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Immigration and the public sector: Income effects for the native population in Sweden

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Abstract. The immigrants' age structure and labour market situation are major determinants for their net contribution to the public sector. During the 50s, 60s and the 70s the immigrants' net contributions gave positive income effects for the native Swedes. Nowadays there are negative income effects due to the deteriorating employment situation among the immigrants. The yearly positive or negative income effects have at most been 1–2% of the gross national product. A change in the immigrants' employment rate by 1 percentage unit will change their yearly net contribution to the public sector by 0.1% of the gross national product.

JEL classification: F22, J15, H5

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1. Introduction

During the post-war years the number of immigrants in Sweden has increased rapidly. In 1940 the proportion of foreign-born persons within the total population of the country only amounted to 1%. The corresponding proportion

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had increased to nearly 7% in 1970 and to just above 10% in 1995, that is to somewhat more than 900 000 individuals. About 50% of the foreign-born persons living in Sweden today have acquired Swedish citizenship. Moreover, there is a growing group of so-called second generation immigrants; that is, children born in Sweden with at least one parent born abroad.

The immigration pattern has changed a lot. Until the mid-1970s immigration to Sweden was primarily labour force immigration mostly from Europe. A relatively large number of these immigrants went to the manufacturing sector as blue-collar workers. According to the 1970 census about 60% of foreign-born persons living in Sweden were born in other Nordic countries and more than 90% were born in Europe. After 1975 the character of immigration has changed. The proportion of refugees and "tied movers" (relatives of already admitted immigrants) has increased. Many of the new immigrants were born outside Europe. At the same time a great many of the former labour-force immigrants have returned home. Therefore the composition of the immigrant population living in Sweden has changed. According to the 1995 census, the proportions of foreign-born were about 30% born in the other Nordic countries, about 35% born in the rest of Europe and about 35% born outside Europe. A more detailed description of the changed immigration pattern can be found in Ekberg and Andersson (1995).

Immigration may affect the income conditions of the native population in many ways. There may be effects on the markets. Immigration may have impacts on relative factor prices, on employment opportunities for natives and on economic growth. The literature about these issues is voluminous. For reviews (see Greenwood and Mc Dowell 1986 and Borjas 1994). However, effects may arise not only through the markets but also through the publicly financed redistribution of incomes. The direction of this redistribution depends on whether the migrants make more/less use of the public sector than what they contribute to the system in taxes. If the immigrants contribute more/less in taxes than what they receive from the public sector there are positive/negative income effects for the native population. The direction of the redistribution effect is often the matter in much political debate and among the public. However, the literature about this issue is rather scarce.[1]

The subject for this article is, in what direction and to what extent the public sector redistributes incomes between immigrants and natives in Sweden. The first aim is to present an empirical investigation on whether the native population of Sweden received positive or negative additional incomes through the public sector during the year 1991 and the year 1994 due to the presence of the immigrants in the country. The second aim is to estimate how the immigrants' net contribution to the public sector changes when their employment rate changes. The last issue is highly policy relevant.

The present study differs from previous ones in two important respects. Firstly, by matching income and population registers, we use a unique database which makes the calculations particularly precise. Secondly, we estimate the relationship between changes in the employment rate among the immigrants and changes in their net contribution to the public sector.

The remaining part of the paper proceeds in the following way: Section 2 addresses the age structure and the employment success as the two important factors for the expected results of the empirical calculations. Section 3 presents the results from previous research. Sections 4 and 5 present the empirical investigations for 1991 and 1994 and Section 6 summarises the results.

2. Some basic factors

There are two factors that are of special interest concerning how the public sector redistributes incomes between the immigrants and the natives. The first is the difference in age distribution between the groups. The other is the employment situation for immigrants compared to that among the natives.

The public sector in Sweden functions like a 'pay as you go system'. The yearly expenditures are financed by taxes and social security fees paid during the same year[2]. A considerable part of the public sector redistributes incomes between different age groups among the population. The distribution primarily takes place from individuals at economically active ages (mostly at the age 20–64) to individuals at economically passive ages (young people and old people).

Heavy public consumption expenditures are directed to young people (child-care and education), and to old people (health-care, service for pensioners and handicapped), see Table A1 in the appendix. Even public transfer payments go largely to old people (pensions). The tax burden is mainly carried by the economically active people. The age structure is therefore a major determinant of the net contribution of immigrants to the public sector. Redistribution also occurs within the group of economically active individuals; for example, from the employed to the unemployed, from the healthy to the sick and from the people with high incomes to the people with low incomes.

The age structure among immigrants is different from that of the native Swedish population. A relatively high proportion of immigrants is at economically active ages, see Table A2 in the appendix. This has been the case during the whole post-war period (see Ekberg 1983; Ekberg and Andersson 1995). Therefore it is expected that in an economy with full employment and with not too low incomes for the immigrants, relative to that of the natives, the immigrants' contribution to the public sector, through taxation, will be bigger than the expenses they have incurred. If that is the case, it implies in turn that the disposable income of the native Swedish population will increase.

There have been great changes in the employment situation for immigrants in the last 15 years. The conclusion from many studies, e.g. Ekberg (1983), Ohlsson (1975) and Wadensjö (1973), is that the employment situation for immigrants in Sweden was good up to the mid-1970s. There was full employment for both natives and immigrants. During long periods the immigrants' degree of employment even exceeded that of the natives. This was especially the case for immigrant women. Moreover, a large number of employed immigrant women worked full time, while most of the employed native Swedish women worked part time. Therefore, the annual work income per capita was high among the immigrants. The occupational mobility among these early immigrants was also about the same as among natives (see Ekberg 1990, 1994, 1996).

At the end of the 1970s, the labour market integration among the new immigrants began to deteriorate and since then the tendency has been strengthened. A great number of refugees that arrived during the 1980s never entered the labour market. Not only was the rate of unemployment for the immigrants high but their participation in the labour force was also rather low (see Ekberg and Andersson 1995). Many immigrants have probably given up the idea of searching for work in the labour market. This has occurred despite the 1980s boom in the Swedish economy and despite the goal for the Swedish

immigration policy to integrate immigrants (also refugees) to about the same extent as natives in the labour market. This goal has not been achieved.[3] We do not know all the reasons for this development. During the 1980s and up to 1991/92 there was still full employment in the native population.[4] During the recession, from 1992 onwards the immigrants' labour market situation, relative to that of the natives, deteriorated even further. However, it seems as if the situation has stabilised after 1994. A summary of the development is given in Table A3.

It has to be noted that a similar development occurred in many other immigrant countries. In countries like Australia, Canada, Germany and the USA the labour market performance was considerably worse for immigrants in the 80s compared to earlier periods, (see Strömback 1986, Richmond 1992, Ulrich 1994 and Borjas 1991) for the countries in question.

An important question is, if immigration may imply changed labour market opportunities among the natives. Such changes may affect the natives' use of the public sector and their contribution to the tax system. However, these kind of effects are probably negligible. The full employment situation among the native Swedes during nearly the whole post-war period indicates that the immigrants have not had any displacement effect on the natives as a group. On the other hand, it is possible that some native groups may lose and others may benefit due to immigration. There may be depression on wages and increased unemployment among those who are substitutes (often the low skilled with low wages) to the immigrant labour force and the reverse effect for those who are complements (often the well educated with high wages) to the immigrant labour force. The need of public transfer payments may increase among those who lose. However, estimations based on Swedish data, (see Ekberg 1983), show only very small effects on relative factor-prices and employment for those who are substitutes or complements to the immigrant labour force. This also seems to be the situation in many other immigrant countries.[5] Thus there is no reason to believe that the post-war immigration up to 1991 has had such effects on the native Swedes' labour market opportunities that their use of the public sector and contributions to the public sector have been affected in any significant way.

The less favourable employment situation among the immigrants relative to that of the native Swedes will increase the immigrants' share of certain public expenditures such as social allowances, unemployment allowances and labour market policy measures. It will also decrease their share of contributions to the public sector. These circumstances will counterbalance the effects of the immigrants' favourable age structure. To what extent this occurs is an empirical question.

3. Previous work

There are relatively few empirical studies on how the public sector redistributes incomes between immigrants and natives. Some of these will be presented below. The reported studies, like the present one, are cross-sectional, i.e. they are concerned with the redistribution effects over one or a few years. The different investigations give ambiguous results. This is probably due to some basic circumstances. One is that most studies do not include all budget posts. The outcome depends on the selection of the posts. The second is that

the quality of data varies strongly from one country to another. The third is that the studies cover different time periods. In many countries both the structure of immigration and the integration of immigrants into the labour market have changed over time and this affects the outcome. The fourth reason might be that the definition of 'immigrant' varies. In some studies it refers to foreign citizens and in others it refers to those born abroad.

For the USA, Simon (1984), found that for the native population immigration had a positive income effect, whereas Blau (1984) found that the income effect was neutral and Weintraub (1984) that it was negative for the population in the big cities. Borjas (1990) concluded that there was an increase over time of immigrant costs to the public welfare system of the USA, which may indicate that at the present time the income effect for the native population is negative.

In a study of Canada, Akbari (1989) described the effect as positive for the native population, as did Kakwani (1986) for Australia, and Straubhaar and Weber (1994) for Switzerland. The same positive results were observed in Germany by Giseck, Heileman and Loeffelholz (1994) and by Ulrich (1994), whereas the effects found by Miegel (1984) were negative.

In Sweden, three studies have been made until now. Wadensjö (1972) studied the effect of the marginal immigration that occurred in 1969. By marginal immigration is meant that it does not affect certain public expenses like public services and indivisibilities such as public and foreign administration, defence and basic research. According to Wadensjö, immigration had a positive income effect for the native population. The second study was conducted by Ekberg (1983). He analysed the redistribution effect in the years 1970 and 1976 between the immigrant population as a whole and the natives. This immigrant population is so large that it can reasonably be regarded as not being marginal and it can therefore be expected to affect, to some extent, the public expenses of the kind mentioned above. This study reached the same conclusion that the income effect was positive but the effect was rather small from the point of view of the native population. In 1970 the effect did not exceed 1% of the gross national product. In 1976 the income effect was even somewhat smaller. The third study was conducted by Gustafsson (1990) comprising the years 1980–85 but including foreign citizens only and it was limited to some parts of the public sector. Gustafsson found that the income effects were neutral.

Thus, it is reasonable to conclude that in the post-war period up to about 1980, the native Swedish population obtained additional incomes through the public sector because of the immigrants. The yearly positive income effect probably culminated about 1970 but was even then rather small.[6] Distributed among a sizeable native population even a large surplus per capita for immigrants will result in a small per capita amount for natives. Bearing in mind that the employment situation among immigrants has changed, it would be of great interest to make a new empirical study of the income effect.

4. An empirical study

Data

The following is an attempt to estimate how the total public sector (state, municipalities and counties), in 1991, redistributed incomes between the im-

migrants and the native-born Swedes. The public sector is financed by direct taxes, indirect taxes and social security fees. For Sweden the sum of these public revenues amounted to SEK 763 billion in 1991. This amount corresponded to 53% of the gross national income. Thus, Sweden has the highest taxes in the world. This money finances public transfer payments and public consumption.

The public sector was not in exact balance in 1991. Let us compare the immigrants' share of the public expenditures with their share of the contributions to the public sector. A difference between these two shares indicates a redistribution.

The immigrant population in the study comprises the 1 059 668 individuals in Table A2 which corresponds to 12.3% of the total population. The immigrant population is so large that it is reasonable to treat it as non-marginal. The study is to a large extent based on linking and matching the income register and the population register of 1991. The income register includes yearly data about the individuals' incomes from work (wages, salaries and self-employment incomes) and capital, taxable incomes and disposable incomes, how much the individuals pay in direct taxes (income tax and wealth tax) and how much of all public transfer payments the individuals receive. Thus, in all these respects the linking and matching gives us exact information about the immigrants. The processing is possible thanks to a special registration number allotted to everybody living in Sweden. An individual's number is entered in many registers, thus making it possible – with special permission from the Swedish authorities – to identify the same individual in different registers. The unique data set used in this article has been processed in co-operation with Statistics Sweden.

From the state's budget we also have exact information on some special public consumption expenditures that exclusively cater to immigrants. It is primarily concerned with extra educational expenses such as the maintenance of the mother tongue and special Swedish teaching for immigrant children at school. There are also expenses for teaching Swedish to adult immigrants and some expenses for the National Immigration Board.

The immigrants' other contributions to the public sector and their use of other public expenditures must be estimated, that is the immigrants' contributions to indirect taxes, corporate taxes, taxes on inheritance and gifts, social security fees and their use of public consumption expenditures and transfer payments to companies.

The estimations are as follows:

I. Indirect taxes

These taxes are proportional. They are based on the sum of value added (gross national product). The immigrants' share of the sum of value added can be assumed to correspond to their share of the sum of work and capital incomes in the whole population. This share was 10.4% in 1991.

II. Social security fees

These are proportional. They are based on the sum of work incomes. We can therefore assume that the immigrants' share of the social security fees is the

same as their share of the sum of work incomes in the whole population. This share was 10.5% in 1991.

III. Corporate taxes and taxes on inheritance and gifts

These taxes are direct taxes and they are dominated by corporate taxes but yield very little contribution to the public sector in Sweden. They gave less than 2% of the total tax revenue in 1991, (see Ministry of Finance 1992). It is reasonable to assume that these taxes are closely linked to the ownership of capital. We assume that the immigrants' share of these taxes is the same as their share of the sum of capital incomes in the whole population.

IV. Public consumption expenditures

a) *Age dependent expenditures in Table A1:* The immigrants' share can be estimated with the help of their age composition and the per capita amounts in Table A1. The basic assumption is that the age dependent public expenditures expand in proportion. Besides, it should also be borne in mind that investigations in Sweden have shown that immigrants are more represented than natives in labour market policy measures, criminal care, alcohol and drug care (see Statistics Sweden 1991). These investigations indicate that immigrants, as regards age, are overrepresented by 50% in labour market policy measures, by 50% in criminal care and by 10% in alcohol and drug care. The per capita amounts in these areas are increased by these percentages for the immigrants relative to those of the natives.
b) *Other public consumption expenditures:* These are scarcely related to age distribution. They are to a great extent expenditures on public goods or mixed goods such as defence, basic research, recreation and culture, road systems and general administration. In what respects does a non-marginal population increase imply a more effective use of this kind of public consumption, in what respects does it imply increased expenditures and in what respects are expenditures independent of the size of the population? We do not know much about that. Therefore, two methods are used. In method 1 we assume that the expenditures increase in proportion to the immigrants' share of the total population. This means that the same amount per individual is used for natives and immigrants. Probably this method overestimates the increase in expenditures as a consequence of immigration. According to the Ministry of Finance (1990) the population increase in Sweden between 1970 and 1990 (about 1.5 million individuals) did not imply more expenditures for defence. In method 2 it is assumed that the expenditures for defence, general administration and the rural road system are not affected by the presence of immigrants. For the rest we assume the same amount per individual for natives and immigrants. The two methods give different results. The real expenditure for immigrants probably lies between these results.

V. Public transfer payments to companies

These transfers may indirectly affect the welfare of individuals through stimulating employment and through lower prices on private consumption. Ex-

amples are interest subsidies to house owners to ensure that household rents are low. Other examples are different types of subsidies to industry and to the farm sector. There is no data or any other information on how the benefits from these subsidies are distributed between immigrants and natives. We make the immigrants' share correspond to their share of the total population which is probably a rather reasonable assumption.

Results

The results are summed up in Table 1. In view of their share of the total population it is shown that the immigrants are heavily overrepresented in social allowances, housing allowances and unemployment allowances and much underrepresented in pensions. The reason for the former case is their weak employment situation and for the latter case their age distribution. In other public transfer payments the immigrants' share is somewhat higher than their part of the total population. This, is to some extent, due to the large number of children among immigrants which implies rather high amounts for child and parent allowances and to a certain extent to their employment situation, which implies high cash benefits during vocational training. Moreover, immigrants are, to a greater extent, in occupations with a high risk of sickness and injury (see Statistics Sweden 1988), which implies rather high amounts for sickness benefits. The immigrants' share of the total public transfer payments to individuals in 1991 is the same as their share of the total population.[7]

The immigrants' part of the total expenditures from the public sector is between 11.0% and 12.2% which is lower than their part of the total population (12.3%). The result is mainly due to their favourable age composition which implies low use of not only old-age pensions but also of health-care and service to pensioners and handicapped. This counter-balances their heavy use of other public expenditures.

The immigrants' contribution to the public sector is even lower and amounts only to 10.0%. The main reason is the immigrants' low rate of employment. Their contribution is specially low when it comes to direct taxes. The explanation is that income taxes are progressive and that the income distribution among immigrants differs from the distribution among natives. Several studies have shown a relatively low part with high incomes among the immigrants (see Statistics Sweden 1977, 1991).

It appears that the immigrant group shows a negative balance of between 1.0–2.2%. This interval corresponds to SEK 7.9–17.4 billion calculated on the public expenditure and to SEK 7.6–16.8 billion calculated on the public revenues. The average level is in both cases about SEK 12 billion. The negative balance will nearly be the same even in a sensitivity analysis.[8] Thus the immigrants had a negative effect on the income level of the native Swedish population. The effect is, however, small. The estimated lower bound is 0.4% and the estimated upper bound is 1.2% of the Swedish gross national product. The average estimate is 0.9%.[9]

The same employment rate

An interesting question is to what extent would the distribution change if the immigrants' employment and unemployment rates were the same as for

Table 1. Public expenditures and public revenues in 1991

	Total population	The immigrant population (12.3% of the total population)
	SEK billion	Share in percent
Public transfer payments to individuals of which:	315.2	12.3[a]
1. Social allowances, housing allowances and unemployment allowances	22.4	25.9[a]
2. Pensions (old age pensions, disability pensions, survivors pensions, partial pensions)	165.3	7.9[a]
3. Other public transfer payments[c]	127.5	15.6[a]
Public transfer payments to companies	82.5	12.3[b]
Age dependent public consumption expenditures	254.1	11.4[b]
Other public consumption expenditures (including those exclusively catering to immigrants)	*140.3*	*6.6–13.5*[b]
Sum of public expenditures	792.1	11.0–12.2
Direct taxes (income taxes, corporate taxes and taxes on inheritance and gifts)	288.0	9.3[ab]
Indirect taxes	256.8	10.4[b]
Social security fees	*218.2*	*10.5*[b]
Sum of public revenues	763.0	10.0

[a] We have the exact information on the immigrants' use of public transfer payments to individuals and on the immigrants' contribution to the income taxes. The information is achieved through linking and matching the income register and the population register. However, the immigrants' contribution to other direct taxes, i.e. corporate taxes and taxes on inheritance and gifts has to be estimated. These taxes are very small. More information is given in the text.

[b] The estimated figures for the immigrants. We have the exact information on the immigrants' work incomes and capital incomes through linking and matching the income register and the population register. With the help of this information the immigrants' shares of indirect taxes and social security fees are estimated. The immigrants' share of the public transfer payments to companies is assumed to be the same as their share of the total population. Their share of the age dependent public consumption expenditures is estimated with the help of their age composition and the per capita amounts in Table A1. We also consider that the immigrants are overrepresented by 50% in labour market policy measures, by 50% in criminal care and by 10% in alcohol and drug care. The immigrants' share of other public consumption expenditures is estimated by the help of two methods (except for the small expenditures, exceptionally catering to the immigrants, for which we have the exact information from the state budget) called method 1 and method 2 in the text. The higher figure refers to method 1 and the lower figure to method 2. More information is given in the text.

[c] Sickness benefits, parents' allowances, daily cash benefits during vocational training for the unemployed and to the semi-sheltered employees, study allowances for post-graduates, care allowances, occupational injury life-annuities, allowances from the Adult Education Board, special housing allowances for pensioners, study allowances, partly repayable study allowances, payments for military service, child allowances plus assistance and other social benefits minus the repaid study allowances.

Sources: National accounts. Linking and matching the income register and the population register. Own calculations.

natives. It means that in 1991 the index for employment rate in Table A3 would have been 100 for immigrant men and 100 for immigrant women i.e. the immigrants' relative employment rate would increase by 17 percentage units. This would increase their work incomes, which implies increased contributions to the public sector and decrease their use of the welfare system and of labour market policy measures.

Before a new calculation is performed it is necessary to make some assumptions. Firstly, it is assumed that both the average level and the distribution of annual work incomes are the same for the additional employed immigrants as for those immigrants already employed. Then the increased contributions to direct taxes, indirect taxes and social security fees can be calculated. Secondly, it is assumed that the immigrants' use of housing allowances, except housing allowances for pensioners, and the immigrants' use of unemployment allowances correspond to their share of the population in the age group 16–64. We assume that the immigrants are overrepresented by 20% in social allowances. Their share of social allowances will then be 14.8%. The reason for the last assumption is that the average work income per employed immigrant is lower than among the natives. Thirdly, it is assumed that the immigrants use labour market policy measures to the same extent as natives of the same age. Moreover, we must also consider that income tax is paid for unemployment allowances while housing allowances and social allowances are free from income tax. It is assumed that 30% of the unemployment allowances is paid in income tax.[10]

The calculation shows that the immigrants' share of public expenditures will decrease from 11.0–12.2% to 10.6–11.8% and their share of public revenues will increase from 10.0% to 11.8%. Thus the public revenues are more sensitive than the public expenditures to changed employment among immigrants. The negative balance in Table 1 would be changed to a positive balance of 0–1.2%. On average the change is 1.3% of the gross national product, i.e from a negative balance of 0.9% to a positive balance of 0.4% of the gross national product. It is probably an underestimate, and the true income effect would be somewhat larger.[11]

The present employment rate for the native Swedes is nearly 80% at the age of 16–64. An increase in the immigrants' relative employment rate of 1 percentage unit means approximately also an increase by 1 percentage unit of their employment rate. The results indicate that when the immigrants' relative employment rate increases by 1 percentage unit their net contribution to the public sector increases by about 0.1% of the gross national product.

5. The situation in the mid-1990

During the recession in 1992–1994 immigration into Sweden continued.[12] It consisted to a great extent of refugees from the former Yugoslavia. The immigration during this period can be described as immigration to unemployment, see note to Table A.3. It can be expected that the negative income effect for the native population increased between 1991 and the mid-1990s.

The immigrant population increased by about 10% from 1991 up to the turn of 1994 and 1995. It means an increase of the immigrant population up to about 1.2 million which is 13.6% of the total population. A new complete linking and matching of the income register and the population register has

not been done since 1991. However, Statistics Sweden has provided data for the year 1994 about the immigrants' incomes from work and capital, taxable incomes and their use of pensions, social allowances, housing allowances and unemployment allowances. With the help of this data and the information about the immigrants' age composition it should be possible to provide a rough estimation of the annual redistribution effect in the middle of the 1990s.

The summing up in Table 2 shows that the immigrants' share of social allowances, housing and employment allowances was even higher than in 1991. This share has increased somewhat more than their increased share of the total population between 1991 and 1994. The immigrants' share of the total public expenditures is 12.7–14.0% and their share of the total public revenues is 9.7%, that is to say a negative balance of 3.0–4.3%. This interval corresponds to SEK 27.1–38.8 billion calculated on the public expenditures and SEK 22.9–32.8 billion calculated on the public revenues. The average level in the first case is SEK 32.9 billion and in the second case 27.9 billion. It seems reasonable to say that the negative balance for the immigrants was probably about SEK 30 billion in 1994. This is about 2% of the gross national product in this year.

The main reason for the increased negative balance is of course the deteriorating employment situation for immigrants during 1991–1994. It should be noted that even if the immigrants' share of the population increased from 12.3% to 13.6%, their share of the revenues to the public sector decreased. This was primarily the case for indirect taxes and for social security fees. These taxes are based on value added and incomes from work. The share of direct taxes is about the same as the share in 1991. The reason is that income tax is paid on a large part of public transfer payments.

On average the negative balance for the immigrants increased between 1991 and 1994 by 1.1% of the gross national product. However, some of this increase is due to size effects. Both the public sector and the immigrants' share of the total population increased between the 2 years. If we consider these size effects, the increased negative balance will merely be 0.8% of the gross national product, which can be assumed to be the consequence of the immigrants' lower relative employment rate at 8%.[13] This indicates that when the immigrants' relative employment rate decreases by 1%, their net contribution to the public sector decreases by about 0.1% of the gross national product. The magnitude in the net contribution effect is nearly the same – but in the other direction – as we found in section 3 when the immigrants' relative employment rate increased by 1%.

Table A3 shows that the immigrants' relative employment rate has stabilised since 1994. The index is about the same level in 1994, 1995 and 1996. Therefore, the negative annual income effect for natives in 1995 and 1996 was probably about the same as in 1994.

It is likely that the calculated negative income effect in 1994 somewhat overestimates the real negative effect. The economic policy in Sweden has, in the last few years, given first preference to stable prices and to the reduction of the deficit in the public sector. This has implied a contractionary economic policy which has reinforced the depression. Investigations show that a depression usually redistributes the burden of unemployment (see Persson-Tanimura 1980). New people on the labour market, that is to say young people and immigrants, are more affected by depression than others. The immigrants may have a buffer function. In order to reach the goal of low infla-

Table 2. Public expenditures and revenues in 1994

	The total population	The immigrant population (13.6% of the total population)
	SEK billion	Share in per cent
Public transfer payments to individuals	393.0	14.7[b]
Of which:		
1. Social allowances, housing allowances and unemployment allowances	55.0	29.0[a]
2. Pensions (old age pensions, disability pensions, survivors' pensions, partial pensions)	191.5	8.8[a]
3. Other public transfer payments[c]	146.5	17.2[b]
Public transfer payments to companies	98.0	13.6[b]
Age dependent public expenditures	263.5	12.7[b]
Other public consumption expenditures (including those exclusively catering to immigrants)	*150.0*	*7.3–14.9*[b]
Sum of public expenditures	904.5	12.7–14.0
Direct taxes	326.3	9.4[b]
Indirect taxes	228.2	9.8[b]
Social security fees	*209.1*	*9.9*[b]
Sum of public revenues	763.5	9.7

[a] The exact information for nearly all the immigrants has been received from the Statistics Sweden. However for a minor group we have to make estimations. This is the case for about 100 000 second generation immigrants aged above 18. Their use of social allowances, housing allowances and unemployment allowances is assumed to be 10% higher than for native Swedes of the corresponding ages. This is a reasonable assumption. Ekberg (1997) showed that in 1994 the employment rate and the average work income for the second generation immigrants were only slightly lower than the native Swedes of the same ages. We assume that the second generation immigrants are represented in the pension system in the same way as the native Swedes. Only a few individuals in the second generation have reached ages to benefit the pension system.

[b] These refer to the estimated figures for the immigrants. We assume that the immigrants' share of other public transfer payments and their share of public consumption expenditures, with the exception of labour market measures, increased from 1991 to 1994 in proportion to their increased share of the total population. This is probably rather a good approximation because between 1991 and 1994 there was no change of importance in the age structure of the immigrant population and the native population and because there is no special relationship between other public transfer payments and the employment situation. For labour market measures we assume that the immigrants'overrepresentation increased from 50% in 1991 to 75% in 1994. We have data from the Statistics Sweden about the immigrants' taxable incomes and their incomes from work and capital in 1994. Their share of direct taxes in 1991 to 1994 is assumed to change in proportion to their changed share of taxable incomes. The immigrants' shares of indirect taxes and social security fees are estimated in the same way as in Table 1.

[c] See Table 1.

Sources: National accounts 1994. National Institute of Economic Research (1995). Data from Statistics Sweden. Own calculations.

tion the unemployment rate among natives would probably have been somewhat higher without immigrants. In this sense the immigrants' presence is expected to somewhat change the natives' use of public expenditures and the contribution to the public sector. The buffer effect is probably small. High

unemployment among the new immigrants is probably not a powerful means to reach the goal of stable prices.[14]

The goals of low inflation and financial balance have now been reached. The annual inflation has been reduced from about 8% in 1990 to about 0% in 1996.[15] The revenues and expenditures in the public sector will be in balance in 1997. The interest rate has fallen to a historical low level. Moreover, there is a surplus in the balance of international payments. There seems to be grounds for recovery of the Swedish economy which will hopefully also improve the employment situation of the immigrants.

6. Summary and conclusions

The present study is a cross-sectional one. Studies like this have their limitations. The question if the fiscal impact of immigration is a benefit or a cost for the native population requires another approach. To answer this question it is necessary to calculate the net contribution to the public sector over the whole lifetime for an immigrant group.[16]

However, cross-sectional studies give us a rather good information on how the public sector, in a historical perspective, has redistributed incomes between immigrants and natives. With the help of previous studies in Sweden and the present one we can draw the following conclusion: There is strong evidence that during the post war period up to about 1980 the native Swedish population obtained additional incomes through the public sector because of the immigrants. It is likely that the yearly positive income effect culminated about 1970 but was even then rather small. It probably never exceeded 1% of the gross national product. Nowadays there are yearly negative income effects. In 1991 the negative effect was 0.9% and in 1994 it was 2% of the gross national product. Since then the situation seems to have stabilised. Thus both the positive and the negative income effects have been rather small.

The tendency, over time, has probably been similar in other immigrant countries where the employment situation among immigrants has been worse. However, there are few studies that have analyzed changes over time. One example is Ulrich (1994) for Germany, who reports that there was a positive income effect in the 60s. The reasons in his study are the same as those given in this article, i.e. there was a favourable age structure and a good employment situation among the immigrants in the 60s. Since then the positive income effect has diminished because of the worsened employment situation for the immigrants relative to that of the natives in Germany. Ulrich finishes his study by saying: "If the juvenile age structure loses its impact, foreigners might become a net burden for Germany's public purse in the future."

We do not know all the reasons for the deterioration of the employment situation of the immigrants even in the 80s boom. However, we must question the Swedish immigration policy. Have there been any mistakes? For example, have the introductory training programmes and other labour market measures directed to refugees, been adequate with regard to their background and with regard to the transitions in the Swedish economy? Has the immigration policy tended to make the immigrants passive? In the 80s the waiting period to get a permit for asylum seekers increased very much. In some cases it took years between arrival in Sweden and obtaining a permit to stay. The immigrant was not allowed to work during the waiting period. Probably many immigrants

lost their competence. The summary is that the goal of equality in the Swedish immigration policy has not been achieved.

How the public sector will redistribute incomes between immigrants and natives in the next 10–20 years depends to a large extent on the development of the employment situation for the immigrants. The age structure of the immigrant population will still be favourable. If the Swedish economy will return to full employment, for both immigrants and natives, positive income effects for natives will be expected. In the very long run the outcome will also depend on how the age structure of the immigrant population will change in relation to that of the native population. The immigrant population will grow older and the age structure will come closer to that of the native population. To what extent this will happen is a question of the size and the age structure of the future immigration, return migration and age specific fertility rates and death rates among immigrants.

Appendix

Table A1. Some tax-financed public consumption expenditures by age group[a]. Per capita amounts in SEK. Figures for the total population in 1991

Age	1	2	3	4	5	6	7	Σ
	Health and dental care	Service for pensioners and handicapped	Childcare and certain measures for children	Education	Labour market policy measures	Alcohol, drug care etc.	Criminal care	
0–6	4600		25400					30000
7–15	3200		8400	50100				61700
16–19	4400			40300	2100		400	47200
20–24	4400	50		13100	3500	250	1500	22800
25–34	4700	150		4900	2500	800	900	13950
35–44	6200	150		2300	2100	1800	400	12950
45–54	7900	200		1000	1700	1800	200	12800
55–64	10700	1500		400	1200	1100	40	14940
65–74	19000	7700						26950
						} 250		
75–W	51000	33700						84950

[a] The data in the sources below allow the calculation of public consumption expenditures by expenditure type and by age group. The amount for an age group is then divided by the population in the group. The method is similar to the one in Wadensjö (1972) and in Ekberg (1983).

Note: A small part of public consumption expenditures is financed by users' fees. This is mostly the case with child-care, service for pensioners, handicapped areas and to some extent in health and dental care. Public consumption expenditures financed by users' fees are not included in the table.

Sources: National accounts, The Yearbook of Health Statistics, The Yearbook of Social Services Statistics, The Yearbook of Educational Statistics, The Yearbook of Criminal Statistics, The Yearbook of Labour Statistics, Statistics Sweden.

Table A2. The population in Sweden 1991-12-31. Age distribution in percent

Age	Immigrant population	Native population	Total population
0–19 years	27.8	24.1	24.6
20–54 years	58.4	46.6	48.1
55–64 years	5.1	10.3	9.6
65 years and over	8.7	19.0	17.7
	100.0	100.0	100.0
Number of individuals	1059668[a]	7581259	8640927
Fraction of men (%)	48.9[b]	49.5	49.4

[a] The immigrant population is larger than the group of foreign born. The income register also includes some individuals of the second generation in the immigrant population. Most of them are below the age of 16. Those classified as foreign born in the immigrant population include individuals registered as residents in Sweden on December 31, 1991who did not immigrate later than December 31, 1990. Those who immigrated or emigrated during 1991 are thus not included in the study. These individuals only spent part of the year in Sweden. It is therefore difficult to estimate to what extent they have taken part in the public sector that year. This is of no importance to our total results. The net immigration, i.e. immigration – emigration in 1991 only constituted just above 2% of the immigrant group studied. Political refugees who sought asylum are not included in the study. These can only be registered as residents in Sweden after they have obtained a permit to stay.

[b] A somewhat smaller number of men among immigrants than among natives is explained by a rather low number of men among old immigrants. In the economically active age (16–64) the share of men, both among immigrants and natives, is about 50%.

Source: Linking and matching the income register and the population register.

Table A3. Index for employment rate and annual work income at the age of 16–64 years. Foreign born. Index for native born is 100[a]

Year	Index for employment rate. Standardised for age			Index for work income per capita.[b]
	Men	Women	Both sexes	
1950	–[d]	–[d]	120	–[d]
1960	100	110	105	–[d]
1967	–[d]	–[d]	110	122
1978	95	101	98	99
1987	90	88	89	–[d]
1991	84	83	83	75
1994	77	74	75	64
1995[c]	75	72	74	–[d]
1996	75	73	74	–[d]

[a] The interpretation of the index can be expressed as follows: In 1960 the index was 105. That means that the employment rate among the foreign born was 5% higher than the employment rate among the natives. In 1994 the employment rate among the foreign born was 25% lower than that of the natives. For the years 1950, 1960 and 1967 the figures refer to foreign citizens. Most of the foreign born living in Sweden in these years had foreign citizenship.

[b] Even including individuals at the age 16–64 with zero work income. There is not enough information to standardise for age and for work income.

[c] For the year 1995 I have, in co-operation with Statistics Sweden, also made a special processing of the Labour force Survey with regard to the time for immigration to Sweden. The groups that were studied are those that immigrated before 1980, those that immigrated 1980–1987, those that immigrated 1988–1992 and those that immigrated 1993–1994. The indices for the respective group were 85, 74, 55 and 30 for men and 88, 62, 42 and 18 for women. The indices are extremely low for those that arrived after 1988. It can also be noticed that the indices for those who arrived before 1980 are below 100. For about the same group the indices were close to 100 in 1978.

[d] No information.

Sources: Ekberg (1983), Processed data from 1950, 1960 Swedish census and from 1987, 1991 1994, 1995 and 1996 Swedish Labour Force Surveys. Data from the income register in 1991 and 1994.

Endnotes

[1] This is the impression from Borjas' (1994) review of the research on "Economics and Immigration." The review is mostly concerned with research in the USA and Canada. My investigation of the references in Borjas' article shows that only 5% of the publications (6 out of 119) refer to questions about the immigrants' use of the public sector and contributions to the public sector. Most of the other publications refer to questions about the immigrants' own labour market performance and to questions about different market effects on natives due to immigration.

[2] There are certainly some small public expenses that consist of dividends from funds. However, we have no information on the distribution of these funds between the immigrants and the natives and their use of the dividends. The expenses are very small and are scarcely worth considering in our study.

[3] The goals for the Swedish immigration policy were formulated by the parliament in 1975. One of these is the goal of equality. This means that immigrants are to have the same chances as natives in for example the labour market and in the housing market. The goal of equality can be understood as a part of the goal of full employment. The goal of full employment has been one of the most important goals in the economic policy in Sweden during the post-war period.

[4] Full employment in Sweden usually means an unemployment rate (unemployed in relation to the labour force) at the level of 2–3%, (see Ministry of Finance 1992). This has been the level almost during the whole postwar period up to 1992. When the 80s boom culminated in the early 1990s, the unemployment rate among the native Swedes was at the extremely low level of 1.3% according to the Labour Force Survey. There was shortage of labour in practically every part of the Swedish labour market. However, many immigrants were still outside the labour market. Until the end of the 1970s there was no current information on the unemployment rate among immigrants. However, we have information on their employment rates in different age-classes from the censuses. There are good reasons to assume that, before the mid-1970s, the unemployment level among the immigrants was about the same as among the natives. This is also supported by special investigations, (see Wadensjö 1973). In 1991 the unemployment rate was 2.7% among the natives and 5.0% among the foreign-born. The corresponding levels in 1995 were 7.5% and 17.0%.

[5] Many empirical investigations in the USA show only very weak relationships between immigration and the natives' wages and employment. This is the case even when the labour force is disaggregated (see Borjas 1994) for a review. The same results are reported for some countries in Europe. One example is Pischke and Velling (1997) for Germany and another is Hunt (1992) for France. Gang and Rivera-Batiz (1994) also found small effects due to immigration in some countries in Europe. However, Zimmermann (1994) found a more clear negative effect on low-income natives in Germany. The effect was low but significant. Even a recent study of Greenwood, Hunt and Kohli (1997) found a statistically significant but very small negative effect on low-income natives in the USA.

[6] Even if the mentioned Swedish studies do not cover every year in the post-war period it is likely that in the beginning of the post-war period the income effects were very small. The public sector was small at that time and its ability to redistribute incomes between different parts of the population was probably low. Even in the beginning of the 60s the public expenditures were only 30% of the gross national product.

[7] We use the term "transfer payments to individuals" also for social allowances and housing allowances. The expenditures in these two areas refer to households but there are links to individuals. In the income register Statistics Sweden links social allowances and housing allowances to the head of the household.

[8] The Swedish Level of Living Conditions Surveys has several times studied the immigrants' health status and their use of health care and dental care (see Statistics Sweden 1977, 1982, 1988). According to some investigations, as regards age, they are overrepresented and according to other investigations underrepresented in health care. Most of the investigations show that immigrants are underrepresented in dental care. Since there is no clear conclusion regarding overrepresentation or underrepresentation, we assume that the immigrants and the natives have the same per capita amounts in the area of health care and dental care. This area is the largest in Table A1. A sensitivity analysis shows only small changes. If we assume that the immigrants' amount per capita for health and dental care in the different age classes in Table A1 is 25% higher/lower than for the natives the total public expenditures for immigrants and thereby the negative balance -will increase/decrease – by about SEK 2 billion. The general conclusion is not affected.

[9] The Swedish gross national product in 1991 was somewhat over SEK 1 400 billion. The negative balance is 0.4–1.2% of this amount. It can be assumed that nearly 90% of this amount was produced by the native Swedish population. It corresponded to SEK 1 250 billion. The negative balance is 0.5–1.4% of this amount.

[10] For annual incomes up to SEK 180 000 in 1991 the individual paid income tax only to the local governments (municipalities and counties). The average tax rate was 30%. For incomes above SEK 180 000 the individual also paid income tax (20%) to the state for the fraction of the income above SEK 180 000. About 80% of income earners in 1991 had income below SEK 180 000 (see Statistics Sweden 1994).

[11] It can be expected that other public expenditures are also reduced when the immigrants' employment situation improves. One example is cash benefits during vocational training. Another example is disability pensions. A disability pension can be received between ages 60–64 for other reasons than bad health. If an individual in the age group of 60–64 is unemployed and there is little chance for him/her to get a new job the individual can be offered a disability pension. Today a larger number of immigrants in the age group 60–64 have a disability pension compared to natives of the same age (see National Social Welfare Board 1995). However,

we do not have a good knowledge of the relationship between changes in these and other public expenditures and changes in the employment rate.

[12] The highest level was reached in 1994. This year the net immigration was about 51 000 individuals which was the highest during the post-war period. Since then the level has decreased rapidly. The net immigration in 1995 and 1996 was only about 11 000 individuals and 6 000 respectively (see Statistics Sweden 1997a).

[13] As mentioned before in the text, the immigrants' share of the total population was 10% higher in 1994 than it was in 1991. The public expenditures were much more higher in 1994 than they were in 1991. Most of the increased expenditures were directed to the native population. If we assume the same magnitude in the public sector in the years 1991 and 1994 the negative balance of 3.0–4.3% in 1994 will correspond to an average negative balance of about SEK 28 billion. About 10% of this amount can be assumed to refer to the increased immigrant population between 1991 and 1994. Therefore an increase in the negative balance refers approximately to worse employment rate among the immigrants between these years. The last mentioned amount is 1.7% of the gross national product in 1994, which is compared to 0.9% in 1991.

[14] For those immigrants who arrived before 1992 the average index for employment rate was 80 (both sexes) in 1994. That is to say that there has only been a small reduction since 1991.

[15] The inflation was even slightly negative in 1996. The Swedish consumer price index fell by 0.5 that year (see Statistics Sweden 1997a).

[16] Storesletten (1996) computed with the help of a simulation model the present value of the net contributions to the public sector from an immigrant arriving to Sweden. The calculation comprised a future period of more than 100 years (the immigrant's children born in Sweden were included). The startyear was 1993. The outcome was very sensitive to different assumptions about the immigrant's age at the moment of immigration and about the immigrant's labour market situation. However from these estimations we cannot draw any conclusion about the true outcome for the postwar immigration.

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