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Projection of internal migration based on migration intensity and preferential flows

October 2016

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Abstract - This Working Paper presents the projection methodology for internal migration, which is integrated from 2016 in the population projections published by the Federal Planning Bureau and Statistics Belgium. The methodology is based on migration intensity between districts, rather than on emigration rates from one district to another. With migration intensity, not only is the population of the departure district taken into account (population at risk of moving) but also the population of the destination district (as a proxy for attractiveness).

The short-term evolution of migration intensity is in line with the most recent trends observed in a series of preferential migration flows between districts. In the long term, migration intensity is assumed to be constant.

Jel Classification - J11, C51
Keywords - Internal migration, migration intensity, population projections, demography

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Executive summary

Population projections are published annually by the Federal Planning Bureau (FPB) in collaboration with Statistics Belgium. These projections are generated at district level and then grouped by province, region and for Belgium. Whenever possible, the assumptions on mortality, fertility and migrations are determined at district level so as to integrate specific local features. At district level, internal migrations play a crucial role in population growth; assumptions on the future evolution of these movements are thus a key factor for the future evolution of the population by district.

Up to the 2015-2060 population projections published by the FPB and Statistics Belgium in 2016, the assumptions on internal migration were based on *emigration rates* from one district to another by age, sex and groups of citizenship. These rates were kept constant over the whole projection period.

The methodology described in this Working Paper and applied from 2016 onwards in the population projections published by the Federal Planning Bureau and Statistics Belgium (FPB and Statistics Belgium, 2016) is based on *migration intensity* between districts. With migration intensity, not only is the population of the departure district taken into account (population at risk of moving) but also the population of the destination district (as a proxy for attractiveness). This indicator of migration flows matches better the different explanatory theories of internal migration and, in particular, the models assuming that an individual chooses a destination district on the basis of its attractiveness.

Moreover, taking into account the populations of departure and destination districts produces a projection of internal migration in line with the initial assumption (constant net migration in the case of constant migration intensity), which is not guaranteed with the assumption based on emigration rates. The latter only takes into account the population of the departure district. Using an emigration rate (even a constant one over the whole projection period) generates, all other things being equal, a rise or a decline in outflows, depending on the population growth in the departure district, and thus a downward or upward trend in net migration.

With respect to *the future evolution of migration intensity*, the model introduces a distinction between the short and the long term. In the short term, a continuation of the recent evolution of migration intensity might be a wise choice, as currently no break in the trend of migration flows is observed. The long-term evolution of internal migration is much more uncertain: either extension of the sub-urbanisation phenomenon as currently known, or a break in the trend with regained attraction for urban areas. Consequently, the long-term assumption is based on a constant migration intensity.

To integrate specific features of a district, *migration trends are estimated by district and age group*. However, to have a sufficient number of observations, the trends were only estimated for a selection of *migration flows*, which were defined as '*preferential*'. For the other flows, migration intensity is assumed to remain constant over the whole projection period.

1. Introduction

Population projections are published annually by the Federal Planning Bureau (FPB) in collaboration with Statistics Belgium. These projections are generated at district level and then grouped by province, region and for Belgium. Whenever possible, the assumptions on mortality, fertility and migrations are determined at district level so as to integrate specific local features. At district level, internal migrations play a crucial role in population growth; assumptions on the future evolution of these movements thus become a key factor for the future evolution of the population by district.

Up to the 2015-2060 population projections published by the FPB and Statistics Belgium, the assumptions on internal migration were based on *emigration rates* from one district to another by age, sex and groups of citizenship. These rates were kept constant over the whole projection period and corresponded to the average of the last three years under examination. The emigration rate is the ratio between the number of migrations from a departure district to a destination district and the population of the departure district. This rate can be interpreted in terms of probability; unlike an assumption that is based on an absolute number of migrations, the events in the numerator are linked to the population at risk of migrating, meaning that unrealistic situations are avoided (for example, when the number of migrants is higher than the population at risk). Given the uncertainty surrounding the future evolution of internal migrations, a careful approach has always been adopted, that is, a status quo in the emigration rate.

However, certain migration patterns have been highlighted for many years, in particular the *phenomenon of sub-urbanisation*, which is reflected by a rise in the emigration rates from urban areas to peripheral areas. Recent studies (Eggerickx and Sanderson, 2015) show that this phenomenon persists, albeit in unfavourable socio-economic and political contexts: increased travelling costs, its environmental impact, increased housing prices, etc. Sub-urbanisation extends even beyond the districts adjacent to the major cities.

In the short term, the phenomenon of sub-urbanisation seems likely to continue; an approach based on constant rates would therefore underestimate certain migration flows. Therefore, extending the trends observed for the rates, rather than keeping them constant at the levels observed during the most recent years, makes it possible to continue the observed evolution.

In the longer term, this phenomenon could become more pronounced or, on the contrary, decrease (the phenomenon of a regained attraction for urban areas). Therefore, given this uncertainty, an approach favouring constant rates in the long term seems relevant.

In addition, migration flows from one district to another depend not only on the population in the departure area (population at risk or push factor) but also on the population in the destination area (pull factor). However, using emigration rates, only the population of the departure district is taken into account (Courgeau, 1991). Using *double rates* (or migration intensity rates) allows us to remedy this shortcoming. The denominator of this rate contains both the population of the departure area (population at risk) and the population of the destination area (as proxy for the pull factors). The new methodology is therefore based on this migration intensity, rather than on emigration rates.

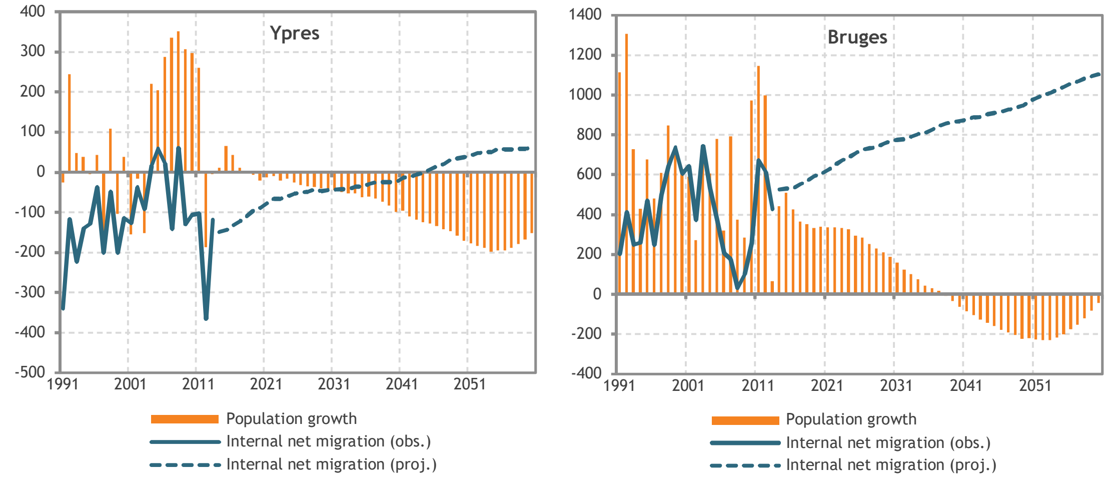
2. Migration intensity

The emigration rate (EM_{ij}^t) from district i to district j is defined as the number of migration flows i to j (M_{ij}^t) divided by the population of the departure district i (P_i^t):

$$EM_{ij}^t = \frac{M_{ij}^t}{P_i^t} \quad (1)$$

In the projection, the number of migrations from district i to district j is obtained by multiplying the population (P_i^t) by the emigration rate (EM_{ij}^t)[1]. In the population projections published in recent years, this rate was kept constant over the whole projection period. Yet, with all other things being equal, using an emigration rate as defined in equation (1) leads to a trend in the evolution of internal net migration[2] (or the net migration rate) in the projection: using an emigration rate will de facto lead to a rise in emigration (and consequently to a decrease in net migration) in the case of a positive growth of the population of the departure district and vice versa. This phenomenon is illustrated using the projection for the districts of Ypres and Bruges (graph 1) based on assumptions that were made in the 2014-2060 population projections (FPB and Statistics Belgium, 2015).

Graph 1 Population growth and internal net migration - the cases of Ypres and Bruges (assumption of constant emigration rates over the whole projection period)
In absolute terms



Sources: 1991-2013: National Register-Statistics Belgium and FPB calculations; 2014-2060: 2014-2060 population projections (FPB and Statistics Belgium)

For these two districts, projected net internal migration tends to increase as a result, notably, of the expected lower level of outflows in line with the slowdown in population growth (based on the 2014-2060 population projections). Although net internal migration was relatively constant over the whole observed period (1991-2013), it would show an upward trend based on a constant long-term emigration rate. This would be at odds with an assumption implicitly based on constant internal net migration (or rather, that the winning and losing regions remain identical over the whole projection period).

1 Rate by age, sex and groups of citizenship (Belgians and foreigners)

2 Net migration is defined as the difference between immigrations and emigrations. The net migration rate is defined as the difference between the internal immigrations and emigrations for an area i divided by the population of that area.

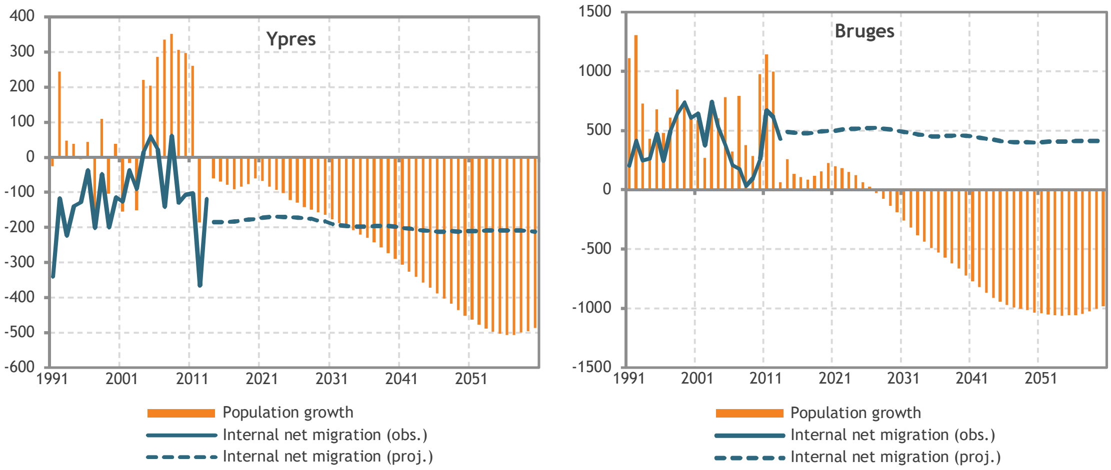
To eliminate this bias, taking into account the population of the destination area together with the population of the departure area makes it possible to balance the migration flows between the areas and ensure that net migration is consistent with the chosen assumption (Bohnert et.al, 2015). This is called migration intensity (or double migration rates – see equation (2)). Moreover, using a rate that integrates both the departure and destination populations is in line with various explanatory theories of internal migrations, and in particular the gravity models that assume that an individual chooses a destination region on the basis of its attractiveness, while comparing it with the attractiveness of the departure region (Courgeau and Lelièvre, 2003). Attractiveness can be measured by several factors (income level, unemployment rates, population size, etc.), while integrating disincentives for migration (distance, language effects, etc.). With migration intensity as defined in the present approach, attractiveness is measured by the population size. The latter is regarded as a proxy for the characteristics of an area, such as job opportunities, job diversity or the provision of public infrastructure (transport, school buildings, etc.).

The *migration intensity* (m_{ij}) of the departure district i to the destination district j is defined as the number of migration flows from i to j (M_{ij}) divided by the sum of the populations of districts i (P_i) and j (P_j):

$$m_{ij}^t = \frac{M_{ij}^t}{P_i^t + P_j^t} \tag{2}$$

As illustrated in graph 2 with the districts of Bruges and Ypres, projected net migration based on a constant migration intensity over the whole projection period is also stable over the whole projection period[3], unlike the result obtained with a constant emigration rate (graph 1).

Graph 2 Population growth and internal net migration - the cases of Ypres and Bruges (assumption of constant migration intensity over the whole projection period)
In absolute terms



Sources: 1991-2013: National Register-Statistics Belgium and FPB calculations; 2014-2060: FPB

3 The other assumptions (mortality, fertility and international migrations) remain unchanged compared to the 2014-2060 projections.

3. Preferential flows

To integrate, as far as possible, migration patterns differentiated according to the age of the individuals and the departure or destination districts, migration patterns are estimated by age group and district. However, to have a sufficient number of observations and thus obtain statistically reliable results, the estimate and the projection of short-term trends are only carried out for a selection of 'preferential' migration flows. These flows are selected in two stages, which are described below.

3.1. Stage 1

The first stage consists in detecting the districts for which *internal migration is a determining factor for the (negative) population growth*. In practical terms, districts with a relatively high (positive or negative) net migration rate[4] are selected. In order to achieve this, the statistical distribution of the net migration rates is analysed by means of a box-plot analysis[5], which makes it possible to identify the districts situated in the tail of the distribution (to the left and right).

For illustrative purposes, the net migration rates of 44 districts[6] are shown in graph 3 for four different years. Certain districts are characterised by a net migration rate well above or below the average, especially Ath, Veurne and Waremme, with a positive net migration rate, and Brussels-Capital and Antwerp, with a negative net migration rate.

In order to systematise the method, the selected districts in this stage are those whose *net migration rate is higher than the 70th percentile or lower than the 25th percentile in at least 60% of the cases over the last ten years (2004-2013).*

The districts with a net migration rate higher than the 70th percentile in 60% of the cases are Halle-Vilvoorde, Nivelles, Ostend, Veurne, Aalst, Ath, Thuin, Huy, Waremme, Neufchâteau and Philippeville. The districts with a net migration rate lower than the 25th percentile in 60% of the cases are Antwerp, Brussels-Capital, Mouscron, Charleroi, Liège and Maaseik.

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4 The net migration rate is the ratio between net migration (difference between entries and exits) and the average population of the area under consideration.

5 A box plot summarises the distribution of a sample of data by the spread, the median, the average and the variance, as well as by quartiles and intervals between them.

6 In the population projection model, the district of Verviers is split into two to make a distinction between the French-speaking Community and the German-speaking Community.

6 This is the lowest observed value (of the net rate in this case) which, in 70% of the cases, is higher than the other observed values.

Graph 3 Net migration rates

Sources: National Register-Statistics Belgium and FPB calculations

3.2. Stage 2

For the districts selected in stage 1, *the preferential* departure zones (for the districts with a positive net migration rate) or destination *districts* (for the districts with a negative net migration rate) are determined. To this end, a rule based on the statistical distribution of migration intensity (double rates) is re-applied. As a reminder, migration intensity integrates both the population of the departure district and that of the destination district. The preferential flows are situated in the tail of the distribution (on the right-hand side only[7]).

The method is illustrated by graph 4, which shows the migration intensity from the district of Antwerp (characterised by a negative net migration rate) to the other districts. Three destination districts show higher rates: Sint-Niklaas, Turnhout and Mechelen. These districts could be qualified as 'preferential' destination districts for the migrations from the district of Antwerp.

To systematise the method, for all the districts selected in stage 1, the preferential flows correspond to the flows for which *the migration intensity from one district to another is higher than the 95th percentile in at*

[7] Unlike the net migration rate, migration intensity is always positive and only the flows situated on the right-hand side of the distribution are used and qualified as preferential flows.

least 60% of the cases over the last ten observed years. All the chosen preferential flows are shown in table 1 and table 2. A map representation is also given in graph 5.

Graph 4 Migration intensity from Antwerp to the other districts of Belgium

Sources: National Register-Statistics Belgium and FPB calculations

For validation purposes, the results of this method based on descriptive statistics were compared with the results obtained by more sophisticated methods (method of residues, which takes into account distance and the language barrier[8]). This comparison also allowed a validation of the percentiles that had to be used as a threshold value (the 70th and 25th percentiles for the net migration rates and the 95th percentile for the migration intensity). The method based on the statistical distribution of the observations (box plots) has the advantage that it can be applied to every update of the population projections by integrating the new observation. The selection of the preferential flows can thus be updated by integrating the most recent migration flows.

8 The method of residues determines whether the observed flows between two districts are higher or lower than the ones that could be expected if the model (on the basis of an econometric estimate which integrates distance and the language barrier) perfectly matched observations. For more details, see Eggerickx, T., Dal L. and Sanderson, J.-P., 2015).

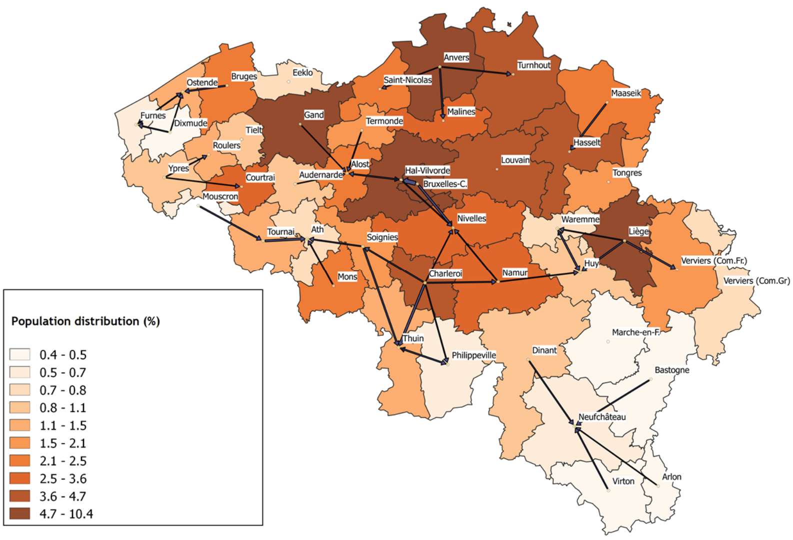
Table 1 Preferential districts with a negative migration rate

Districts with a negative net rate	Destination districts
Antwerp	Mechelen - Turnhout - Sint-Niklaas
Brussels	Halle - Vilvoorde - Nivelles
Ypres	Kortrijk - Roeselare
Charleroi	Nivelles - Soignies - Thuin - Namur - Philippeville
Mouscron	Tournai
Liège	Huy – Verviers (French Community) - Waremme
Maaseik	Hasselt

Table 2 Preferential districts with a positive migration rate

Departure districts	Districts with a positive net rate
Brussels - Aalst	Halle-Vilvoorde
Brussels - Halle-Vilvoorde - Charleroi - Namur	Nivelles
Bruges - Diksmuide - Veurne	Ostend
Diksmuide - Ostend	Veurne
Halle-Vilvoorde - Dendermonde - Ghent - Oudenaarde	Aalst
Mons - Soignies - Tournai	Ath
Charleroi - Soignies - Philippeville	Thuin
Liège - Waremme - Namur	Huy
Huy - Liège	Waremme
Arlon - Bastogne - Virton - Dinant	Neufchâteau
Charleroi - Thuin	Philippeville

Graph 5 Preferential migration flows



Source: National Register and Statistics Belgium, calculations FPB

4. Future evolution of internal migration

4.1. Short-term evolution

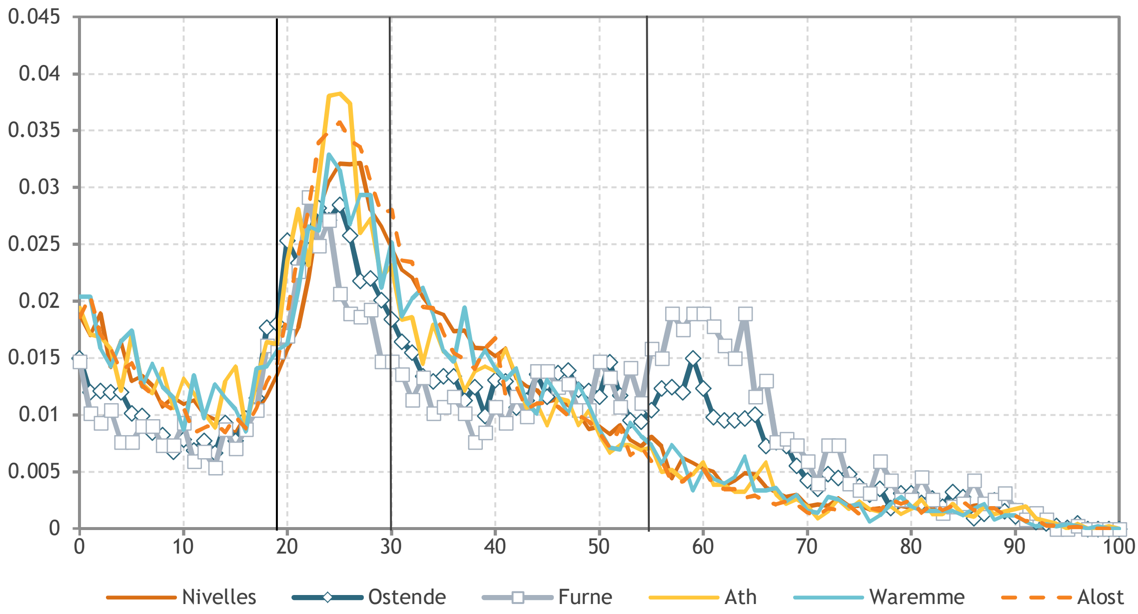
The previous sections have revealed the usefulness of making an assumption based on migration intensity and have also shown that it is possible to identify a set of preferential migration flows between districts. For these districts, recent trends are estimated and projected for the short term.

Recent trends are analysed from the perspective of migration intensity and by taking into account four homogeneous age groups (0-19, 20-34, 35-54 and 55 and older). The migration patterns are indeed related to age. Working by age group helps to ensure a sufficient number of observations to estimate trends. Graph 6 presents a distribution by age group of migrants for some districts. The graph shows the link between (internal) migration patterns and the different life stages: migrations of families with children (age groups 0-19 and 30-39), migrations of young people who find their first job and gain their independence (20-29) and finally migrations of people who are at the end of their professional career and who want to spend their retirement in another district (55 and older).

The graph also reveals certain specific district features. For example, Veurne and Ostend attract a higher proportion of immigrants aged over 55 (migration linked to a withdrawal from working life).

No distinction as to sex is made in the model since migration patterns do not vary significantly according to this characteristic.

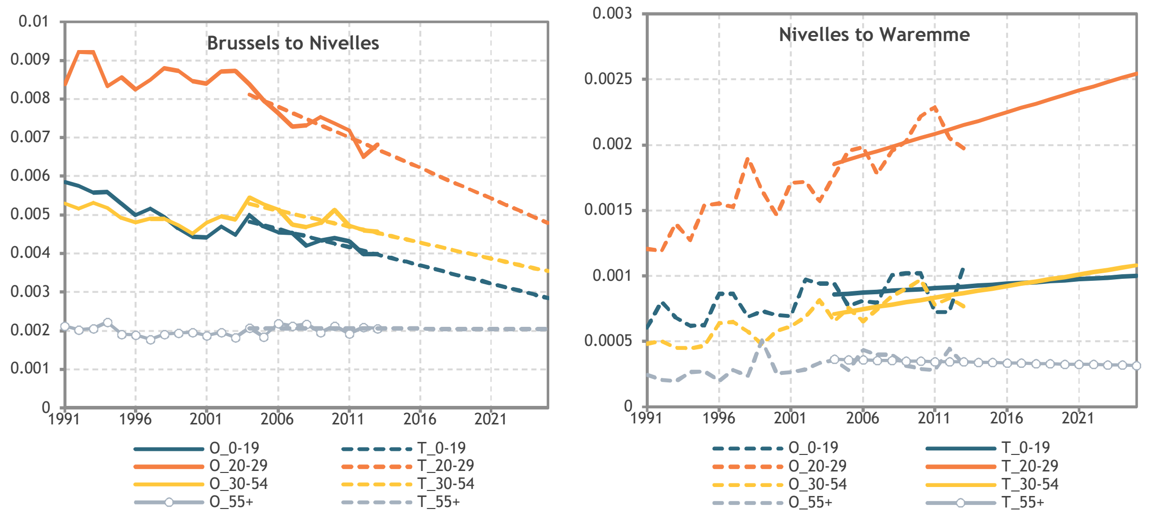
Graph 6 Age distribution of immigrants - Districts of Nivelles, Ostend, Veurne, Ath, Waremme and Aalst (2013)



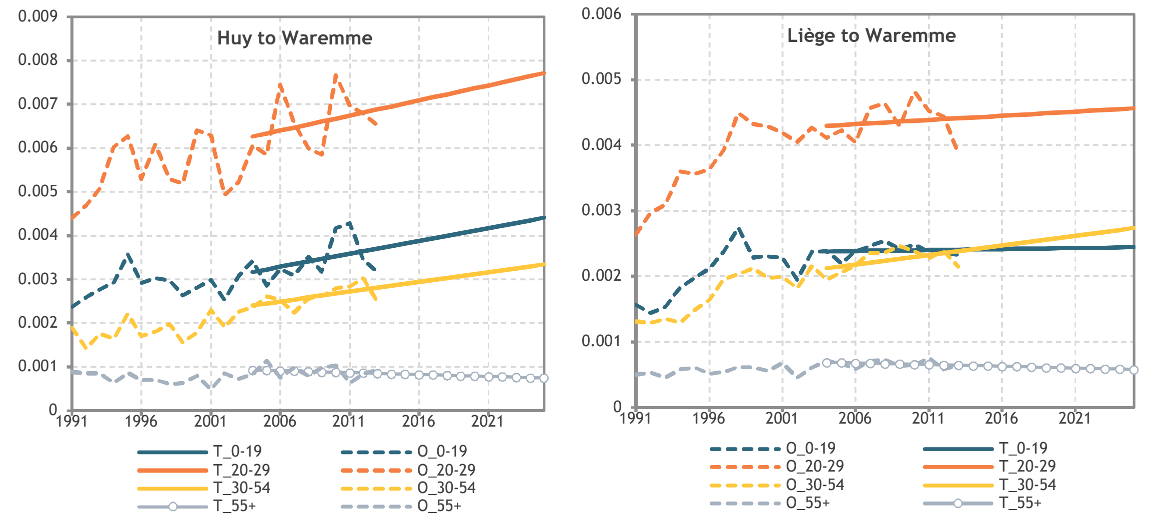
Source: National Register - FPB, FPB calculations

The trends – by age group – based on the migration intensities between preferential districts are estimated using a linear time model. The observation period considered includes the last observed decade. Graph 7 and graph 8 illustrate the estimates (2004-2013) and the projection (2014-2025) of the migration intensities from Brussels-Capital (district with a negative net migration rate) to Halle-Vilvoorde and Nivelles and from Huy and Liège to Waremme (districts with a positive net migration rate).

Graph 7 Migration intensities from Brussels-Capital to Nivelles and from Nivelles to Waremme
Observations (1991-2013) and estimate/projection (2003-2025)



Graph 8 Migration intensities from Huy and Liège to Waremme
Observations (1991-2013) and estimate/projection (2003-2025)



Sources: observations: 1991-2013 National Register - Statistics Belgium, FPB calculations; estimate/projection: FPB
(O for observations and T for trend)

Depending on the flows and age group, the model continues an upward or downward trend or almost zero growth (of the intensities). Observations show parallel development of migration intensities for the age groups 0-19 and 30-54 (parents migrating with their children). In projection, since estimates by age are independent of each other, some trends can cross each other, which is not desirable. It is unlikely that the migration intensity will go upward in the age group 30-34, while it remains fairly stable for children aged between 0 and 19, who are assumed to migrate with their parents (see Nivelles and Liège to Waremme in graph 7 and graph 8). To ensure a certain degree of consistency in the model, *the evolution of the migration intensity for the age group 0-19 is assumed to be identical to the intensity estimated for the age group 30-54.*

4.2. Long-term evolution

Since the long-term evolution of migration flows is relatively uncertain (even more than the short-term evolution), extending the trend beyond a five-year period seems too ambitious. We would rather opt for a scenario based on a continuation of the sub-urbanisation process. Beyond five years, intensities are kept constant at the level projected for the fifth year. For the non-preferential flows, the migration intensity is kept constant over the whole projection period. The level is defined by an average (by age, sex and district) of the last three observed years.

All in all, over the whole projection period, the number of migrations of individuals aged x from district i to district j, in period t, is equal to the sum of the populations aged x in districts i and j, multiplied by the product of the migration intensity from i to j for age x and the projected evolution of this intensity:

$$M_{ij,x}^{t} = (P_{i,x}^{t} + P_{j,x}^{t}) * m_{ij,x}^{obs} * evol_{ij,groupe\ x}^{t,} \quad (3)$$

The evolution is set to one for the non-preferential flows over the whole projection period and after the fifth projection year for the preferential flows.

5. Impact of the method on the population projections

This section presents, in two stages, the impact of the new methodology on the population projections.

First, the impact of an assumption based on migration intensity rather than on emigration rates is highlighted by comparing the 2014-2060 population projections (as a reminder, based on constant emigration rates) with a scenario assuming *a constant migration intensity over the whole projection period* (SC1).

Second, a scenario assuming *the continuation in the short term (over the next five years) of the migration intensity (for the preferential flows)* will be analysed (SC2).

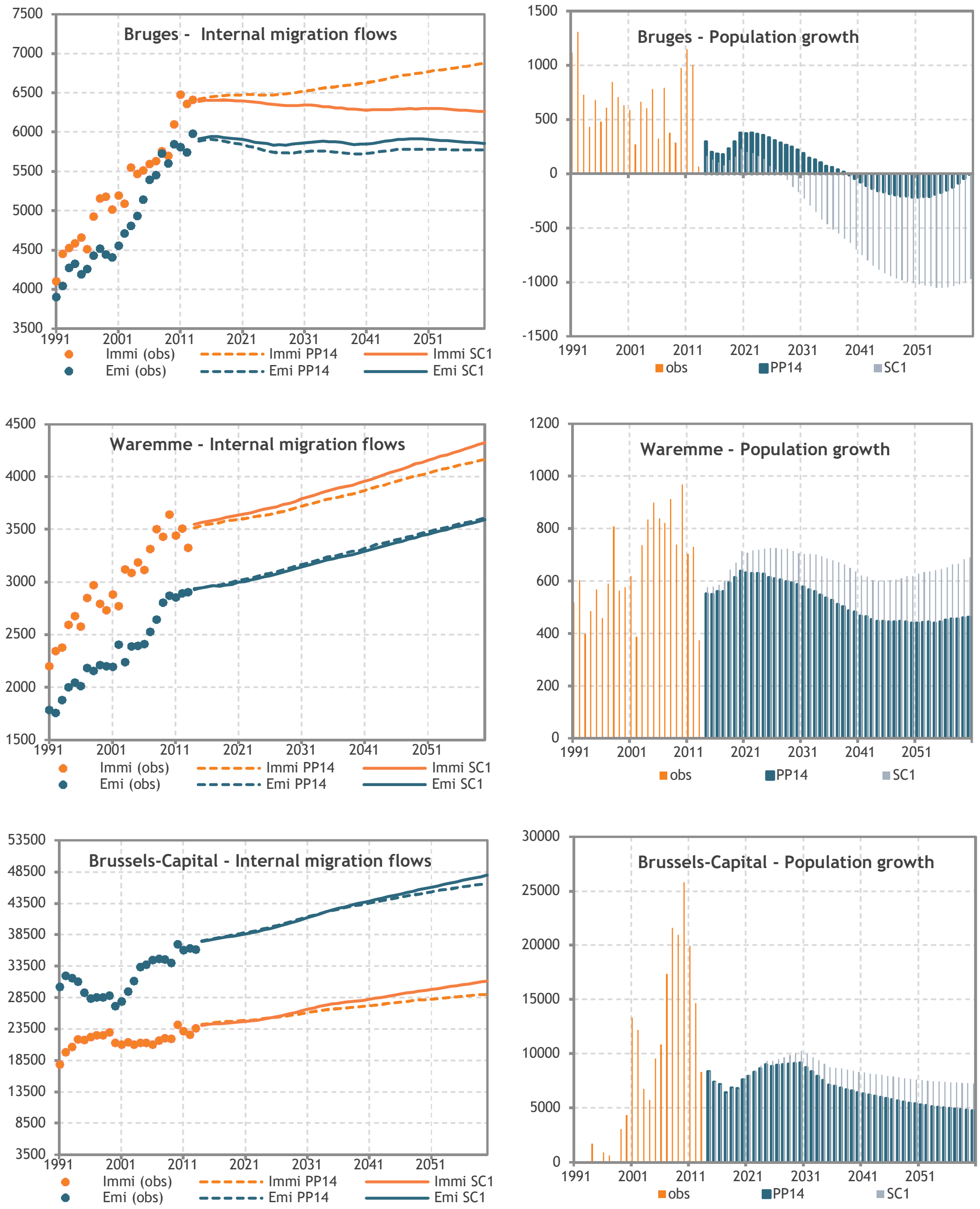
5.1. Constant migration intensity over the whole projection period (SC1)

In the 2014-2060 population projections (PP14) based on constant *internal emigration rates* (equation (1)), a district characterised by an increase in its population growth will produce, with all other things being equal, more outflows (push factor); as a consequence, internal net migration will decline. Conversely, a district experiencing a slowdown in its population growth will generate fewer outflows and consequently internal net migration will decrease.

The use of *migration intensity* (equation (2)) allows us not only to take into account a push factor (i.e. population in the district of departure) but also a pull factor (i.e. population in the district of destination). More precisely, an acceleration in population growth will lead not only to more outflows (push effect) but also to more inflows (pull effect). Conversely, a deceleration in population growth will lead to not only fewer outflows (push effect) but also to fewer inflows (pull effect). Graph 9 illustrates these effects with two districts: Bruges and Waremme.

When the assumption on internal migration is based on migration intensity (SC1), the inflows to Bruges are smaller in comparison with the reference projection (PP14). The relatively slow population growth of the district reduces indeed its attractiveness, which is captured by the migration intensity and not by the emigration rate alone. Consequently, the net migration is lower in SC1, resulting in lower population growth compared to PP14. Furthermore, we should recall that taking migration intensity into account makes it possible to maintain relatively constant net migration in the long term (see Section 2).

Graph 9 Impact of an assumption based on migration intensity
The cases of Bruges, Waremme and Brussels-Capital
In absolute terms



Sources: observations: 1991-2013 National Register-Statistics Belgium; projections: FPB

The opposite effect takes place for the district of Waremme. Its relatively high population growth (pull factor) leads to an increase in the migration flows to this district, which in turn fuels the population growth. The same effect is seen for Brussels-Capital.

Generally speaking, applying an assumption based on migration intensity influences not only outflows by taking into account the population at risk (push factor) but also inflows through an attractiveness effect (population of destination as proxy for pull factor). The districts that see a slowdown in their population growth will not only face a fall in outflows (fewer people likely to emigrate) but also lose some of their attractiveness, leading to fewer inflows. Using migration intensity allows us to maintain the balance between the inflows and outflows and, as a consequence, keep net migration relatively constant over the whole projection period (if migration intensity is maintained at constant levels).

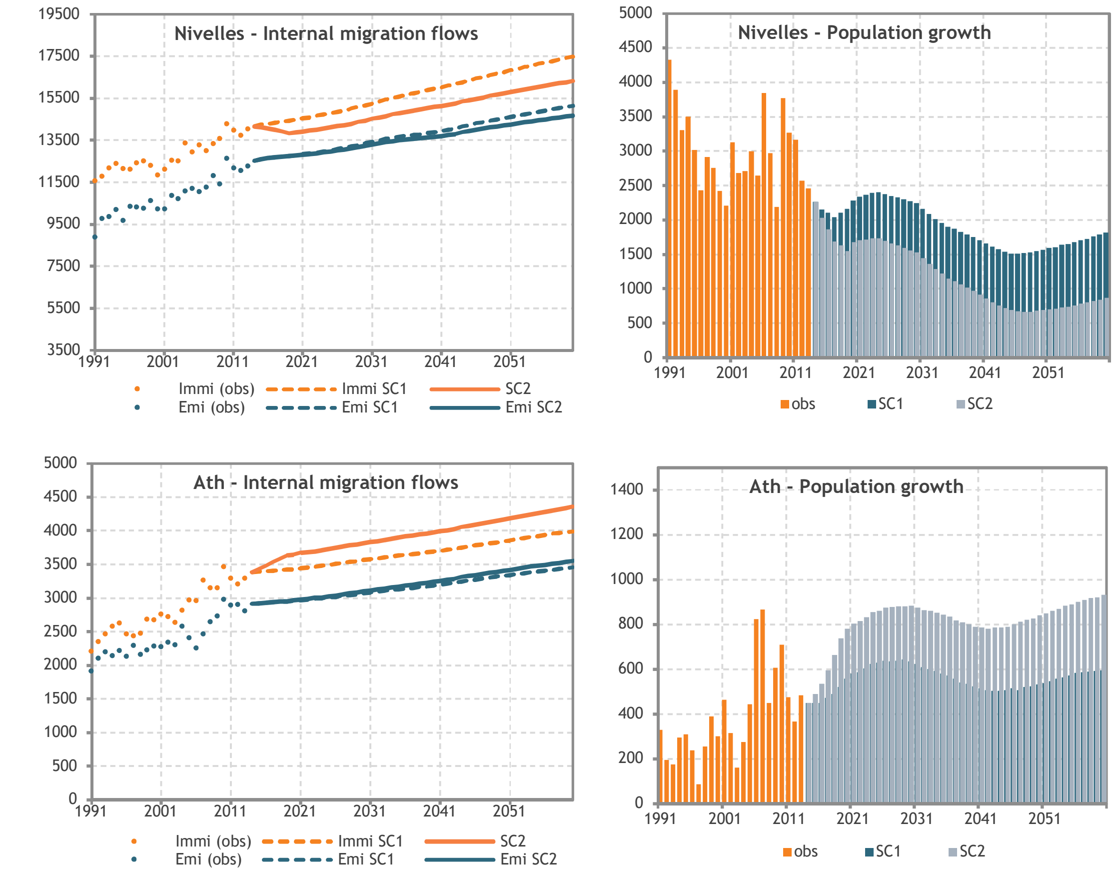
5.2. Continuation in the short term of the trends in migration intensity (SC2)

As a reminder, by continuing the trend observed in migration intensity over the next five years, some districts will see their migration intensity (by age group) rise or fall (graph 7 and graph 8). The case of Nivelles is interesting since it is characterised, in the age group 20-29, by a fall in migration intensity from Brussels-Capital and a rise in migration intensity to Waremme. Migration intensity from Brussels-Capital to Nivelles also seems to decrease for the two age groups representing families with children (0-19 and 30-54 years).

If those trends continue until 2019 (and the migration intensity projected for 2019 is kept constant until 2060 – SC2), the population growth of Nivelles should be weaker than the growth based on a constant migration intensity over the whole period (SC1). Indeed, the impact on inflows exceeds the fall in outflows resulting from a slowdown in population growth (graph 10). By continuing the fall in migration intensity in the short term (until 2020), a drop in immigration in the short term is seen.

The opposite effect is observed for the district of Ath. When the trends in migration intensity continue over the first five projection years, inflows to that district go up (faster than outflows).

Graph 10 Impact of an assumption based on migration intensity with a trend until 2019
The cases of Ath and Nivelles
In absolute terms



Sources: observations: 1991-2013 National Register-Statistics Belgium; projections: FPB

5.3. Impact on the population growth of the Regions

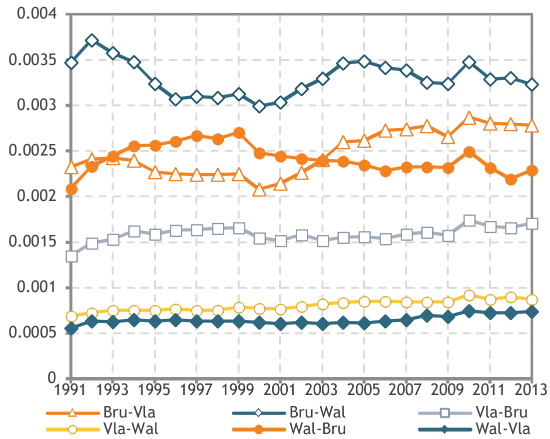
An overall finding is that, compared with the method based on a constant emigration rate, the assumption that the observed trend in migration intensity should continue in the short term – followed by a stabilisation of that trend over the long term – (SC2) alters the growth of the district population through various mechanisms:

- Over the whole projection period, weaker/stronger immigration and/or emigration depends on the development in the population of the departure district (population at risk) and the population of the destination district ('pull' effect).
- In the short term, the effect is amplified/mitigated depending on the projected trend in migration intensity.

The impact of this scenario (SC2) on *the population of Belgium* is negligible (10 000 additional people in 2060 compared to PP14, i.e. 0.08%). The population growth of Belgium is altered by two elements: first, the changes in migration flows between districts modify the population by district and, second, the fertility and mortality assumptions (fertility and mortality rates) are specific to each district.

At the regional level (graph 12), the impact is positive for the Brussels-Capital Region (+ 77 000 people) and the Flemish Region (+ 17 000 people) and negative for the Walloon Region (- 84 000 people). The new methodology adds a 'pull' effect related to the population size. The relatively high population growth in the Brussels-Capital Region is thus further stimulated by the pull effect, which is taken into account through migration intensity.

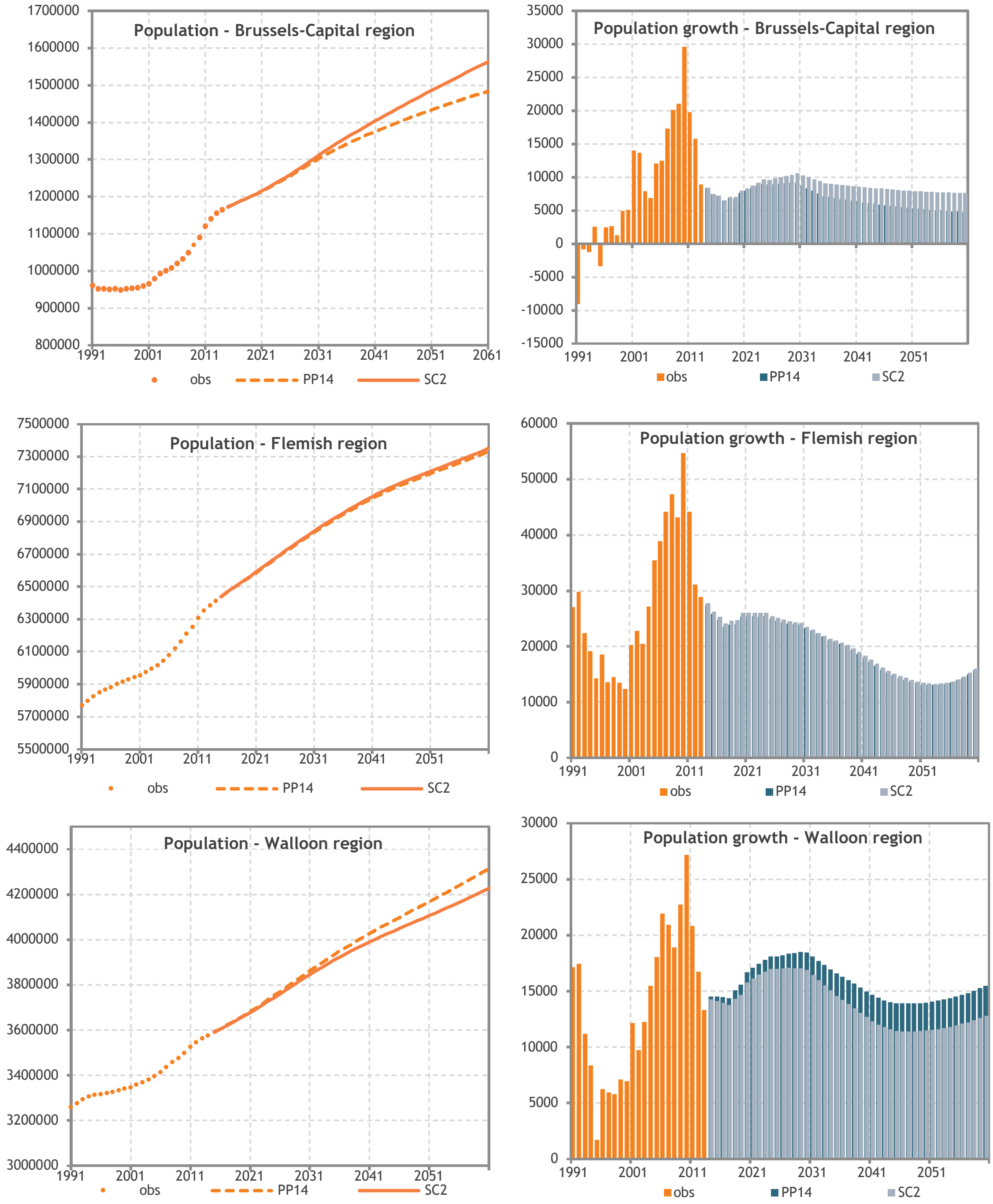
Graph 11 Interregional migration intensity



Sources: observations: 1991-2013 National Register-Statistics Belgium; calculations: FPB

Migration intensity (graph 11) from the Walloon Region to the Brussels-Capital Region (Wa-Bru) is stronger than that from the Flemish Region (Fla-Bru) to Brussels, which explains the negative impact on the growth of the Walloon population.

Graph 12 Impact on the population of the Regions of an assumption based on migration intensity with a trend until 2019



Sources: observations: 1991-2013 National Register-Statistics Belgium; projections: FPB

6. Conclusion

The methodology for projecting internal migration presented here is based on the migration intensity between districts rather than on the emigration rate from one district to another. Migration intensity not only takes into account the population of the departure district (population at risk), but also the population of the destination district ('pull' factor). This indicator of migration flows better matches the various explanatory theories of internal migrations and, in particular, the models which assume that an individual chooses a destination district depending on its attractiveness. Moreover, taking into account the populations of departure and destination districts produces a projection of internal migration in line with the initial assumption (constant net migration in case of a constant migration intensity), which is not possible with the assumption based on emigration rates. The latter only takes into account the population of the departure district. Using an emigration rate (even constant over the whole projection period) generates, with all other things being equal, a rise or a decline in outflows depending on the population growth in the departure district, and thus a downward or upward trend in net migration.

With respect to the future evolution of migration intensity, a distinction was made between the short and the long term:

In the short term, a continuation of the recent evolution of migration intensity might be a wise choice, as currently no break in the trend of migration flows is observed.

The long-term evolution of internal migration is much more uncertain: either extension of the sub-urbanisation phenomenon as currently known or a break in the trend with a strong return to the cities. Consequently, the long-term assumption is based on a constant migration intensity.

To integrate specific district features, short-term migration trends are estimated by district and age group. However, in order to have a sufficient number of observations, the trends were only estimated for a selection of migration flows, which were defined as 'preferential'. For the other flows, migration intensity is assumed to remain constant over the whole projection period.

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