) has come to recognize that the assimilation path could be bumpy and lengthy for some but will nonetheless converge to the mainstream.

The second model, the immigrant assimilation hypothesis (IAH) from the economics literature, also emphasizes the effect of YSM on economic adaptation, but that such effect is conditioned by the amount of human capital (Chiswick, 1978), in particular destination-specific human capital (Chiswick, 2002). Upon arrival, an initial immigrant-native wage gap is anticipated, since their pre-migration skills, such as language and qualifications, are not directly transferable to the host country. As time passes, immigrants improve their host-country-specific skills and close the wage gap from natives. The immigrant-native gap might not be closed, however, if a relevant knowledge deficiency, namely under-investment in destination-specific human capital, or discrimination against foreigners persists in the host country. In other words, the role of factors other than human capital, including structural or societal factors, can at best influence the extent of upward assimilation. In this perspective, the role of YSM is decisive to economic assimilation through influencing the accumulation of destination-specific human capital.

Despite variations, these two models share two similar assumptions: a positive relationship between YSM and assimilation, and the prediction of mainstream assimilation via upward mobility. However, with increasing availability of data on the children of recent immigrants, the empirical observations of persistent differences in assimilation outcomes concentrated among certain immigrant groups have cast doubts on the descriptive and explanatory power of these models (see e.g. Hirschman, 2001; Gibson, 1997; Waters, 1996). Given equal residential duration as the children of natives, second-generation immigrants are supposed to achieve comparable levels of education and labour market outcomes. Why do some groups of immigrant children tend to have worse education outcomes, and why, even given the same level of education, some groups of immigrant children have worse labour market outcomes than the children of natives? This points to the possibility that more complex societal and structural mechanisms underlie the process of economic assimilation.

Segmented assimilation theory, an alternative theoretical perspective, confronts the classic models with the fundamental challenges that assimilation might not a uniform process for all immigrants and their children, and that the relationship between YSM and assimilation is not necessarily positive depending on the segment of society to which immigrants assimilate (Bankston & Zhou, 1997; Zhou, 1997). As immigrants arrive at the host society, which is stratified into segregated and unequal segments thanks to increasing labour

market bifurcation, assimilation is essentially the process in which they are absorbed into these different segments. The path of assimilation thus divides not only in terms of the extent and pace of assimilation, but also the direction and destination. While some migrant groups will follow the rosy route of upward assimilation and join the middleclass, the more disadvantaged will however be cut off from economic mobility and experience downward assimilation into the underclass.

Instead of asserting a deterministic role to individual-level dynamics as in the classic models, segmented assimilation theory posits that it is the interplay between structural, societal and individual factors that will decide the fate of immigrants and their children. For first-generation immigrants, structural factors particularly the modes of incorporation are the most deterministic, which refer to the reception by the government and host community. If unfavourable policies and/or prejudice towards certain ethnic minorities exist(s), their upward mobility is likely to be hindered. On the contrary, favourable reception could promote the emergence of strong ethnic communities, which could offer a middle-range pathway to mainstream assimilation for those facing negative modes of incorporation through ethnic capital spillover.

On one hand, the segmented assimilation theory offers a new perspective to our descriptive understanding of the immigrant adaptation process by differentiating between the destination of assimilation and the path of assimilation. The current understanding about how much and how fast assimilation takes place can be broadened to take into account "assimilation into which reference population" (Tran, 2016). On the other hand, although it sheds lights on the importance of opportunity structure on immigrant integration, it comes with the deficiency of neglecting the agency of immigrants. As Lutz (2017) puts it, immigrant integration is a product of immigrant capacity and immigrant aspirations. While the institutions will determine the amount of opportunities available, such personal aspirations or incentives, which can be realized such as through investment in destination-specific human capital as mentioned in the IAH, will decide the extent to which such opportunities are utilized and transferred into actual and observable progress of economic and welfare assimilation.

3.2 Empirical Evidence on Welfare Assimilation

In the following section, existing evidence on the patterns and explanatory factors of welfare assimilation will first be presented. We will then discuss a major identification problem noted in the literature and outline the research gap which this study intends to fill.

3.2.1 Patterns and Explanatory Factors of Welfare Assimilation

Developed upon the literature on earning assimilation of immigrants in the U.S. pioneered by Chiswick (1978), alongside studies on other economic assimilation outcomes such as employment and occupational level, the estimation of immigrant welfare assimilation in the destination countries has gained in popularity in recent decades, primarily due to increasing data availability. With the majority of welfare assimilation studies conducted in the American context, the literature has yet to identify a consistent pattern. Jensen (1988) shows that, once individual and family characteristics which shape the needs and eligibility for public assistance are controlled for, immigrant households are significantly less likely to receive cash benefits than native households. However, Borjas & Hilton (1996) draw the opposite conclusion when other means-tested non-cash benefits such as housing subsidies, food vouchers and Medicaid are also considered. Such diverse conclusions shed light on the heterogeneities in the nature, eligibility and receipt patterns across welfare programs, and hence the importance of welfare definition according to one's research purpose.

To the best of our knowledge, there has been no study on welfare assimilation in the Dutch context. Although the subject of welfare assimilation has not received the same degree of academic attention in the Netherlands, a descriptive report has touched upon the issue. The 2016 Integration Report (CBS, 2016) measures the proportion of people among selected refugee groups and immigrants from new EU member countries in receipt of social assistance by years since migration. For refugees, the utilization rates tend to increase until 6 years of stay and decrease with longer stay. For non-refugee immigrants from new EU member countries, an increasing trend with years since migration is observed. To draw reference from the limited European literature on immigrant welfare assimilation, empirical evidence has been provided for Sweden, Finland, Denmark, Norway, and Germany. The general finding is a decreasing trend of welfare utilization over time among first-generation immigrants, particularly salient among refugees who arrived with higher initial levels, although parity with the predicted levels of natives is a rare case. Such patterns found in the European context provide a tentative indication of potential segmentation among first-generation immigrants.

In the case of Sweden, Hansen and Lofstrom (2003) examine whether immigrants assimilate into or out of welfare and find a decrease in immigrant social assistance participation propensity with time spent in the country, although immigrants use social assistance to a larger extent than natives. Refugees decrease their social assistance utilization at a faster rate than non-refugee immigrants, but neither groups were predicted to reach parity with natives within the 20-year observation period.

For Finland, Sarvimäki (2011) examines assimilation patterns in terms of receipt of income transfers (social assistance, housing allowance, unemployment benefits and other), annual earnings and employment outcomes. High initial immigrant-native differences in earnings and employment are found among female immigrants and immigrants from non-OECD countries. Convergence to the native level is found in the use of social benefits after 20 years of residence in the country, despite persistent differences in employment and earnings.

In the Danish case, Blume and Verner (2007) examine the welfare dependency rate of immigrants, which is measured by the amount of public transfers received including pensions, social assistance, unemployment insurance benefits, child benefit and public housing support as a share of one's total income. While assimilation out of welfare is observed, such reduction is stronger for migrant men than women, who are also more sensitive to the effects of business cycle. Immigrants from later arrival cohorts show higher welfare dependence, partly due to the large variations in cohort qualities.

For Norway, Ekhaugen (2005) specifically takes into account the possibility of selective re-migration and benefit substitution. Considering the potential sensitivity of results to an overly narrow definition of welfare due to the likely presence of program substitution, this study examines receipiency of social assistance, unemployment benefit, disability pension, sickness benefit and rehabilitation benefit. By comparing refugees and other non-western with western immigrants, the author finds that welfare assimilation is observed for refugees but the opposite for other non-western immigrants.

For Germany, Riphahn, Sander & Wunder (2013) compare the probabilities of receiving social assistance and unemployment benefits between Turkish immigrants and the natives. After controlling for individual and household characteristics, only the second generation of Turkish immigrants remains significantly more likely to use welfare.

In sum, the European literature on welfare assimilation has identified the importance of the following factors: entry category, region or country of origin, gender, arrival cohort and business cycle. In addition to these factors, other socio-demographic and migration characteristics have been found relevant in the broader international literatures on economic and welfare participation and assimilation of first-generation immigrants. Such socio-demographic factors include education, marital status, and family composition. Having a low level of education, being a single parent and having more children (Zimmermann et al., 2012; Barrett & McCarthy, 2008; Bratsberg et al., 2007) are risk factors of welfare participation. Blume & Verner (2007) find that, with increasing years of stay, male immigrants are less likely to depend on welfare than female immigrants in Denmark.

Migration characteristics such as age at migration, ethnicity, ethnic capital, ethnic concentration, and citizenship acquisition are found to closely relate to their subsequent socio-economic integration in the host country. Research has shown that the younger the immigrants arrive at the host country, the more likely they have better employment and earning outcomes, possibly through accumulation of destination-specific human capital, such as language skills and familiarity with the labour market (Åslund et al., 2009; Bleakley & Chin, 2008).

The ethnic penalty effect has been mostly associated with the existence of discrimination against certain ethnic minorities, particularly those with a Muslim background in the European context as an extensive body of evidence suggests. For example, in the case of application for similar jobs in Germany, female immigrants wearing headscarves (Weichselbaumer, 2016) and Turkish-sounding names (Kaas and Manger, 2010) are found to receive much less feedback compared with German-sounding names. In Sweden, migrants from Asia and Latin America show a much smaller gap in employment probabilities from natives than migrants from the Middle East and Africa (Akay, 2015).

Borjas (1992) points out that the effect of ethnicity or origin might have captured other indirect effects specific to the ethnic group in the host country, such as ethnic capital and ethnic concentration. Ethnic capital, which refers to the amount of resources that can be shared within an ethnic group, and ethnic concentration or segregation, which provides the channel through which such co-ethnic contact can come into effect at the local level, are proven important to the economic integration of immigrants and their children (Borjas, 1992, 1994).

The link between citizenship acquisition and immigrant integration has received increasing attention. Bauböck et al. (2013) find support for a "citizenship premium" on a number of socio-economic indicators in EU countries, such as unemployment rate, poverty and living quality, and so do Peters, Vink & Schmeets (2018) for the Dutch case with regards to the probability of having paid employment. Bevelander & Pendakur (2009) find that citizenship acquisition has positive impacts on employment for non-EU and non-North American immigrants in Sweden.

3.2.2 Identification Problem and Other Controls

The well-known identification problem in the literature of immigrant assimilation lies in identifying the effects of aging, cohort and period from the effect of assimilation. Several

ways have been proposed to identify the model. The most straightforward solution is to assume either equal period effects for immigrants and natives (Borjas, 1985) or equal cohort effects. However, empirical findings have consistently contradicted these assumptions by showing that, globally as well as in the Dutch case, economic downturn has differential impacts on immigrants and natives (CBS, 2009), and immigrants from different entry cohorts display differential degrees of welfare participation (Zorlu, 2013).

Although it has long been established that the economic assimilation potentials differ greatly by immigrant cohorts (Borjas, 1985, 1995), as again pointed out by Borjas (2013), the source of cohort effect can be multiple, including changing origin composition of immigrants cohorts, changing cohort qualities, changing macro-economic conditions, differential distribution of geographical settlement, changing amounts of investment in destination-specific human capital, and changing destination country immigration policies. Most of these hypotheses were based on the Mincer-Becker human capital framework. For example, many studies suggest that cohort effect mainly stems from differences in cohort composition and characteristics (Blume & Verner, 2007; Borjas, 1985), whereas Borjas (2013) identifies the growing size of certain national origin groups as one factor associated with the declining rate in English language skill acquisition and economic assimilation among recent cohorts in the United States. In the Dutch case, the likelihood of welfare utilization is found to be the highest for the 1990-1995 cohort, and much lower for more recent as well as older cohorts (Zorlu, 2013).

The relevance of period effect has been highlighted as empirical evidence shows that welfare participation is highly sensitive to changes at the macro level. The entry gap and pace of economic assimilation are affected by arrival year effect (Clark & Lindley, 2006), and immigrants are more negatively affected by macroeconomic conditions than natives (Crossley, McDonald & Worswick, 2001). Period effect can also stem from introduction of policy changes.

Another concern is settler bias. Selectivity might be present in the choice of return migration or remigration of migrants (Beenstock et al., 2010; Duleep & Dowhan, 2002). Estimates of the economic integration of immigrants would be upwardly biased if the least successful have a greater propensity to remigrate, or downwardly biased if the most successful are more likely to leave (Chiswick, 2000). For example, Ekhaugen (2005) finds remigration to concentrate among western immigrants who are less likely to use welfare. Many studies have also found that certain groups of refugees tend to move to other countries where they have family or clan ties after obtaining citizenship, such as the high number of onward mobility to the U.K. among Somalis from the Netherlands (Heelsum, 2011).

In line with common practice of more recent research, we group the entry cohorts into five-year intervals and include regional unemployment rate suggested by Barth et al. (2004) in the model. Although the wage-curve approach was initially proposed to relax the equal period effect assumption among immigrants and natives, it helps account for the differential sensitivities to local labour market conditions even among immigrants from different regions and countries (Akay, 2008). By doing so, the provincial unemployment rate accounts for differential welfare use propensities among immigrants through the direct effect on employment prospects and through the indirect effect on acquisition of destination-specific human capital via on-the-job learning. This has been supported by empirical evidence for the Dutch case: after 10 years of residence, the chance of receiving social assistance is lower among asylum migrants who have been placed under the settlement policy in regions with better job prospects; sensitivities to local labour market conditions among asylum migrants also differ by individual characteristics such as age, gender, country of origin, and education level (CPB, 2018). In addition to the provincial unemployment rate, different sources of local variations will be controlled for through the province variable due to data limitations. We also control for age at migration instead of age. Settler bias is accounted for through inclusion of a remigration dummy. To identify migrants who remigrate, including both onward international migration and return migration, an assumption is made that attrition from the sample before the last observation year 2015 is due to remigration if it is not because the individual has passed the maximum sample age of 60 or died. 109,928 individuals (24.25%) have remigrated in our sample.

In sum, while existing studies have provided an important base for understanding the welfare assimilation process, much of the knowledge gap remains. First of all, existing evidence for the Netherlands are purely descriptive. Potential biases cannot be appropriately accounted for, such as the effects of selective re-migration, business cycles, aging and cohort quality changes. Second, the observation period of existing Dutch studies is too short to shed light on long-term assimilation trends. Third, the focus on refugees and the broad distinction between western and non-western immigrants leave the aggregate picture of welfare assimilation of all first-generation immigrants unknown. This study therefore aims to complement these gaps in existing studies by decomposing intra-group differences.

3.3 Operationalization: Defining base groups for segmented assimilation

According to Portes, Fernandez-Kelly & Haller (2007), to disapprove the segmented assimilation theory one has to demonstrate the non-existence or insignificance of downward assimilation. One common approach is to select indicators of downward assimilation and compare the distribution among immigrants by their countries of origin. If the differences in the downward assimilation indicator, which is welfare utilization in our case, are randomly distributed among immigrant groups regardless of their average human capital and background characteristics, the number of success stories and failures in each group should approximate and thus there is no need to worry about downward assimilation. However, if such differences are concentrated in some groups, we cannot reject the existence of (an) alternative path(s) to upward assimilation.

There are two problems concerning such operationalization. Given that this methodology was designed to test segmented assimilation among second-generation immigrants, it has limited applicability to first-generation immigrants, among whom differences are expected due to substantial variations across YSM. The second problem is that it lacks specificity with regards to testing the core theoretical assumption, namely, the existence of downward assimilation into the underclass. While concentrated differences can be observed, the comparison is being made only among statistically similar migrants, but not with any reference group from the native population. The consequent lack of solid empirical evidence led to widespread skepticism centered on two issues: (i) the existence of an alternative assimilation process, which is the first thing to be tested in this research, and (ii) whether the reference group for the alternative path is the underclass, which remains controversial as to whether it exists, whether it is relevant to societies outside of the American context, and whether it is possible to define such a class.

Such a methodological loophole is fundamentally embedded in the elusive nature of the underclass concept. From a broader perspective, class per se, as Bourdieu (1987) puts it, is not an actual group, but rather a construct or a 'probable group' characterized by similar positions, conditions and interests, and consequently similar stances and practices. Not to mention underclass, which is an even more vague concept considering the highly mixed perspectives of what constitutes an underclass. In the American context where the theory originates, the underclass concept was directly associated with a group of African-Americans living in ghettos who are cut off from upward mobility, live in poverty, or even involved in criminal activities. Many argue that such an underclass concept may not be relevant to other societies, such as Europe where religion appears a more prevalent social divide than race (see, for example, Song, 2004). As for the Netherlands, Roelandt &

Veenman (1992) conclude that there is no clear proof for the existence of an ethnic underclass, although marginalization is observed for ethnic minorities who might be at risk of becoming an underclass. It is therefore important to reflect on what an underclass means as a concept as well as in the context of segmented assimilation theory, and whether it remains relevant to contemporary societies and to the Dutch context.

Two aspects require attention with regards to the definition. First, while many sociologists associate underclass with dysfunctional behaviours, we agree with Aponte (1990) that the definition of underclass should be based on deprivation, not behaviour, primarily due to the conceptual undesirability to differentiate between 'deserving' and 'undeserving' poor, and secondarily due to the methodological flaw of endogeneity between behaviour and outcome. As such, we follow Aponte (1990) in defining underclass as the economically marginalized who remain at the bottom end of the socioeconomic ladder with dim prospects for intragenerational and intergenerational upward mobility. The most proximate group to this definition in the Dutch society is essentially the working class.

The literature of social stratification has provided two main options for measuring socio-economic status: composite and proxy measures, the choice of which depends largely on data availability and purpose of research. Common proxies and indicators include income, wealth, education, occupation, and area-level indicators. While income and wealth appear at first glance tempting due to their popularity in the definition of upper-, middle-, and lower-class, they are not feasible options in the context of our research. Besides the apparent disadvantages that they are highly subject to underreporting and substantial variations across life course, they are endogenous to welfare utilization. While use of welfare is heavily dependent on income or wealth, they may also influence the decision of welfare utilization, such as via influencing the number of hours worked.

After eliminating the option of monetary measures, we have three other options of proxy measures: education, occupation and area-level indicators. An example of area-level indicators is average income in the neighborhood. It can be particularly useful in highly segregated societies such as the U.S., but not necessarily to the Dutch context. Adding to that, the definition of neighborhood is an arbitrary choice, difficult to operationalize and focuses on the community level. Without precise measurement of occupational level, we deem education a preferable option in the context of this research, firstly due to data availability on the highest level of education obtained, secondly due to its higher consistency throughout the life course, and thirdly due to its function as a proxy also for occupational qualification and income. Across disciplines, education has been uniformly perceived to be a good proxy for socio-economic status through its major influence on occupation and consequent amount of economic resources. In the theory of Bourdieu in

the sociological literature, there is a strong relationship between educational attainment and occupational outcome which in turn determines one's social class. In the human capital theory (see Becker, 1964) from economics, education is a critical form of human capital that determines one's earning. While we recognize the existence of labour market mismatch and depreciation of human capital in the job market which are valid concerns particularly for individuals with higher levels of education as well as heterogeneous returns to human capital, our focus is to utilize low level of education as a proxy for economically marginalized position. In the Dutch statistical definition, low education level refers to incompletion of basic compulsory education. That is, incompletion of level 2 of MBO (secondary vocational education), incompletion of HAVO (senior general secondary education) or VWO (pre-university education), or any level below.

A final point to note is the conceptual difference between mobility and assimilation. We refrain from using the terms downward and upward assimilation in this research as they tend to stir up confusions about two distinct concepts: mobility and assimilation. Mobility is in relation to one's initial position. Upward mobility does not necessarily equate achievement of mainstream assimilation – one can arrive with a high initial gap from natives and manage to reduce it substantially over time yet remain marginalized, and vice versa. We therefore treat destination of assimilation and mobility path as two distinct elements in our main analysis which would complement our understanding of the assimilation process from different angles.

Taking these into account, we formulate the following descriptive and explanatory hypotheses based on our conceptual framework: in terms of patterns, the welfare assimilation process is segmented into two paths: assimilation into the middle class and assimilation into the working class. We define assimilation into the working class as convergence towards Dutch natives with low level of education. Assimilation to the middle class is defined as convergence towards Dutch natives with an average level of education, who represent the mainstream of host society. With regards to the determinants, the interplay between structural, societal and individual factors will commonly decide their welfare assimilation outcomes. Mainstream assimilation can be occur due to, at the macro level, positive modes of incorporation in the receptive context, which can be captured by the variables area of origin and entry category, as they respectively reflect attitudes towards immigrant groups with varying degrees of ethnic and cultural distinctions, and differential immigration policies towards various types of migrants. Specifically, immigrants with a western background and economic/skilled migrants (i.e. labour migrants and education migrants) are predicted to receive the most favourable reception. At the meso level, ethnic spillover through the presence of co-ethnics at the local level would support

their economic and consequently welfare assimilation in spite of negative modes of incorporation. At the individual level, human capital and the aspiration for integration would contribute positively to welfare assimilation. The former will be captured by their education level, and the latter will be proxied by whether the immigrant has naturalized. Since we have no data on their Dutch language skills and cultural attitudes, naturalization indicates the willingness to become integrated into the Dutch society. Although the requirements for naturalization stated in the Dutch nationality laws had changed from rather lenient to strict from 1984 to 2003, one requirement that applied most of the time is that to claim Dutch citizenship one's foreign nationality has to be renounced if possible. Since 2003, passing a naturalization test is required to demonstrate a sufficient level of integration through knowledge of the Dutch language and society. As such, citizenship acquisition also indirectly reflects the Dutch language proficiency of more recent cohorts.

4. Data and Methodology

4.1 Data Description

Our dataset comes from the Social Statistical Database (SSB) of the Statistics Netherlands (CBS). The SSB, constructed mainly from register data and complemented by survey data from Labour Force Survey (EBB), covers everyone legally residing in the Netherlands. The samples consist of random 20% of all first-generation immigrants (354,400 individuals and 1,768,361 observations) and random 1% of all Dutch natives (85,773 individuals and 507,589 observations) aged 18-64 who were registered at the municipality in the period between 2006 and 2015. The decision to draw such random subsamples is due to the enormous number of observations across the 9-year observation period if the original dataset comprising over 10 million people per year is to be covered in the estimation sample. The final sample excludes individuals aged above 60 to avoid contamination from usage of welfare programs as an early retirement pathway. The use of unbalanced samples allows selectivity of remigration to be controlled for (Dustmann & Gorlach, 2015). Descriptive statistics of key variables can be found in Table 2 below.

4.2 Variable Definitions

The dependent variable is welfare use, i.e. whether an individual has received welfare (social assistance, IOW, unemployment benefit, IOAW or IOAZ) in that year. Given the research objective to test for existence of an alternative path to mainstream assimilation, this dependent variable is seen as an indicator of economic marginalization. These five programs are selected due to their indication of a lack of self-sufficiency. Other welfare programs available for the working-age populations such as disability benefit and universal schemes have been ruled out due to their incompatible nature.

We recognize that the nature of social assistance and unemployment benefit is not equivalent, with the former as a safety-net measure and the latter a social insurance. In spite of that, we consider it optimal to focus on the composite welfare measure to ensure robustness of the results. On one hand, this avoids estimation problems arising from over-concentration of zeros in the dependent variable. This is the case when unemployment benefit receipt alone is used as the dependent variable although not for social assistance receipt. On the other hand, it is important to take into account the possibility of benefit substitution (Ekhaugen, 2005), which could lead to misleading conclusions disregarding the complementarity of welfare programs. Among programs of similar nature, switching from one to another is found to be a common practice in Norway (Nordberg & Røed, 2002). In addition, it is known that the distribution of recipiency varies across programs in the Dutch context where migrants, compared to natives, are usually found to overrepresent in social assistance receipt but vice versa in unemployment benefit receipt. For example, by the end of 2015, the percentage of Dutch natives among social assistance recipients is 38% and 74% among unemployment benefit recipients. Since the predicted assimilation outcome is completely dependent on the native utilization level in that particular program, the comparison would give an overly, and falsely, pessimistic estimation when considering social assistance alone. A more holistic view can be provided with a composite welfare measure.

Information on migration characteristics such as YSM and entry category is only available for migrants who arrived as of 1995, who account for approximately 40% of the sample. As the maximum observable YSM is 21+ and the maximum age in the sample is 60, the variable age at migration which is calculated from age minus YSM can only be deducted by 21 for immigrants with YSM above 21 years. Since entry category is fixed but the type of residence permit is changeable, its interpretation retains to whom they enter as and for those arriving after 1995. Ethnic capital is summarized by the share of the highly educated among co-nationals in the year 2007. The average income of co-nationals, another common measure of ethnic capital, cannot be used in this research due to potential

collinearity with the dependent variable welfare receipt. Considering that for half of the migrant population information on their education level is missing, we checked whether such missingness is concentrated among migrants from specific regional origin and found the proportion of migrants with missing education level is quite evenly distributed across regional origin (below 5% difference). Ethnic concentration is measured as the log-transformed number of co-nationals in the municipality in 2007. We have tried to vary its definition by measuring it through the percentage of co-nationals at the municipality level, and also at higher geographical units, namely at regional and provincial levels. Our decision is based on three considerations: (i) the literature generally agrees that the lower the geographical unit the better the measurement; (ii) municipality is an optimal level in our research context since neighborhood and street levels are too small to capture the local economic opportunities offered by co-ethnic contact, such as co-ethnic employment in ethnic businesses, whereas regional and provincial levels are too large; and (iii) pseudo R-square of the model using the log-transformed number of co-nationals at the municipality level is higher than that using the percentage of co-nationals as a share of the entire municipality population.

The education level variable comprises four categories: low, middle, high and unknown. The 'unknown' category accounts for about 50% of the observations for the migrant population, due to the collection method for such information. While measurement error is known to exist in this variable and the use of it is said to be potentially problematic for migrant populations, we have identified the limited extent of such problems in two steps: (a) checking the endogeneity of missingness; and (b) comparing weighted and unweighted regression outputs. The former can be found in Appendix 1 and the latter would be shown in Section 6.1.

4.3 Estimation strategy

To address the first research question, average adjusted predictions (AAP) or average marginal probabilities of welfare receipt probability will be estimated for first-generation immigrants over working age by their regional origin, entry category, education level and gender. Such predictions will be compared with AAP predicted for average Dutch natives and Dutch natives with low education level. The thresholds for each welfare assimilation outcome are as follows: after more than 20 years of residence, if the AAP falls below the predicted level for Dutch natives with low education level, an immigrant is predicted to

Table 2: Mean values of dependent and independent variables by regional origin

	All migrants	EU	Other Europe	MENA	Sub-Saharan Africa	Asia	Americas & Oceania	Suriname & Caribbean	Dutch natives
Social assistance receipt status	0.130	0.033	0.135	0.235	0.262	0.063	0.050	0.135	0.023
Unemployment benefit receipt status	0.039	0.038	0.041	0.032	0.048	0.029	0.029	0.048	0.029
Lagged welfare receipt status	0.158	0.062	0.167	0.255	0.292	0.085	0.071	0.172	0.047
Initial welfare receipt status	0.143	0.009	0.006	0.022	0.055	0.008	0.004	0.011	0.001
Area of origin									
EU	0.212								
Other Europe	0.157								
MENA	0.195								
Sub-Saharan Africa	0.068								
Asia	0.113								
Americas & Oceania	0.039								
Suriname & Caribbean	0.216								
Entry category dummies (as of 1995)									
Family migrant	0.185	0.119	0.255	0.253	0.204	0.226	0.268	0.097	
Asylum migrant	0.065	0.002	0.051	0.156	0.221	0.026	0.002	0.038	
Labour migrant	0.118	0.380	0.044	0.022	0.057	0.098	0.155	0.026	
Education migrant	0.043	0.048	0.027	0.018	0.049	0.117	0.096	0.021	
Share of highly educated co-nationals	0.089	0.123	0.060	0.072	0.057	0.122	0.133	0.076	
Number of co-nationals at municipality	1095	9294	8870	1448	924	545	14325	2.879	
YSM	16.538	13.069	17.678	17.499	15.599	15.586	14.402	19.431	
Age at migration	23.797	25.804	23.073	22.239	22.945	25.989	24.964	22.663	
Naturalization dummy	0.617	0.239	0.637	0.742	0.594	0.597	0.501	0.899	
Remigration dummy	0.083	0.132	0.058	0.045	0.109	0.095	0.143	0.060	
Entry cohort									
Before 1995	0.555	0.372	0.606	0.537	0.442	0.506	0.419	0.802	

1995-2000	0.113	0.078	0.125	0.191	0.130	0.096	0.097	0.075	
2001-2005	0.121	0.107	0.146	0.155	0.181	0.124	0.143	0.061	
2006-2010	0.119	0.228	0.074	0.071	0.165	0.154	0.187	0.041	
2011-2015	0.092	0.216	0.048	0.046	0.083	0.120	0.153	0.021	
Female dummy	0.526	0.550	0.517	0.463	0.474	0.573	0.603	0.543	0.493
Education level									
Low	0.213	0.108	0.282	0.288	0.309	0.160	0.118	0.212	0.106
Middle	0.198	0.178	0.156	0.203	0.200	0.151	0.177	0.271	0.268
High	0.114	0.147	0.081	0.096	0.081	0.136	0.178	0.109	0.196
Unknown	0.475	0.566	0.481	0.414	0.410	0.553	0.528	0.408	0.430
Household type									
Single-person	0.229	0.284	0.133	0.183	0.338	0.220	0.259	0.252	0.165
Unmarried couple without kids	0.083	0.150	0.040	0.038	0.080	0.083	0.133	0.081	0.100
Unmarried couple with kids	0.074	0.086	0.048	0.043	0.094	0.065	0.077	0.106	0.085
Married couple without kids	0.103	0.127	0.111	0.072	0.055	0.162	0.139	0.081	0.145
Married couple with kids	0.380	0.275	0.563	0.540	0.219	0.387	0.286	0.271	0.428
Single-parent	0.108	0.063	0.091	0.090	0.182	0.066	0.090	0.184	0.064
Other household	0.014	0.010	0.009	0.026	0.015	0.011	0.009	0.013	0.006
Institutional household	0.009	0.006	0.005	0.009	0.018	0.006	0.007	0.013	0.008
Observation year									
2008	0.136	0.117	0.141	0.137	0.132	0.147	0.130	0.147	0.146
2009	0.139	0.125	0.142	0.139	0.137	0.146	0.135	0.147	0.145
2011	0.143	0.138	0.144	0.143	0.146	0.141	0.141	0.146	0.144
2012	0.144	0.145	0.144	0.144	0.147	0.142	0.145	0.144	0.143
2013	0.145	0.151	0.144	0.144	0.146	0.141	0.146	0.141	0.142
2014	0.146	0.158	0.143	0.145	0.146	0.141	0.149	0.138	0.141
2015	0.148	0.167	0.142	0.148	0.147	0.141	0.154	0.136	0.140
Province									
Groningen	0.022	0.028	0.017	0.015	0.025	0.026	0.022	0.024	0.039
Friesland	0.014	0.016	0.007	0.013	0.017	0.021	0.012	0.014	0.042
Drenthe	0.010	0.011	0.007	0.010	0.014	0.013	0.009	0.009	0.033

Overijssel	0.042	0.036	0.077	0.041	0.037	0.042	0.032	0.025	0.073
Flevoland	0.034	0.021	0.018	0.036	0.035	0.034	0.030	0.059	0.022
Gelderland	0.073	0.074	0.096	0.074	0.070	0.081	0.058	0.052	0.129
Utrecht	0.070	0.055	0.068	0.111	0.065	0.061	0.067	0.054	0.077
North-Holland	0.237	0.223	0.215	0.251	0.236	0.244	0.342	0.232	0.146
South-Holland	0.320	0.266	0.323	0.295	0.346	0.283	0.297	0.411	0.189
Zeeland	0.016	0.036	0.010	0.008	0.011	0.015	0.009	0.010	0.023
North-Brabant	0.111	0.136	0.123	0.102	0.111	0.130	0.082	0.081	0.159
Limburg	0.051	0.098	0.039	0.045	0.034	0.051	0.040	0.028	0.068
Log-transformed provincial unemployment rate	1.740	1.752	1.729	1.733	1.747	1.726	1.747	1.746	1.712
Number of observations	1,768,361	374,998	276,774	344,368	120,657	200,638	68,652	382,174	507,589

achieve mainstream assimilation; otherwise s/he will be considered to assimilate to the working class instead.

To address the second question, comparison will be made between the initial AAP of welfare utilization propensy with the ultimate AAP estimated for each immigrant sub-group. Three types of relative mobility patterns are discerned: upward mobility, stagnation, To address the second question, comparison will be made between the initial AAP of welfare utilization propensy with the ultimate AAP estimated for each immigrant sub-group. Three types of relative mobility patterns are discerned: upward mobility, stagnation, and downward mobility. Upward or downward mobility occurs as vertical movement across segments takes place, and stagnation occurs if one remains in the same segment.

To address the third question, firstly, coefficient estimates of key explanatory variables, namely, the area of origin, entry category, education level and YSM, will be compared among first-generation immigrants. Secondly, adjusted predictions at mean values (APM) or conditional marginal probabilities after more than 20 years of residence will be estimated for immigrants from each entry category, regional origin, education level and gender by fixing the values of all other covariates at the average values of EU migrants, so that observed variations are attributable only to the effect of the parameter which varies. Exceptions are made for the following characteristics: immigrants are assumed to have naturalized (as proxy for aspiration for integration), did not remigrate, observed in 2015 (to control for business cycle, arrival year effect and policy changes), and come from single-person household (to avoid contamination from other co-habitants due to social assistance as a household-level benefit). As such, comparison can be made among statistically similar migrants who show motivation for integration, which would allow us to identify the effects of structural and human capital disadvantages.

4.4 Model specification

In spite of the fact that an overwhelming proportion of welfare utilization and assimilation studies work with a static model, a recent study by Akay (2015) proposes the use of a dynamic employment assimilation model to avoid biased estimates of assimilation profiles through taking into account the dynamic nature of such processes. Built upon this basis, this research employs a dynamic correlated random effects (CRE) probit model to study immigrant welfare assimilation.

The basic dynamic random effects model is demonstrated in equation 1 below. Y refers to the latent probability of welfare receipt. Y_{it-1} is the lagged status of welfare receipt, and γ can be interpreted as the degree of structural state dependence (Heckman, 1981). Only one lag of the dependent variable is and can be used when controlling for initial conditions (Wooldridge, 2005, p. 42). X is a vector of covariates. μ captures the individual-specific unobserved heterogeneity. ε is the error term. These two error terms are assumed to be uncorrelated and normally distributed with mean zero. The observation period is 2008-2015, with 2007 as the initial period. Two problems are to be solved: the endogenous covariates problem and initial conditions problem. The endogenous covariates problem arises if there is correlation between the unobserved heterogeneity and the covariates. The initial condition problem occurs if the unobserved heterogeneity is correlated with Y_{i0} and thus with lagged status, unless the initial condition is exogenous. For example, if the first wave of observation for all individuals starts at the age of 18, the first year eligible for welfare, there is no initial conditions problem. Otherwise, we need to use specific estimators that deal with this problem.

$$Y_{it} = \alpha + Y_{it-1}\gamma + X_{it}\beta + \mu_i + \varepsilon_{it}, \qquad t = 1, \dots, 8 \qquad (1)$$

In the econometrics literature, three common approaches have prevailed in the setting of dynamic binary choice models – Heckman's reduced-form approximation (1981), Wooldridge's conditional maximum likelihood estimator (2005), and Orme's approach (2001). Instead of modelling the initial state as in Heckman's and Orme's methods, Wooldridge proposes to model $D(Y_1 + \dots + Y_T \mid X_t, Y_0)$ by specifying $D(\mu \mid Y_0, \bar{X})$. Wooldridge's approach approximates the specification of the Chamberlain-Mudlank's correlated random effects (CRE), which deals with the endogenous covariates problem by relaxing the strict exogeneity assumption of random effects between μ and X through $\bar{X}$. To do so, the values of time-varying covariates across the observation period are used – either by including the time-averaged values (often used to save on degrees of freedom), or the lags and leads of time-varying covariates (Wooldridge, 2007). We include the time-averaged values of time-varying covariates as demonstrated in equation 2 below.

$$Y_{it} = \alpha + Y_{it-1}\gamma + X_{it}\beta + Y_{i0}\theta + \bar{X}_i\tau + \mu_i + \varepsilon_{it}, \qquad t = 1, \dots, 8 \qquad (2)$$

Most welfare and economic assimilation studies have applied Wooldridge's approach partly due to its implementarity given existing programs in statistical softwares (xtpdyn and xtprobit on Stata). Cappellari & Jenkins (2008) demonstrate that similar results are provided by the three estimators on both balanced and unbalanced panels that are sufficiently long. Arulampalam & Stewart (2009) also find that, for T>3, similar

insubstantial bias is produced across Wooldridge's and Heckman's approaches. Akay (2009) even suggests that, for panels with longer durations (5-8 periods), the Wooldridge method outperforms the Heckman's approach. Wooldridge's approach was developed to be implemented on balanced panels, but it may be applied to unbalanced panels if attrition is random (Cappallari & Jenkins, 2008). Its application in unbalanced panels by Cappellari & Jenkins (2008) and Akay (2009) did not suggest presence of substantial bias.

5. Results

5.1 Life-cycle Welfare Assimilation Profiles

Based on results from dynamic CRE probit regressions estimated separately for first-generation immigrants from each area of origin (which will be described in detail in Section 5.2 below), we first predict the average welfare utilization probabilities over the working-age life-course for immigrants by their areas of origin, entry category, education level and gender. After estimating a similar dynamic CRE probit regression for the native sample excluding all migration characteristics for the native sample (full regression output in Appendix 2), the same predictions have been estimated for two reference groups from the native sample: average Dutch natives who represent the mainstream, and Dutch natives with low education level who represent the economically marginalized segment of the Dutch society. An assumption is made that everyone enters the labour market at 18. For first-generation immigrants, age at migration is thereby assumed to be 18, which corresponds to YSM=0, so that the life-course trends between immigrants and natives of the same age are directly comparable. Given that the maximum YSM observed is 21+, the corresponding maximum age range observed is 39-60. Other characteristics take the values as observed for each individual.

As mentioned in Section 4.4, Dutch natives with low education level at ages 39-60 serve as the benchmark for determining which of the assimilation paths migrants are predicted to undergo. Divergence from average natives and assimilation into the working class occur if the ultimate probability at YSM=21+ of migrants exceeds the predicted probability at age=39+ of Dutch natives with low education level (0.136). Convergence to average natives and thus assimilation into the middle class is achieved if the ultimate probability at YSM=21+ of migrants falls below the threshold for assimilation to the working class.

Table 3 summarizes the following results for first-generation immigrants by their area of origin, entry category, education level and gender: (i) predicted probability of welfare utilization at YSM=21+, (ii) corresponding assimilation outcome, (iii) intragenerational mobility pattern, and (iv) whether parity with average natives is reached. The life-cycle welfare assimilation trajectories of male immigrants by their area of origin, entry category and education level are shown in Graphs 3-27 in comparison with predicted welfare receipt probabilities for average Dutch natives and Dutch natives with low education level. The scale of vertical axis is adjusted to be uniform for migrants from the same area of origin for direct comparison.

Concerning the assimilation outcomes, the results suggest that, after more than 20 years of residence, assimilation into the mainstream is not a common path for all, and the risk of marginalization is present for the majority of first-generation immigrants without higher education. A closer look at those with predicted probability levels above that for Dutch natives with low education reveals an even more concerning picture, as some have more than double. This might indicate not merely a risk of assimilation into the working class, but essentially, no assimilation. Observing this pattern led us to draw an additional threshold to identify whether some groups do not even come close to assimilating into the working class. No assimilation is deemed to occur if the ultimate probability at YSM=21+ at least doubles the predicted probability for Dutch natives with low education level at age=39-60 (0.272).

The majority of education migrants are predicted to assimilate into the mainstream, though parity with average Dutch natives is reached by few of them. The following groups of education migrants are predicted to achieve comparable levels or outperform average Dutch natives in terms of welfare utilization propensity after more than 20 years of residence: (i) EU migrants with middle, high and unknown education levels, (ii) those from Suriname & Caribbean and Americas & Oceania with high and unknown education levels, (iii) those from Sub-Saharan Africa with higher education. In the meanwhile, the risk of marginalization exists for most of those with low education level, and (ii) female Asian education migrants with middle education level. An exception is education migrants from EU countries who, regardless of their education levels, are uniformly predicted to undergo mainstream assimilation. The risk of no assimilation is present for female education migrants with low education level from the MENA region and Asia.

Labour migrants with high and unknown education levels exhibit similar patterns as education migrants, but labour migrants with low-to-middle education levels appear worse off than education migrants with the comparable education levels. While all labour migrants with high and unknown education levels are predicted to achieve mainstream

assimilation, more of those with middle education levels are predicted to join the working class. The following groups are predicted to reach parity with average Dutch natives after more than 20 years of residence: (i) labour with high and unknown education levels from EU countries; (ii) labour migrants with high and unknown education levels from Suriname & Caribbean, and (iii) labour migrants with higher education from Sub-Saharan Africa. Among those with middle education level, labour migrants from the EU, again, together with those from Sub-Saharan Africa and Suriname & Caribbean, are the only groups exempt from working-class assimilation. The risk of no assimilation concentrates among female labour migrants with low education level.

Family migrants do not perform as well as the above groups of economic migrants. Almost all family migrants with low-to-middle education levels are at risk of segregation from the mainstream, except those with middle education level from EU countries. What is consistent with results for economic migrants is that higher education offers the route to mainstream assimilation, although the predicted probabilities for highly educated family migrants are generally higher and closer to the cut-off for working-class assimilation. Only family migrants with high and unknown education levels from EU countries are predicted to reach parity with average Dutch natives after more than 20 years of residence. The risk of no assimilation concentrates among family migrants with low education level.

All asylum migrants with low education level are predicted to have no assimilation, except men from Asia and Suriname & Caribbean. Asylum migrants with middle, high and unknown education levels are mostly predicted to remain on the margins, despite notable upward mobility achieved by those from the MENA region and Sub-Saharan Africa. In the case of asylum migrants from the MENA region, Sub-Saharan Africa and other Europe, who comprise over 80% of asylum migrants in the sample, higher education fails to serve as the ladder to mainstream assimilation as it does for all other types of migrants, though it helps alleviate their levels of disadvantage. This is not the case, however, for highly educated asylum migrants from Asia and Suriname & Caribbean. None of the asylum migrants are foreseen to reach parity with average Dutch natives.

Migrants arriving before 1995 whose entry category is unknown show welfare assimilation patterns similar to those of family migrants arriving as of 1995. Despite their unknown entry category, it is known that mass immigration of the four largest ethnic minorities in the Netherlands took place before 1995 — Turkish and Moroccan guest workers and their family members who came through family reunification scheme, and post-colonial migrants from Suriname and the Dutch Antilles. The former group has almost uniformly low levels of education. The latter group is mixed in composition, since their early waves of

immigration consist mainly of the elites. The results thus shed light on the marginalized position of these major ethnic minorities who possess little human capital.

The gender perspective also sheds lights on its interaction with human capital. In general, female migrants are in relative terms worse-off than their male counterparts. Such gender difference in welfare utilization propensity is much more pronounced among non-economic migrants (family migrants and asylum migrants) than economic migrants. However, almost all highly educated female migrants are better-off than their male counterparts, regardless of their entry categories and regional origin, mainly except those coming from EU countries.

In sum, an education gradient manifests in the welfare assimilation patterns of all types of first-generation immigrants. Higher education opens door for mainstream assimilation except for asylum migrants with the following backgrounds: the MENA region, Sub-Saharan Africa and other Europe. In relative terms, economic/skilled migrants, including education and to a lesser extent labour migrants, are more advantaged than non-economic migrants. Among non-economic migrants, family migrants are better off than refugees.

As far as intragenerational mobility is concerned, upward movement from no assimilation or working-class assimilation to mainstream assimilation shows to be a common phenomenon for migrants coming from the MENA region and Sub-Saharan Africa. Even among those predicted to be at risk of segregation from the mainstream from these two areas of origin, upward mobility is still the dominant trend. For the rest, stagnation and downward mobility are more common, and downward mobility occurs more often among those from other Europe, Asia and Americas & Oceania, who have relatively more favourable initial conditions upon arrival. The diversity in mobility patterns even for immigrants with the same predicted assimilation destination suggests the importance of focusing not only on the ultimate assimilation outcome, but its comparison with their initial conditions. Substantial progress has been made for many, even among those who are predicted to remain on the margins. Such results also align with our initial thought that the terms 'downward assimilation' and 'upward assimilation' should be handled with caution in that mobility is relative while assimilation outcome is absolute.

Table 3: Predicted welfare assimilation path by regional origin, entry category, education level and gender (Assuming age at migration: 18)

Entry category	Education level	EU		Other Europe		MENA		Sub-Saharan Africa		Asia		Americas & Oceania		Suriname & Caribbean	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F
Labour (Post-1995)	Low	0.15 (=)	0.19 (=)	0.24 (=)	0.28 (-)	0.25 (+)	0.30 (=)	0.19 (+)	0.24 (=)	0.25 (=)	0.30 (-)	0.25 (=)	0.30 (-)	0.22 (=)	0.25 (=)
	Middle	0.09 (=)	0.10 (=)	0.14 (=)	0.15 (=)	0.14 (+)	0.15 (++)	0.10 (=)	0.11 (=)	0.14 (-)	0.15 (-)	0.15 (-)	0.17 (-)	0.11 (=)	0.11 (=)
	High	0.05 (=)	0.05 (=)	0.09 (=)	0.09 (=)	0.09 (++)	0.08 (++)	0.06 (++)	0.6 (++)	0.09 (=)	0.09 (=)	0.10 (=)	0.10 (=)	0.06 (=)	0.05 (=)
	Unknown	0.02 (=)	0.03 (=)	0.09 (=)	0.11 (=)	0.10 (++)	0.12 (++)	0.08 (++)	0.10 (++)	0.08 (=)	0.09 (=)	0.06 (=)	0.08 (=)	0.06 (=)	0.07 (=)
Education (Post-1995)	Low	0.09 (=)	0.12 (++)	0.20 (=)	0.20 (=)	0.25 (+)	0.30 (+)	0.19 (+)	0.24 (+)	0.23 (=)	0.28 (-)	0.20 (-)	0.24 (=)	0.22 (=)	0.25 (=)
	Middle	0.05 (=)	0.06 (=)	012 (=)	0.13 (=)	0.13 (+++)	0.14 (+)	0.10 (++)	0.12 (++)	0.12 (=)	0.13 (=)	0.11 (=)	0.12 (=)	0.11 (=)	0.11 (=)
	High	0.03 (=)	0.03 (=)	0.08 (=)	0.07 (=)	0.09 (++)	0.08 (++)	0.06 (++)	0.06 (++)	0.08 (=)	0.08 (=)	0.07 (=)	0.07 (=)	0.06 (=)	0.05 (=)
	Unknown	0.01 (=)	0.02 (=)	0.08 (=)	0.09 (=)	0.09 (++)	0.11 (++)	0.08 (++)	0.10 (++)	0.07 (=)	0.09 (=)	0.04 (=)	0.06 (=)	0.06 (=)	0.07 (=)
Family (Post-1995)	Low	0.14 (=)	0.18 (=)	0.26 (=)	0.31 (-)	0.29 (=)	0.34 (=)	0.28 (=)	0.33 (=)	0.27 (-)	0.32 (-)	0.26 (=)	0.31 (-)	0.27 (=)	0.30 (-)
	Middle	0.09 (=)	0.10 (=)	0.16 (-)	0.17 (-)	0.17 (+)	0.18 (+)	0.16 (+)	0.18 (+)	0.15 (-)	0.16 (-)	0.16 (-)	0.18 (-)	0.14 (-)	0.15 (-)
	High	0.05 (=)	0.05 (=)	0.11 (=)	0.10 (=)	0.11 (++)	0.11 (++)	0.11 (+++)	0.11 (+++)	0.11 (=)	0.10 (=)	0.10 (=)	0.10 (=)	0.08 (=)	0.07 (=)
	Unknown	0.02 (=)	0.03 (=)	0.11 (=)	0.12 (=)	0.12 (++)	0.14 (+)	0.13 (+++)	0.15 (+)	0.09 (=)	0.10 (=)	0.07 (=)	0.08 (=)	0.09 (=)	0.09 (=)
Asylum (Post-1995)	Low			0.32 (-)	0.37 (=)	0.33 (=)	0.38 (=)	0.35 (=)	0.40 (=)	0.27 (=)	0.32 (-)			0.27 (=)	0.29 (-)
	Middle			0.21 (=)	0.22 (=)	0.20 (+)	0.21 (+)	0.22 (+)	0.24 (+)	0.15 (-)	0.16 (-)			0.14 (-)	0.15 (-)
	High			0.15 (-)	0.14 (-)	0.14 (+)	0.13 (+)	0.17 (+)	0.16 (+)	0.11 (=)	0.10 (=)			0.08 (=)	0.07 (=)
	Unknown			0.14 (-)	0.16 (-)	0.15 (=)	0.17 (+)	0.18 (+)	0.21 (+)	0.09 (=)	0.10 (=)			0.09 (=)	0.09 (=)
Unknown (Post-1995)	Low	0.16 (=)	0.20 (=)	0.25 (=)	0.30 (-)	0.28 (=)	0.33 (=)	0.24 (+)	0.29 (=)	0.27 (-)	0.31 (-)	0.23 (-)	0.27 (-)	0.28 (-)	0.31 (-)
	Middle	0.09 (=)	0.11 (=)	0.15 (-)	0.16 (-)	0.16 (+)	0.17 (+)	0.13 (+++)	0.15 (+)	0.15 (-)	0.16 (-)	0.13 (=)	0.15 (-)	0.15 (-)	0.15 (-)
	High	0.06 (=)	0.06 (=)	0.10 (=)	0.09 (=)	0.11 (++)	0.11 (++)	0.09 (++)	0.09 (++)	0.10 (=)	0.10 (=)	0.08 (=)	0.08 (=)	0.09 (=)	0.08 (=)
	Unknown	0.03 (=)	0.04 (=)	0.10 (=)	0.11 (=)	0.12 (+++)	0.14 (+)	0.11 (++)	0.13 (+++)	0.09 (=)	0.10 (=)	0.06 (=)	0.07 (=)	0.09 (=)	0.10 (=)

Destination of assimilation (in colour)
Assimilation to the middle class: ■ Average natives (AAP<0.136)
Assimilation to the working class: ■ Natives with low education level (AAP>0.136)
No assimilation: ■ Above AAP for natives with low education level (AAP>0.272)

Parity with average natives (in bold): AAP<0.064

Relative mobility (in bracket)
Upward mobility:
− From no assimilation to middle class: +++
− From working class to middle class ++
− From no assimilation to working class: +
Stagnation: =
Downward mobility: —

Note: Average adjusted predictions (AAP) assuming age at migration at 18 are reported up to 2 decimal points, whereas identification of assimilation pattern considers AAP up to 3 decimal points. All predicted probabilities are statistically significant at 1% level.
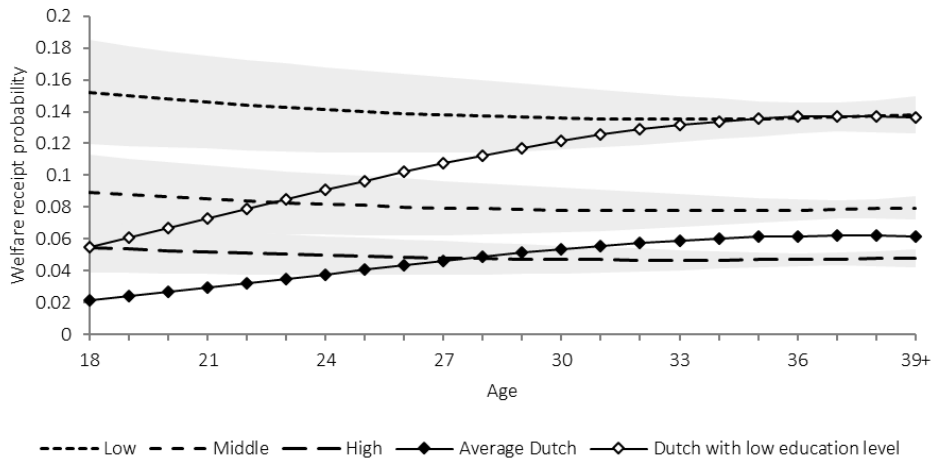
Graph 3: AAP for male EU labour migrants by education level
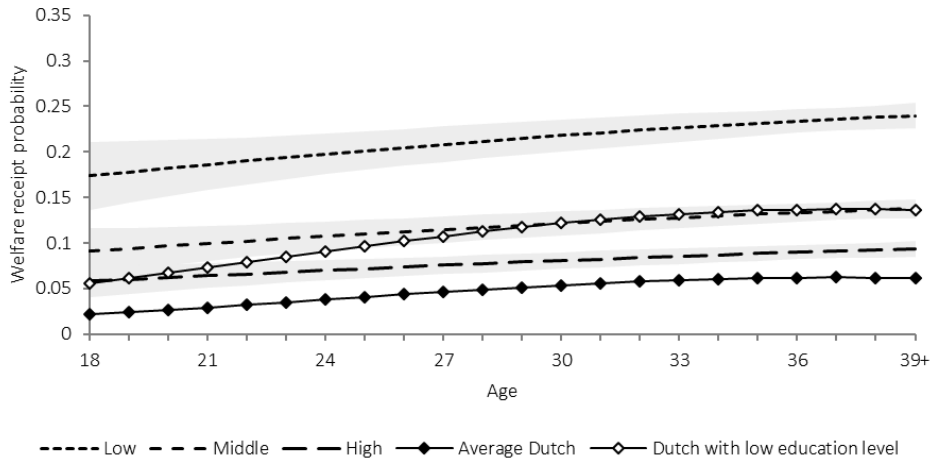(Age at migration: 18)
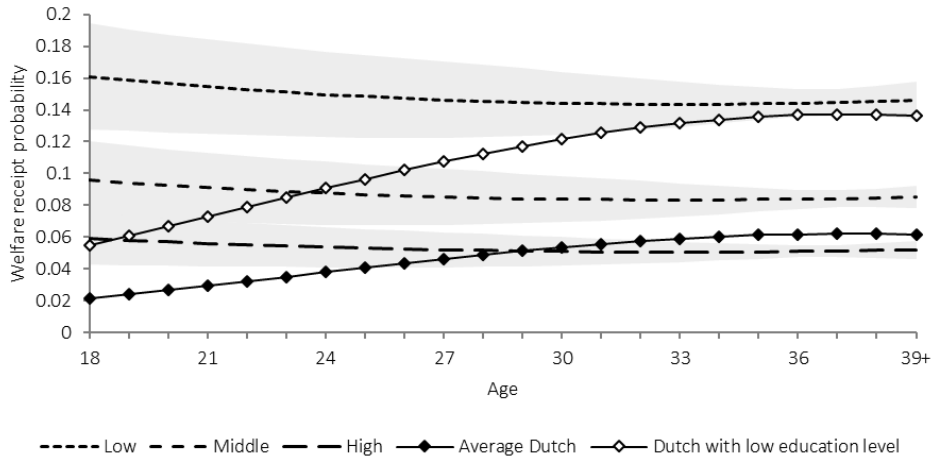
Graph 4: AAP for male EU education migrants by education level
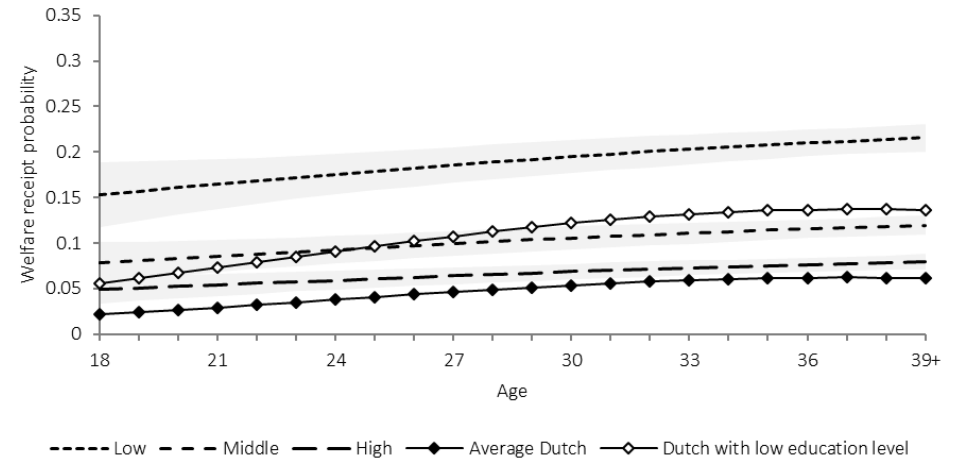(Age at migration: 18)
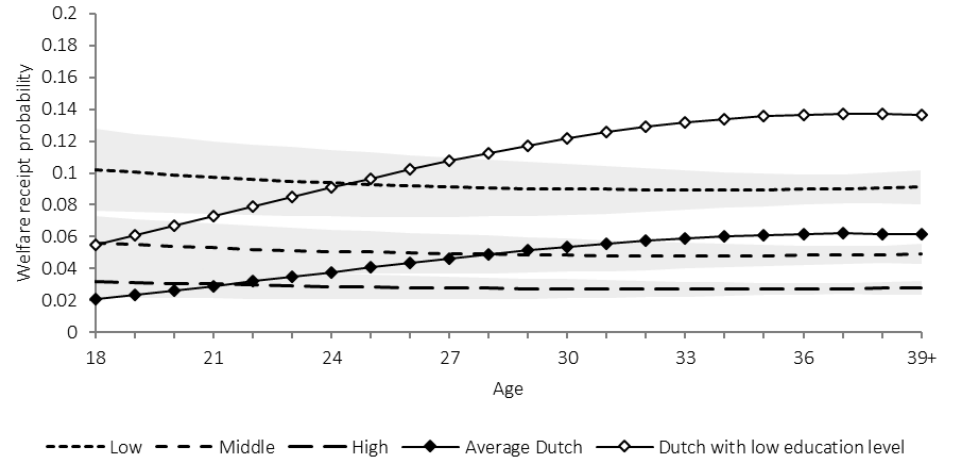
Graph 5: AAP for male EU family migrants by education level
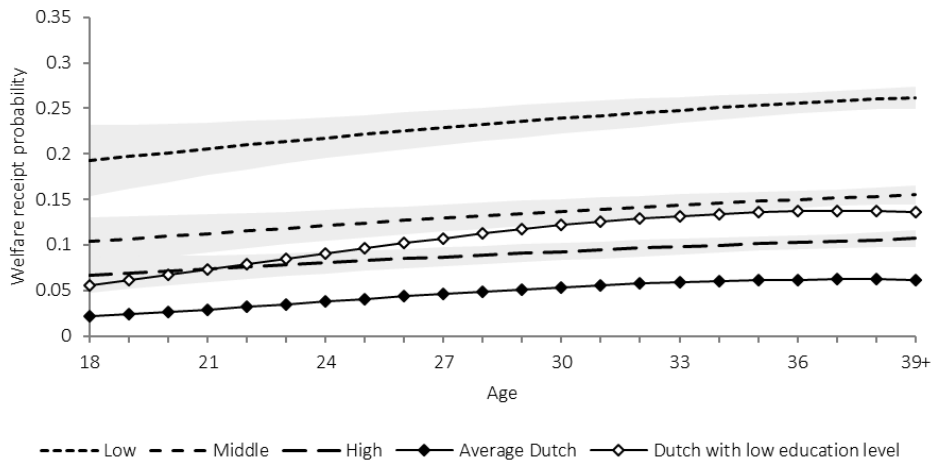(Age at migration: 18)

Graph 6: AAP for male labour migrants from other Europe by education level
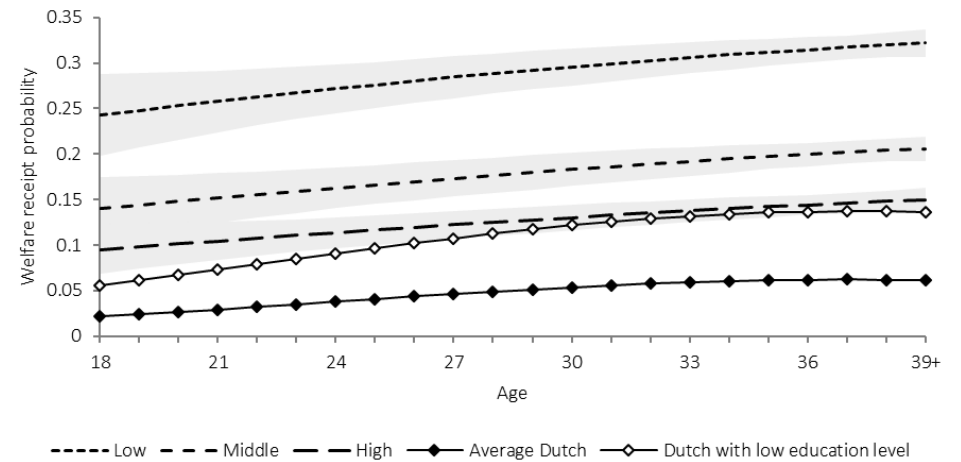(Age at migration: 18)

Graph 7: AAP for male education migrants from other Europe by education level
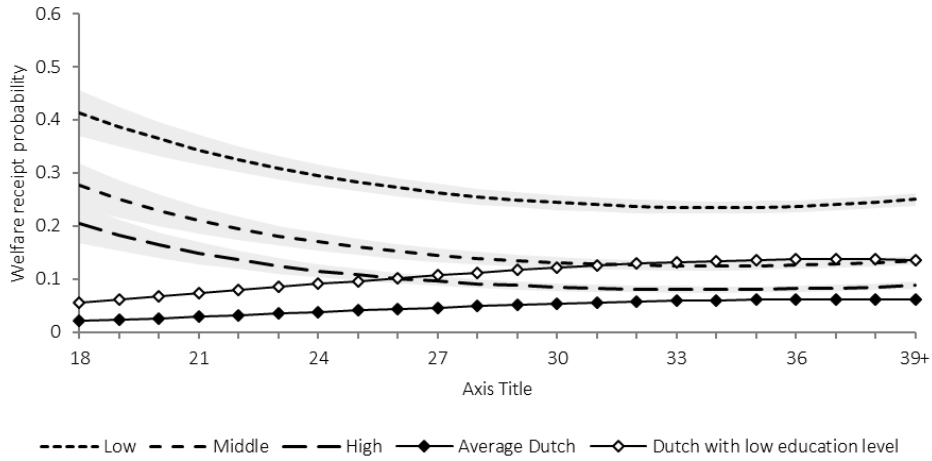(Age at migration: 18)

Graph 8: AAP for male family migrants from other Europe by education level
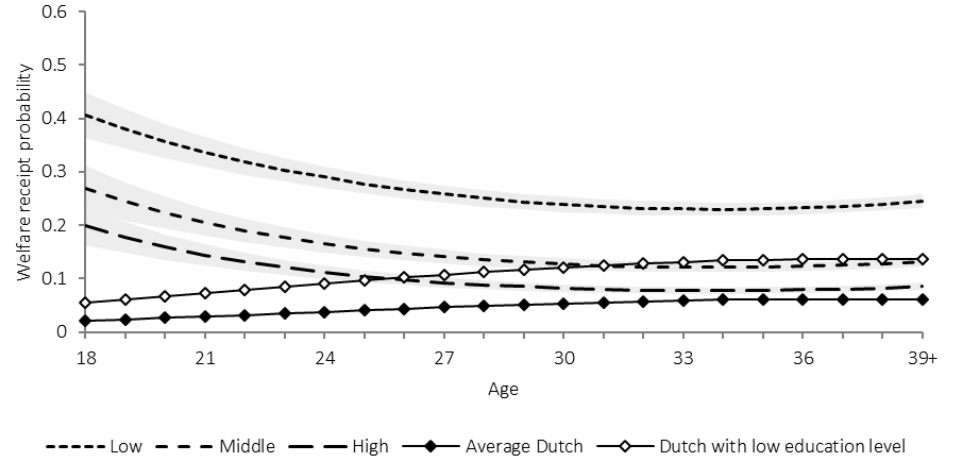(Age at migration: 18)

Graph 9: AAP for male asylum migrants from other Europe by education level
(Age at migration: 18)

Graph 10: AAP for male labour migrants from the MENA region by education level
(Age at migration: 18)

Graph 11: AAP for male education migrants from the MENA region by education level
(Age at migration: 18)

Graph 12: AAP for male family migrants from the MENA region by education level
(Age at migration: 18)

Graph 13: AAP for male asylum migrants from the MENA region by education level
(Age at migration: 18)

Graph 13: AAP for male labour migrants from Sub-Saharan Africa by education level
(Age at migration: 18)

Graph 14: AAP for male education migrants from Sub-Saharan Africa by education level
(Age at migration: 18)

Graph 15: AAP for male family migrants from Sub-Saharan Africa by education level
(Age at migration: 18)

Graph 16: AAP for male asylum migrants from Sub-Saharan Africa by education level
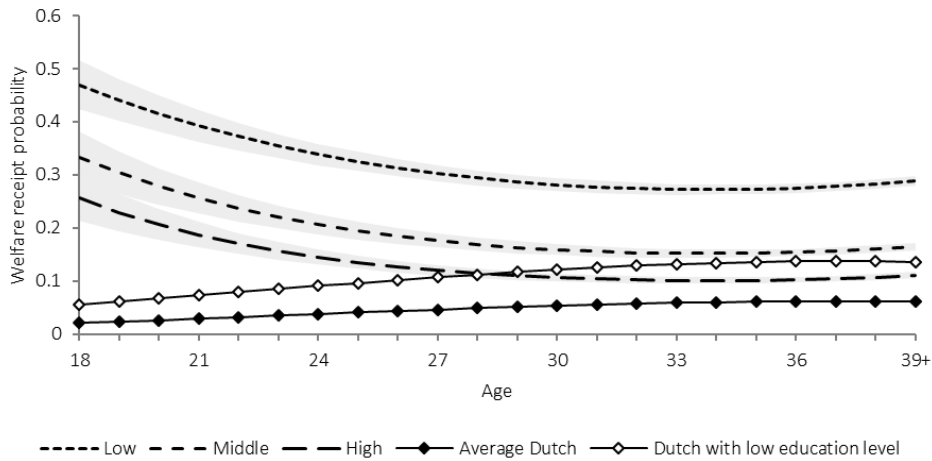(Age at migration: 18)

Graph 17: AAP for male labour migrants from Asia by education level
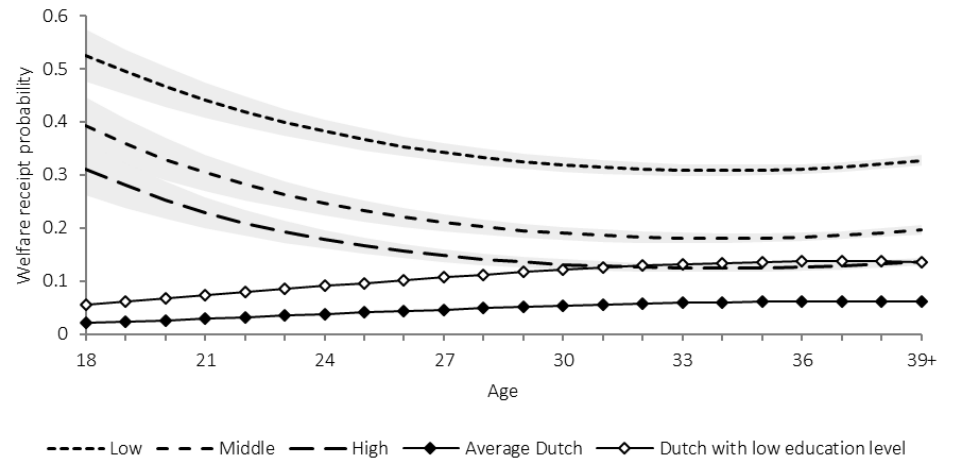**(Age at migration: 18)**

Graph 18: AAP for male education migrants from Asia by education level
(Age at migration: 18)

Graph 19: AAP for male family migrants from Asia by education level
(Age at migration: 18)

Graph 20: AAP for male asylum migrants from Asia by education level
(Age at migration: 18)

Graph 21: AAP for male labour migrants from Americas & Oceania by education level
(Age at migration: 18)

Graph 22: AAP for male education migrants from Americas & Oceania by education level
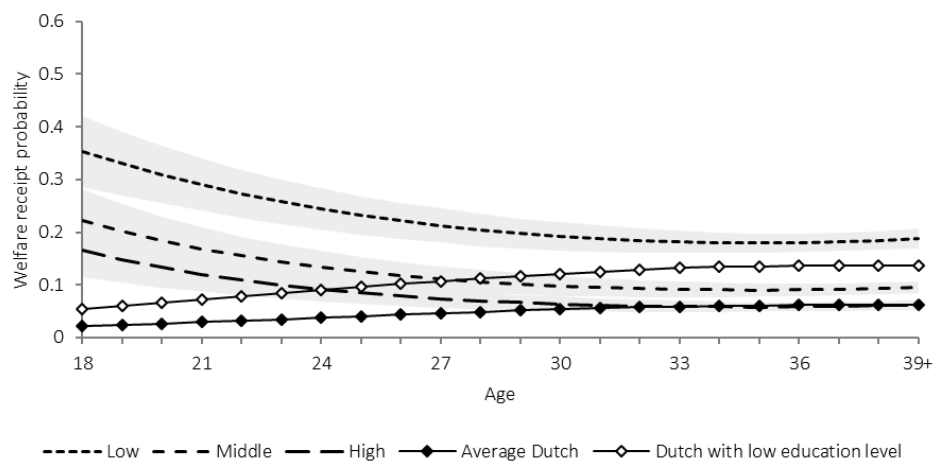(Age at migration: 18)

Graph 23: AAP for male family migrants from Americas & Oceania by education level
(Age at migration: 18)

Graph 24: AAP for male labour migrants from Suriname & Caribbean by education level
(Age at migration: 18)

Graph 25: AAP for male education migrants from Suriname & Caribbean by education level
(Age at migration: 18)

Graph 26: AAP for male family migrants from Suriname & Caribbean by education level
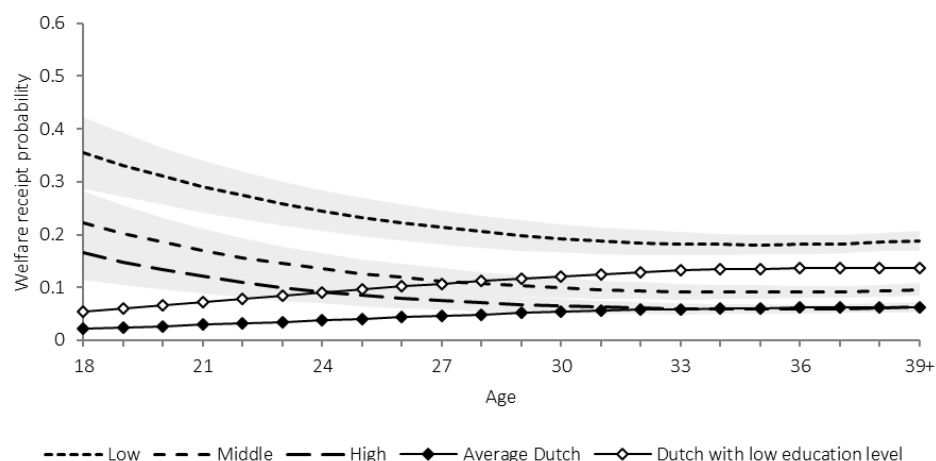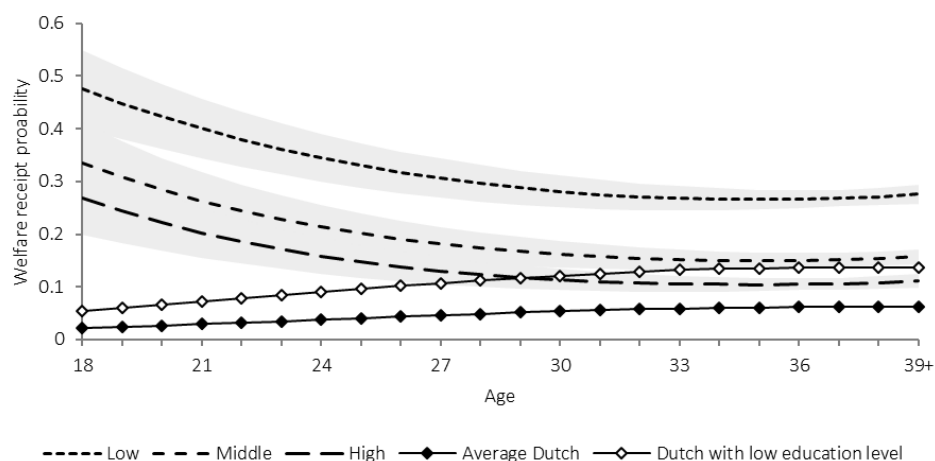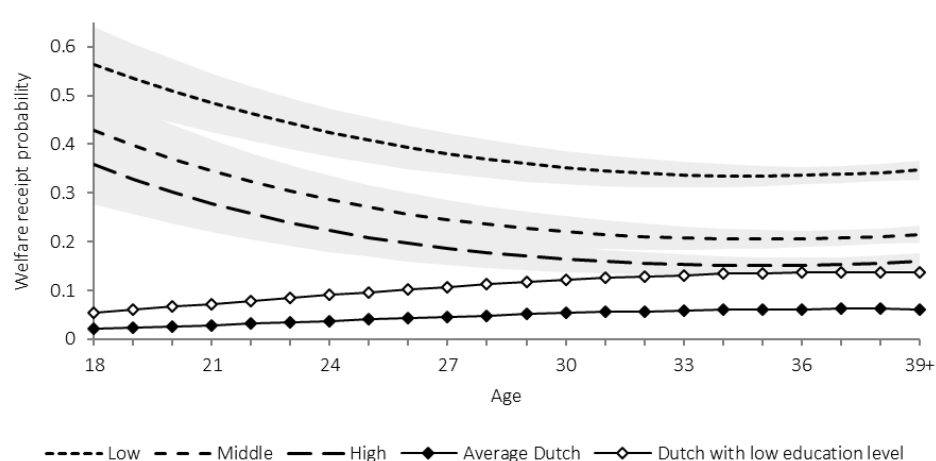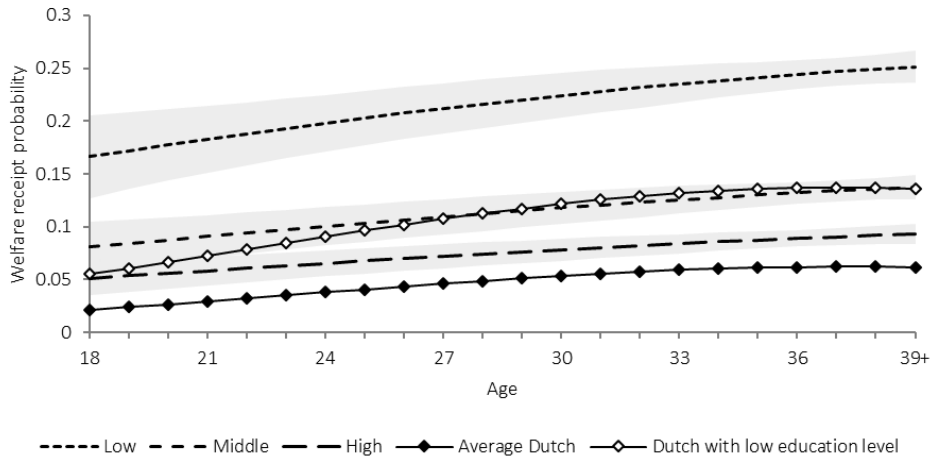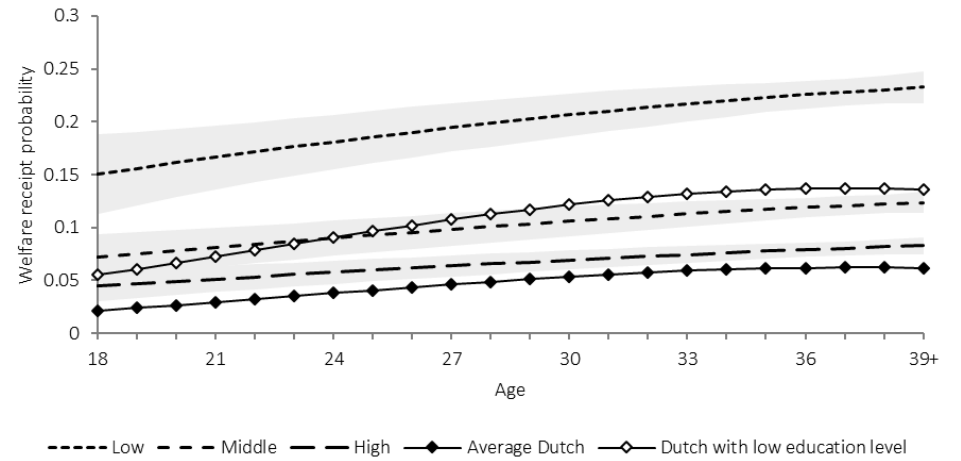(Age at migration: 18)
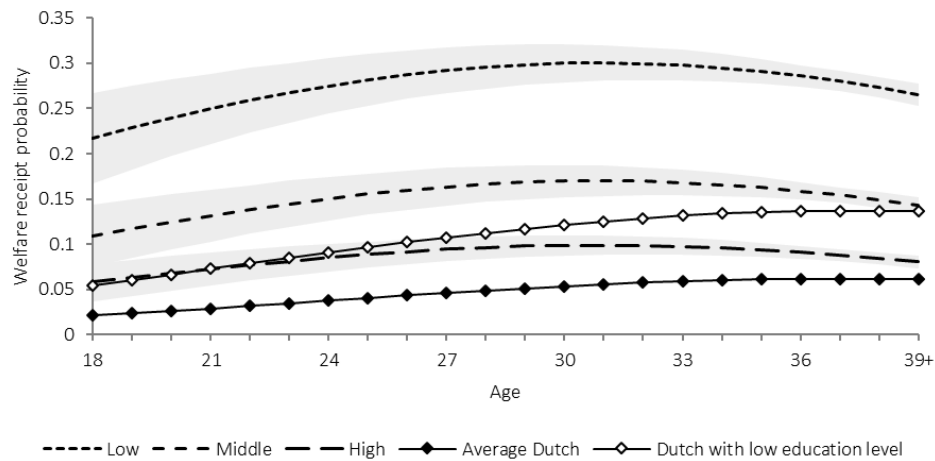
Graph 27: AAP for male asylum migrants from Suriname & Caribbean by education level
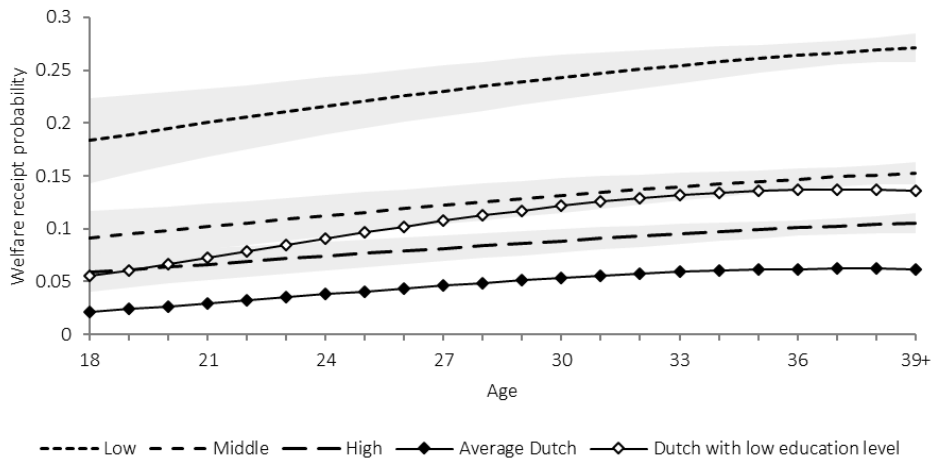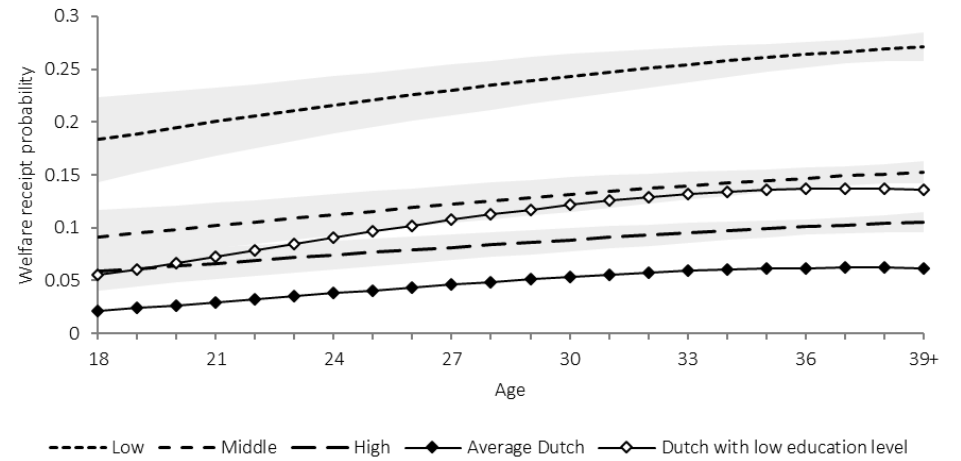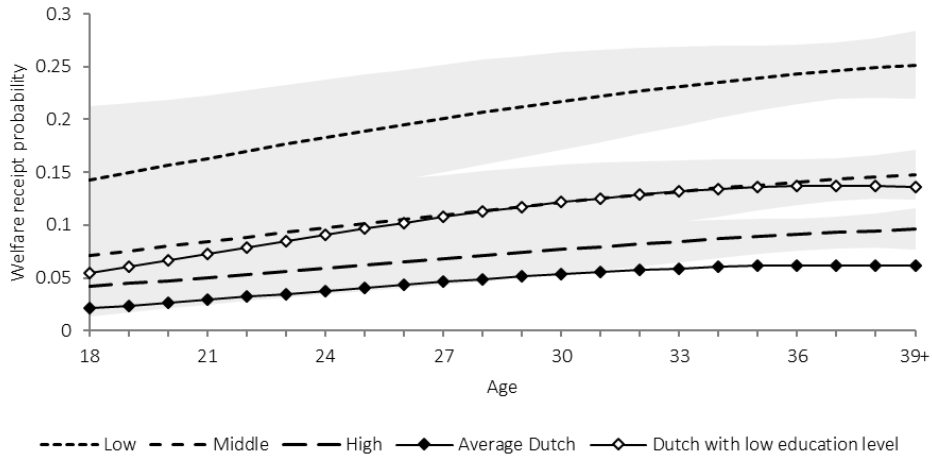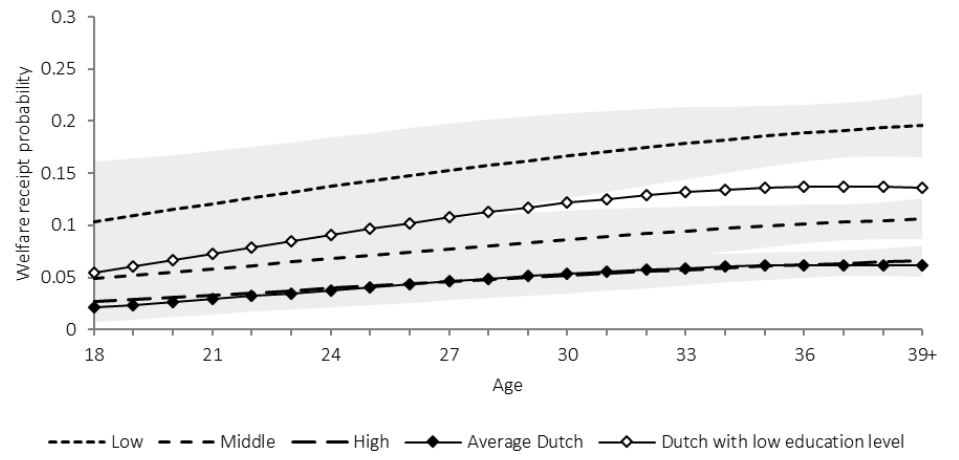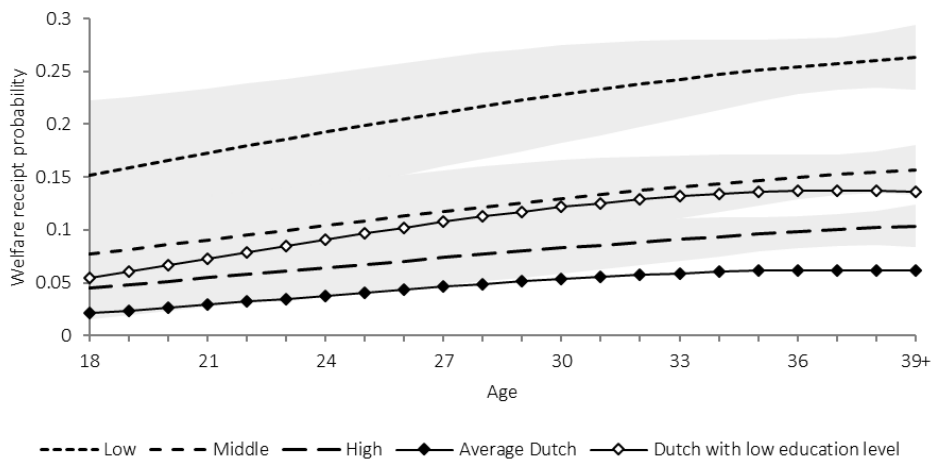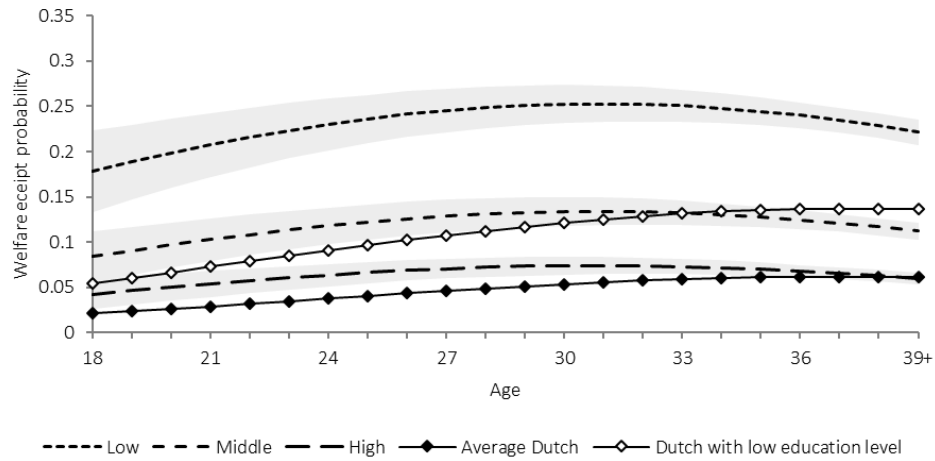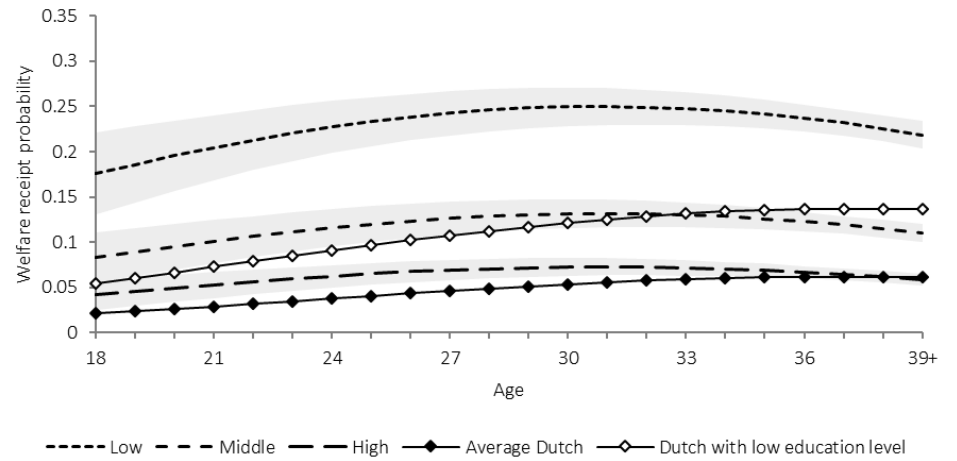(Age at migration: 18)
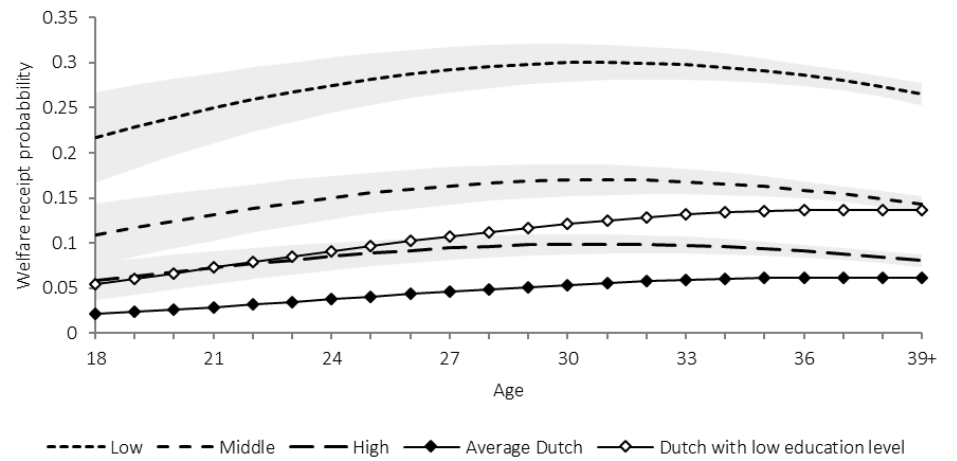
5.1.1 Decomposition

Caution is needed when interpreting the estimates for family migrants, for their entry is dependent on their sponsor, who is their partner or another family member, and thus who they are matters. Unfortunately, we do not have data on entry category of their sponsor, but we do have information on their partner origin which could hopefully shed light on heterogeneities among family migrants. It is to be noted that there are preconditions and rules to which family migrants have to adhere. In general, as spouse of their sponsor, they are 21 years or older and their partner has sufficient income and residence permit for non-temporary purpose of stay. If family migrant applies for social benefits before obtaining permanent residence, they could risk termination of their residence permit. These all indicate selectivity of family migrants who are admitted.

We re-estimated the AAP for family migrants by their partner origin: Dutch (10.43%), EU (2.26%), non-EU (20.42%) and no partner (66.89%) separately for migrants from each regional origin. The partner origin variable records country of birth of the current partner of that individual. The category 'no partner' can be family migrants who divorced with their sponsor, or those who migrated not as spouse of the sponsor. Possibility includes family reunification as a minor or other family member. Results from decomposition did not show a fundamentally differential pattern from the overall pattern of family migrants – mainstream assimilation is still less likely for family migrants with low-to-middle levels of education, but relatively common among family migrants with a Dutch partner or a partner from the EU than those with a non-EU partner.

Among family migrants with a non-EU partner, we further identify family migrants from refugee countries whose partner is a refugee with the speculation that such a specific group of family migrants are themselves refugees like their partners but enter through a more lenient immigration scheme, and therefore would demonstrate, albeit to a lesser extent, a similar level of disadvantage as asylum migrants. Following CBS (2016), we regard people from Afghanistan, Iraq, Iran, Somalia, Syria and Eritrea as refugees. In our sample, 95% of family migrants with a refugee partner (3.06% of family migrants in the sample) are from MENA region and Sub-Saharan Africa. Estimated results align with our prediction as no assimilation is an expected outcome for all family migrants with a refugee partner from Sub-Saharan Africa, and those with low education level from the MENA region. The rest of those from the MENA region are predicted to assimilate into the working class.

5.2 Determinants

Table 5 shows the regression outputs of dynamic CRE probit models for all first-generation immigrants and by their areas of origin. After controlling for YSM, education level and other characteristics, each category of the regional origin (except those from Asia and Americas & Oceania) and entry category variables remain strongly correlated with the probability of welfare utilization. Compared with EU migrants, migrants from the MENA region, Sub-Saharan Africa, other Europe, and Suriname & Caribbean are more like to receive welfare. The ethnic penalty effect appears the strongest for the former two groups. Compared with other types of migrants, entry as asylum migrants and family migrants after 1995 are both correlated with higher probabilities of welfare receipt. Such positive correlations are statistically significant at 1% level. The results suggest, in the first place, that YSM and human capital alone do not fully explain welfare utilization, and that the modes of incorporation in the receptive context matter, as suggested by the segmented assimilation theory.

Ethnic capital and ethnic concentration both demonstrate to be important determinants. The effect of ethnic capital is particularly strong, which contributes to significant reduction in the welfare utilization probabilities for all non-EU immigrants. Ethnic concentration at the municipality level also, although to a lesser extent, reduces such probabilities. This aligns with our hypothesis derived from the segmented assimilation theory that strong ethnic communities could help offset the negative effects of unfavourable modes of incorporation.

In addition to these structural factors, other life-course factors at the individual and household levels appear to be closely related to the propensity of welfare receipt. Naturalization is found to decrease the welfare receipt probability of all non-western immigrants. This result surprisingly aligns with the finding of Bevelander & Pendakur (2009) that citizenship acquisition increases the probability of employment for non-EU and non-North American immigrants in Sweden. Coefficients of the lagged welfare receipt status, which indicates the effect of structural state dependence, are sizable and statistically significant at 1% level for immigrants from all areas of origin. The so-called "welfare trap" occurs to have the strongest effect on those from Asia, the MENA region, other Europe and Suriname & Caribbean. Age at migration, arrival before 1995, and living in a single-person or single-parent household are positively correlated with welfare receipt propensity.

As mentioned in Section 3.2.3, the estimation results would be upwardly biased if the least successful in the labour market are the ones more likely to remigrate and vice versa. The

results suggest that migrants who remigrate by the end of our observation period (2015) are uniformly less likely to receive welfare compared to those who did not. Such difference is statistically significant at 1% level for all except for those from other Europe and Suriname & Caribbean. This finding is in accordance with general findings in the literature that migrants that remigrate are the ones less likely to use welfare. Characteristics of the movers are identified as follows: (i) shorter YSM (on average 13 versus 17 for stayers); (ii) mainly from recent entry cohorts (18% entering between 2006-2015 compared with much lower rate of remigration at 6% among older cohorts); (iii) lower annual household income across all education levels and entry categories except for family migrants (37% versus 41% for stayers in the income distribution); (iv) more labour migrants and education migrants leave than stay; and (v) mainly from the EU (34% leave and 20% stay). Migrants from the MENA region and Suriname & Caribbean, as well as those with low-to-middle education levels, on the contrary, tend to stay than leave. This seemingly paradoxical profile of movers who have simultaneously worse economic position and lower welfare utilization probability could be possibly explained by: (i) ineligibility for social assistance and unemployment benefit due to short-term temporary permit or insufficient years of work experience in the Netherlands; (ii) skill mismatch with the Dutch labour market, driving their outmigration for better economic opportunities; and (iii) benefit claim in their origin country.

In sum, relating to the segmented assimilation theory, the concern for segregation from the mainstream is valid and concentrated among migrants with the following characteristics: having a background from the MENA region, Sub-Saharan Africa, other Europe or Suriname & Caribbean, family migrant, asylum migrant, and having a low level of education. Such characteristics align with our hypothesis that those bearing structural and human capital disadvantages, namely negative modes of incorporation and low human capital, would have less favourable prospects of welfare assimilation. Next we examine whether such differences persist over the working-age life course of these groups, in order to confirm the existence and mechanism of segmented assimilation.

Table 4: Coefficient estimates of key explanatory variables

	All immigrants	EU	Other Europe	MENA	Sub-Saharan Africa	Asia	Americas & Oceania	Suriname & Caribbean
Dependent variable: welfare receipt								
Areas of origin								
EU	(Reference group)							
Other Europe	0.280 *** (0.008)							
MENA region	0.472 *** (0.008)							
Sub-Saharan Africa	0.370 *** (0.010)							
Asia	0.005 (0.008)							
Americas & Oceania	-0.016 (0.012)							
Suriname & Caribbean	0.212 *** (0.007)							
Entry category dummies (arrival as of 1995)								
Family migrant	0.094 *** (0.012)	-0.093 *** (0.023)	0.074 * (0.038)	0.087 *** (0.033)	0.338 *** (0.046)	0.026 (0.041)	0.218 *** (0.063)	0.023 (0.034)
Asylum migrant	0.401 *** (0.013)	0.122 (0.092)	0.389 *** (0.042)	0.298 *** (0.033)	0.653 *** (0.047)	0.286 *** (0.050)	0.559 *** (0.201)	0.368 *** (0.038)
Labour migrant	-0.062 *** (0.013)	-0.042 ** (0.019)	-0.052 (0.044)	-0.146 *** (0.041)	-0.128 ** (0.055)	-0.101 ** (0.047)	0.157 ** (0.068)	-0.228 *** (0.043)
Education migrant	-0.298 *** (0.016)	-0.422 *** (0.034)	-0.200 *** (0.050)	-0.178 *** (0.044)	-0.122 ** (0.056)	-0.225 *** (0.046)	-0.151 ** (0.075)	-0.244 *** (0.045)
Share of highly educated co-nationals	-0.525 *** (0.048)	1.901 *** (0.104)	-1.047 *** (0.170)	-0.651 *** (0.131)	-2.369 *** (0.166)	-3.523 *** (0.185)	-1.957 *** (0.421)	-0.899 *** (0.114)
Number of co-nationals at municipality (logged)	-0.029 *** (0.002)	-0.034 *** (0.004)	-0.028 *** (0.004)	-0.027 *** (0.003)	-0.007 (0.006)	-0.031 *** (0.005)	-0.049 *** (0.009)	-0.037 *** (0.004)
YSM	-0.024 *** (0.005)	-0.014 (0.010)	0.030 * (0.017)	-0.120 *** (0.012)	-0.101 *** (0.017)	0.043 ** (0.019)	0.050 (0.033)	0.071 *** (0.020)
YSM squared	0.001 *** (0.000)	0.000 (0.000)	-0.000 (0.001)	0.004 *** (0.000)	0.003 *** (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.003 *** (0.001)
Education level								

Low	(Reference group)							
Middle	-0.124 ***	-0.103 ***	-0.057 ***	-0.126 ***	-0.155 ***	-0.078 ***	-0.096 ***	-0.192 ***
	(0.005)	(0.015)	(0.014)	(0.011)	(0.019)	(0.019)	(0.034)	(0.011)
High	-0.254 ***	-0.257 ***	-0.165 ***	-0.250 ***	-0.186 ***	-0.143 ***	-0.202 ***	-0.440 ***
	(0.007)	(0.017)	(0.019)	(0.015)	(0.029)	(0.021)	(0.037)	(0.015)
Unknown	-0.358 ***	-0.728 ***	-0.236 ***	-0.203 ***	-0.118 ***	-0.404 ***	-0.599 ***	-0.432 ***
	(0.005)	(0.014)	(0.011)	(0.009)	(0.016)	(0.016)	(0.034)	(0.010)
Lagged status	2.083 ***	1.52 ***	2.130 ***	2.320 ***	1.790 ***	2.337 ***	1.852 ***	2.019 ***
	(0.005)	(0.015)	(0.013)	(0.010)	(0.017)	(0.016)	(0.034)	(0.011)
Naturalization dummy	-0.125 ***	0.011	-0.179 ***	-0.173 ***	-0.223 ***	-0.052 ***	0.066 **	-0.092 ***
	(0.002)	(0.014)	(0.011)	(0.010)	(0.017)	(0.017)	(0.030)	(0.017)
Remigration dummy	-0.090 ***	-0.089 ***	-0.030	-0.124 ***	-0.138 ***	-0.158 ***	-0.233 ***	-0.000
	(0.009)	(0.021)	(0.026)	(0.023)	(0.030)	(0.035)	(0.057)	(0.020)
Gender	0.017 ***	0.028 ***	-0.011	0.063 ***	0.051 ***	0.038 ***	0.037	-0.023 ***
	(0.004)	(0.010)	(0.010)	(0.008)	(0.016)	(0.013)	(0.025)	(0.008)
Age at migration	0.025 ***	0.024 ***	0.017 ***	0.024 ***	0.039 ***	0.025 ***	0.039 ***	0.029 ***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.001)
Age at migration squared	-0.000 ***	-0.000 ***	-0.000	-0.000 **	-0.001 ***	-0.000 ****	-0.000 ***	-0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R-square	0.492	0.336	0.477	0.531	0.480	0.507	0.441	0.468
Number of observations	1,768,261	374,998	276,774	344,468	120,657	200,638	68,652	382,174

Note: The table reports estimated coefficients of the dynamic CRE probit models. All regressions also control for household composition, entry cohort fixed effects, period fixed effects, log-transformed provincial unemployment rate, province fixed effects, initial status of welfare receipt, time-averages of time-varying variables as Wooldrige's estimators: province, household composition and provincial unemployment rate. Clustered standard errors are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

## 5.2.1 The Roles of Structural and Human Capital Disadvantages

As mentioned in Section 5.1, the risk of marginalization is observed to concentrate among first-generation immigrants marked by the following characteristics: (i) all migrants with low-to-middle education levels except education migrants with middle education level, and (ii) the majority of asylum migrants regardless of their education levels. A question arises as to whether their predicted gap from Dutch natives with low education level is due to concentrated disadvantages in other characteristics among such groups, or due to structural and human capital disadvantages per se, i.e. having a non-western background, being an asylum migrant, and/or having low education level? While the assimilation profiles provide valuable insights into the patterns of welfare assimilation, they are not free of contamination from a variety of factors other than our variables of interest. Examples include certain cohorts arriving during periods of economic downturn, concentration of older migrants, single-parents or residence in regions with fewer jobs among these migrants from certain entry category or ethnic origin, reducing returns to human capital over time, decreasing quality of more recent immigrants, to name but a few. What is needed is a type of probability estimate that would allow us to isolate the effects of factors other than our key predictors. More specifically, we are interested in knowing the extent to which structural and human capital disadvantages would hinder immigrants even if they have the motivation to integrate into the Dutch society from mainstream assimilation.

Graph 28 shows the predicted difference in AAP from Dutch natives with low education level at YSM=21+, and Graph 29 shows the predicted difference in APM from Dutch natives with low education level at YSM=21+. The only difference is that, in the estimation of APM, all characteristics other than their entry category, regional origin and education level are controlled for: they are assumed to have shown the aspiration for integration through citizenship acquisition and have the average characteristics of EU immigrants, who have the lowest gap from average Dutch natives and thereby the most favourable conditions. Since all characteristics are fixed to be the same for each individual, the observed difference can be attributable only to the parameter which varies, i.e. difference in education level, area of origin or entry category.

After controlling for all other characteristics, it becomes apparent that, despite uniform display of an education gradient, the interaction effects between human capital and regional origin are differential depending on the nature of migration. Being an economic/skilled migrant implies that the level of education is deterministic of their welfare assimilation outcome. For family migrants, it is the interaction between their regional

origin and education level that matters. As for asylum migrants, their refugee status per se outweighs the effects of regional origin and education level.

Graph 28: AAP ratio to Dutch natives with low education level after 21+ years of residence
for male migrants by entry category, regional origin and education level
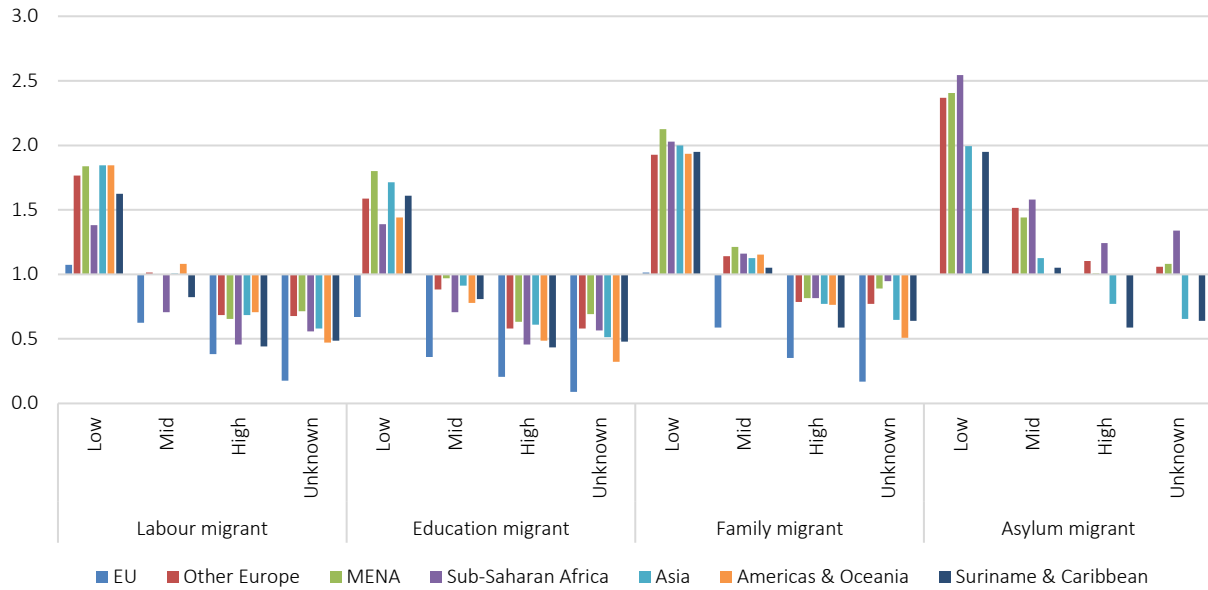
Graph 29: APM ratio to Dutch natives with low education level after 21+ years of residence
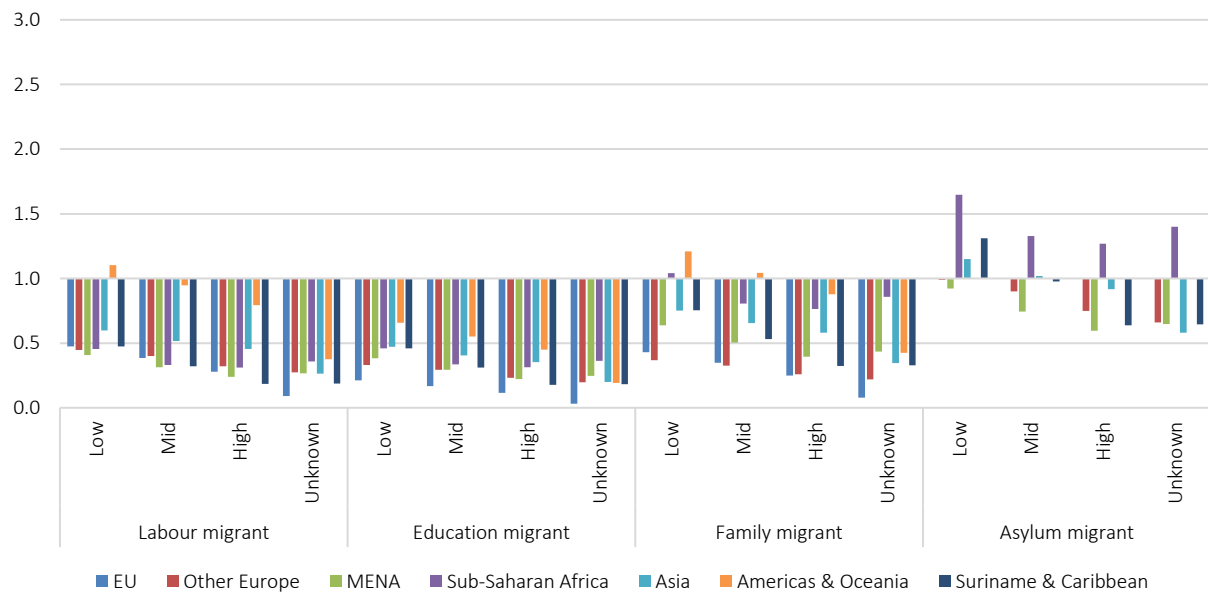for male migrants by entry category, regional origin and education level

Table 5: Percentage difference in predicted probabilities at YSM=21+ for male migrants after controlling for all characteristics other than regional origin, entry category and education level (APM relative to AAP)

Entry category	Education level	Regional origin							
		EU	Other Europe	MENA	Sub-Saharan Africa	Asia	Americas & Oceania	Suriname & Caribbean	Average
Labour	Low	-56%	-75%	-78%	-67%	-68%	-40%	-71%	-65%
	Middle	-38%	-61%	-69%	-53%	-49%	-12%	-61%	-49%
	High	-27%	-53%	-63%	-32%	-33%	12%	-58%	-36%
	Unknown	-49%	-60%	-63%	-36%	-55%	-20%	-61%	-49%
Education	Low	-68%	-79%	-79%	-67%	-72%	-54%	-71%	-70%
	Middle	-54%	-67%	-70%	-52%	-56%	-29%	-62%	-56%
	High	-44%	-60%	-65%	-31%	-42%	-7%	-59%	-44%
	Unknown	-64%	-66%	-64%	-36%	-61%	-41%	-62%	-56%
Family	Low	-58%	-81%	-70%	-49%	-62%	-37%	-61%	-60%
	Middle	-41%	-71%	-58%	-31%	-42%	-10%	-49%	-43%
	High	-29%	-67%	-52%	-6%	-25%	15%	-45%	-30%
	Unknown	-53%	-71%	-51%	-10%	-46%	-16%	-49%	-42%
Asylum	Low		-58%	-62%	-35%	-42%		-33%	-46%
	Middle		-41%	-48%	-16%	-9%		-7%	-24%
	High		-32%	-41%	2%	19%		8%	-9%
	Unknown		-38%	-40%	5%	-11%		1%	-17%

Note: Coloured in gray are groups predicted at risk of marginalization in AAP. All predicted probabilities are statistically significant at 1% level.

Ceteris paribus, major differences are still being observed between economic/skilled and non-economic migrants. While economic migrants are predicted to outperform average natives, the pattern is the reverse for asylum migrants. Even given that they had the motivation to integrate and the most favourable characteristics, after more than 20 years of residence, being an asylum migrant with low education level would still lead to up to 1.7 times higher welfare utilization probabilities than average Dutch natives. The refugee status, regardless of their education levels, areas of origin, aspiration for integration and other characteristics, would still indicate an economic position closer to the margins than the mainstream of the Dutch society.

For economic/skilled migrants with low education level who are uniformly observed to be at risk of marginalization, their high welfare utilization propensities are more driven by concentrated disadvantages in other characteristics than their low levels of education. For

such a group, variations in other characteristics led to a significant drop in their welfare utilization propensities by 54-79%.

More substantial variations across regional origin are seen among family migrants, especially those with middle education level. For family migrants from other Europe with low-to-middle education levels, the notable levels of reduction (71% and 81%) implies that their observed disadvantage is less due to their regional origin but more due to concentrated differences in other characteristics. For other non-western family migrants, however, the reduction is much less prominent, indicating the strong effects of ethnic penalty. All in all, the risk of marginalization among family migrants is mainly attributable to the combined effects of being a family migrant without higher education from outside of Europe.

As for asylum migrants who are observed to be at risk of marginalization, the reductions are much smaller after changing the values of other characteristics. The change is the smallest among asylum migrants with middle, high and unknown education levels and a background from Sub-Saharan Africa, Asia and Suriname & Caribbean (ranging from 2-48%, and an average reduction rate of 29% in relation to the overall reduction rate of 44% for all immigrants). This implies that their observed disadvantages are mainly driven by their refugee status per se.

The results are, in the first place, in line with the proposition of segmented assimilation theory that assimilation is not purely dependent on the accumulation of destination-specific human capital over time, but its interaction with the modes of incorporation. Furthermore, the results shed light on the respective roles of entry category and ethnic origin in the interplay.

At the structural level, as segmented assimilation theory suggests, entry categories can reflect the modes of incorporation in the receptive context. Unfavourable reception towards certain types of migrants from the government can be the presence of any policy, law or practice that hinders equal opportunities of and access to full participation in the society, especially the labour market. Immigration policy tends to be the least restrictive towards highly skilled migrants who enter as economic and education migrants. When it comes to family and asylum migrants, the level of constraints escalates. Integration policy is also crucial to preventing social and economic exclusion of migrants, as our results reflect its current inadequacy and ineffectiveness in reaching the most disadvantaged groups, such as the refugees. One crucial element is the transferability of qualifications obtained abroad, especially those obtained in non-western countries, which could one explanation for the low returns to refugees' education and the lack of assimilation even for

those with higher education. Improving transferability of qualifications obtained abroad and skill profiling would also accelerate and transform the assimilation process especially for refugees who are high-skilled.

At the individual level, the nature of migration could also indicate the level of favourable selectivity through returns to migration and education. Based on human capital migration model, Chiswick (2000) posits that favourable selectivity for labour market success in the supply of migrants is expected to be more intense for economic migrants than non-economic migrants such as tied-movers (family migrants) and refugees, and for high-skilled than low-skilled workers. Such a viewpoint echoes with Ogbu's differentiation of voluntary and involuntary minorities, the diverse experiences of whom contribute to fundamentally different integration processes and educational outcomes (Ogbu & Simons, 1998). The move for economic and education migrants is by and large a rational decision after calculating the costs and benefits in expectance of higher returns to international migration. Not only are they likely to be well planned and prepared for their move in order to optimize their returns, such as having qualifications obtained abroad recognized by the Dutch authorities and learning the Dutch language, most likely they are able to stay because their skill matches with demands of the Dutch labour market. At the other end of the spectrum are asylum seekers and refugees. Forced migration due to war, conflicts or other external factors means their migration to the Netherlands is largely unexpected and unprepared, and thus their skill match with the local labour market is likely to be less optimal. Psychological trauma also adds to their difficulty in adaptation. Between these two ends are family migrants, who do not fully share the experience of voluntary nor forced migrants. For many, migration to the Netherlands is unforeseen before long. As such, their skills are to a larger extent home-country-specific rather than destination-specific. Among those who migrate for family reunification with their partner or family member who entered as asylum migrants, their nature of migration is not so different from forced migration and thus similar difficulties as asylum migrants are anticipated for this type of family migrants.

What cannot be explained by the interaction between human capital and nature of migration are the differences across regional origin within the same entry category and gender at the same education level and YSM. Equally highly skilled and statistically comparable, why are EU family migrants predicted to have successful integration into the mainstream while non-EU family migrants remain on the margins? Given the variety of potential implications from the effect of regional origin, we have controlled for some of the important external and internal indirect effects, such as spillover of ethnic capital, ethnic concentration, and differences in the quality (i.e. human capital), aspiration for integration,

residential duration, residential location, arrival year and age at migration of migrants from certain areas of origin. What could remain in the regional origin effects are: (i) existence of discrimination and/or group-based stereotypes, as consistently highlighted both by segmented assimilation theory and the literature, and (ii) cultural and linguistic distances to the host society. While we do not have data on cultural factors, their Dutch language proficiency has been indirectly captured by citizenship acquisition for more recent cohorts. In sum, ethnic penalty seems to act as an additional condition upon the interaction between nature of migration and human capital.

6. Robustness Check

6.1 Weighting

Due to the combined nature of our data from both register and survey data, weighting for each individual is provided by Statistics Netherlands to adjust for their representativeness in the population. Such weight is always 1 for register data. To check whether estimated coefficients which are used to calculate welfare use probabilities are robust, and to confirm whether selectivity exists for those with missing information on education level, we compare such estimations with and without the use of weight. Appendix 3 shows the regression outputs from weighted and unweighted pooled probit models. The only difference between these two models and the one used in our main analysis is the incorporation of random effects, for which weighting is not possible in the software setting of CBS where our analysis is conducted.

Most of the coefficients and p values differ only marginally. That said, we notice larger differences in coefficients of the following categories: unknown education level, residence in Friesland, origin from Asia, and institutional and other households. The differences reflect an adjustment for the population representation of certain characteristics. Our main concern, the education level variable, particularly from low to high education levels, seem only slightly affected by weighting. Considering this comparison between weighted and unweighted regressions as well as results from the correlation tests mentioned in Section 4.2, we believe that selectivity in missingness of the education variable should not threaten the validity of our results, although caution is needed to interpret results for those with unknown education level.

6.2 Sensitivity to threshold setting

Predictions made regarding the assimilation outcomes have been based on a selected threshold, that is, the average value of AAP for Dutch natives with low education level at age=39-60 (0.136). Given the 95% confidence interval of AAP for Dutch natives with low education level to be between 0.132-0.140, we have also considered other thresholds adjacent to this range: (1) the lower bound of 95% confidence interval for Dutch natives with low education level (0.132); (2) mean value between APR for average Dutch natives and Dutch natives with low education level (0.099); and (3) upper bound of 95% confidence interval for Dutch natives with middle education level (0.069). Except that the value of the third option is too low and too close to AAP for average Dutch natives (0.062), the other two options are within reasonable scope. While it is obvious that more subgroups would fall out of mainstream assimilation if lower thresholds are chosen for assimilation into the working class and vice versa, the assimilation patterns summarized in the previous sections remains valid.

Specifically, under the second threshold, the boundary shift of mainstream assimilation would exclude most labour and education migrants with middle education level, but EU migrants and male migrants from Sub-Saharan Africa are still exempted. As such, the education gradient for economic migrants would appear even steeper. The most distinct difference is that all family migrants with higher education except those from EU countries and Suriname & Caribbean would then be categorized as at risk of working-class assimilation instead. This change, however, by and large aligns with our predicted pattern that non-economic migrants are worse-off than economic migrants, only expanding the groups for which higher education would appear insufficient for bridging with mainstream assimilation. For asylum migrants, little is changed with the change in threshold.

7. Conclusion

Economic assimilation of immigrants, which is not only a significant indicator of their own success, but also of their overall contribution to the host country's economy, is both an intragenerational and intergenerational process. While the immigrant-native gap in economic outcomes is expected to diminish across generations, results from this research suggest that automatic closing of such gap over time should not be presumed if a level playing field is not provided for all regardless of their type of immigration and ethnic

background. In the Dutch context, substantial gap in welfare utilization propensities, as a reflection of economic marginalization, is predicted to persist throughout the working-age life course between Dutch natives and migrants from certain areas of origin and entry categories, who are likely to remain marginalized despite notable upward mobility achieved. The most disadvantaged would not even have the chance to assimilate to the working class, suggesting prospective emergence of an ethnic underclass at the bottom of the economic ladder.

While individual factors emphasized in classic theories such as years since migration and human capital remain important in explaining the welfare assimilation outcomes, in line with predictions from segmented assimilation theory, their interaction with the modes of incorporation in the receptive context matters for the first generation. What appears to determine which assimilation path one could follow is the differential interaction effects between regional origin and human capital conditioned upon the nature of migration. With much less stringent immigration and integration conditions, voluntary skilled migrants, such as labour and education migrants, have much higher returns to their education than family migrants who are tied movers and refugees who are forced migrants. While higher education seems to offset the ethnic penalty faced by family migrants with non-EU origin, it only minimally reduces the level of disadvantage for asylum migrants, despite remarkable reductions in their welfare utilization propensities through their working-age life course.

The observed patterns shed light on the importance of government policies that can eliminate such concentrated disadvantages in the labour market integration of first-generation immigrants with non-EU origin and non-economic migration purposes. Improving transferability of qualifications obtained abroad would not only accelerate but transform the assimilation process for many, especially the highly-skilled refugees who are hindered from full participation in and contribution to the host society due to unnecessary structural barriers.

The results also illustrate the misleading nature of rhetoric about immigrants as one homogenous group. Discrepancy between refugees and other types of migrants has been observed in both the patterns and determinants of welfare assimilation, which points to their fundamentally different nature of migration and thereby the need for different sets of policies. While long-term planning of immigration policy is possible due to predictability of the number and characteristics of immigrants, the inflow of refugees due to an outburst of war is unpredictable in nature. For immigrants, perhaps it is still reasonable to consider their potential economic costs and contributions so that a sensible admission policy could be formulated to promote sustainable development of the host country. Applying the same scale of economic calculation to refugees, who bear significant disadvantages due to

traumatic experiences of fleeing war, conflict or prosecution, would be all but dehumanizing. Political commitment to international conventions remains important when it comes to protection of forced migrants.

Redefining assimilation from an absolute to a relative concept, the exploration of whether the process of immigrant adaptation has become segmented broadens and contextualizes the discussion onto the increasingly divided nature of contemporary societies with pervasive vertical and horizontal inequalities, if not stratification. The segmented assimilation theory, while offering new perspectives of potential diversity of the assimilation process, has yet to offer a solid methodology to unambiguously test the empirical validity of its core concepts. Confined to identifying the relevance of modes of incorporation to the disadvantaged position among similar immigrants, the fundamental question of whether they assimilate to a different segment to the middle class was left unanswered. Besides complementing such methodological gap through offering alternative means of operationalization, this research contributes to the literature by expanding the descriptive and explanatory functions of the conventional welfare assimilation model through bridging the economics and sociology literatures, and by undertaking a dynamic life-course approach in welfare assimilation analysis.

Further research is needed to shed light on the cultural mechanism of segmented assimilation. Due to our explicit focus on the aggregate trend, predictions by the country of origin were not provided, from which informative indications could be drawn regarding the extent of integration among specific ethnic minorities in the Netherlands. Despite the presence of missing information and measurement error on the entry category and especially education level variables, we have demonstrated the limited extent of such problems.

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Appendix 1: Correlation check of missing education level

The education level variable is recorded in the following way: if a migrant did not follow formal education in the Netherlands, such information is missing; if they did, the level of that course or education would be recorded as the highest level of education. In the meanwhile, information from Labour Force Survey (EBB) and UWV register (of people registered as unemployed) is used to complement the potential measurement error and missing information of this variable. Weighting is provided by the Statistics Netherlands to account for the combined nature of the data (register data and survey data).

Data experts at Statistics Netherlands have speculated that such missingness might be highly correlated with specific areas of origin and older age groups. After checking the correlation between the 'unknown' category of education level with each area of origin, entry category, age, age at migration, and entry cohort (as shown in Table 3 below), we find all correlation to be lower than 0.2 except that with age at migration (0.26), and the vast majority lower than 0.1. This suggests that endogeneity is not a highly concerning problem at least within our sample.

Table 6: Correlation between missing education level and potentially related variables

Variable	Category	Correlation
	EU	0.102
	Other Europe	-0.005
	MENA	-0.063
Area of origin	Sub-Saharan Africa	-0.016
	Asia	0.057
	Americas & Oceania	0.025
	Suriname & Caribbean	-0.076
	Family migrant	-0.027
	Asylum migrant	-0.071
Entry category	Labour migrant	0.150
	Education migrant	-0.042
	Age	0.185
	Age group: 45+	0.127
Age-related	Age at migration	0.267
	Age at migration: <30	-0.159
	Entry cohort	0.100
Entry cohort	Cohort: before 1995	-0.040
	Cohort: 2010-2015	0.109

Appendix 2: Regression output for Dutch natives

Table 7: Regression output for Dutch natives

Welfare receipt	Coef.	SE
Lagged status	1.844 ***	0.014
Education level		
Low		
Middle	-0.229 ***	0.013
High	-0.578 ***	0.015
Unknown	-0.768 ***	0.014
Female	-0.012	0.009
Household composition		
Unmarried with no kids		
Single-person household	0.167 ***	0.023
Married with no kids	0.070 **	0.031
Unmarried with kids	-0.020	0.030
Married with kids	-0.037	0.026
Single-parent household	0.283 ***	0.030
Other household	0.059	0.072
Institutional household	0.167 **	0.069
Age	0.162 ***	0.012
Age squared	-0.002 ***	0.000
Provincial unemployment rate (log)	0.391 ***	0.115
Period		
2008		
2009	0.157 ***	0.026
2011	0.05	0.038
2012	0.085	0.055
2013	0.081	0.079
2014	-0.019	0.082
2015	-0.082	0.074
Province		
Groningen		
Friesland	0.203 *	0.117
Drenthe	0.122	0.105
Overijssel	0.054	0.113
Flevoland	-0.038	0.140
Gelderland	0.105	0.107
Utrecht	0.084	0.111
Noord-Holland	0.04	0.104
Zuid-Holland	-0.05	0.102

Zeeland	0.024	0.175
Noord-Brabant	0.017	0.112
Limburg	0.161	0.130
Initial status	0.533 ***	0.087
Wooldridge's estimators:		
Means of time-varying variables		
<u>Household composition</u>		
Single-person household	0.875 ***	0.237
Unmarried with no kids	0.524 **	0.239
Married with no kids	0.453 *	0.239
Unmarried with kids	0.633 ***	0.239
Married with kids	0.472 **	0.236
Single-parent household	0.864 ***	0.238
Other household	0.612 **	0.267
Institutional household	0.687 ***	0.259
<u>Province</u>		
Groningen	-0.819 ***	0.290
Friesland	-1.028 ***	0.288
Drenthe	-0.985 ***	0.285
Overijssel	-0.961 ***	0.270
Flevoland	-0.991 ***	0.312
Gelderland	-1.058 ***	0.255
Utrecht	-1.133 ***	0.255
Noord-Holland	-1.108 ***	0.261
Zuid-Holland	-1.000 ***	0.270
Zeeland	-1.031 ***	0.308
Noord-Brabant	-0.970 ***	0.257
Limburg	-1.097 ***	0.281
<u>Provincial unemployment rate (log)</u>	-0.108	0.170
Intercept	-5.004 ***	0.382
/lnsig2u	-1.590	0.052
sigma_u	0.452	0.012
rho	0.169	0.007
Pseudo R-square		0.371

Note: *** p<0.01, ** p<0.05, * p<0.1

Appendix 3: Weighted and unweighted coefficient estimates

Table 8: Weighted and unweighted pooled probit regression outputs

Welfare receipt	Weighted pooled probit			Unweighted pooled probit		
	Coef.	S.E.	P value	Coef.	S.E.	P value
Lagged welfare status	2.304	0.009	0.000	2.255	0.004	0.000
Initial welfare status	0.177	0.027	0.000	0.152	0.012	0.000
YSM	-0.047	0.013	0.000	-0.028	0.005	0.000
YSM squared	0.001	0.000	0.005	0.001	0.000	0.000
Regional origin						
EU						
Other Europe	0.260	0.014	0.000	0.227	0.007	0.000
MENA	0.404	0.014	0.000	0.378	0.006	0.000
Sub-Saharan Africa	0.315	0.018	0.000	0.299	0.008	0.000
Asia	0.041	0.014	0.003	0.008	0.007	0.258
America & Oceania	0.002	0.024	0.945	-0.005	0.010	0.645
Suriname & Caribbean	0.189	0.013	0.000	0.177	0.006	0.000
Entry category dummies						
Family migrant	0.074	0.019	0.000	0.078	0.010	0.000
Asylum migrant	0.313	0.023	0.000	0.313	0.011	0.000
Labour migrant	-0.061	0.020	0.003	-0.053	0.011	0.000
Education migrant	-0.213	0.026	0.000	-0.239	0.014	0.000
Share of highly educated co-nationals	-0.417	0.089	0.000	-0.435	0.041	0.000
Log-transformed number of co-nationals at municipality	-0.021	0.003	0.000	-0.023	0.001	0.000
Naturalization dummy	-0.086	0.010	0.000	-0.108	0.004	0.000
Remigration dummy	-0.054	0.018	0.003	-0.073	0.008	0.000
Age at migration	0.010	0.001	0.000	0.019	0.001	0.000
Age at migration squared	0.000	0.000	0.145	0.000	0.000	0.000
Entry cohort						
Before 1995						
1995-1999	-0.071	0.031	0.021	-0.102	0.015	0.000
2000-2004	-0.064	0.052	0.225	-0.114	0.023	0.000
2005-2009	-0.194	0.064	0.003	-0.199	0.029	0.000
2010-2015	-0.319	0.076	0.000	-0.293	0.034	0.000
Education level						
Low						
Middle	-0.120	0.010	0.000	-0.112	0.005	0.000
High	-0.253	0.013	0.000	-0.229	0.006	0.000
Unknown	-0.193	0.008	0.000	-0.303	0.004	0.000

Female	0.008	0.007	0.254	0.010	0.003	0.002
Household composition						
Unmarried with no kids						
Single-person household	0.079	0.026	0.002	0.105	0.010	0.000
Married with no kids	-0.086	0.038	0.023	-0.032	0.014	0.019
Unmarried with kids	-0.050	0.032	0.117	-0.028	0.014	0.040
Married with kids	-0.093	0.029	0.001	-0.043	0.012	0.000
Single-parent household	0.220	0.029	0.000	0.256	0.012	0.000
Other household	-0.036	0.041	0.379	0.039	0.021	0.061
Institutional household	0.054	0.079	0.493	-0.061	0.026	0.018
Provincial unemployment rate (log)	0.216	0.085	0.011	0.278	0.041	0.000
Period						
2008.000						
2009.000	0.161	0.021	0.000	0.140	0.010	0.000
2011.000	0.043	0.031	0.162	0.007	0.015	0.651
2012.000	0.055	0.044	0.206	0.005	0.021	0.822
2013.000	0.044	0.061	0.469	-0.021	0.029	0.463
2014.000	-0.021	0.063	0.734	-0.087	0.030	0.004
2015.000	-0.087	0.057	0.125	-0.135	0.027	0.000
Province						
Groningen						
Friesland	-0.679	0.305	0.026	0.116	0.059	0.050
Drenthe	-0.010	0.154	0.948	-0.022	0.059	0.716
Overijssel	0.088	0.125	0.484	0.155	0.051	0.002
Flevoland	-0.205	0.106	0.052	-0.214	0.051	0.000
Gelderland	0.081	0.104	0.436	0.228	0.047	0.000
Utrecht	0.104	0.104	0.320	0.156	0.049	0.001
Noord-Holland	0.133	0.105	0.207	0.103	0.043	0.016
Zuid-Holland	0.053	0.091	0.555	0.114	0.042	0.006
Zeeland	0.066	0.118	0.578	0.128	0.068	0.061
Noord-Brabant	0.050	0.099	0.616	0.109	0.046	0.019
Limburg	-0.003	0.124	0.983	0.078	0.050	0.117
Wooldrige's estimators:						
Means of time-varying variables						
Household composition						
Unmarried with no kids	-0.321	0.105	0.002	-0.215	0.048	0.000
Single-person household	0.005	0.103	0.965	0.029	0.046	0.530
Married with no kids	-0.288	0.109	0.008	-0.260	0.048	0.000
Unmarried with kids	-0.182	0.108	0.092	-0.116	0.048	0.016
Married with kids	-0.281	0.103	0.006	-0.209	0.047	0.000
Single-parent household	0.052	0.103	0.614	0.087	0.047	0.064
Other household	-0.350	0.130	0.007	-0.360	0.056	0.000

Institutional household	0.465	0.147	0.002	0.625	0.057	0.000
Province						
Groningen	-0.082	0.156	0.598	-0.198	0.071	0.005
Friesland	1.061	0.448	0.018	-0.142	0.080	0.076
Drenthe	0.014	0.212	0.947	-0.003	0.085	0.976
Overijssel	-0.192	0.154	0.212	-0.269	0.064	0.000
Flevoland	0.032	0.140	0.819	-0.051	0.068	0.451
Gelderland	-0.134	0.131	0.304	-0.330	0.057	0.000
Utrecht	-0.278	0.128	0.030	-0.334	0.058	0.000
Noord-Holland	-0.402	0.114	0.000	-0.385	0.051	0.000
Zuid-Holland	-0.271	0.110	0.014	-0.394	0.051	0.000
Zeeland	-0.103	0.136	0.449	-0.129	0.085	0.129
Noord-Brabant	-0.133	0.116	0.251	-0.212	0.054	0.000
Limburg	-0.087	0.179	0.627	-0.209	0.062	0.001
Provincial unemployment rate (log)	0.251	0.099	0.012	0.404	0.041	0.000
Intercept	-2.030	0.265	0.000	-2.576	0.106	0.000