

Swedish-born return immigrants by parents country of birth

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Background

In Statistics Sweden annual population projection Swedish-born are one of seven birth country groups of which births, deaths, emigration and immigration are projected. For Swedish-born, first the future emigration is projected which makes it possible to estimate the re-immigration. In the model for emigration, parents country of birth are taken into consideration and emigration rates are estimated for Swedish-born with; two Swedish-born parents, two foreign-born parents and one Swedish-born and one foreign born parent. This age- and sex-specific rates are weighted to rates for all Swedish-born and used to project the future emigration. However, parents country of birth is not considered when estimating the future re-immigration of Swedish-born (Statistics Sweden, 2009).

Since the estimations of re-immigrants have been biased in the latest projection, especially for children, it is useful to see if there are any diversities in re-immigration depending on the parents background. Therefore, the aim of this study is to investigate whether information about parents country of birth should be included in the model that projects the future re-immigration of Swedish-born.

Data and method

Flows of emigration and immigration have been collected from the Register of the Total Population. Data on parents country of birth have been derived from the Multi-Generation Register, a register where information about parents is available since 1969 and for persons born 1932 or later.

Since there's no assumptions on the proportion of the future emigration by parents country of birth, we use age- and sex-specific ratios based on the emigration from 2008 – 2012. This proportion are then applied to the latest projection on emigration. The estimated number of Swedish-born (SB) by parents country of birth living abroad is then calculated as:

$$SB_t = E_t - I_t + SB_{t-1}(1 - q_t)$$

where, E_t is the number of emigrants at year t

I_t is the number of immigrants at year t

q_t is the death-risks¹ at year t

For those aged 0, $SB_t = E_t$

Information about the number of persons living abroad is then used to estimate a five year average age- and sex-specific re-immigration rate for each of the three groups:

$$\hat{R}_t = \frac{\sum_{i=0}^5 I_{(t-i)}}{\sum_{i=0}^5 M_{(t-i)}}$$

where, I_t is the number of Swedish-born immigrants at year t

M_t is the mean population of Swedish-born living abroad at year t

For those aged 0 and 1, $\hat{R}_t = 0$

Model for the re-immigration of Swedish-born

As seen in figure 1 below, the estimation of immigration does not follow the observed development when using only re-immigrant rates. However, the figure also shows a pattern that re-immigration follows the emigration with a delay of three years. For example the increased emigration in the mid-1980s were followed by an increase of re-immigrants a few years later and the downturn in emigration in 1989 were followed by a decrease in 1991. Instead a linear regression model where immigration estimated by re-immigration rates combined with information on emigration three years earlier is used to adjust the re-immigration². The regression estimates are given by:

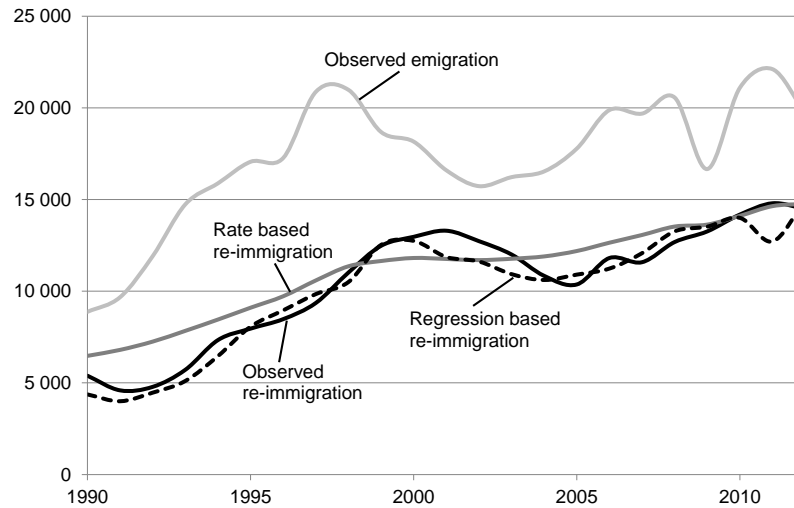
$$\hat{I}_t^{reg} = -3882 + 0,69 \cdot \hat{I}_t^r + 0,42 \cdot E_{t-3}$$

where, $\hat{I}_t^r = \hat{R}_t^5 \cdot SB_{t-1}$

¹ Death-risks are the same as for all persons living in Sweden and are also assumed to be the same whether the parents country of birth

² $R^2=0,79$ when based on the period 1999 – 2012

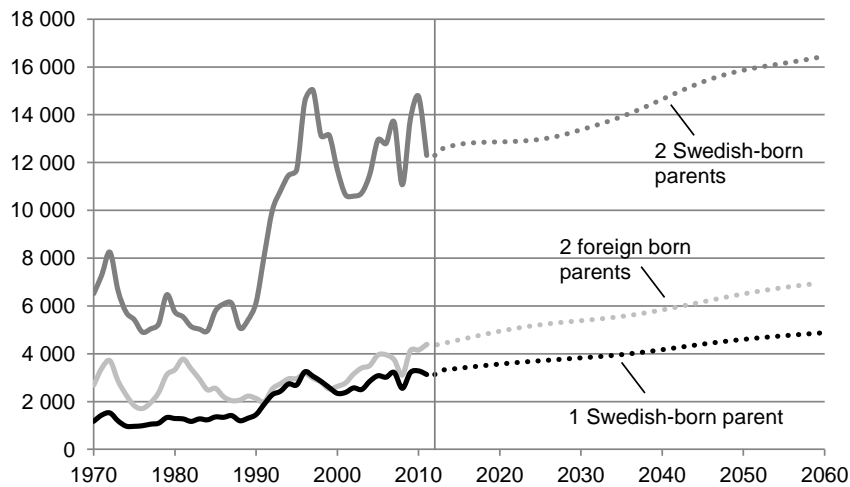
Figure 1. Observed emigration and re-immigration and rate based re-immigration and regression based re-immigration, 1990 – 2012. Numbers



Results

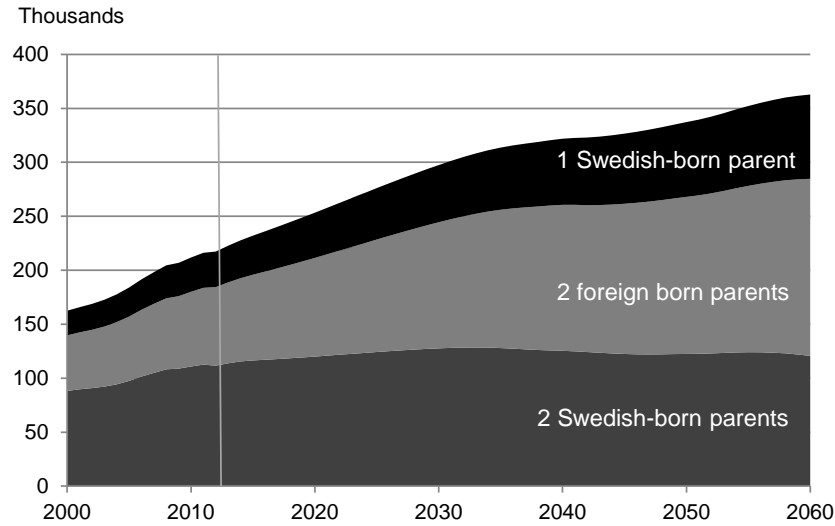
The emigration of Swedish-born with two Swedish-born parents increased rapidly during the financial crisis in the mid-1990s and continued to be at a high level during the 2000s. Swedish-born with two foreign born parents and one Swedish-born parent has also somewhat experienced an increase during the same period. Results from the model gives a firm increase for all groups and an emigration of more than 16 000 persons with two Swedish-born parents at year 2060. Similar could be seen for the two other groups with an emigration of nearly 7 000 Swedish-born with two foreign born parents and around 4 800 Swedish-born with one Swedish-born parent at the end of the period.

Figure 2. Emigration of Swedish-born by parents country of birth 1970 – 2012 and projection 2013 – 2060. Numbers



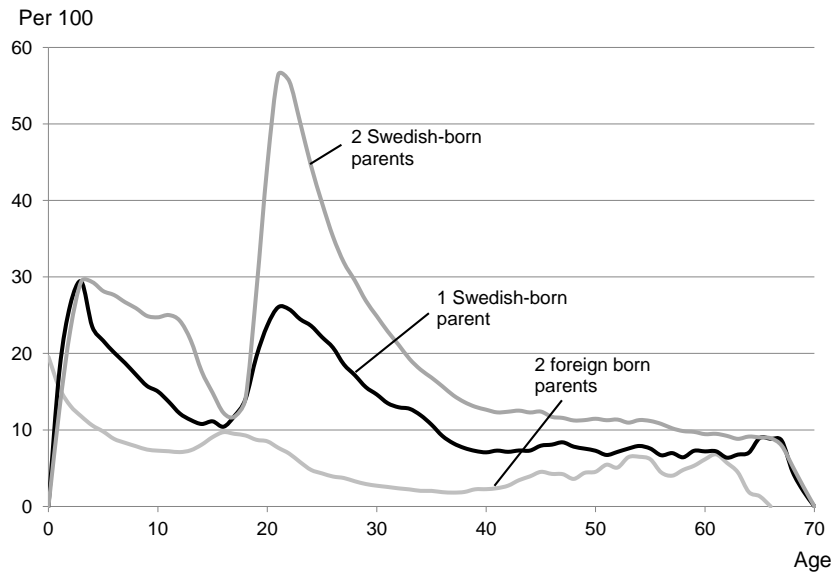
As shown in figure 3 below, about 220 000 Swedish-born persons were estimated to live in another country at year 2012. The largest group, persons with two Swedish-born parents, constitutes about half of the population. The second largest group is of persons with two foreign born parents. All three groups increases until the first years of 2030s when the number of Swedish-born with two Swedish-born parents decreases and finally stabilizes around 120 000 persons until the end of the projection. The number of persons with two foreign born parents continues to increase during the whole period, leading them to exceed the numbers of persons with two Swedish-born parents in the late 2020s. The estimated number of persons with two foreign born parents living in another country in 2060 is nearly 165 000. The number of persons with one Swedish-born parent living abroad is about 80 000 at the end of the forecast period.

Figure 3. Estimated Swedish-born living abroad by parents country of birth 2000 – 2012 and projection 2013 – 2060



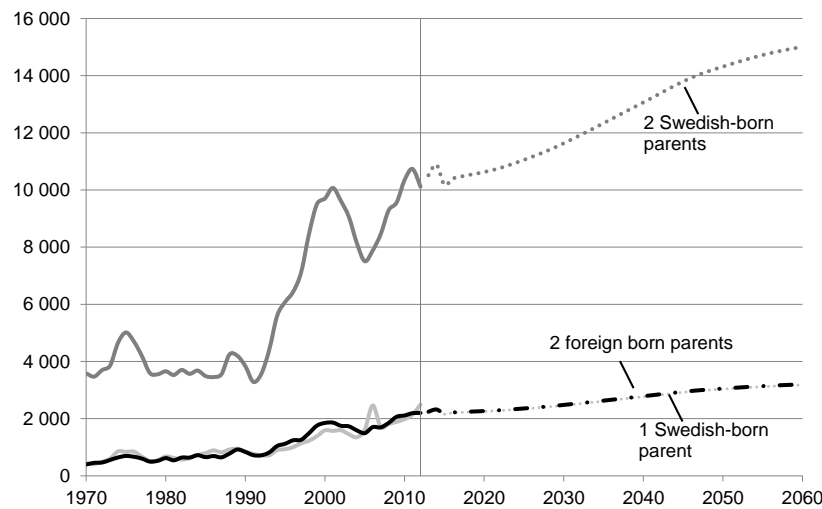
The rates for re-immigration are different depending on parents country of birth. Persons with two foreign born parents are least likely to return to Sweden after emigration. The highest tendency to return to Sweden have persons with two Swedish-born parents with a peak for persons in their early twenties where about half of the population re-immigrates. The structure of the age-specific rates for persons with one foreign born parent are similar but not as high as the rates for person with two Swedish-born parents.

Figure 4. Re-immigration rates for Swedish-born by parents country of birth and age, 2008 – 2012



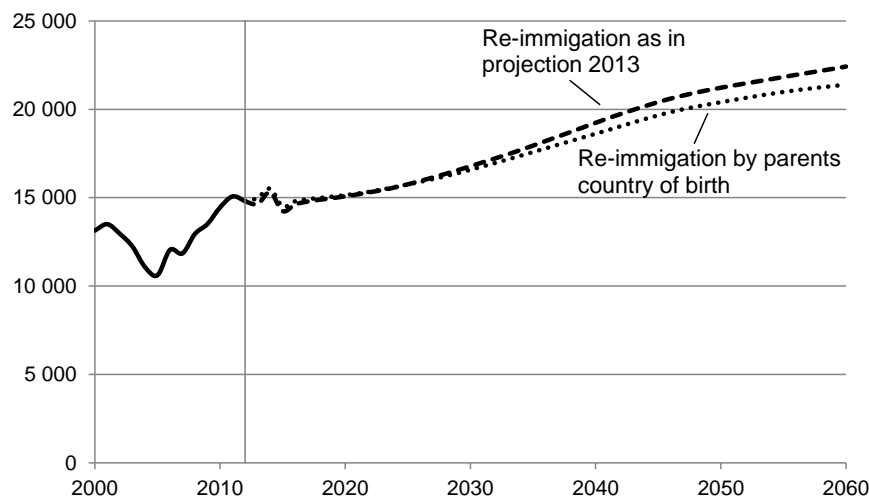
The rapid rise of emigrants with two Swedish-born persons in the mid-1990s led to a subsequent increase of re-immigrants, shown in figure 5. The high numbers of returning persons with two Swedish-born parents will continue to increase during the forecast period with about 15 000 persons returning at year 2060. The long-term increase in the estimated number of persons re-immigrating is due to the number of Swedish-born persons abroad grows according to the calculations. Even though there is a large number of estimated persons with two foreign born parents living abroad, the relative low rates for return immigration means that a low number decides to return to Sweden.

Figure 5. Re-immigration of Swedish-born by parents country of birth 1970 – 2012 and projection 2013 – 2060. Numbers



When comparing the projection of return immigrants based on a model which includes parents background and the latest official projection (Statistics Sweden, 2013), the re-immigration is about the same for the first 20 years. After 2030, the estimated number of re-immigrants given by this study's results are not increasing at the same pace as the official projection leading to about 1 000 less re-immigrants per year at the end of the period.

Figure 6. Re-immigration of Swedish-born 2000 – 2012 and projection 2013 – 2060. Numbers



Concluding comments

By looking at parents country of birth there's different behaviour in re-immigration for Swedish-born persons. Those with two foreign born parents are the most eager to leave the country and returns to Sweden in the least extend. This leads to an increasing number of Swedish-born with two foreign born parents living abroad. Emigrating persons with two Swedish-born parents are by far the largest group which leads them to consist a major proportion of all Swedish-born living abroad. Although since this group have high rates of return immigration, a large number is also returning to Sweden. A development that leads to that the number of persons living in another country with two foreign born parents exceeds those with two Swedish-born parents during the projected period. Compared to Statistics Sweden's population projection, the results from this study are about the same until the 2030s and after that, there's only a smaller difference between the two projections. This shows that including the variable parents country of birth is not necessary when projecting the future re-immigration of Swedish-born.

References

Statistics Sweden (2009), Background material about demography, children and family 2009:1, *Model to forecast the re-immigration of Swedish-born*.

Statistics Sweden (2013), *The future population of Sweden 2013 – 2060*.