Maastricht University

Tipping points? Ethnic composition change in Dutch big city neighbourhoods

Citation for published version (APA):

Ong, C. (2014). *Tipping points? Ethnic composition change in Dutch big city neighbourhoods*. UNU-MERIT. UNU-MERIT Working Papers No. 011 http://www.merit.unu.edu/publications/wppdf/2014/wp2014-011.pdf

Document status and date:
Published: 01/01/2014

Document Version:
Publisher's PDF, also known as Version of record

Please check the document version of this publication:

• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

• Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the “Taverne” license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy
If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Download date: 23 Aug. 2022

UNU-MERIT Working Paper Series

#2014-011

Tipping points?
Ethnic composition change in Dutch big city neighbourhoods

Cheng Boon Ong

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)
email: info@merit.unu.edu | website: http://www.merit.unu.edu

Maastricht Graduate School of Governance (MGSoG)
email: info-governance@maastrichtuniversity.nl | website: http://mgsog.merit.unu.edu

Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands
Tel: (31) (43) 388 4400, Fax: (31) (43) 388 4499

UNU-MERIT Working Papers

ISSN 1871-9872

Maastricht Economic and social Research Institute on Innovation and Technology, UNU-MERIT

Maastricht Graduate School of Governance MGSoG

UNU-MERIT Working Papers intend to disseminate preliminary results of research carried out at UNU-MERIT and MGSoG to stimulate discussion on the issues raised.

Tipping points?
Ethnic composition change in Dutch big city neighbourhoods[1]

Cheng Boon Ong*

* Maastricht Graduate School of Governance, Maastricht University, the Netherlands. Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands. Cheng.ong@maastrichtuniversity.nl. +31(0)433884452

February 2014

Abstract: Micro-level studies using individual and household data have shown that residential location choices are influenced by neighbourhood ethnic composition. Using three conurbation samples in the Netherlands – Amsterdam metropolitan area, Rotterdam-The Hague metropolitan area, and the country's largest conurbation, the 'Randstad' metropolitan area – this paper analyses the evolution of neighbourhood ethnic composition as a social interaction outcome of disaggregated household behaviour. The potential 'tipping point' in neighbourhood ethnic composition, beyond which 'white flight' (or the departure of native or advantaged households) occurs, is tested. The share in neighbourhood population of native Dutch and western minority did not exhibit the hypothesised 'tipping' behaviour in its growth rate with respect to initial share of non-western minority. This paper argues that the large social housing sector, centralised tax regime, and strong regulatory role of the state in housing and urban planning, are the main explanatory factors for the relative constancy in Dutch neighbourhood ethnic composition.

Keywords: Ethnic segregation; Neighbourhood; Tipping point; Urban renewal; Regression discontinuity

JEL-classification: J15, R0, R21, R31, R58

[1] I thank Henriëtte Maassen van den Brink and Kristof De Witte for the very useful comments on an earlier version of this paper.

1. Introduction

Schelling (1971, 181) characterises the neighbourhood 'tipping point' as the point where '*a recognisable new minority enters a neighbourhood in sufficient numbers to cause the earlier residents to begin evacuating*'. The related literature defines this phenomenon as 'white flight' (first mentioned in Grodzins 1958; see also Coleman, Kelly, and Moore 1975; Boustan 2010). Despite its origin in North American racial segregation literature, 'white flight' research is picking up in Western Europe with its rising migrant population (Mocetti and Porello 2010; Rathelot and Safi 2013).

Empirically, the Schelling 'all-minority' neighbourhood is rarely observed even in the United States and more so in the Netherlands with its lower levels of socioeconomic and spatial inequalities (Musterd 2005). To begin with, not all native population consider minority neighbours to be a disamenity. Next, neighbourhood ethnic composition is but one of many factors that determines residential location choice. Besides other neighbourhood attributes, one needs to account for the neighbourhood supply of dwelling types because housing is a heterogeneous good that is made up of many attributes such as central heating and the number of rooms (c.f. Bajari and Kahn 2005; Ong and De Witte 2013a). This multidimensionality to neighbourhood valuation allows for semi-stable 'integrated' neighbourhoods with share of minority below the tipping point (we refer to the difference between "one-sided" and "two-sided" tipping in Card, Mas, and Rothstein 2008a).

But why should we care about white flight and neighbourhood tipping points? The significance of neighbourhood tipping point research is tied to its sister literature on segregated neighbourhood effects. Social interaction-based models tackling 'peer' influences on individual behaviour have been used to study a variety of topics, from education (Overman 2002), teenage pregnancy (Crane 1991), to crime (Kling, Ludwig, and Katz 2005). If neighbourhood peer effects do exist, segregated neighbourhoods could foster the intergenerational transmission of social inequality (Borjas 1995). For brevity, I refer to the reviews by Jenks and Mayer (1990), Sampson et al. (2002) and Durlauf (2004). Despite vacillating empirical results on neighbourhood effects on a specific social outcome, residential segregation with respect to an immigrant minority group is still an indicator of social exclusion and cohesion in the host society (Massey 1981; Logan, Zhang, and Alba 2002). Tipping point research hence, offers a dynamic perspective to neighbourhood ethnic composition and explores the possibility of cultivating 'integrated' or 'mixed' neighbourhoods instead.

Card and colleagues' 'tipping point' study claims to '*provide some of the first direct evidence of the non-linear dynamic behaviour predicted by social interaction models*' (2008b, 212). The 'tipping point' hypothesis was tested for various metropolitan areas using the American census tract data from 1970 to 2000 and regression discontinuity method. The contribution of this paper applying Card et al.'s neighbourhood tipping point framework to a country like the Netherlands is three-fold. First,

unlike the segregation discourse in the United States – a traditional immigrant country complicated by a slavery history – ethnic segregation in Western Europe revolves around a native majority group and a voluntary immigrant group received in the last few decades. The majority of the 'non-western' immigrants received in the 1960s and 1970s were low-skilled 'guest-workers'. The 'non-western' definition precludes ethnic groups deemed to be well assimilated (i.e. Japanese and Indonesian) thus underscoring the socioeconomic dimension in the Dutch ethnic segregation discourse. Since then, the 'non-western' minority population in the Netherlands has increased by a factor of 12 from 162,320 in 1972 to almost 2 million in 2013 (CBS 2014). A considerable number compared to the national population of only 16.8 million and with most of the 'non-western' group concentrated in the four largest cities.

Micro-level studies in the Netherlands using individual and household data have shown that residential location choices are affected by neighbourhood ethnic composition (Bolt, van Kempen, and van Ham 2008; Ong and De Witte 2013a; van der Laan Bouma-Doff 2007; van Ham and Feijten 2008; Zorlu and Latten 2009; Zorlu and Mulder 2008). In the Dutch context, 'white flight' generally refers to the spatial residential mobility of native Dutch and western-origin households who have relatively more resources than non-western minority households in the housing market (Musterd and De Vos 2007; Musterd and Deurloo 2002). This corresponds to the negative relationship between non-western minority neighbourhood composition and housing price with the distaste for non-western minority neighbours also exhibited by some of the non-western minority homeowners (Ong and De Witte 2013a). Bolt et al. (2008) found native Dutch households to be more likely, compared to non-western minority households, to move out of 'concentrated' neighbourhoods with at least 40 per cent non-western minority. There is also evidence of 'white avoidance' (Ellen 2000) with native Dutch households being less likely, compared to Turkish and Moroccan households, to move from a 'non-concentrated' to a 'concentrated' non-western neighbourhood (Bolt, van Kempen, and van Ham 2008). While the occurrence of 'white flight' and 'white avoidance' has been heavily implied in the abovementioned Dutch studies, none (to my best knowledge) has focused on finding potential critical thresholds in ethnic minority composition beyond which neighbourhoods will tip. This paper aims to fill this scholarly gap.

As a second contribution, this paper offers an interesting comparison between a West European investigation and the North American findings prevalent in the neighbourhood segregation literature. The centralised tax regime, large social housing sector, and pervasive regulatory role of the government in the Netherlands are expected to moderate neighbourhood segregation outcomes. As a densely populated country, the state is mandated to heavily regulate housing and land markets with subsidies (e.g. for the construction of social housing), zoning and land use plan, and legislations such as the Housing Act (Dieleman, Dijst, and Spit 1999). Strong central governance and redistribution

offer a levelling effect across neighbourhoods and municipalities to reduce 'Tiebout-type' of neighbourhood sorting (Tiebout 1956). Inevitably, Vermeulen and Rouwendal (2007) find housing supply in the Netherlands to be inelastic to prices.

Third, during the study's observation period, neighbourhood ethnic and socioeconomic composition has been tempered by urban restructuring policies with explicit aims for selective out-migration from neighbourhoods and 'social mixing'. 'Social mixing' here refers to the desegregation of social groups stratified based on socioeconomic and demographic characteristics in the targeted spatial set. It was the main message in policy documents such as 'The Differentiated City' and the 'Report on Urban Renewal' and the centrally coordinated policies such as the 'Big City Policies' in the 1990s and the more recent 'Priority Neighbourhoods' policy (Ministerie van VROM 1996; 1997; 2007b; VROM-raad 2001; 1990). The earlier policies were more structural, e.g. through the sale of social rented dwellings, demolition and replacement, upgrading, and joining with other units (Kruythoff 2003). The later 'Vogelaar' or 'Priority Neighbourhoods' (*Aandachtwijken*) policy from 2007 was more social-oriented with large investments made in other key areas such as schooling (Ministerie van VROM 2007b; Permentier, Kullberg, and van Noije 2013).

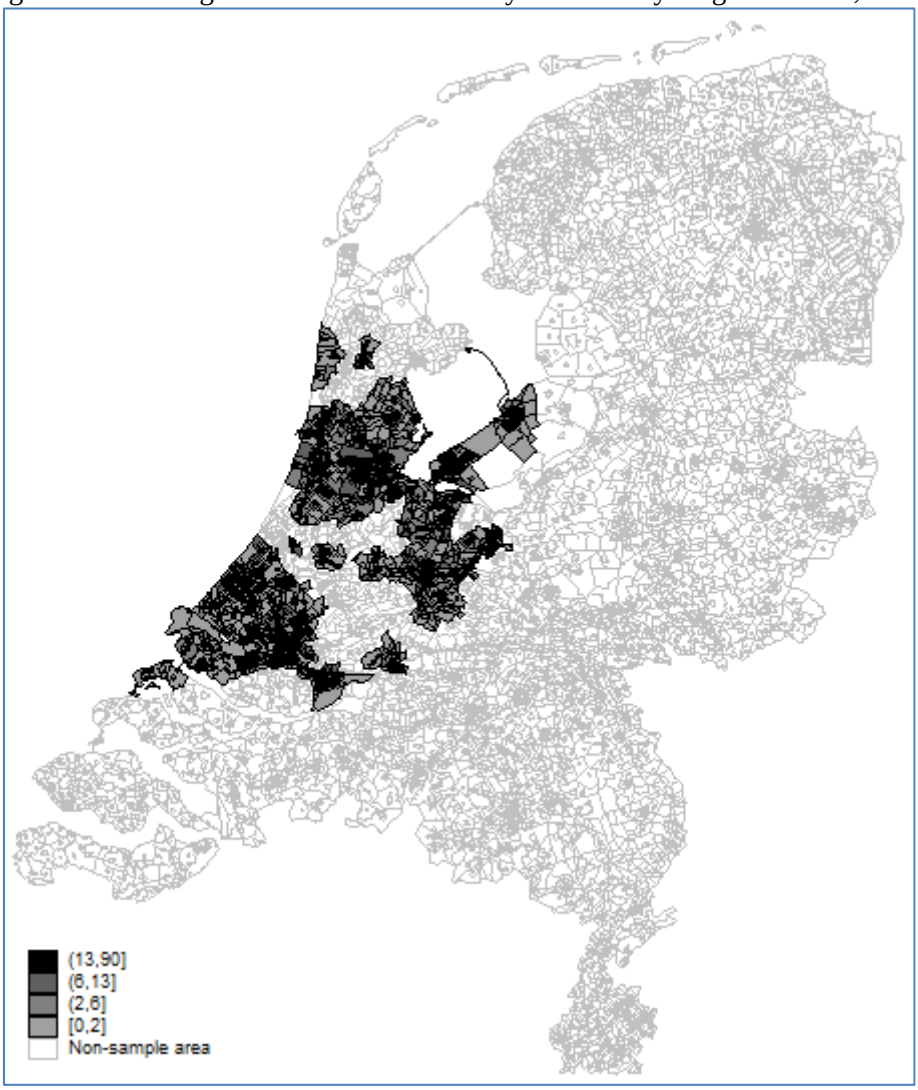
Ethnic-based desegregation was never an explicit policy aim although the conflation of the 'non-western' and socioeconomic status has provided a convenient pretext. Policymakers were concerned by both the socioeconomic and ethnic segregation especially in relation to the assimilation of those of migrant background. On the one hand, the lack of 'tipping point' dynamic to neighbourhood ethnic and socioeconomic change could validate the relevant policies. On the other hand, if it exists, identifying 'tipping points' could help distinguish 'remedial' and 'preventive' target neighbourhoods for area-based policymaking (Galster, Quercia, and Cortes 2000). A dynamic outlook improves on the current use of static indicators used to select 'problem' neighbourhoods in the Netherlands – also pointed out by Van Gent and colleagues (2009) in their critique of the 'Priority Neighbourhoods' urban restructuring programme.

This paper examines neighbourhood dynamics in three main conurbations in the Netherlands: (i) the Amsterdam metropolitan region, (ii) the Rotterdam-The Hague metropolitan region, and (iii) the 'Randstad' urban agglomeration, the country's largest which overlaps to a large extent with the first two metropolitan areas. The concentration of non-western minority inhabitants in the neighbourhoods included in this study is presented in Figure 1.

In the following sections, the study's data and methodology (Section 2) along with its empirical findings (Section 3) are outlined, before the discussion on why neighbourhood ethnic composition in

Dutch big cities did not exhibit 'tipping point' behaviour between 1998 and 2008 (Section 4). A final section then concludes.

Figure 1: Percentage of non-western minority residents by neighbourhood, 2009.



Source: CBS (2010a; 2013a). 'Neighbourhood' here refers to the administrative definition '*buurt*' while the remainder of the paper denotes the four-digit postcode area.

2. Data and methodology

To determine the existence of tipping behaviour in neighbourhood ethnic composition in the Netherlands, I apply the estimation methodology proposed by Card, Mas, and Rothstein (2008b; 2006) to Dutch neighbourhood panel data from 1998 to 2008 (CBS 2010b; 2013a see *Appendix* for further elaboration of the dataset). For brevity of the paper, I refer to the abovementioned papers for detailed explanation on the estimation methodology and its underlying theoretical framework. Due to the relatively small spatial and population size of Dutch cities[2] and the data-intensive methods proposed by Card et al., the study focuses on the 'Randstad' or the largest urban agglomeration in the Netherlands which consists of four provinces: Nord-Holland, Zuid-Holland, Flevoland, and Utrecht (further information on the Randstad available in Hendriks 2006). In addition, smaller sample analyses were conducted for two metropolitan regions: the Amsterdam metropolitan area and the Rotterdam-The Hague metropolitan area. In 2009, approximately 2.3 million inhabitants live in the Amsterdam metropolitan area spread across 1,604 square kilometres of land while a similar number – 2.2 million – live in the smaller Rotterdam-The Hague metropolitan area of 993 square kilometres (see Table 1). The Randstad area also overlaps, but not entirely, the two metropolitan regions with its 2,702 square kilometres of land mass and 5.2 million inhabitants, almost a third of the national population.

Relevant neighbourhood data from Statistics Netherlands (CBS) are only available from 1998, unlike the three decade-span American Census data used by Card et al. (2008b). Noticeable change in neighbourhood attributes such as ethnic composition would rely on the mobility of many disaggregated households and thus, is expected to be gradual. So, despite the annual Dutch neighbourhood data, only the data from years 1998 and 2008 are utilised to compute *decadal net growth rate* in neighbourhood share of native Dutch and western minority – the main dependent variable. Using decadal neighbourhood ethnic turnover as opposed to a pure 'white flight' measure is advantageous as it incorporates 'white avoidance', i.e. 'white' households avoiding neighbourhoods with 'non-white' proportions beyond the critical threshold when relocating (Ellen 2000).

As neighbourhood units, I use the Dutch four-digit postcode area that is comparable to the census tract in the United States. The average number of inhabitants per four-digit postcode neighbourhood is 4,282 at the country-level and 7,199 at the big city-level in 2009 (see Table 1). The size of a four-digit postcode area in the Randstad is about 3.7 square kilometres (1.4 square miles). Similar information is available at a smaller spatial aggregation-level, i.e. the more homogenous and functionally demarcated '*buurt*', but the four-digit-postcode neighbourhood is more stable over time and appropriate for our study. As a result, ethnic composition change is observed for more than 98 per cent of the four-digit postcode neighbourhoods between 1998 and 2008. Following Card et al. (2008b), sparse

[2] For example, there are only 69 and 59 four-digit-postcode neighbourhoods within the Amsterdam and The Hague municipalities respectively, while Card et al. excluded cities with fewer than 100 census tracts (2008b).

neighbourhoods with less than fifty inhabitants were excluded[3] in the later analysis along with neighbourhoods with population growth rates that are larger than 1000 per cent or native Dutch population growth rates that are higher than 500 per cent during this period[4].

Table 1: Descriptive statistics of regional and neighbourhood characteristics in 2009.

	The Netherlands	Randstad	Amsterdam Metropolitan	Rotterdam-The Hague
Land size (km^2)	33681.0	2702.9	1604.3	992.9
Number of residents ('000)	16500.0	5197.8	2267.3	2196.5
Number of households ('000)	7317.8	2464.6	1079.4	1034.9
Neighbourhood attributes				
Land size (km^2)	8.7	3.7	4.8	3.4
Number of residents	4282.2	7199.1	6788.3	7471.2
Number of households	1900.2	3413.5	3231.7	3520.1
Native Dutch (%)	86.8	73.4	75.4	70.0
Western (%)	7.4	10.5	10.6	10.8
Non-western (%)	5.8	16.1	14.0	19.2
Turkish (%)	1.6	3.2	2.5	3.8
Moroccan (%)	1.4	3.3	2.9	3.0
Surinamese (%)	1.4	3.9	3.7	5.0
Antillean/Aruban (%)	0.6	1.4	1.0	1.9
Other non-western (%)	3.3	5.6	5.4	6.4
Single household (%)	28.1	37.9	36.3	38.0
Household with children (%)	39.2	33.7	34.5	33.4
Average household size	2.4	2.2	2.2	2.2
Average income ('000)	29.6	32.5	33.7	32.2
Welfare benefit recipients (%)	18.7	20.9	20.5	21.2
HH below social minimum (%)	6.8	8.5	8.0	9.4
Homeowner dwellings (%)	68.8	53.3	55.4	51.8
Rental dwellings (%)	30.3	45.3	43.2	47.0
Average dwelling price ('000)	282.7	279.7	313.5	247.3
Residential density	4.0	2.5	2.9	2.2
Total neighbourhoods*	3941	745	346	305

Source: CBS (2013a). *Maximum number of four-digit postcode neighbourhoods which does not exclude neighbourhoods with missing values on the covariates. 'Randstad' is the largest urban agglomeration in the Netherlands consisting of four provinces: Nord-Holland, Zuid-Holland, Flevoland, and Utrecht. 'HH' refers to households and average income is per income-earner. 'Ethnicity' variables refer to country of birth or, for second-generation migrants, the mother's country-of-birth that is considered primarily to that of the father's. 'Residential density' is measured from very high (1) to very low (5). '% Welfare recipients' measures the share of inhabitants aged 15 to64 who reported receiving pension, unemployment, disability, or other welfare benefit as their main source of income in 1998.

[3] For the Randstad, Amsterdam, and Rotterdam-The Hague conurbations, the number of sparse neighbourhoods (fewer than 50 inhabitants) excluded were 23, 13, and 7 respectively.

[4] Card et al. (2008b) excluded census tracts with growth rates larger than five standard deviations of the metropolitan statistical area average and/or have experienced growth of native 'white' population that is more than 500 per cent of the base population. In my dataset, 22 neighbourhoods experienced either total population growth rate of above 1000 per cent or native Dutch population growth rate of above 500 per cent.

The Dutch statistical data categorise one as of 'foreign' background by her country of birth or that of (one of) her parents for second-generation migrants. 'Non-western' refers to origins from Turkey, Africa, Latin America and Asia, with the notable exceptions of Indonesia and Japan. Inhabitants with origins from the latter two are considered 'western' due to their perceived assimilation with the host country. The conflation of socioeconomic assimilation and ethnicity leads this study to primarily group the 'western' minority with the native Dutch as part of the dependent variable (although this assumption is relaxed to check for the robustness of the results).

From Table 1, it is evident that neighbourhoods in the conurbations have a much higher percentage of western and non-western minority residents compared to the rest of the country. This is despite the underestimation of average postcode neighbourhood share of non-western minority provided in Table 1 as its corresponding information is not provided in the administrative neighbourhood data for neighbourhoods with fewer than 10 non-western minority residents (CBS 2013b)[5]. Comparatively, these neighbourhoods are on average, also wealthier, more expensive and densely populated, and have proportionally less homeowners and more single-person households.

Methodology

The Card et al. (2006; 2008b) method is divided into two steps. First, it locates the unknown location point of discontinuity. Then the potential tipping point candidate is tested using the regression discontinuity method. An important innovation introduced by Card et al. in order to use standard hypothesis testing involves splitting the city-specific sample(s) into two independent subsamples – two-third of the observations are used for the data-intensive tipping point search procedure, while the remainder one-third are used for statistically testing the hypothesis of discontinuity. While Card et al. explored two distinct methods in their search for candidate tipping points, the more robust 'fixed point' approach is used for the relatively small Dutch city samples. The alternative time-series structural break procedure has been deemed to perform well only in larger city samples (Card, Mas, and Rothstein 2006).

The 'fixed point' method first assumes the existence of a tipping point. It is designated as the unstable equilibrium point in neighbourhood 'minority' share where its 'native' population's growth rate equals that of the city mean. Here, the city-specific growth rate that is averaged across all its neighbourhoods over the observation period serves as a reference point. For neighbourhoods with initial minority population below the tipping point value, its native population should have grown more than the city average during the observation period. Equally, for neighbourhoods with initial minority share beyond

[5] Native Dutch share in Table 1 is overestimated as it is calculated based on the neighbourhood western and non-western minority composition.

the tipping point, a relative decrease in native population is expected. Being an unstable equilibrium, the latter is hypothesised to tend towards minority-only population over time as the native population continues to leave the neighbourhood.

There can be more than one candidate tipping point and tipping point(s) can be derived from the intersection(s) between some growth function of neighbourhood native population and the city's mean growth rate. The smoothed growth function of native Dutch and western minority share with respect to non-western share is fitted using a global polynomial model following Card et al. (2006; 2008b). Given that global polynomial models are susceptible to outliers, the sample for each city is limited to neighbourhoods with not more than 50 per cent non-western minority residents in 1999. The '50 per cent' threshold is set based on visual inspection and it trims between 3.5 to 8.7 per cent of the data in the three samples. The deviation between neighbourhood *i*'s growth rate in native Dutch and western minority share (relative to initial neighbourhood composition), $\Delta Y_i = (Y_{i,2008} - Y_{i,1998})/N_{i,1998}$ from its city *j*-specific mean growth rate, $\overline{\Delta Y_j}$ is fitted as a quartic polynomial of the neighbourhood share of non-western minority in the base year, $x_{i,1998}$ with the stochastic error term, ε_i.:

$$\Delta Y_i - \overline{\Delta Y_j} = \sum_{p=0}^{4} \lambda_p {x_{i,1998}}^p + \varepsilon_i. \quad (1)$$

The regression coefficients are then used to calculate the roots of the polynomial equation and the root with the most negative slope is considered a 'tipping point' candidate. Following Card et al. (2008b), the procedure is refined by fitting a quartic polynomial using a smaller sample within 10 percentage points from the previously identified root.

Subsequently and using the sample of neighbourhoods not selected for the tipping point search procedure, I test for the potential discontinuity effect of non-western minority share as deviated from its tipping point, $(x_i - x_{tip})$ on the growth rate in native Dutch and western minority share, ΔY_i. The following regression discontinuity specification is used:

$$\Delta Y_i = \sum_{p=0}^{4} \alpha_p (x_{i,1998} - x_{tip})^p + d\mathbf{1}[x_{i,1998} > 0] + \boldsymbol{\beta Z}_{i,1998} + \epsilon_i \quad (2)$$

where $d\mathbf{1}[x_i > 0]$ is an indicator variable taking the value one if the percentage of non-western inhabitants is larger than the 'tipping point' share, x_{tip}, and zero otherwise, while $\boldsymbol{Z}_{i,1998}$ represents the vector of neighbourhood covariates for the base year, and ϵ_i the random error term. Neighbourhood control variables pertaining to base year 1998/1999 include average housing price, residential density, share of households with children, share of elderly people above the age of 65,

share of individuals reporting welfare benefit as their main source of income in 1998 (as a proportion to number of inhabitants aged 15 to 64), and percentage of rental housing from the housing stock (as of 2003 since earlier data is not available[6]). Residential density is measured from high to low based on the density of addresses. The results of the regression discontinuity models are reported in the following section.

3. Empirical findings

The tipping point search procedure has found potential tipping point candidates for the three multi-municipality conurbations: 2.90 per cent of non-western minority for the Amsterdam metropolitan area, 9.75 per cent for the Rotterdam-The Hague metropolitan area, and 6.22 per cent for the Randstad metropolitan area. The candidate tipping point for the Amsterdam metropolitan region is considerably smaller than the other two samples – most likely due to the proportionally fewer non-western minorities in the suburban areas (see Table 1). Preliminary graphical analyses by means of Figure 2, Figure 3 and Figure 4 suggest that 'tipping' behaviour of growth in native Dutch and western minority share between 1998 and 2008 was not observed for all three samples. Using two-thirds of each conurbation sample, the local polynomial fit of growth rate in native Dutch and western minority neighbourhood share during that period is plotted separately, before and after the tipping point, against share of non-western minority in 1998. The tipping point value derived from the two-stage polynomial search procedure is represented by the vertical line while crosses denote the observation points and the shaded area the 95 per cent confidence interval.

This result was confirmed by the regression discontinuity tests of the tipping points for the respective conurbation samples in Table 2. The coefficients of the tipping point indicator variable exhibited contradicting effect signs depending on the sample and covariates and remained or became statistically insignificant[7]. For example, 'tipping' was observed in the baseline model for the Rotterdam-The Hague metropolitan area, i.e. the mean growth rate difference in native Dutch and western minority share before and after the tipping point is 9.35 percentage points. However, the discontinuity indicator variable loses its statistical significance once the neighbourhood controls are included. While the smaller Amsterdam and Rotterdam-The Hague metropolitan samples could potentially suffer from low statistical power due to their small sample sizes, the non-significant result was consistent with the larger Randstad sample which consists of 47 municipalities, including the municipalities of Amsterdam, Rotterdam, and The Hague. Standard errors were allowed to cluster at the municipality-level for all samples. Statistically significant polynomial terms of non-western share for the Amsterdam and Randstad samples (not reported in Table 2) and the linear term for the Rotterdam-The

[6] The exclusion of some of the variables reported in Table 1 is either due to the lack of pre-2004 data or the multicollinearity problem with those included in the final analysis.
[7] The discontinuity or 'tipping point' variable has been inspected for potential multicollinearity problems, e.g. with non-western minority share and its polynomial terms.

Hague sample are indicative of the variable's explanatory power despite the lack of 'tipping point' effect.

Besides neighbourhood ethnic composition, socioeconomic and demographic covariates seem to be useful correlates for native Dutch and western minority growth rate. In particular, the proportion of households with children has a clear negative correlation, all things equal. The neighbourhood's native Dutch and western minority population experiences a mean negative growth of 0.59, 0.41, and 0.72 percentage points for every increase in the proportion of households with children in Amsterdam metropolitan, Rotterdam-The Hague metropolitan, and the Randstad respectively. Residential density as scaled from high to low hints at the suburbanisation preference of native Dutch and western minority households in the Randstad and Amsterdam metropolitan samples. And they prefer fewer renter neighbours since one percentage increase in rental housing is associated with a decrease of a quarter to half a percentage point in native Dutch and western minority growth in Amsterdam metropolitan and the Randstad. Interestingly, this group in the Randstad metropolitan region also appears disinclined to stay in neighbourhoods with more elderly inhabitants, i.e. every percentage point increase in share of elderly is correlated with a 0.61 percentage point decrease in native Dutch and western minority growth rate. Given the fact that the model does not account for the endogeneity and potential omitted variable bias with regards to the control variables, the relationship between these variables and the dependent variable is assumed to be non-causal.

Figure 2: Growth in native Dutch/western minority share on non-western minority share in Amsterdam, 1998-2008.

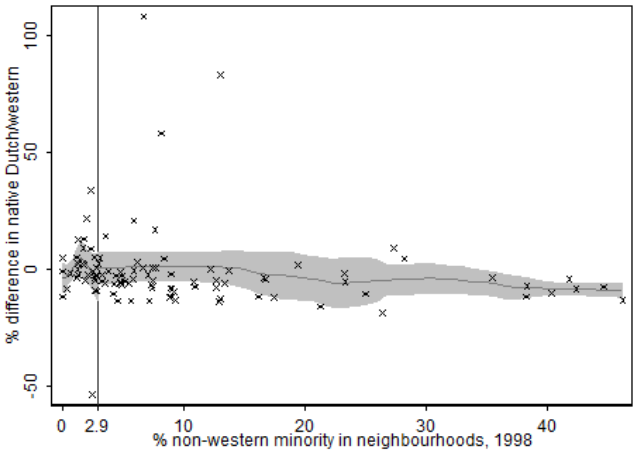


Figure 3: Growth in native Dutch/western minority share on non-western minority share in Rotterdam-The Hague, 1998-2008

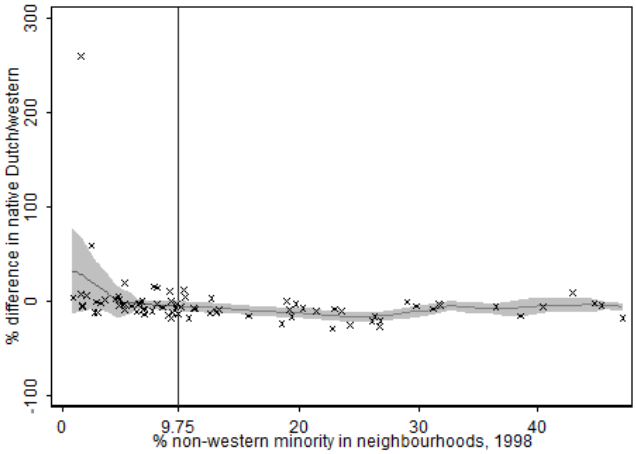
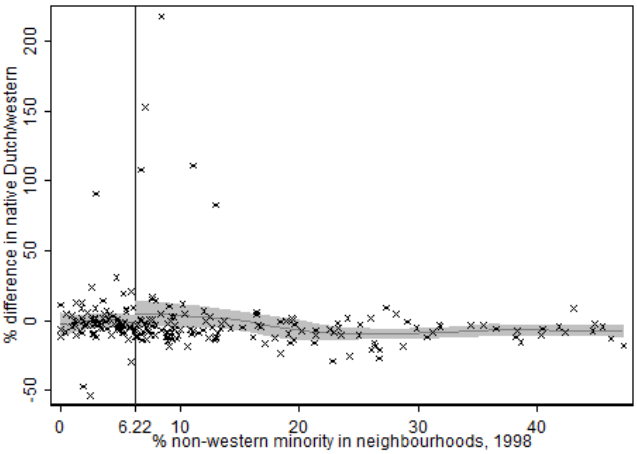


Figure 4: Growth in native Dutch/western minority share on non-western minority share in Randstad, 1998-2008



Source: CBS (2010b), own calculations. The local polynomial fit of growth rate in native Dutch and western minority neighbourhood share between 1998 and 2008 is plotted before and after the tipping point against share in non-western minority in 1998 using two-thirds of each sample. Local polynomial estimate uses Epanechnikov kernel and rule-of-thumb bandwidth. Crosses denote the observation points, shaded area the 95 confidence interval, while the vertical line shows the tipping point derived from the two-stage polynomial search procedure.

Table 2: Regression discontinuity results for change in native Dutch/western share at tipping point, 1998-2008.

	Amsterdam Metropolitan			Rotterdam – The Hague			Randstad Metropolitan		
Beyond Tipping Point	2.08	4.00	-2.55	-9.35**	1.42	12.04	6.32	8.01	7.65
	(4.63)	(4.47)	(5.75)	(4.41)	(5.79)	(7.42)	(5.64)	(6.60)	(8.46)
% Non-western minus TP	-0.26**	0.08	2.46	-0.29	0.34	-1.81**	-0.48**	-0.07	0.31
	(0.10)	(0.30)	(1.50)	(0.35)	(0.55)	(0.71)	(0.19)	(0.14)	(1.08)
% Rental housing		-0.28*	-0.26*		-0.04	0.07		-0.46*	-0.48*
		(0.14)	(0.15)		(0.12)	(0.17)		(0.25)	(0.25)
Average house price ('000)		-0.07	-0.07		-0.12	-0.07		-0.05	-0.06
		(0.04)	(0.04)		(0.15)	(0.10)		(0.04)	(0.05)
Residential density		4.09	4.52*		13.30	8.63		5.16**	5.67**
		(2.48)	(2.57)		(11.64)	(7.54)		(2.29)	(2.61)
% Welfare recipients		-0.35	-0.48		-1.27	-1.10		-0.19	-0.16
		(0.50)	(0.51)		(1.50)	(1.34)		(0.23)	(0.24)
% Households with kids		-0.58**	-0.59**		-0.40*	-0.41*		-0.67**	-0.72**
		(0.24)	(0.25)		(0.21)	(0.22)		(0.26)	(0.28)
% Elderly (> 65 years)		-0.47	-0.37		0.31	0.01		-0.62***	-0.61***
		(0.29)	(0.28)		(0.89)	(0.64)		(0.22)	(0.22)
Quartic in % non-western minus TP	No	No	Yes	No	No	Yes	No	No	Yes
Number of neighbourhoods	102	83	83	80	75	75	213	188	188
Adjusted R^2	0.001	0.048	0.020	0.033	0.080	0.062	0.019	0.149	0.152

Source: CBS (2010b; 2013a). Two-tailed significance: * p<0.10, ** p<0.05, *** p<0.01. 'TP' refers to 'tipping point'. All neighbourhood covariates pertain to base year 1998/1999 except share of rental housing stock measured in 2003. The standard errors in parentheses are clustered at the municipality-level. 'Residential density' is measured from very high (1) to very low (5). '% Welfare recipients' measures the share of inhabitants aged 15 to64 who reported receiving pension, unemployment, disability, or other welfare benefit as their main source of income in 1998.

4. Why neighbourhoods in Dutch big cities did not tip between 1998 and 2008

As outlined in the introduction, 'tipping points' in neighbourhood composition change, if they exist, could theoretically assist preventive area-based policies by targeting neighbourhoods prior to their 'tip'. However, if we find a lack of 'tipping point' behaviour in neighbourhood turnover, this hints at the effectiveness of the related policies that are already in place. In the following section, I outline several key hypotheses that could shed light on the lack of 'tipping' behaviour in native Dutch and western growth rate between 1998 and 2008 with respect to initial non-western share.

4.1. Data: Observation period and neighbourhood definition

Since the relevant neighbourhood administrative data is only available from 1998, it is likely that this study has missed out on most of the 'tipping' phenomena in big city neighbourhoods. For instance, mass suburbanisation of native Dutch households in large cities had begun in various cities from the 1960s onwards (Dieleman and Wallet 2003; Bontje and Latten 2005). Although this study encompasses the suburban neighbourhoods within the metropolitan regions, it is likely that the spatial 'dichotomisation' has already occurred prior to 1998 – akin to Farley et al.'s (1978) 'chocolate city, vanilla suburbs' analogy. As a matter of fact, non-western minority household have largely bucked the suburbanisation trend (Zorlu 2009) or if they do, they tend to re-concentrate with fellow ethnic households (Burgers and van der Lugt 2006). Besides 'white avoidance', 'minority avoidance' could be at play here.

Excluding the outliers, growth rate in native Dutch and western minority with respect to initial non-western share hovers close to zero per cent as seen in Figure 2, Figure 3 and Figure 4. For this to happen within the tight housing market (low vacancy rate of 2.2 per cent in 2007, see Ministerie van VROM 2007a), one would imagine the out-migration of households from a neighbourhood to roughly correspond with the in-migration of households of similar ethnicity. Barring incidences of racial discrimination, the selectivity in residential mobility could be due to ethnic differences in housing and neighbourhood characteristics, including neighbourhood ethnic composition (see Ong and De Witte 2013a on heterogeneous preferences among homeowners in the Netherlands).

Another possible issue relates to the definition of 'neighbourhood' or the areal unit of interest. The four-digit postcode neighbourhood used in this study could be too large, spatially and population-wise, or functionally incoherent compared to the smaller *buurt* neighbourhood definition. The departure of native Dutch households from 'non-western minority' concentration neighbourhoods has been recorded at the smaller six-position postcode neighbourhood or block-level in Amsterdam (Musterd and De Vos 2007; Musterd and Deurloo 2002). The sensitivity of spatial-based measures and analysis to the definition of areal units such as a neighbourhood is known as the 'modifiable areal unit problem' (c.f. Fotheringham and Wong 1991). Spatial segregation studies have found different levels

of segregation depending on which areal unit is used, e.g. the smaller *îlots* (Verdugo 2011) or the larger *communes* (Rathelot and Safi 2013) in France. Moreover, residential mobility decision depends on the individual household's subjective perception of what constitutes the neighbourhood and thus, the perceived level of neighbourhood ethnic segregation (Guo and Bhat 2007).

4.2. Methodology

For the main analysis, the dichotomous 'native Dutch and western' versus 'non-western' social grouping was used. While valid and justifiable, it is contentious because the western minority group could also be inserted as a right-hand side explanatory variable instead, either as a separate covariate or combined with the non-western group to form a general 'minority' category (see also "minority definition" in Card, Mas, and Rothstein 2008b). As a form of robustness check, the analysis was re-run with growth rate in native Dutch share as the dependent variable and 'minority' share as the main variable of interest, see Table 3. The tipping point candidates remain statistically insignificant as the results reproduce similar conclusions derived from Table 2 using the initial dichotomous categorisation.

Compared to the large North American city samples of Card et al. (2008b), this study could potentially suffer from low statistical power due to the Dutch metropolitan regions' small sample sizes and the use of Card et al.'s data intensive, 'tipping point' search methodology. If there is indeed a 'tipping point' effect, the low statistical power is translated into a higher probability for making a 'false negative' or 'Type II' error, i.e. failing to reject the null hypothesis of no 'tipping point' effect when it is indeed false. Even so, I argue that the lack of statistically significant result for the larger Randstad agglomeration sample to be indicative of the true relationship between the growth in neighbourhood share of native Dutch and western share with respect to its share of non-western minority.

Table 3: Regression discontinuity results for change in native Dutch share at tipping point, 1998-2008.

	Amsterdam Metropolitan			Rotterdam – The Hague			Randstad Metropolitan		
Beyond Tipping Point	3.54	4.85	-0.40	8.24	-0.80	-8.72	2.50	3.13	4.18
	(4.70)	(4.49)	(4.19)	(15.40)	(8.86)	(8.82)	(6.43)	(7.76)	(10.02)
% Minority minus TP	-0.25***	0.06	0.82	-0.88	-0.03	0.43	-0.34*	-0.18	-0.17
	(0.09)	(0.19)	(0.53)	(0.88)	(0.21)	(0.88)	(0.18)	(0.16)	(0.57)
% Rental housing		-0.25*	-0.24*		0.05	0.15		-0.34	-0.31
		(0.13)	(0.12)		(0.10)	(0.14)		(0.23)	(0.23)
Average house price ('000)		-0.07	-0.06		-0.08	0.06		-0.03	0.01
		(0.04)	(0.04)		(0.15)	(0.07)		(0.05)	(0.05)
Residential density		4.11*	4.09*		11.43	0.60		3.75	4.01*
		(2.34)	(2.30)		(9.63)	(4.66)		(2.35)	(2.04)
% Welfare recipients		-0.33	-0.35		-0.86	-0.59		-0.09	-0.16
		(0.34)	(0.39)		(1.04)	(0.59)		(0.19)	(0.20)
% Households with kids		-0.48**	-0.63*		-0.38**	-0.28		-0.54**	-0.64**
		(0.21)	(0.33)		(0.17)	(0.23)		(0.23)	(0.25)
% Elderly (> 65 years)		-0.38	-0.60*		-0.05	-0.24		-0.68**	-0.72**
		(0.27)	(0.34)		(0.47)	(0.26)		(0.28)	(0.30)
Quartic in % minority minus TP	No	No	Yes	No	No	Yes	No	No	Yes
Number of neighbourhoods	102	83	83	80	75	75	213	188	188
Adjusted R^2	0.005	0.057	0.030	0.058	0.084	0.107	0.014	0.135	0.134

Source: CBS (2010b; 2013a). Two-tailed significance: * p<0.10, ** p<0.05, *** p<0.01. 'Minority' and 'TP' refer to 'western and non-western minority' and 'tipping point' respectively. All neighbourhood covariates pertain to base year 1998/1999 except share of rental housing stock measured in 2003. The standard errors in parentheses are clustered at the municipality-level. 'Residential density' is measured from very high (1) to very low (5). '% Welfare recipients' measures the share of inhabitants aged 15 to64 who reported receiving pension, unemployment, disability, or other welfare benefit as their main source of income in 1998.

4.3. Government policies

Current literature on 'tipping point' in neighbourhood ethnic composition is limited by the North American scope. The Netherlands differs substantially in several ways, I summarise the three main factors relevant to this study: (i) a large social housing sector, (ii) centralised tax and redistributive regime, and (iii) the strong regulatory role of the state in housing and urban planning.

Unlike North American cities, only slightly more than half of the large Dutch city housing stock comprise of homeowner dwellings (see Table 1). There is also an unusually large social housing sector occupying up to 37 per cent of the total national stock or 75 per cent of rented dwellings in 2007 (Ministerie van VROM 2007a). This was the result of decades-long state subsidised housing construction by housing associations which was later stemmed in the mid-1990s. 'Grossing up' (*brutering*) annulled the associations' outstanding state loans in the place of future construction subsidies. Quite uniquely, the Dutch social housing sector supports socially integrated neighbourhoods as it is socially differentiated and not stigmatised (e.g. as compared to council housing in the United Kingdom). This reality however is not static with the growing homeownership sector at the expense of social housing stock. The latter is heading towards 'residualisation', i.e. catering only to low-income or socially disadvantaged households (van Kempen and Priemus 2002). Migrant households of non-western origin are especially likely to be social housing tenants – 66 per cent in 2006 compared to 31 per cent for native Dutch households and 43 per cent for western minority households nationwide (see Table 4).

Table 4: Housing tenure type by ethnicity, 2006

	Native Dutch	Non-western	Western
Homeownership	59.26	22.61	42.86
Social rental	30.56	66.23	42.93
Private rental	8.21	9.16	12.29

Source: Housing Survey (Ministerie van VROM 2006), own calculation with household weights.

Centralised tax regime and redistribution reduce the influence of neighbourhood amenities and the Tiebout-sorting prevalent in the United States (e.g. Bayer, Ferreira, and McMillan 2004). The budget of local municipalities that are responsible for urban planning is largely – 83 per cent in 2001 – drawn from general tax revenues and not local taxation (Van Der Burg and Dieleman 2004). Under the 'Big City Policy', the Amsterdam and Utrecht municipalities received approximately €1.8 billion and €428 million (respectively €2,456 and €1,642 per capita) from the national government between 1999 and 2003 (Aalbers et al. 2004). Moreover, local amenities like schools are almost universally funded by central government coffers (Ladd and Fiske 2009). Redistribution also involves social transfers with low-income, single-household occupants of both social and private rental dwellings eligible for

government rental subsidy (*huurtoeslag*) as long as the rent is below the specified threshold (€699.48 excluding utilities for 2014, see Rijksoverheid 2014).

One could argue that housing stock diversification via urban renewal programmes is inevitable in the context of a densely populated country with scarce land for new construction (also noted in Kruythoff 2003). Furthermore, the public role in urban planning is necessary with the unusually large social rented housing sector administered by local housing associations. For instance, the Bijlmer neighbourhood in Amsterdam was expected to see a decrease in social housing stock from 93 to 55 per cent by demolishing half of the 12,500 flat units (Aalbers et al. 2004). 'Social mixing' continues to be featured prominently in urban planning policies (Ministerie van VROM 1996; 1997; 2007b; VROM-raad 2001; 1990). Altogether these policies are extensive, costly, and reflect the shift within the Dutch policy tradition of using spatial measures as exemplified in Table 5.

Table 5: Overview of post-war urban policies in the Netherlands

Policy Name	Main Goal	Period	Orientation	Slogan
Creating CBDs	Stronger urban economy	To 1970	Efficiency	New jobs
Urban renewal	Improving urban housing	1970-1980	Social justice	New housing for neighbourhood
City renewal	Stronger urban economy	1980-1990	Efficiency	Stop urban degradation
Multiple-problem	Help disadvantaged neighbourhoods	1985-1990	Social justice	Stop cumulating problems
Social renewal	More social cohesion	1990-1994	Social justice	Higher participation
Big City Policy I	Mixed neighbourhoods	1994-1998	Social justice	Immigration of high incomes
Big City Policy II	Stable neighbourhoods	1998-2004	Social justice	Prevent leaving neighbourhood
Big City Policy III	Stronger neighbourhoods	2004-2009	Efficiency	Powerful cities
Big Cities Policy+	Integrated neighbourhoods	From 2007	Social justice	Prevent parallel societies

Source: Musterd and Ostendorf (2008). 'CBDs' refers to 'central business districts' created within cities. 'Big Cities Policy+' includes recent policies such as the 'Vogelaar' or 'Priority Neighbourhoods' policy.

All the factors mentioned above basically reduces the leverage of market mechanisms in the Dutch housing market (Vermeulen and Rouwendal 2007) that would have otherwise resulted in high levels of neighbourhood segregation observed in the United States and elsewhere (among others, see Massey and Denton 1993; Wilson 1987; Musterd 2005).

5. Conclusion

The main aim of this paper was to test the potential 'tipping point' dynamic in neighbourhood ethnic composition that has been documented in North American studies (e.g. Card, Mas, and Rothstein 2008b). For comparability, the same methodology by Card et al. (2006; 2008b) was applied to three

Dutch conurbations – the Amsterdam metropolitan area, the Rotterdam-The Hague metropolitan area, and the Randstad metropolitan area – using administrative neighbourhood data from 1998 to 2008. I fail to find 'tipping point' behaviour in decadal growth of native Dutch and western minority neighbourhood share with respect to initial share of non-western residents, despite their negative statistical association. The previous sections have highlighted the possible data and methodological limitations. More importantly, this paper outlines three main factors that downplay the market mechanism usually responsible for neighbourhood ethnic segregation. They are: (i) a large social housing sector, (ii) a centralised tax and redistributive regime, and (iii) the strong regulatory role of the state in housing and urban planning. Essentially, if 'social mixing' remains the main objective in urban planning, the lack of 'tipping point' dynamic in neighbourhood ethnic change offers some limited support to the present policy practices in the Netherlands.

APPENDIX

Data

The neighbourhood data used in this paper comprise of two neighbourhood datasets from Statistics Netherlands (or *Centraal Bureau voor de Statistiek*, CBS): the 'Population and Household Data by Four-Digit Postcode' (CBS 2010b) and the 'Neighbourhood Key Figures, 1995-2012' (CBS 2013a). The latter dataset defines neighbourhood by the administrative definition (*buurt*) which is collapsed into the larger spatial aggregation four-digit postcode neighbourhood used in this study. The '*buurt*' neighbourhood is not a complete subset of the four-digit postcode area, i.e. there could be more than one four-digit postcode address within each '*buurt*' neighbourhood, so the most common four-digit postcode is used. There are, on average, three '*buurt*' neighbourhoods per four-digit postcode area. Residential density is originally based on the number of addresses per km^2 measured at the *buurt*-level on a five-point scale: 1 = at least 2,500 addresses, 2 = 1,500 to 2,500 addresses, 3= 1,000 to 1,500 addresses, 4 = 500 to 1,000 addresses, and 5 = less than 500 addresses. Neighbourhood data is also available for years 1995 and 1997 but the 'non-western' minority category is limited to those of Turkish, Moroccan, Surinamese, Dutch Antillean, and Aruban descent.

Indicator variables were created in addition to the datasets to define the three conurbation areas. The 'Randstad' urban agglomeration is defined to be equivalent to the municipalities under four Dutch provinces: Nord-Holland, Zuid-Holland, Flevoland, and Utrecht (for more information on the Randstad, see Hendriks 2006). The 'Amsterdam Metropolitan Region' refers to 36 Dutch municipalities: Aalsmeer, Almere, Amstelveen, Amsterdam, Beemster, Beverwijk, Blaricum, Bloemendaal, Bussum, Diemen, Edam-Volendam, Haarlem, Haarlemmerliede-Spaarnwoude, Haarlemmermeer, Heemskerk, Heemstede, Hilversum, Huizen, Landsmeer, Laren, Lelystad, Muiden, Naarden, Oostzaan, Ouder-Amstel, Purmerend, Uitgeest, Uithoorn, Velsen, Waterland, Weesp, Wijdemeren, Wormerland, Zaanstad, Zandvoort, Zeevang (Metropoolregio Amsterdam 2012). While the 'Rotterdam-The Hague Metropolitan Region' include 24 Dutch municipalities: Albrandswaard, Barendrecht, Bernisse, Brielle, Capelle aan den IJssel, Delft, Den Haag, Hellevoetsluis, Krimpen aan den IJssel, Lansingerland, Leidschendam-Voorburg, Maassluis, Midden-Delfland, Pijnacker-Nootdorp, Ridderkerk, Rijswijk, Rotterdam, Schiedam, Spijkenisse, Vlaardingen, Wassenaar, Westland, Westvoorne, Zoetermeer (Metropoolregio Rotterdam Den Haag 2013).

BIBLIOGRAPHY

Aalbers, Manuel B., Ellen van Beckhoven, Ronald van Kempen, Sako Musterd, and Wim Ostendorf. 2004. *Large Housing Estates in the Netherlands: Policies and Practices*. Faculty of Geosciences, Utrecht University, Urban and Regional Research Centre Utrecht.

Bajari, Patrick, and Matthew E. Kahn. 2005. "Estimating Housing Demand with an Application to Explaining Racial Segregation in Cities." *Journal of Business and Economic Statistics* 23 (1): 19–33.

Bayer, Patrick, Fernando Ferreira, and Robert McMillan. 2004. "Tiebout Sorting, Social Multipliers and the Demand for School Quality." *National Bureau of Economic Research (NBER) Working Paper Series* (No. 10871).

Bolt, Gideon, Ronald van Kempen, and Maarten van Ham. 2008. "Minority Ethnic Groups in the Dutch Housing Market: Spatial Segregation, Relocation Dynamics and Housing Policy." *Urban Studies* 45 (7): 1359.

Bontje, Marco, and Jan Latten. 2005. "Stable Size, Changing Composition: Recent Migration Dynamics of the Dutch Large Cities." *Tijdschrift Voor Economische En Sociale Geografie* 96 (4): 444–51.

Borjas, George J. 1995. "Ethnicity, Neighborhoods, and Human-Capital Externalities." *American Economic Review* 85 (3): 365–90.

Boustan, Leah Platt. 2010. "Was Postwar Suburbanization 'white Flight'? Evidence from the Black Migration." *The Quarterly Journal of Economics* 125 (1): 417–43.

Burgers, Jack, and Hugo van der Lugt. 2006. "Spatial Assimilation of Minority Groups." *Journal of Housing and the Built Environment* 21 (2): 127–39.

Card, David, Alexandre Mas, and Jesse Rothstein. 2006. "Tipping and the Dynamics of Segregation in Neighbourhoods and Schools." *Princeton University Industrial Relations Section Working Paper* (515). http://arks.princeton.edu/ark:/88435/dsp01kk91fk532.

———. 2008a. "Are Mixed Neighborhoods Always Unstable? Two-Sided and One-Sided Tipping." *National Bureau of Economic Research (NBER) Working Paper Series* (No. 14470).

———. 2008b. "Tipping and the Dynamics of Segregation." *The Quarterly Journal of Economics* 123 (1): 177–218.

Centraal Bureau voor de Statistiek (CBS). 2010a. "Wijk- En Buurtkaart 2009." http://www.cbs.nl/nl-NL/menu/themas/dossiers/nederland-regionaal/publicaties/geografische-data/archief/.

———. 2010b. "Bevolking En Huishoudens; Viercijferige Postcode." http://statline.cbs.nl/.

———. 2013a. "Statline: Kerncijfers Wijken En Buurten 1995-2012." http://www.cbs.nl/nl-NL/menu/themas/dossiers/nederland-regionaal/cijfers/incidenteel/maatwerk/wijk-buurtstatistieken/.

———. 2013b. "Toelichting: Kerncijfers Wijken En Buurten, 2003 En 2004-2010."

———. 2014. "Statline: Allochtonen/herkomstgroepering Vanaf 1972." http://statline.cbs.nl/.

Coleman, James S., Sarah D. Kelly, and John A. Moore. 1975. "Trends in School Segregation, 1968-1973". Washington, DC: Urban Institute.

Crane, Jonathan. 1991. "The Epidemic Theory of Ghettos and Neighborhood Effects on Dropping out and Teenage Childbearing." *The American Journal of Sociology* 96 (5): 1226–59.

Dieleman, Frans M., Martin J. Dijst, and Tejo Spit. 1999. "Planning the Compact City: The Randstad Holland Experience." *European Planning Studies* 7 (5): 605–21.

Dieleman, Frans M., and Christiaan Wallet. 2003. "Income Differences between Central Cities and Suburbs in Dutch Urban Regions." *Tijdschrift Voor Economische En Sociale Geografie* 94 (2): 265–75.

Durlauf, Steven N. 2004. "Neighborhood Effects." In *Handbook of Regional and Urban Economics*, edited by J. Vernon Henderson and Jacques-François Thisse, 4:2173–2242. Amsterdam: Elsevier.

Ellen, Ingrid G. 2000. *Sharing America's Neighborhoods: The Prospects for Stable Racial Integration*. Cambridge, MA: Harvard University Press.

Farley, Reynolds, H. Schuman, S. Bianchi, D. Colasanto, and S. Hatchett. 1978. "Chocolate City, Vanilla Suburbs: Will the Trend toward Racially Separate Communities Continue?" *Social Science Research* 7 (4): 319–44.

Fotheringham, A.Stewart, and David W. S. Wong. 1991. “The Modifiable Areal Unit Problem in Multivariate Statistical Analysis.” *Environment and Planning A* 23 (7): 1025–44.
Galster, George C., Roberto G. Quercia, and Alvaro Cortes. 2000. “Identifying Neighborhood Thresholds: An Empirical Exploration.” *Housing Policy Debate* 11 (3): 701–32.
Grodzins, Morton. 1958. *The Metropolitan Area as a Racial Problem*. Pittsburgh: University of Pittsburgh Press.
Guo, Jessica Y., and Chandra R. Bhat. 2007. “Operationalizing the Concept of Neighborhood: Application to Residential Location Choice Analysis.” *Journal of Transport Geography* 15 (1): 31–45.
Hendriks, Frank. 2006. “Shifts in Governance in a Polycentric Urban Region: The Case of the Dutch Randstad.” *International Journal of Public Administration* 29 (10-11): 931–51. doi:10.1080/01900690600770702.
Jencks, Christopher, and Susan E. Mayer. 1990. “The Social Consequences of Growing Up in a Poor Neighborhood.” In *Inner-City Poverty in the United States*, edited by Laurence E. Lynn and Michael G.H. McGeary, 111–86. Washington D. C.: National Academy Press.
Kling, Jeffrey R., Jens Ludwig, and Lawrence F. Katz. 2005. “Neighborhood Effects on Crime for Female and Male Youth: Evidence from a Randomized Housing Voucher Experiment.” *The Quarterly Journal of Economics* 120 (1): 87–130.
Kruythoff, Helen. 2003. “Dutch Urban Restructuring Policy in Action Against Socio-Spatial Segregation: Sense or Nonsense?” *European Journal of Housing Policy* 3: 193–215.
Ladd, Helen F., and Edward B. Fiske. 2009. “Weighted Student Funding for Primary Schools: An Analysis of the Dutch Experience.” *Duke Sanford School of Public Policy Working Paper Series* (SAN09-02).
Logan, John R., Wenquan Zhang, and Richard D. Alba. 2002. “Immigrant Enclaves and Ethnic Communities in New York and Los Angeles.” *American Sociological Review*: 299–322.
Massey, Douglas S. 1981. “Dimensions of the New Immigration to the United States and the Prospects for Assimilation.” *Annual Review of Sociology* 7: 57–85.
Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
Metropoolregio Amsterdam. 2012. “Metropoolregio Amsterdam - Achtergrond.” Accessed May 30. http://www.metropoolregioamsterdam.nl/achtergrond.html.
Metropoolregio Rotterdam Den Haag. 2013. “Metropoolregio Rotterdam Den Haag.” http://mrdh.nl/.
Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer (VROM). 1996. “De Gedifferentieerde Stad: Gezamenlijke Rapportage van de Vier Grote Steden En Het Rijk”. Zoetermeer: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (VROM).
———. 1997. “Nota Stedelijke Vernieuwing”. Den Haag: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (VROM).
———. 2006. “WoonOnderzoek Nederland (WoON).” http://easy.dans.knaw.nl/.
———. 2007a. “VROM International: Netherlands Ministry of Housing, Social Planning and the Environment.” http://international.vrom.nl/pagina.html?id=7557.
———. 2007b. “Actieplan Krachtwijken: Van Aandachtswijk Naar Krachtwijk”. Den Haag: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (VROM).
Mocetti, Sauro, and Carmine Porello. 2010. “How Does Immigration Affect Native Internal Mobility? New Evidence from Italy.” *Regional Science and Urban Economics* 40 (6): 427–39.
Musterd, Sako. 2005. “Social and Ethnic Segregation in Europe: Levels, Causes and Effects.” *Journal of Urban Affairs* 27 (3): 331–48.
Musterd, Sako, and Sjoerd De Vos. 2007. “Residential Dynamics in Ethnic Concentrations.” *Housing Studies* 22 (3): 333–53.
Musterd, Sako, and Rinus Deurloo. 2002. “Unstable Immigrant Concentrations in Amsterdam: Spatial Segregation and Integration of Newcomers.” *Housing Studies* 17 (3): 487–503.
Musterd, Sako, and Wim Ostendorf. 2008. “Integrated Urban Renewal in The Netherlands: A Critical Appraisal.” *Urban Research & Practice* 1 (1): 78–92.

Ong, Cheng Boon, and Kristof De Witte. 2013. “Ethnic Segregation and Heterogeneous Preferences of Homeowners for Housing and Neighbourhood Characteristics. Evidence from the Netherlands.” *UNU-MERIT Working Paper Series* (2013-061).
Overman, Henry G. 2002. “Neighbourhood Effects in Large and Small Neighbourhoods.” *Urban Studies* 39 (1): 117–30.
Permentier, Matthieu, Jeanet Kullberg, and Lonneke van Noije. 2013. “Werk Aan de Wijk. Een Quasi-Experimentele Evaluatie van Het Krachtwijkenbeleid”. Den Haag: Sociaal en Cultureel Planningbureau (SCP).
Rathelot, Roland, and Mirna Safi. 2013. “Local Ethnic Composition and Natives’ and Immigrants’ Geographic Mobility in France, 1982–1999.” *American Sociological Review*: 0003122413514750.
Rijksoverheid. 2014. “Wat Is Huurtoeslag?” http://www.rijksoverheid.nl/onderwerpen/huurtoeslag/vraag-en-antwoord/wat-is-huurtoeslag.html.
Sampson, Robert J., Jeffrey D. Morenoff, and Thomas Gannon-Rowley. 2002. “Assessing ‘Neighborhood Effects’: Social Processes and New Directions in Research.” *Annual Review of Sociology* 28: 443–78. doi:10.2307/3069249.
Schelling, Thomas C. 1971. “Dynamic Models of Segregation.” *Journal of Mathematical Sociology* 1: 143–86.
Tiebout, Charles M. 1956. “A Pure Theory of Local Expenditures.” *Journal of Political Economy* 64 (5): 416. doi:10.1086/257839.
Tweede Kamer der Staten-Generaal. 1990. “Vierde Nota over de Ruimtelijke Ordening Extra”. Handelingen van de Tweede Kamer der Staten-Generaal 21879, nrs. 1-2.
Van Der Burg, Arjen J., and Frans M. Dieleman. 2004. “Dutch Urbanisation Policies: From ‘Compact City’ to ‘Urban Network.’” *Tijdschrift Voor Economische En Sociale Geografie* 95 (1): 108–16. doi:10.1111/j.0040-747X.2004.00297.x.
Van der Laan Bouma-Doff, Wenda. 2007. “Involuntary Isolation: Ethnic Preferences and Residential Segregation.” *Journal of Urban Affairs* 29 (3): 289–309.
Van Gent, Wouter P. C., Sako Musterd, and Wim Ostendorf. 2009. “Bridging the Social Divide? Reflections on Current Dutch Neighbourhood Policy.” *Journal of Housing and the Built Environment* 24 (3): 357–68.
Van Ham, Maarten, and Peteke Feijten. 2008. “Who Wants to Leave the Neighbourhood? The Effect of Being Different from the Neighbourhood Population on Wishes to Move.” *Environment and Planning A* 40: 1151–70.
Van Kempen, Ronald, and Hugo Priemus. 2002. “Revolution in Social Housing in the Netherlands: Possible Effects of New Housing Policies.” *Urban Studies* 39 (2): 237–53. doi:10.1080/00420980120102948.
Verdugo, Gregory. 2011. “Public Housing and Residential Segregation of Immigrants in France, 1968-1999.” *IZA Discussion Paper Series* (No. 5456). http://ftp.iza.org/dp5456.pdf.
Vermeulen, Wouter, and Jan Rouwendal. 2007. “Housing Supply and Land Use Regulation in the Netherlands.” *Tinbergen Institute Discussion Paper* (No. 07-058/3).
VROM-raad. 2001. “Grotestedenbeleid, Voortzetten En Verbouwen: Advies over Grotestedenbeleid”. Advies 030. Den Haag: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (VROM).
Wilson, William Julius. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago, IL: University of Chicago Press.
Zorlu, Aslan. 2009. “Who Leaves the City? The Influence of Ethnic Segregation and Family Ties.” *Population, Space and Place* 15 (4): 323&342.
Zorlu, Aslan, and Jan Latten. 2009. “Ethnic Sorting in the Netherlands.” *Urban Studies* 46 (9): 1899.
Zorlu, Aslan, and Clara H. Mulder. 2008. “Initial and Subsequent Location Choices of Immigrants to the Netherlands.” *Regional Studies* 42 (2): 245 – 264.

The UNU-MERIT WORKING Paper Series

2014-01 *The medium-term effect of R&D on firm growth* by Marco Capasso, Tania Treibich and Bart Verspagen
2014-02 *Diverse and uneven pathways towards transition to low carbon development: The case of diffusion of solar PV technology in China* Michiko Iizuka
2014-03 *User innovators and their influence on innovation activities of firms in Finland* by Jari Kuusisto, Mervi Niemi and Fred Gault
2014-04 *Migration, remittances and household welfare in Ethiopia* by Lisa Andersson
2014-05 *Path-breaking directions of nanotechnology-based chemotherapy and molecular cancer therapy* by Mario Coccia and Lili Wang
2014-06 *Poor trends - The pace of poverty reduction after the Millennium Development Agenda* Richard Bluhm, Denis de Crombrugghe, Adam Szirmai
2014-07 *Firms' adoption of international standards: Evidence from the Ethiopian floriculture sector* by Mulu Gebreeyesu
2014-08 *School choice, segregation, and forced school closure* by Cheng Boon Ong and Kristof De Witte
2014-09 *Gender difference in support for democracy in Sub-Saharan Africa: Do social institutions matter?* by Maty Konte
2014-10 *Why are women less democratic than men? Evidence from Sub-Saharan African countries* by Cecilia García-Peñalosa and Maty Konte
2014-11 *Tipping points? Ethnic composition change in Dutch big city neighbourhoods* by Cheng Boon Ong