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# **The Impact of Immigration on the Size of Government:**

## **Empirical Evidence from Danish Municipalities**

Paper for presentation at the RC19 2009

### **Abstract**

This study examines whether the influx of immigrants of non-Western origin in Danish municipalities affected the amount of public spending between 1995 and 2001, a period marked by an unprecedented rise in the number of asylum applicants. Recent studies suggest that immigration from less developed countries would prompt a decline in public redistribution due to a lack of social cohesion in increasingly diversified communities. The results of this paper do not support the hypothesis regarding a decline in government spending. In contrast, a net influx of non-Western immigrants led to a small but significant increase in local tax rates.

Keywords: immigration, public goods, social cohesion, welfare state

## 1 Introduction

During the second half of the 20th century several Western European countries actively encouraged immigration at times of excess demand for labor. Since the beginning of the 1970s, however, public immigration policy has been more restrictive regarding labor migration. More recent immigrants have mostly been refugees or relatives of earlier cohorts of migrants. Denmark is one of these countries, and as in some other host countries, immigration and immigration policy has gradually become a political issue. In the 2001 parliamentary election the *Danish People's Party* – a nationalist party with a clear anti-migration platform – emerged as the third largest party, winning 22 of the 175 seats in the *Folketing*. Since then it has supported the liberal-conservative government and increased its own number of seats in the elections in 2005 and 2007. This reveals the impact of the immigration issue on political debate in Denmark. As Goul Andersen – Professor of Political Sociology at Aalborg University, Denmark – has noted:

More than most other countries, Denmark has experienced a thorough political mobilisation on the issue of immigration, which should strengthen both the direct and indirect effects of immigration on the support for the welfare state.//...[immigration] became a permanent issue on Danish voters' agenda from 1994 onwards [...]. In 2001, it was the most important single issue. (Goul Andersen, 2006, p. 4).<sup>1</sup>

Some scholars have expressed the view that immigrants would be negatively self-selected through the generosity of the public welfare system (see Borjas, 1999, Boeri et al., 2002, and Nannestad, 2005, for a more comprehensive discussion), which ultimately would erode the basis for providing publicly financed welfare.

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<sup>1</sup> As an indirect effect, Goul Andersen points to the mobilization of anti-immigration parties, while the actual change in “cultural homogeneity” would be a direct effect.

A somewhat different, more general discussion regards the issue concerning to what extent cultural and ethnic homogeneity in a society matters for the prevalence of certain institutional arrangements and general guidelines underlying the provision of social welfare within different countries. In a debated book, Alesina and Glaeser (2004) examined the evolution of social welfare arrangements in the US and Western Europe.<sup>2</sup> One of their conclusions states that immigration would result in a drop in social welfare spending in Europe due to eroding solidarity, simply because the population becomes increasingly heterogeneous. This process would be encouraged by politicians advocating a reduced role for the state, thereby exploiting xenophobic currents in the electorate for realizing their goals. Such a deterministic outlook by two prominent economists has not passed unnoticed. Goul Andersen (2006) questions the appropriateness of such predictions, stressing that one has to distinguish between established welfare state institutions under the influx of immigrations and the creation of such institutions in a society that is ethnically heterogeneous:

It makes a fundamental difference what comes first: Ethnic heterogeneity or institutionalised welfare. I suggest that the institutional welfare state may serve to maintain solidarity with the poor, even if they are foreigners, and that right-wing parties will find it difficult to get support if they maintain an anti-welfare stance. (Goul Andersen, 2006, p. 6).

The aim of the present study is to examine the validity of such opposing views on the consequences of immigration for the future of welfare states. In particular, it seeks to examine if and how much the amount of public spending has been affected by the influx of immigrants of non-Western origin.<sup>3</sup> To this end, a data set for a representative sample of Danes

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<sup>2</sup> This study triggered some debate in economics but even more in the political and other social sciences. See for example Pontusson (2006) and Taylor-Gooby (2005).

<sup>3</sup> Throughout the paper the term “Non-Western” is used as a matter of convenience. It follows the division made by Statistics Denmark, i.e. including persons from countries other than the EU countries (before 2002), and

containing information on individual consumption of publicly provided services, such as education, health care, and care of the elderly, has been examined. In addition, information on tax contributions made by the same individuals forms another outcome variable under scrutiny. Such detailed information is rather unique and has not appeared in other studies in this field.

The focus in this paper is on Danish municipalities. The municipality level constitutes the basic pillar of the Danish governmental system. Based on these data, several regression estimations are conducted, aimed at measuring whether an influx of immigrants has any impact on the size of locally determined services. The key finding of the estimations is that there is no evidence of a decline in the Danish welfare state as a result of an increase in the proportion of immigrants. On the contrary, there are some indications of a significant increase in terms of income tax payments. Thus, even if the Danish welfare system underwent some changes, such as a larger emphasis on “workfare” instead of welfare, its main purpose and overall size remained fairly stable.

Section 2 below discusses methodological issues and previous results in the literature. Section 3 offers a brief review of recent immigration patterns in Denmark and an account of institutional arrangements, particularly the role of the municipalities and certain characteristics of Danish immigration policy. Section 4 presents the data, while Section 5 discusses the estimation method. Section 6 presents the main results of the estimations and Section 7 offers some conclusions.

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Andorra, Iceland, Liechtenstein, Monaco, Norway, San Marino, Switzerland, the Vatican, Canada, USA, Australia and New Zealand.

## ***2 Methodology and Previous Studies***

Several theoretical and empirical contributions to the field of political economics have sought to clarify whether shared common norms in a society are a precondition for a more extensive welfare state, and, in doing so, have stressed the importance of loyalty and cohesion among citizens. As already has been put forward by Olson (1982), the following factors are of critical importance to facilitate provision of public goods: the number of members in the group concerned, the degree of homogeneity within the group, and the sensitivity of agents to the loss of reputation that results from not contributing. Consequently, the design of any social welfare system can be regarded as the long-term outcome of a process of social interaction among group members. Departing from this line of thought, the issue of the (causal) effect of ethnic diversity on public spending has surfaced in recent years, for instance in work by Alesina et al. (1999), Luttmer (2001), Razin et al. (2002), Böheim and Mayr (2005), and Facchini and Mayda (2006).

Razin et al. (2002) define a model predicting a negative correlation between the size of the public sector (as determined by transfer redistributions and labor tax payments) and low-skilled immigrants – the cause of which is said to be a “fiscal leakage” to immigrants. Building their model on the framework outlined by Meltzer and Richard (1981), they connect the “median voter” to the size of public spending, or – to use their terminology – the “size of government”. The study by Böheim and Mayr (2005) departs from a similar theoretical setting. They also propose a negative correlation between native preferences regarding public spending (transfer payments and expenditure on publicly provided goods) and low-skilled immigration – a result that they attribute to “anti-social sentiments”. Examining aggregated data for a number of OECD countries, both studies find some support for the predictions of their respective models. Razin et al. (2002) look at labor tax rates and social transfers per capita, using a panel of 11 European countries for the period 1974–1992. Covering the period

1990–2001 for a total of 18 countries, Böheim and Mayr (2005) use as their outcome variables “general government total outlays in per cent of GDP” and a measure for public spending on private goods in terms of “the share of total transfers received by households in per cent of total outlays” (see p. 16).

Unlike these authors, Alesina et al. (1999) focus on outcomes in a single country, the US, by looking at differences across cities. One advantage of focusing on cities is the larger number of observations available than in studies relying on cross-country data. In addition, because of comparable historical developments and institutional arrangements, data for cities in one country facilitate estimating effects that are less confounded by unobserved heterogeneity. They conclude that “voters choose lower public goods when a significant fraction of tax revenues collected on one ethnic group are used to provide public goods shared with other ethnic groups.” Their explanation for that result is “that each ethnic group’s utility level for a given public good is reduced if other groups also use it” (p. 1244). In a study utilizing survey data, Luttmer (2001) confirms these results. However, a study by Hopkins (2006a), analyzing data over a period of 44 years for cities and counties in the US, finds some fluctuation in the impact of immigration on local public spending. As he notes, studies such as that by Alesina et al. (1999) do not take adequate account of heterogeneity across cities and counties.

The present study, to some extent, relates to Alesina et al. (1999). There are, however, some notable differences. First, the focus here is on changes in spending within municipalities over time, while Alesina et al. (1999) use the comparison of differences across cities as their identification strategy.<sup>4</sup> The period investigated, 1995–2001, is marked by an increase in the influx of immigrants that was, at least by Danish standards, exceptional. Thus, any changes in provision of local services such as day-care facilities, care of the elderly or primary education,

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<sup>4</sup> They use panel estimation techniques in some sensitivity analyses only.

arising from such demographic changes should show up more clearly during that time frame than in any other period of similar length.<sup>5</sup> Second, Alesina et al. (1999) look at specific expenditure such as education, infrastructure (i.e. roads and sewerage), health, and police. Studying such outcomes on a one-by-one basis may be misleading, however, as publicly provided services could have been reduced in exchange for measures in other areas. In this study, the strategy is to look at comprehensive measures instead, to net out any substitution between different items of publicly provided goods. Third, in this paper it is the impact of a change in the share of (first generation) non-Western immigrants that is under focus, not ethnic diversity in general. It thereby addresses proposals made by Alesina and Glaeser (2004), who regard immigrants coming from Africa or Eastern Europe (see pp. 217–218) as a main threat to European-style welfare regimes.

The focus is on the effect of immigration on the “old-style” welfare system. For that reason are first- and second-generation immigrants and their utilization of public services purposely excluded from the estimations. Including their figures would distort the analysis, as some groups of immigrants may chose other forms of publicly provided welfare than native Danes. For example, this would hold for publicly provided child day-care facilities in case women of foreign origin to a larger degree prefer to look after their children themselves. Accordingly, the study will not be confounded by differences in claims to publicly provided welfare following from a changing demographic composition of Danish municipalities along cultural and ethnic lines over the period covered.

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<sup>5</sup> Hopkins (2006b) looks at the effect of changes in population diversity within municipalities in the state of Massachusetts, from 1995 to 1999. He puts forward the argument of racial threat, saying that even small changes in diversity can result in notable changes in both the structure and the size of investment in public goods.

### **3 Institutional Background**

This section briefly presents the institutional arrangement regarding the governmental system and the role of municipalities. It is followed by a short review of more essential features of Danish immigration policies.

#### **The public sector in Denmark<sup>6</sup>**

During the study period, in Denmark there have been, in all, 275 municipalities, distributed over 14 counties, the latter of which constitutes the second level in the Danish governmental system. In comparison with most other Western European countries, municipalities in Denmark are authorized to engage in a broad range of tasks and have considerable discretion in applying existing social welfare schemes.

An important aspect for this study is that municipalities are authorized to determine income tax rates locally. Alongside these tax revenues, they also receive block grants from central government, i.e. grants not earmarked for specific purposes, see *Local Government in Denmark*, LGDK (2003). As in other countries the government administers an equalization scheme that is intended to compensate the municipalities for specific expenditure needs, and which serves to equalize the tax base. The two main criteria are expenditure needs arising from the demographic composition or from needs caused by other determined social reasons, “so that differences in local taxation levels reflect the locally determined service levels” (LGDK, 2003, p. 28). The following are the main tasks and services that come under local jurisdiction:<sup>7</sup>

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<sup>6</sup> This section draws extensively on the bulletin *Municipalities and Counties in Denmark – Tasks and Finance*, Ministry of the Interior and Health.

<sup>7</sup> Police, administration of justice, higher education, vocational training, and research are the responsibility of the central government. The most important tasks at county level are connected with governing hospitals, health insurance, and upper secondary education.



- Primary education
- Child care and care of the elderly (the main share of municipal spending)
- Libraries, local sports facilities, and other cultural activities
- Granting and payment of social assistance, disability pensions, and certain other cash benefits<sup>8</sup>
- Job activation and employment projects for non-insured unemployed persons
- Public utilities, environmental measures, and emergency services

Local budget plans are the outcome of annual summits between central government and the local authorities, and the scope for active strategies for determining cash transfers at the municipal level is, at best, limited. However, given a set of legal commitments, there is considerable scope for the designing of publicly provided goods and services at the municipal level. As noted by Christoffersen and Paldam (2003), Danish municipalities “have unusual independence when it comes to the size (over the designated minimum), the quality provided, and the mode of production” (p. 79).

### **Trends in immigration and Danish dispersal policy<sup>9</sup>**

Similar to the UK, Sweden, West Germany and other countries, Denmark experienced a period of labor immigration in the late 1960s and early 1970s. That kind of migration almost ceased in the aftermath of the first oil crisis in 1973 (Damm et al., 2006, p. 32). Nonetheless, primarily due to family reunification, the number of immigrants remained fairly stable after

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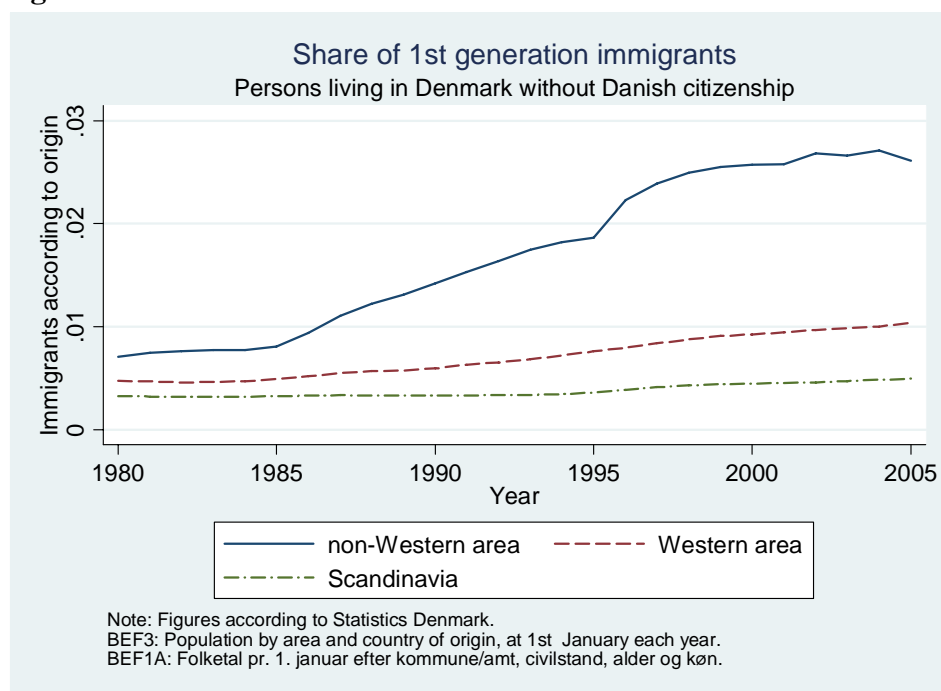
<sup>8</sup> As mentioned above, such transfer payments are only partly funded by the municipalities themselves.

Maintenance payments by municipalities to refugees during an introduction period are funded by the state. The actual construction of state refunding changed somewhat after the introduction of the “Act of Integration” in 1999, but it is still central government that pays for refugees during the introduction period.

<sup>9</sup> This section draws largely on Damm (2005). For a more detailed discussion of the socio-economic situation for immigrants in Denmark in the 1990s, see e.g. Pedersen and Smith (2001).

an initial fall in 1974. After a period of rather modest immigration at the beginning of the 1980s, immigrant numbers rose markedly some years later. This was mainly due to an increase in the number of refugees coming from Iraq, Iran, Lebanon, Sri Lanka, and Poland. At the start of the 1990s the crisis in the former Yugoslavia led to a significant increase in the number of asylum-seekers, reaching a peak in the official figures in 1995, when many refugees were granted permanent resident status. In the late 1990s and early 2000s, Denmark experienced a major influx of refugees from Iraq and Somalia. The general pattern of immigration can be seen by studying Figure 1. At the start of the 1980s, immigrants from Western countries and Scandinavia made up a larger share, but the composition changed noticeably in subsequent years.

**Figure 1**



With the arrival of a wave of immigrants at the beginning of the 1980s, the Danish Refugee Council (DRC), responsible for such matters, had problems in providing all refugees with accommodation. For that reason, in 1986, a placement policy was introduced, according to which new arrivals were to be dispersed over the whole of Denmark. It was intended to

counteract the tendency of immigrants to move to metropolitan areas. For the most part, the result of this policy was that refugees were distributed among large and medium-sized municipalities. From 1995, however, as a consequence of the massive influx of refugees from Bosnia-Herzegovina, the main criterion for assigning refugees was the availability of housing.

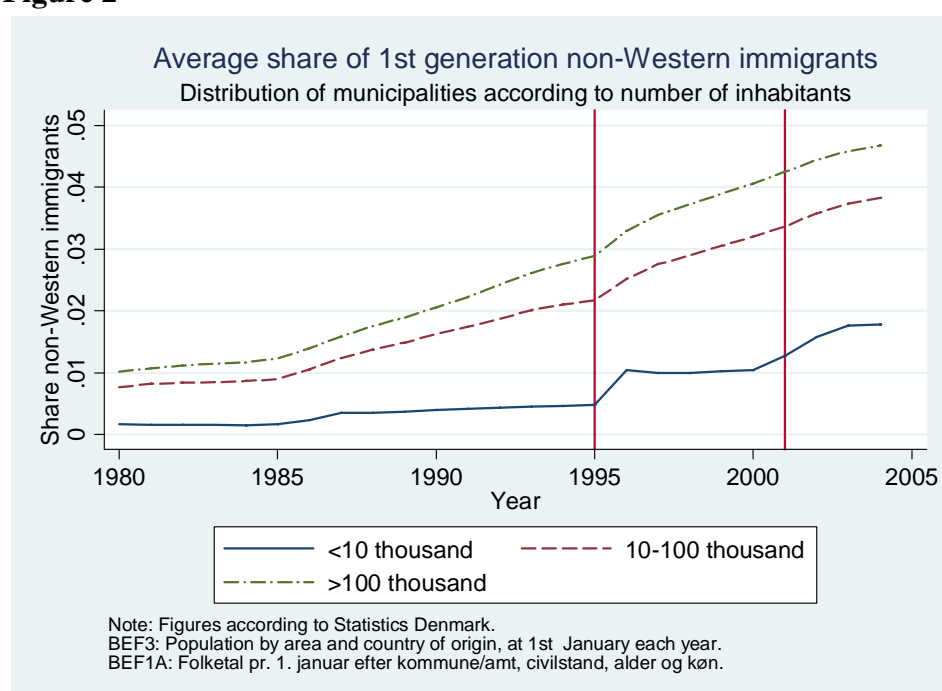
Relocation after the initial allocation by the DRC was possible, since refugees were free to move wherever they wanted, once they had been granted asylum. However, there was some incentive not to change the initial location, at least not before completing an 18-month “introductory period”. For example, those refugees complying with the policy could expect help from local authorities in finding appropriate housing and child day care; however, there was no restriction on social welfare payments. From 1 January 1999 the dispersal policy became more restrictive, as refugees risked losing the special “introduction allowance” – a form of social assistance benefit – if they decided to move within a three-year period, unless it were to start work in another municipality. About half the refugees arriving before 1998 left their first destination municipality within seven years of taking up residence there. Refugees, especially those with little contact with the labor market, were more likely to move to municipalities with a high proportion of their countrymen (Damm et al., 2006, Chapter 6, and Damm, 2006).

### **Immigration 1995–2001**

Figure 2 shows the development of the non-Western immigrant share in Denmark in the period 1980–2004. The noticeable leap in 1995, especially in the smaller municipalities, is largely due to refugees who arrived from Bosnia-Herzegovina in 1992 and 1993. After first receiving temporary residence permits, most were granted asylum in 1995. The change in their immigrant status was accompanied by a change in placement. Owing to the large number of refugees coming from Bosnia-Herzegovina the placement policy was tightened in a way that the “special introduction programme included settlement in rural districts, thereby

ignoring whether a municipality had suitable characteristics for reception or not” (Damm 2005, p. 6). The general economic situation during the study period was quite favorable, as 1995 marks the start of a lengthy period of economic growth that reached its peak in 2002. It was characterized by an increase in employment for native Danes, but also for the non-Western immigrants (see also Damm et al., 2006, p. 38), with a resulting drop in the numbers receiving unemployment payment.

**Figure 2**



## 4 Data

The data used in this study are from the *Law Model* provided by the Danish Ministry of Finance. These data are collected for the purpose of evaluating government programs. They are based on a representative panel including 3.3 percent of the Danish population, and include the years 1995, 2000, and 2001.<sup>10</sup>

<sup>10</sup> For a more detailed description of the Law Model data, see Danish Ministry of Economic Affairs (2000).

One advantage of the Law Model data is that it includes figures for the consumption of all kinds of publicly provided goods. These figures are based on very detailed information about individual use of the various services: schools, health care, care for the elderly, day care, etc. Accordingly, the data allows me to define dependent variables that exclude those persons who have their origin in a non-Western country. Other costs, such as central state administration, defence, and various types of subsidies to the private sector are not included, while costs relating to payment for infrastructure are distributed by way of lump-sum amounts across the population.

Table 1 displays changes in covariates for the period 1995–2001. All dependent variables, demographic control variables, and labor income figures refer to native Danes. Other background variables, indicated by superscripts, have subsequently been merged with the *Law data*. They have been taken from Statistics Denmark and refer to all persons in the respective municipalities. Mean values are shown distributed by population size to indicate differences across smaller and larger municipalities. Panel A reveals that native citizens living in municipalities with less than ten thousand inhabitants had a slightly smaller increase in per capita income tax payments, despite a bigger increase in income tax rates. With regard to the assessed value of consumption of publicly provided goods, those rose significantly across all municipalities. Meanwhile, the “share of non-Western immigrants” increased by approximately 0.7 percentage points, regardless of municipality size; however, the increase was statistically significant for smaller municipalities only. Such figures suggest two things. First, the policy of distributing refugees to smaller municipalities certainly affected the “share of non-Western immigrants” in smaller communities. Second, this demographic change ran parallel with an increase in municipality tax rates. The following regression estimations aim to reveal to what extent the results from this first inspection of data are indicative of a causal relationship.

For the purpose of estimation, the Law model data has been “collapsed” from the individual level with respect to each individual’s municipality of residence. Hence, instead of 3.3 percent of the native Danish population, i.e. about 138 000 observations each year, mean values for the 275 municipalities are used. The reason for doing this transformation is to take account of so-called “random effects” on the municipality level (see Moulton, 1990 and Bertrand et al., 2004 for a motivation). In particular, such a procedure avoid the kinds of obstacles that otherwise would emerge when using data on the individual level interchangeably with data on the municipality level in one and the same regression estimations. More importantly, decisions on tax and spending policies within municipalities are taken by members of local councils, so choosing municipalities as the ecological level of analysis seems appropriate.

## ***5 Estimation Approach***

The analytical purpose of this study is to estimate the marginal impact of the share of citizens of non-Western origin on three measures of public spending. The first outcome studied is the value of individualized publicly provided goods, the second refers to per capita paid income taxes, and the third is municipality tax rates. Tax rates and (real) tax payments are, of course, closely related. However, they will not be affected to the same degree, unless the tax base stays around constant. For several reasons this may not always be the case, for example, in times of economic hardship, municipality councils may chose to raise taxes, but to the extent taxable income has diminished, such an increase in tax rates will not translate into a similar rise in real tax payments. Estimations will yield the effect of a marginal change in the “share of non-Western immigrants” in municipalities on changes in each of the three outcome variables. One natural question that arises is whether this will reveal a causal effect or not. This question will be developed more in detail below.

## Basic regression model

The regression set-up is in accordance with a least squares dummy variable model (LSDV), frequently referred to as fixed-effect estimations. It states that a dummy variable for each municipality is included alongside the other explanatory variables. The estimation model appears as follows (see also Verbeek, 2000, p. 313):

$$(i) \quad y_{it} = \alpha_i + x'_{it}\beta + \lambda_t + \varepsilon_{it}, \text{ where } \varepsilon_{it} \sim IID(0, \sigma_\varepsilon^2)$$

Here  $x_{it}$  are control variables as described above, while  $\alpha_i$  is a dummy variable for each of the  $N$  municipalities, and  $\lambda_t$  is a vector of time dummy variables. Owing to the municipal fixed effects, the identification of parameters will result from the *change* in the “share of non-Western immigrants” in the municipalities between 1995, 2000, and 2001. Thanks to this approach it is possible to control for structural socio-economic aspects, such as long-term unemployment and other factors that have been approximately constant over the covered time period. Not controlling for such municipality characteristics, the coefficient vector  $\beta$  would be subject to omitted-variable bias.

In the baseline estimations, the variables included are: municipal averages for per capita gross labor income, age, number of children per household, number of citizens, and the ratio of mean to median income. This last variable is intended to capture the income distribution in municipalities. The theoretical argument, following Meltzer and Richard (1981), argues that the size of government is determined by (pre-tax) income distribution, stating that an unequal distribution would lead to further reallocation and thus to greater public size in terms of tax payments. In the basic version of this model the (decisive) median voter supports tax rates depending on the difference between his own income and that of the average income-earner.<sup>11</sup>

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<sup>11</sup> The empirical support for the applicability of this theory is rather mixed. See Alesina and Glaeser (2004) for a more detailed discussion on empirical evidence.

One reason for including gross labor income in the estimations is that local tax revenues are determined by the tax base. Or, to put it another way, in order to reveal any intended policy changes in local governments it is necessary that the economic conditions prevailing in that municipality are held constant.<sup>12</sup> The equalization scheme between state and municipalities implies a redistribution of public funds among municipalities according to demographic and socio-economic conditions. This also motivates controlling for age and number of dependent children per family. The inclusion of population size is intended to control for economics of scale in the provision of publicly provided goods across municipalities. Furthermore, controls for the share of high-school graduates and the proportion of the population over 65 are included.<sup>13</sup>

The dependent variables and most explanatory variables appear as logarithms in the estimations, so, too, does the measure for the “share of non-Western immigrants”, all of which allows stating a relationship in terms of elasticities. Standard errors are robust to both heteroskedasticity in a cross-sectional dimension and serial correlation over time. According to Stock and Watson (2008), clustering of covariance matrixes should be applied in estimations that involve three or more time periods, while in the case of two time periods only, a heteroskedasticity-robust estimator is consistent as well as more efficient. Accordingly, in the baseline set-up standard errors are clustered at the municipality level, while White robust estimators are applied where observations are included for two years.

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<sup>12</sup> Here I have to tackle some endogeneity aspects as the link from labor income to the studied outcome variables could involve recursive dynamics. I return to such issues in the next section. Alesina et al. (1999) include per capita labor income to address the fact that “more developed” cities may have a larger provision of public goods.

<sup>13</sup> Such controls have also been used in Alesina et al. (1999). The relative skill level has been found to be an important factor in the acceptance of (low-skill) immigration. See Facchini and Mayda (2006).



## Causal effects and measurement concerns

In general, there can be various underlying factors determining both changes in public spending and the size and course of migration flows. However, the inflow of a broad share of immigrants into Denmark during the period concerned was partly exogenous due to the influx of refugees, such as the one caused by the civil war in the former Yugoslavia. In combination with the fact that the placement policy became legal practice long before any signs of the crisis in Yugoslavia were noticed, this exemplifies what economists like to call a “natural experiment”.<sup>14</sup> In fact, there has been a fairly unanticipated, unprecedented, and substantial change in the distribution of quite large groups of immigrants across municipalities. However, as refugees to some extent moved away from their initial placement municipalities, there is some scope for reverse causality and endogeneity of right-hand variables, which can be expressed as  $E[x_{it}, \varepsilon_{it}] \neq 0$ . It is not clear how this mechanism evolves and how it affects the coefficient estimates. According to the notion of Tiebout sorting “populations may move selectively to favorable public good locations” (see Banerjee and Somanathan, 2007, p. 300). However, as previous studies have shown (see previous section), refugees who decided to leave their initial placement municipality, to a greater extent, moved to larger cities, especially to places where they could find people from their home country. Thus, as long as the change of residence was not caused by the provision of a certain set-up of publicly provided goods, such as day-care system, schools, etc, or the tax rate in various municipalities, the estimations of the “share of non-Western immigrants” coefficients will not suffer from such endogeneity.

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<sup>14</sup> The exodus of people fleeing the civil war in the former Yugoslavia has been used by Angrist and Kugler (2003) for the purpose of measuring the impact of immigration on EU labor markets.

The other control variables included in the estimations account for factors on the macro-level that were of importance to the implementation of the placement policy.<sup>15</sup> Thus, by conditioning on the age structure, number of children, labor market conditions (subsequently also a measure for public housing), and municipality time-fixed effects, the exogenous dimension in the assignment of refugees and its effect on publicly provided goods are expected to unfold.

## **6 Estimation Results**

The estimations reveal the following findings. First, the change in the “share of non-Western migrants” had no significant impact on the assessed value as to publicly provided goods consumed by native Danes, i.e. expenditure connected with child care, schools, health care, and care for the elderly, have been largely unaffected (see Table 2). On the other hand, there are indications of a small but overall positive effect on tax payments, i.e. a rise in the “share of non-Western migrants” led to an increase in the income taxes paid by native Danes (see column (1) in Table 3). However, in the estimations the coefficient for “share of non-Western immigrants” becomes smaller once labor income has been excluded from the model (see column (3) in Table 3). This shows that changes in average labor incomes in municipalities on the one hand, and the “share of non-Western immigrants” on the other, are highly correlated.<sup>16</sup> Changes in the demographic composition of municipalities might result in a change in the tax base, which would affect the income tax paid. To see how such a relocation mechanism affects the results, estimations using “Municipality Income Tax Rates” as the

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<sup>15</sup> On the individual level health, education, and proximity to relatives have been taken into account by the responsible authorities. See Damm (2005, p. 27).

<sup>16</sup> It should be remembered that average labor income in municipalities reflects not only differences in income from work for those with jobs, but also the relative number of people employed in a municipality.

dependent variable were conducted. This will provide a more clear-cut measure of the actual tax policies intended to be implemented by local governments.

The estimations reveal a significantly positive effect from an increase in “share of non-Western migrants” in the baseline OLS estimation (see Table 4, column (1)). This result only changes slightly if labor income is excluded from the estimation, as can be seen by comparing the coefficient estimates in columns (1) and (3). A comparison of the results regarding the amount of income taxes actually paid (Table 3, column (1)) and the municipal tax rates (Table 4, column (1)), reveals a clear correspondence as regards the actual size of the effect of the “share of non-Western immigrants”, even if coefficients differ with respect to level of significance.

To check for robustness, in subsequent estimations observations for the year 2000 have been dropped. This examination is meant to address unobserved dynamic structures in local government spending. Conducting estimations for two calendar years with a five-year gap between is intended to achieve estimations that are free from serial correlation. In general, according to standard econometric textbooks, state dependency could bias the coefficient estimates downwards in fixed-effect estimations. In fact, reducing the time dimension to two years only, 1995 and 2001, has only a slight impact on the coefficient estimate for the “share of non-Western immigrants”. The OLS coefficient estimates for income tax paid decrease somewhat, from 0.011 to 0.010 (see Table 3, column (5)). Looking at the tax rate outcome, the effect is also rather small, indicating an increase from 0.014 to 0.016 (see Table 4, column (5)).

Back-of-the-envelope calculations to evaluate the effect in terms of standard deviation change in the “share of non-Western immigrants” and the related change in taxes, yield the following results. A further standard deviation increase between 1995 and 2001 in the “share of non-Western immigrants”, i.e. a 71 percent change (corresponding to a change of about 0.5

*percentage points*), results in an increase in income tax rates of about 1.2 percent, as calculated by interacting changes in mean tax rates for the municipalities in the estimation sample. See Table 1b, and the coefficient estimate in Table 4, column (5),  $[0.005 / 0.007] * 0.016$ . The corresponding result for income tax payments reveals an increase of about 0.7 percent,  $[0.005 / 0.007] * 0.01$ , using the coefficient estimate from Table 3, column (5). These numbers suggest rather a small effect. Nonetheless, they are significantly positive and contradict most results reported in the literature, as discussed in Section 2. Moreover, the figures seem reasonable as regards their size. An increase of 1.2 percent in income tax rates corresponds to about 0.36 *percentage points*; hence, an increase of 0.5 *percentage points* in the “share of non-Western immigrants” due to immigration yields an increase in tax rates of 0.36 *percentage points*.

A series of sensitivity tests show that the estimated effects are fairly robust. Some of the tests conducted are shown in columns (2), (4), and (6) in Tables 2–4. Omitting all control variables except municipality fixed effects and time dummies leads to a non-significant coefficient where income tax paid is the dependent variable (see Table 3 column (4)). As regards consumption of publicly provided goods these are still insignificant. On the other hand, tax rates still rise with an increase in the “share of non-Western immigrants” (see Table 4, column (4)). In other estimations a number of additional control variables were added: measures for public housing, share of votes for the two major parties, i.e. the *Liberal Party* and the *Social Democratic Party*, and population density are included.<sup>17</sup> The control for party strength is intended to hold constant for possible “political horse-trading” in the assignment of refugees among the municipalities. One might argue that a shift in budget policies will only materialize after a change in the governing assembly has taken place. Clarifying such

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<sup>17</sup> As mentioned previously, at times, provision of public housing has been the main criterion in the placement of refugees in the Danish dispersal policy.

mechanisms is certainly worth studying on their own, but will not be addressed here. A control for population density takes into account differences in costs for publicly provided goods. As before, institutional differences across municipalities, such as council size, will be accounted for by means of municipality fixed effects and controls for population size. All in all, such additional controls do not yield any major differences compared with the baseline estimations, as can be seen by comparing columns (1) and (2) in Tables 3 and 4, respectively.

## **7 Conclusion**

The purpose of this paper has been to explore whether or not a change in the “share of non-Western immigrants” had any measurable effect on publicly provided goods and services. Owing to the actual design of the analysis, apposite institutional arrangements, and an unprecedented influx of immigrants to Denmark, the study is more reliable than most other empirical studies aiming to evaluate the impact of immigration on social cohesion and welfare state design. The results of the regression estimations reveal no sign of a drop in public welfare spending. The welfare expenditure measures applied are visibly unaffected by changes in the “share of non-Western migrants”. On the contrary, the slight increase in income taxes suggests an increase rather than a decline in public spending. One explanation for the latter result could be an ambition on the part of local authorities to sustain a “status quo” in publicly provided goods, and to ensure a given standard of service. Thus, the social welfare system shows no obvious sign of weakening, in spite of the somewhat inflamed debate on immigration issues in Denmark. This is worth emphasizing, as it contradicts the claims made in most related studies. The findings show that the imminent death of the Scandinavian welfare state as the result of immigration from areas outside the Western hemisphere is exaggerated.

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**Table 1.** Summary Statistics: Weighted Means of First-Differences between 1995 and 2001

	<b>Municipalities in Sample</b>	<b>Less than 10 thousand</b>	<b>10 to 100 thousand</b>	<b>More than 100 thousand</b>	<b>Municipalities not included</b>
<b>A. Dependent variables</b>					
ΔPublic goods consumption per capita	9231.664 (4404.382)	10070.320 (5969.621)	9317.865 (3882.984)	8325.387 (4854.829)	10436.720 (8638.149)
ΔIncome tax per capita	17948.680 (7025.789)	15255.950 (5268.431)	19207.300 (8210.525)	16494.450 (2154.507)	7741.170 (4045.451)
ΔIncome tax rates	2.638 (0.896)	3.282 (0.789)	2.720 (0.879)	1.898 (0.441)	3.681 (0.476)
<b>B. Control variables</b>					
ΔWomen	0.000 (0.016)	0.003 (0.024)	0.002 (0.016)	-0.005 (0.002)	-0.026 (0.029)
ΔAge	1.220 (1.220)	1.490 (1.386)	1.561 (0.930)	0.038 (1.233)	1.813 (1.054)
ΔNumber of children/household	0.013 (0.050)	0.008 (0.079)	0.015 (0.048)	0.012 (0.026)	-0.051 (0.082)
ΔLabor income per capita	36092.580 (10231.910)	30397.780 (10216.090)	36107.620 (10076.800)	40540.090 (9626.429)	10367.790 (9999.692)
Δ Number of persons in municipality	3826.080 (8115.246)	132.151 (181.466)	834.100 (836.437)	15242.820 (13431.560)	-284.382 (185.140)
Δ Percentage BA graduates	0.034 (0.017)	0.024 (0.019)	0.031 (0.015)	0.048 (0.015)	0.010 (0.011)
Δ Mean to median income ratio	-0.654 (3.559)	-1.442 (8.430)	-0.452 (1.006)	-0.615 (0.288)	-
Δ Fraction of population >65	0.003 (0.025)	0.004 (0.028)	0.010 (0.021)	-0.017 (0.029)	0.014 (0.025)
Δ Share of non- Western immigrants	0.007 (0.005)	0.007 (0.004)	0.007 (0.006)	0.007 (0.005)	0.006 (0.002)
Δ Public housing	638.545	34.320	107.978	2623.001	-2.842

	(1239.761)	(42.991)	(419.228)	(1445.915)	(4.210)
Δ Vote share	0.028	0.004	0.020	0.068	−0.065
Liberal Party	(0.0669)	(0.082)	(0.062)	(0.048)	(0.068)
Δ Vote share	−0.028	−0.022	−0.024	−0.043	−0.053
Social Democratic	(0.0799)	(0.074)	(0.084)	(0.075)	(0.021)
Party					
Δ Labor income,	−0.144	−0.278	−0.147	−0.028	1.703
median	(0.309)	(0.557)	(0.246)	(0.025)	(0.954)
Δ Population	43.029	1.607	9.827	170.062	−4.240
density	(106.141)	(12.183)	(28.185)	(196.629)	(4.344)
Δ No. of persons	5.445	1.198	6.920	94	−4
in sample	(29.199)	(11.913)	(21.472)	(196.533)	(4.359)
Number of					
municipalities	272	131	137	4	3

Notes: Weighted with respect to number of observations in each municipality. Standard deviations in parentheses. Standard deviations in parenthesis.

**Table 2.** Dependent variable: Log consumption of publicly provided goods

	Baseline Estimations		Some variables excluded		Including 1995 and 2001	
	(1)	(2)	(3)	(4)	(5)	(6)
Year 2000 dummy	0.218 (0.042)***	0.221 (0.043)***	0.195 (0.025)***	0.203 (0.016)***	0.000 (0.000)	0.000 (0.000)
Year 2001 dummy	0.232 (0.050)***	0.233 (0.049)***	0.205 (0.028)***	0.214 (0.025)***	0.240 (0.050)***	0.236 (0.048)***
Women	-0.219 (0.359)	-0.154 (0.363)	-0.174 (0.346)		-0.468 (0.364)	-0.405 (0.364)
Age	0.029 (0.010)***	0.029 (0.010)***	0.029 (0.010)***		0.037 (0.011)***	0.039 (0.010)***
Number of children	0.127 (0.127)	0.094 (0.127)	0.134 (0.126)		0.185 (0.123)	0.182 (0.122)
Log of Labor income per capita	-0.119 (0.142)	-0.128 (0.143)			-0.159 (0.152)	-0.176 (0.149)
Log of Number of persons	-0.646 (0.380)*	1.451 (0.665)**	-0.749 (0.380)**		-0.907 (0.358)**	0.478 (0.808)
Log of Percentage BA graduates	0.026 (0.057)	0.028 (0.057)	0.007 (0.055)		0.027 (0.060)	0.011 (0.062)
Mean to median income ratio	0.002 (0.002)	0.002 (0.002)	0.003 (0.002)		0.004 (0.002)**	0.004 (0.002)**
Log of Fraction of population >65	-0.117 (0.079)	-0.116 (0.080)	-0.096 (0.086)		-0.162 (0.072)**	-0.175 (0.069)**
<b>Log of Share non- West. immigrants</b>	<b>-0.007 (0.011)</b>	<b>-0.001 (0.011)</b>	<b>-0.006 (0.011)</b>	<b>0.004 (0.015)</b>	<b>-0.004 (0.011)</b>	<b>0.006 (0.011)</b>
<i>Additional variables included</i>	No	Yes	No	No	No	Yes
Observations	813	801	813	825	542	534
R-squared	0.855	0.858	0.854	0.836	0.881	0.888

Notes: Standard errors (SE) in parentheses: Clustered (White robust) SE in three (two) period estimation. Weighted with respect to number of observations in each municipality. Significant at 10% (\*), 5% (\*\*), 1% (\*\*\*), respectively. All estimations include municipality dummies. Additional variables used in estimations shown in columns (2) and (6) are public housing, vote shares for the Liberal Party and the Social Democratic Party, population density.

**Table 3.** Dependent variable: Log of income taxes paid

	Baseline Estimations		Some variables excluded		Including 1995 and 2001	
	(1)	(2)	(3)	(4)	(5)	(6)
Year 2000 dummy	0.053 (0.020)***	0.053 (0.021)**	0.171 (0.014)***	0.228 (0.007)***	0.000 (0.000)	0.000 (0.000)
Year 2001 dummy	0.048 (0.020)**	0.042 (0.021)**	0.189 (0.013)***	0.254 (0.008)***	0.032 (0.021)	0.030 (0.022)
Women	0.076 (0.194)	0.061 (0.195)	-0.151 (0.259)		0.024 (0.189)	0.005 (0.194)
Age	0.017 (0.005)***	0.017 (0.005)***	0.018 (0.005)***		0.017 (0.004)***	0.017 (0.005)***
Number of children	0.059 (0.074)	0.063 (0.080)	0.023 (0.080)		0.054 (0.068)	0.053 (0.073)
Log of Labor income per capita	0.606 (0.064)***	0.611 (0.065)***			0.655 (0.068)***	0.649 (0.068)***
Log of Number of persons	0.277 (0.187)	0.132 (0.280)	0.802 (0.200)***		0.284 (0.166)*	-0.045 (0.322)
Log of Percentage BA graduates	0.005 (0.032)	0.002 (0.034)	0.099 (0.042)**		0.022 (0.033)	0.022 (0.034)
Mean to median income ratio	0.001 (0.000)***	0.001 (0.000)***	-0.000 (0.001)		0.002 (0.001)***	0.002 (0.000)***
Log of Fraction of population >65	0.023 (0.035)	0.023 (0.037)	-0.080 (0.042)*		0.040 (0.031)	0.038 (0.032)
<b>Log of Share non- West. immigrants</b>	<b>0.011 (0.005)*</b>	<b>0.011 (0.006)*</b>	<b>0.006 (0.006)</b>	<b>0.0003 (0.006)</b>	<b>0.010 (0.005)**</b>	<b>0.008 (0.005)</b>
<i>Additional variables included</i>	No	Yes	No	No	No	Yes
Observations	813	801	813	825	542	534
R-squared	0.980	0.981	0.976	0.973	0.985	0.985

Notes: Standard errors (SE) in parentheses: Clustered (White robust) SE in three (two) period estimation. Weighted with respect to number of observations in each municipality. Significant at 10% (\*), 5% (\*\*), 1% (\*\*\*), respectively. All estimations include municipality dummies. Additional variables used in estimations shown in columns (2) and (6) are public housing, vote shares for the Liberal Party and the Social Democratic Party, population density.

**Table 4.** Dependent variable: Log of Income Tax Rates

	Baseline Estimations		Some variables excluded		Including 1995 and 2001	
	(1)	(2)	(3)	(4)	(5)	(6)
Year 2000 dummy	0.081 (0.010)***	0.082 (0.010)***	0.067 (0.006)***	0.062 (0.007)***	0.000 (0.000)	0.000 (0.000)
Year 2001 dummy	0.097 (0.011)***	0.097 (0.011)***	0.080 (0.007)***	0.075 (0.007)***	0.097 (0.011)***	0.099 (0.011)***
Women	0.212 (0.116)*	0.211 (0.117)*	0.239 (0.116)**		0.246 (0.115)**	0.235 (0.116)**
Age	0.006 (0.003)**	0.006 (0.003)*	0.006 (0.003)*		0.006 (0.002)**	0.006 (0.002)**
Number of children	0.070 (0.042)*	0.068 (0.044)	0.075 (0.043)*		0.060 (0.039)	0.056 (0.043)
Log of Labor income per capita	-0.073 (0.037)*	-0.076 (0.037)**			-0.083 (0.039)**	-0.086 (0.039)**
Log of Number of persons	-0.115 (0.115)	-0.619 (0.184)***	-0.178 (0.119)		-0.076 (0.093)	-0.618 (0.207)***
Log of Percentage BA graduates	-0.023 (0.017)	-0.023 (0.017)	-0.034 (0.017)**		-0.020 (0.017)	-0.020 (0.017)
Mean to median income ratio	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
Log of Fraction of population >65	-0.011 (0.022)	-0.012 (0.022)	0.001 (0.022)		-0.024 (0.019)	-0.024 (0.019)
<b>Log of Share non- West. immigrants</b>	<b>0.014 (0.003)***</b>	<b>0.013 (0.003)***</b>	<b>0.014 (0.003)***</b>	<b>0.017 (0.004)***</b>	<b>0.016 (0.002)***</b>	<b>0.015 (0.003)***</b>
<i>Additional variables included</i>	No	Yes	No	No	No	Yes
Observations	813	801	813	825	542	534
R-squared	0.937	0.937	0.936	0.926	0.948	0.948

Notes: Standard errors (SE) in parentheses: Clustered (White robust) SE in three (two) period estimation. Weighted with respect to number of observations in each municipality. Significant at 10% (\*), 5% (\*\*), 1% (\*\*\*), respectively. All estimations include municipality dummies. Additional variables used in estimations shown in columns (2) and (6) are public housing, vote shares for the Liberal Party and the Social Democratic Party, population density.