Spatial mismatch, education and language skills in the Brussels metropolis: an analysis

Mauvais appariement spatial, niveau de scolarité et connaissances linguistiques dans la métropole bruxelloise : une analyse

Ruimtelijke mismatch, scholing en talenkennis in de Brusselse metropool: een analyse

Tobias Theys, Nick Deschacht, Stef Adriaensens and Dieter Verhaest

Translator: Philippe Bruel

This text was automatically generated on 10 June 2020.

Spatial mismatch, education and language skills in the Brussels metropolis: an analysis

Mauvais appariement spatial, niveau de scolarité et connaissances linguistiques dans la métropole bruxelloise : une analyse
Ruimtelijke mismatch, scholing en talenkennis in de Brusselse metropool: een analyse

Tobias Theys, Nick Deschacht, Stef Adriaensens and Dieter Verhaest

Translation : Philippe Bruel

AUTHOR'S NOTE

Introduction

1   For a long period of time already, the Brussels conurbation has been characterized by a very high unemployment rate. In 2014, the area – which in the administrative interpretation coincides with the borders of the Brussels-Capital Region (BCR) – had an unemployment rate of 18,5 %. That is considerably higher than the other two regions: in the Walloon Region the unemployment rate was 12 % and in the Flemish Region 5,1 % [Statbel, 2018]. On top of that, the situation on the low-skilled labour market is even more serious: in 2014, the unemployment rate among low-skilled workers in the BCR was 30,9 %, while in the Flemish and the Walloon regions it was respectively 9,2 and 21,6 %. The Brussels metropolis is no exception for high unemployment: worldwide metropolitan areas have been struggling with this problem for a long time [Elhorst, 2003].

2   The concept of "spatial mismatch" was introduced in 1968 by John Kain [1968], in order to explain the role of location in the high unemployment rate among the black population in the inner cities. After a significant proportion of the white population moved from the city centres to the suburbs, many companies followed their move, the so-called "suburbanization" of jobs. As a consequence, the black population, which remained behind in the city centres due to segregation in the housing market, lost its direct access to a considerable part of the labour market. The resulting spatial mismatch hypothesis states that a major cause of unemployment, especially among disadvantaged sections of the population, lies in the geographical distance between the job seekers' place of residence and the neighbourhoods where vacancies can be found. Closely related to this hypothesis is the theory of "neighbourhood effects", or effects resulting from the neighbourhood where someone lives [Durlauf, 2004]. These effects can have a negative impact on the employment opportunities of residents of disadvantaged neighbourhoods and can manifest themselves in various ways, including less valuable social networks, less quality education, social stigma or negative group pressure.

3   Since Kain [1968] the spatial mismatch hypothesis has been tested in numerous contexts (see, among others, Gobillon, Selod and Zenou [2007] and Ihlanfeldt and Sjoquist [1998] for extensive reviews of the literature). Dujardin, Selod and Thomas [2008] previously investigated the impact of neighbourhood effects and spatial mismatch in the Brussels region. Based on census data from 1991 they concluded that neighbourhood effects played an important role in explaining employment opportunities.

4   This paper analyses the degree of spatial mismatch for job seekers in the Brussels metropolis, with an extra focus on the low-skilled and their language skills. Using a mismatch index, we measure the access of these job seekers to suitable vacancies in the Brussels-Capital Region and the neighbouring area.

1. An investigation problem

5   A special feature of the Brussels metropolis is its linguistic diversity, while the main language in most of Flanders is Dutch, and in Wallonia French. In the Brussels-Capital Region (BCR), a region that is officially bilingual, the lingua franca is French. For job seekers in the Brussels city region this constitutes an additional barrier: a significant number of jobs in the region requires knowledge of the two languages.

6   In 2014, the year for which the analysis of spatial mismatch is performed in this paper, the BCR counted 1 163 486 inhabitants [Hermia, 2014], which corresponds to 10,5 % of the Belgian population. Over the 19 municipalities, the average unemployment rate is 19 %. Although the borders of the Brussels metropolis coincide administratively with those of the BCR, its urban sphere of influence extends beyond these borders. To analyse the degree of spatial mismatch, it is therefore recommended to use a definition of the metropolis that is closer to existing economic and social interdependencies. This principle makes it necessary to take the situation in the hinterland into account. In the literature various proposals have been suggested to define this hinterland [Dujardin, Thomas and Tulkens, 2007; Thomas and al., 2012], but, to date, there is no real consensus on the matter. Since this definition plays an important role in measuring

spatial mismatch, we choose to conduct our analysis at three geographical levels, with different external borders.

7   First, we limit the measurement to the 19 municipalities in the BCR. This also corresponds to Eurostat's Functional Urban Area [Eurostat, 2017]. We then repeat the analysis for the Extended Urban Area (EUA) [Dujardin, Selod and Thomas, 2008], compiled on the basis of population and employee density and commuting behaviour to the BCR. The EUA extends the metropolis to 41 municipalities. In 2014, the 22 additional municipalities – of which 5 are Walloon and 17 Flemish – counted a total of 551 740 residents and had an average unemployment rate of 7,7 %. Finally, we look at the local labour market area (LLMA) [Vanderbiesen, Herremans and Sels, 2013], compiled on the basis of commuting flows. The LLMA is the broadest definition we use for the Brussels city region and contains 88 municipalities, including all municipalities that are part of the EUA. In 2014, the 47 additional municipalities, of which 20 are Walloon and 27 Flemish, counted a total of 901 820 residents and had an average unemployment rate of 8,6 %. The methodology used by Vanderbiesen, Herremans and Sels [2013] does not exclude local labour market areas that are not contiguous. This is the case for the local labour market area that includes the BCR, where four Walloon municipalities cause a geographic interruption of the labour market area.

8   The numbers illustrate the typical pattern of a core and its hinterland: in the core there is high unemployment (an average of 19 %), while unemployment in the hinterland is significantly lower (around 8 %, depending on the definition). Figure 1 shows the location and composition of the three zones (Appendix 1 summarizes the municipalities per zone).

Figure 1. The Brussels metropolis: three possible definitions.
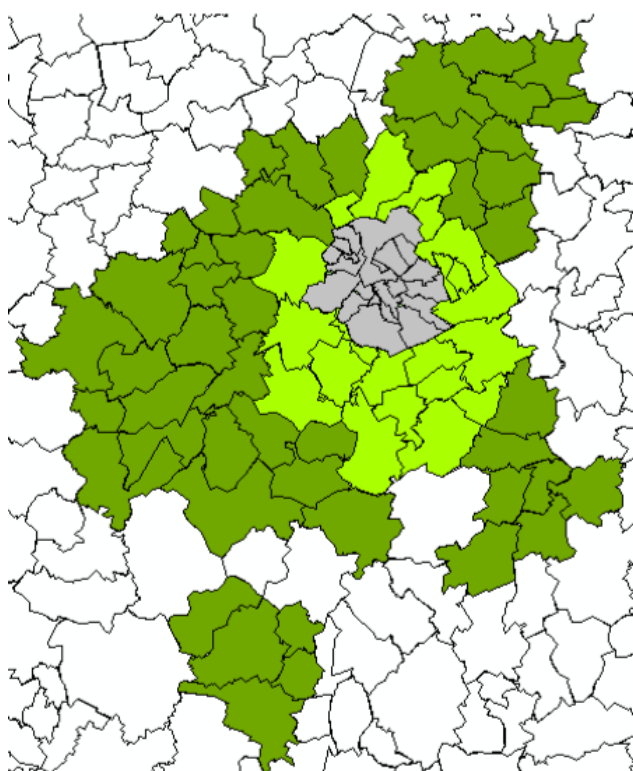
NOTE: THE MUNICIPALITIES IN GREY FORM THE BRUSSELS-CAPITAL REGION, THE MUNICIPALITIES IN GREY AND LIGHT GREEN THE EXTENDED URBAN AREA (EUA) [DUJARDIN, SELOD AND THOMAS, 2008], THE MUNICIPALITIES IN GREY, LIGHT AND DARK GREEN THE LOCAL LABOUR MARKET AREA [VANDERBIESEN, HERREMANS AND SELS, 2013].

9   The hypothesis at the heart of this paper states that spatial mismatch plays an important role in framing the high unemployment in the core of the Brussels city region. When we break down the labour market by level of education, we expect a greater degree of spatial mismatch in the labour market for the low-skilled, with a large proportion of job seekers in municipalities in the core of the city region (BCR) with high unemployment, while job suburbanization would result in a large proportion of suitable vacancies being found in the periphery. This mismatch obliges (low-skilled) job seekers in the BCR to expand their search area to find more opportunities on the labour market. To substantiate this expectation numerically, a comparison is made with the spatial mismatch for the high-skilled. For this group we expect a more equal spread of vacancies and job seekers across the region, leading to a smaller spatial mismatch. Moreover, distance has a more negative impact on the low-skilled, since the high-skilled have a greater search radius and are more mobile [Amior, 2017].

2. Methodology

10   To calculate the degree of spatial mismatch, we use the distance-weighted spatial mismatch index (DSMI) [Theys, Deschacht, Adriaenssens and Verhaest, 2018]. The DSMI is an extension of the spatial mismatch index [Martin, 2001]. Where the original index makes no distinction in the distance between workplace and place of residence, the

DSMI also takes the distance between these places into account. It is calculated in three steps.

11   In the first step the difference between the proportion of unemployed and the share of job vacancies in each municipality in the region is calculated:

$$s_i = \frac{wz_i}{wz} - \frac{v_i}{v}$$

12   where wz_i and v_i represent the number of job seekers and vacancies in municipality i, and wz and v the number of job seekers and vacancies in the entire region. Municipalities with a positive (negative) s_i have a relative surplus (shortage) of job seekers compared to the number of vacancies. To eliminate the mismatch, there are two options. On the one hand job seekers can move or commute from municipalities with a relative surplus of job seekers to municipalities with a relative shortage. On the other *hand*, companies looking for employees can settle in regions with relatively many job seekers. In order to avoid uncertainty, the further explanation of the methodology and the discussion of the results are based on employees who travel (commuters).

13   The second step calculates the effort these movements require on the basis of the distance that commuters have to travel. In this way, movements over a large distance are given a higher weight than movements over a small distance. This distance is standardized based on the size of the area being analysed. Since this standardization is therefore directly related to the considered area, it is not possible to compare the degree of spatial mismatch for a group between different areas. However, the ratio between two groups can be compared between areas. The total travel movement is equal to

$$\sum_{i,j} s_{ij} d_{ij}$$

14   where s_{ij} represents the commuters from surplus-municipality i to deficit-municipality j and d_{ij} the (standardized) distance between the two municipalities. We assume that the commuters move in a rational way and so this total travel movement is limited to the necessary minimum. The calculation of the DSMI thus becomes a minimization process:

$$DSMI = \min_{s_{ij}} \sum_{i,j} s_{ij} d_{ij}$$
$$where: \sum_j s_{ij} = s_i \; \forall \; i; \; \sum_i s_{ij} = -s_j \; \forall \; j; \qquad s_{ij} \geq 0 \; \forall \; i,j.$$

15   The value of the DSMI lies between 0 and 1, where a DSMI of 0 represents a situation where vacancies and job seekers are perfectly evenly distributed among the municipalities, while a DSMI of 1 represents the situation where job seekers and vacancies are as far apart as could be.

16   The DSMI is essentially a combination of the original SMI and a measure of the distance to be covered, and can also be decomposed in these two factors: DSMI = SMI x D, where the SMI represents the proportion of commuters in the population and D the average (standardized) distance to be covered by these commuters.

3. Data

17   This contribution works with data about vacancies and job seekers. Since the responsibility for employment in Belgium is a regional matter, separate services exist in each region: Actiris, VDAB and Forem respectively for the Brussels, Flanders and Wallonia regions. The services also have separate databases, which entails some limitations for the data. The calculations for the degree of spatial mismatch were made on the basis of the job seekers who were registered with the three services at the beginning of 2014 and the vacancies that the services directly received from employers throughout the year 2014. As job seekers are required to register with the relevant employment service in order to claim unemployment benefits, it is likely that these data are fairly complete. However, employers are not obliged to pass on vacancies to the regional employment service, which can lead to an underestimation of the actual quantity. As long as this underestimation is not region-specific, this is not a problem, since the calculations work with relative quantities. In addition, these analyses only include vacancies for which the place of employment is determined at municipal level. This can lead to an underestimation of the number of effective vacancies for the Flemish data, and to a lesser extent for the Walloon data, where a number of vacancies only receive a regional place of employment. Due to limitations in the reporting of language requirements for vacancies, we only make a distinction between the labour market for bi- or trilingual people (labour market with language skills) and the one for jobseekers with a knowledge of one official language (Dutch or French) (labour market without language skills).

18   With regard to job seekers, the data from VDAB and Forem are an average of the number of job seekers in the first quarter of 2014. Due to a limited availability, the data from Actiris are those from the beginning of 2014. While the variables around language skills at VDAB are binary, Actiris and Forem work with Likert scales. For these data, it is assumed that a job seeker has a sufficient knowledge of a language to qualify for a vacancy if this knowledge is at least "average". In addition, the data on language is mainly self-reported (a limited minority has official certificates), which may lead to an overestimation of the real knowledge.

19   We follow the definition of the Brussels Observatory for Employment [2011] on the level of education: low-skilled workers are those who have not graduated from high school or have not completed an apprenticeship. By high-skilled we mean those with a higher education diploma. Jobseekers whose degree is not (yet) approved, are considered low-skilled.

20   The benchmark for the weighing of the movement is twofold: as basic measurement, we calculate the Euclidian distance between the centre points of the municipalities. For the second approach, we use travel time via public transport between the town halls of each municipality. In choosing town halls as starting points we avoid starting points that are far from any form of public transport, as could be the case with the geographical centre points. The choice for public transport is deliberate: a significant portion of the (unskilled) unemployed have no access to a car. In addition, the morning rush hour around Brussels makes car use less attractive in terms of potential time gain. For each combination of municipalities the shortest travel time is chosen, with the latest arrival time being nine o'clock in the morning. Travel times between municipalities are calculated using the Google Maps Distance Matrix API. Twenty

connections are impossible; 19 of these connections have Opzullik as the final destination, the other connection is between Villers-la-Ville and Binche. These connections get an artificial high value in the travel time matrix, so that they cannot occur in an optimal solution.

4. Results and discussion

21   The spatial mismatch indices indicate to what extent vacancies and job seekers are spread differently across the municipalities in the region. However, they say nothing about the labour market shortage for the region as a whole. Before we look at the results of the mismatch indices, we review the labour shortage in the three areas.

4.1. Competition in the labour market

22   Table 1 reports the vacancies and job seekers in the Brussels- Capital Region (BCR), the 22 municipalities that are added to the Extended Urban Area (EUA) (EUA belt) and the 47 municipalities that are part of the local labour market area (LLMA) but not of the EUA (LLMA belt). The reported figures for the three areas are expressed as percentages of the total number of vacancies and job seekers in the entire region. Figures 2-5 show the distribution of low- and high-skilled vacancies and job seekers, adjusted for the size of the municipalities, in this total region.

Figure 2. Distribution of low-skilled vacancies among the municipalities in the local labour market area

Low-skilled vacancies (per km²)

- 0,07 - 7,7
- 7,7 - 25,0
- 25,0 - 50,9
- 50,9 - 92,3
- 92,32 - 138,5
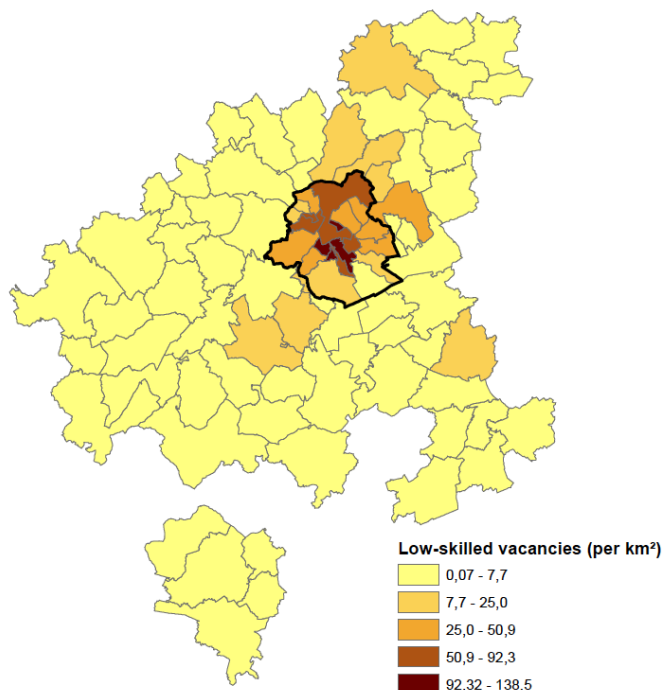
Figure 3. Distribution of low-skilled job seekers among the municipalities in the local labour market area

Low-skilled job seekers (per km²)
- 0,5 - 51
- 51 - 198
- 198 - 508
- 508 - 793
- 793 - 2688

Figure 4. Distribution of high-skilled vacancies among the municipalities in the local labour market area

High-skilled vacancies (per km²)
- 0,08 - 3,2
- 3,2 - 10,9
- 10,9 - 34,2
- 34,2 - 78,9
- 78,9 - 161,1

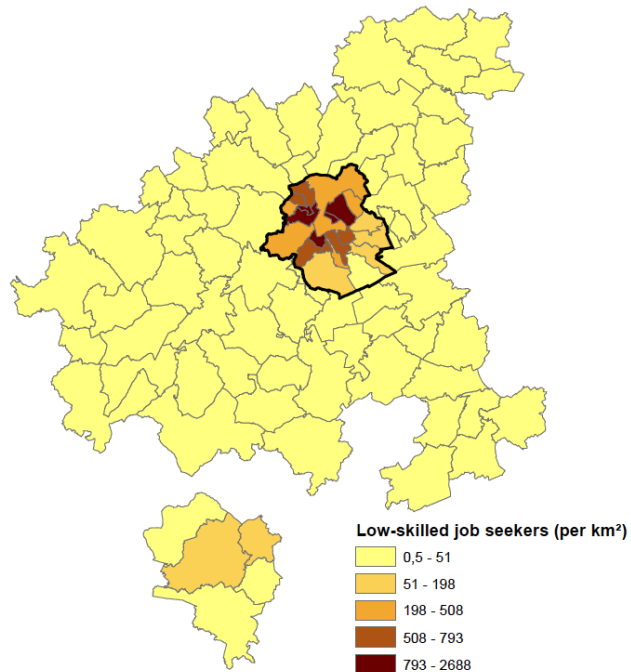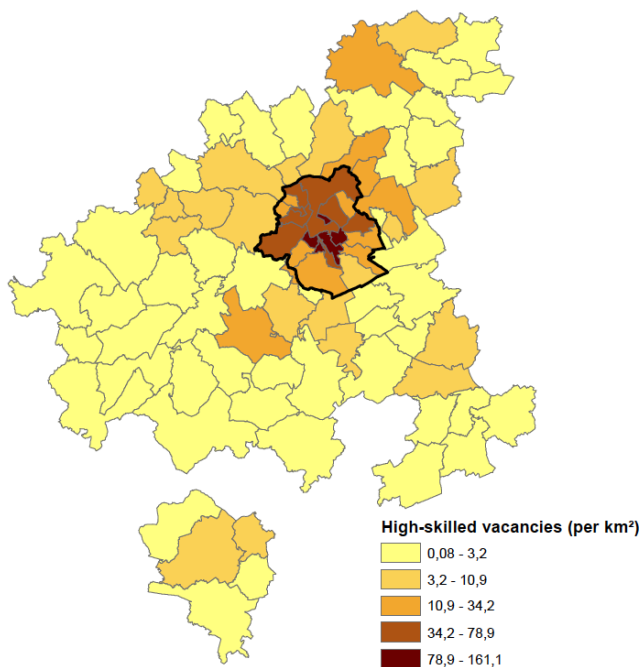**Figure 5. Distribution of high-skilled job seekers among the municipalities in the local labour market area**

High-skilled job seekers (per km²)
- 0,2 - 13
- 13 - 49
- 49 - 122
- 122 - 327
- 327 - 521
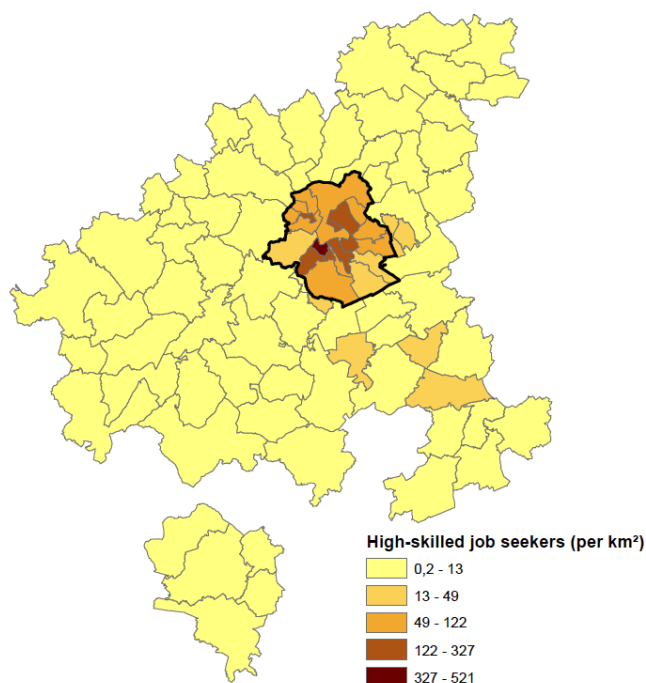
23   In the total region under consideration (which equals the LLMA), there are 4,1 job seekers per vacancy. However, these figures conceal important differences between the various labour markets: in the high-skilled labour market there are 1,6 job seekers per vacancy, in the low-skilled 5,8.

24   Both vacancies and job seekers are the most concentrated in the BCR. There are 60,8 % of the job seekers and 51,3 % of the vacancies on the market for the high-skilled in the BCR, which leads to 1,8 job seekers per vacancy, while there is a significant difference in the labour market for the low-skilled (74,4 % and 42,1 %), or 10,3 job seekers per vacancy.

25   Outside the BCR, vacancies are relatively evenly distributed between the EUA belt, the 22 municipalities in the EUA surrounding the BCR, and the LLMA belt, the 47 municipalities in the LLMA that are located outside the EUA. However, the LLMA belt has a considerably higher share of job seekers, especially in the low-skilled labour market. In the high-skilled labour market, this leads to a similar labour shortage in the EUA and the LLMA belts (respectively 1,1 and 1,4 job seekers per vacancy), while in the low-skilled labour market the difference is larger (respectively 1,3 and 3,7 job seekers per vacancy).

26   These numbers show that the shortage on the labour market is strongly linked to the choice we make for the size of the city region. If we add the EUA belt, where a limited number of job seekers reside but many vacancies can be found, to the city region, the average situation improves considerably for job seekers. The inclusion of the LLMA belt means above all progress for the low-skilled job seekers. All this suggests that jobs for low-skilled people are situated relatively far away and therefore entail a higher spatial mismatch.

27 If we look at the labour market for the low-skilled and make a distinction between the situation for job seekers with language skills and without language skills, we see that the low-skilled with language skills are considerably better off. In the LLMA there are 3,2 job seekers per vacancy compared to 5,9 in the low-skilled labour market without language skills and, especially in the BCR, low-skilled people with language skills have an advantage: there are 4,6 job seekers per vacancy, while per vacancy without language skills there are 11,3 seekers.

Table 1. Share of job seekers and vacancies in the BCR and the two expansions of the metropolis

	Total labour market				High-skilled labour market				Low-skilled labour market		
	Vacancies	Job seekers	Ratio		Vacancies	Job seekers	Ratio		Vacancies	Job seekers	Ratio
BCR	46,7 %	66,7 %	5,8		51,3 %	60,8 %	1,8		42,1 %	74,4 %	10,3
EUA belt	24,6 %	9,6 %	1,6		22,0 %	15,7 %	1,1		27,5 %	6,2 %	1,3
LLMA belt	28,8 %	23,7 %	3,3		26,7 %	23,4 %	1,4		30,4 %	19,4 %	3,7
Total area	41 569	167 896	4		16 304	25 373	1,6		16 895	98 749	5,8

	Low-skilled labour market without language skills				Low-skilled labour market with language skills		
	Vacancies	Job seekers	Ratio		Vacancies	Job seekers	Ratio
BCR	37,7 %	72,1 %	11,3		50,1 %	72,7 %	4,6
EUA belt	25,5 %	5,7 %	1,3		35,3 %	12,0 %	1,1
LLMA belt	36,7 %	22,3 %	3,6		14,6 %	15,3 %	3,3
Total area	11 949	70 569	5,9		4 412	13 967	3,2

BCR = Brussels-Capital Region. EUA belt = the 22 municipalities in the Extended Urban Area that are not part of the Brussels-Capital Region. LLMA belt = the 47 municipalities in the local labour market area that are not part of the Extended Urban Area. Ratio = number of job seekers per vacancy.

SOURCE: ACTIRIS, VDAB, FOREM.

4.2. Spatial mismatch on the labour market

28 Table 2 to 4 show the results of the spatial mismatch indices for the different definitions of the city region, figures 6 and 7 show the relative shortages and surpluses in the labour market for the high- and low-skilled in the local labour market area (LLMA).

Figure 6. Relative surpluses and shortages of job seekers in the low-skilled labour market

Relative surpluses (low-skilled)
- -0,06 - -0,035
- -0,035 - -0,00
- -0,005 - 0,004
- 0,004 - 0,031
- 0,031 - 0,08
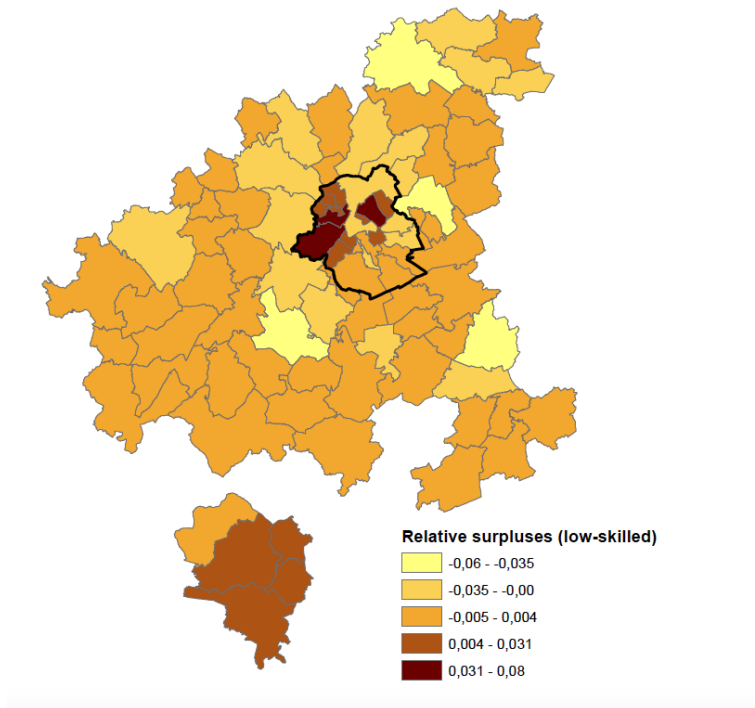
Figure 7. Relative surpluses and shortages of job seekers in the high-skilled labour market

Relative surpluses (high-skilled)
- -0,08
- -0,08 - -0,01
- -0,01 - 0,001
- 0,001 - 0,013
- 0,013 - 0,031
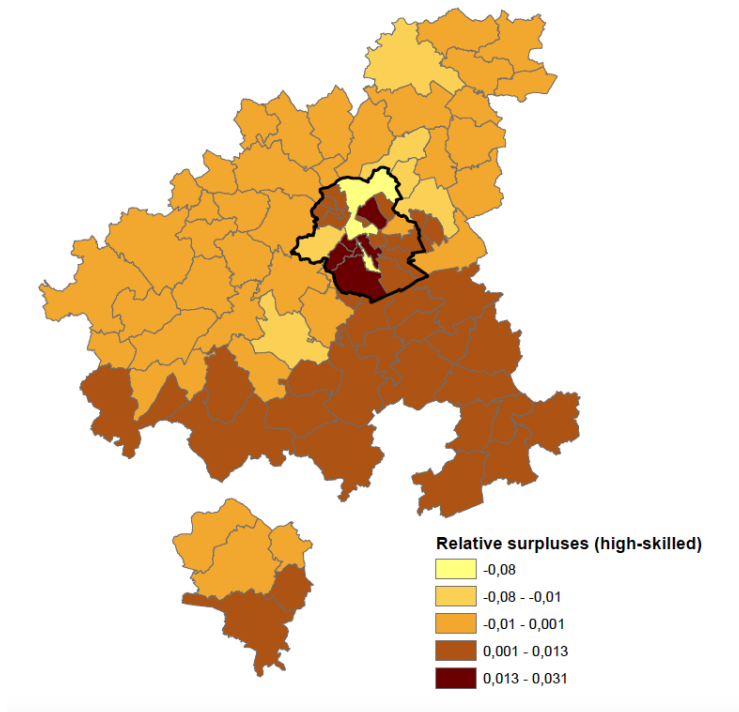
29   Before we go over the results, it is important to repeat that the indices can only be compared between labour markets within an area and not between different areas,

since the calculation is directly linked to the area being analysed. However, the relationships between different groups, for example the low-skilled and the high-skilled, can be compared between areas.

30   A superficial comparison between the results for the entire labour market and those for the high- and low-skilled, reveals that the total labour market masks patterns that occur in the subdivided labour markets. In the discussion of the results, we thus focus on the subdivided labour markets.

31   Table 2 reports the results of the indices for the Brussels-Capital Region (BCR). Depending on the way in which the movement is measured, the size of the spatial mismatch is 8,3 % (distance) to 21,6 % (travel time) greater for the low-skilled than for the high-skilled. When we break down this index into pure mismatch (vacancies are not in the municipalities where job seekers live) and location-driven mismatch (similar municipalities are close together), we see that it is mainly the pure mismatch, as measured by the SMI, that causes spatial mismatch: the SMI is 17 % greater for the low-skilled.

32   Including the results from the table 1 and 2 we can say that the low-skilled are confronted with a considerably higher competition within the BCR (10,3 job seekers per vacancy compared to 1,8 for the high-skilled), and that the distribution of jobs and job seekers over the municipalities is also more uneven.

Table 2. Results of the distance-weighted spatial mismatch indices for the labour markets in the Brussels-Capital Region.

	Brussels-Capital Region					
	DSMI (%)			SMI (%)	Average travel distance	
	Distance	Travel time			Distance (km)	Travel time (minutes)
Total labour market	8,4	9,1		25,6	4	23,9
High-skilled labour market	9,6	8,8		25,3	4,7	23,7
Low-skilled labour market	10,4	10,7		29,6	4,3	24,5
Low-skilled labour market with language skills	11,3	11,6		33,7	4,1	23,3
Low-skilled labour market without language skills	10,4	11,1		28,4	4,5	26,3

DSMI = distance-weighted spatial mismatch index. SMI = spatial mismatch index.
SOURCE: ACTIRIS, VDAB, FOREM.

33   When we divide the low-skilled labour market according to language skills, we see that the low-skilled with language skills experience a higher mismatch. This difference comes from the pure mismatch, which is 18,7 % higher for the low-skilled with language skills. This pure mismatch is mainly due to the considerable relative shortage of job seekers with language skills in the municipality of Brussels: compared to the BCR

average of 4,6 job seekers per vacancy, there are only 2,1 job seekers per vacancy in the municipality of Brussels. This relative deficit is responsible for 20,2 percentage points of the pure spatial mismatch of 33,7 %. In the labour market for the low-skilled without language skills, this relative deficit is only 13,0 percentage points of the pure spatial mismatch of 28,4 %. However, the average distance and travel time needed to eliminate the spatial mismatch are smaller for the low-skilled with language skills.

34   Based on the results from tables 1 and 2 we can therefore conclude that the competition for the low-skilled without language skills is greater in the BCR, but that the distribution of vacancies and job seekers among the 19 municipalities in the BCR are more equal for them.

35   Table 3 shows the results of the indices for the 41 municipalities that make up the extended urban area (EUA). In the EUA, the low-skilled experience a spatial mismatch that is 31,6 % or 16,5 % greater than the one for the high-skilled, depending on the distance measure used. Again, the pure mismatch is the main cause: for the low-skilled the SMI is 23,8 % greater than for the high-skilled.

Table 3. Results of the distance-weighted spatial mismatch indices for the labour markets in the Extended Urban Area

	Extended Urban Area					
	DSMI (%)			SMI (%)	Average travel distance	
	Distance	Travel time			Distance	Travel time
Total labour market	7,6	8,6		32,5	7,1	29,9
High-skilled labour market	7,9	9,7		32,0	7,5	34,6
Low-skilled labour market	10,4	11,3		39,6	7,9	32,4
Low-skilled labour market with language skills	9,3	10,9		39,2	7,2	31,7
Low-skilled labour market without language skills	11,4	11,8		40,3	8,5	33,3

DSMI = distance-weighted spatial mismatch index. SMI = spatial mismatch index.
SOURCE: ACTIRIS, VDAB, FOREM.

36   Using table 1 and these results we can conclude that the unskilled labour market experiences a sharp drop of the relative competition in the EUA, with 6,8 job seekers per vacancy, compared to 10,3 in the Brussels-Capital Region. The drop for the high-skilled is more limited (from 1,8 to 1,6 job seekers per vacancy). The difference in spatial mismatch between the two groups has increased when we measure the movements using distance, but has decreased when we use the travel time.

37   In the unskilled labour market broken down by language, we see that the low-skilled without language skills no longer experience a lower mismatch, on the contrary: job

seekers without language skills experience a mismatch in the EUA that is 22,6 % greater than the mismatch for the low-skilled with language skills. The difference in this case mainly comes from the location-driven mismatch: the low-skilled without language skills have to travel more distance and are longer on the road.

38   Finally, table 4 shows the values of the indices for the local labour market area (LLMA). In the LLMA too, the spatial mismatch is considerably larger for the low-skilled: when we measure the movements on the basis of the distance travelled, the overall mismatch is 50,1 % larger and 39,2 % based on travel time. The spatial mismatch results mainly from the pure spatial mismatch, which is 34,3 % greater for the low-skilled. In addition, they must travel further and longer on average. In the LLMA, the competition on the low-skilled labour market is smaller than in the EUA (5,8 job seekers per vacancy compared to 6,8 in the EUA), while it stays the same for the high-skilled (1,6 job seekers per vacancy). Although the difference in competition on the two labour markets has decreased, the spatial mismatch has increased considerably: the difference between the two labour markets has grown by 19,5 or 22,7 percentage points, depending on the distance measure used.

Table 4. Results of the distance-weighted spatial mismatch indices for the labour markets in the local labour market area.

	Local labour market area					
	DSMI (%)			SMI (%)	Average travel distance	
	Distance	Travel time			Kilomètres	Minutes
Total labour market	6,7	8,1		35,2	15,0	45,9
High-skilled labour market	5,5	7,4		32,1	13,4	45,7
Low-skilled labour market	8,3	10,3		43,1	15,1	47,7
Low-skilled labour market with language skills	4,6	6,9		38,1	9,5	36,2
Low-skilled labour market without language skills	9,9	11,8		46,5	16,7	50,6

DSMI = distance-weighted spatial mismatch index. SMI = spatial mismatch index.
SOURCE: ACTIRIS, VDAB, FOREM.

39   This result is not surprising, since a considerable part of the vacancies (30,4 %) on the low-skilled labour market is situated in the LLMA belt, while less than 20 % of the job seekers lives here: some of the job seekers in the Brussels Capital Region will have to move to the LLMA belt to eliminate the spatial mismatch.

40   A comparison between the situations for low-skilled job seekers with and without language skills results in a considerable difference: the spatial mismatch is 115,2 % or 71 % higher for the low-skilled without language skills. In this case, the mismatch

mainly originates from the location-driven mismatch: the low-skilled without language skills have to travel considerably further and longer. This result can be explained by the concentration of vacancies with language skills in the centrally located BCR. Moreover, competition is considerably lower for low-skilled people with language skills: for this group there are 3,2 jobseekers per vacancy in the LLMA, for the low-skilled without language skills 5,9.

Conclusion

41   In this study, we analysed the extent of spatial mismatch on the labour market in the Brussels city region's urban area, using the distance-weighted spatial mismatch index (DSMI). As there is no consensus on the definition of this urbanized area, the analyses were carried out for three alternatives: the Brussels-Capital Region (BCR), the extended urban area (EUA) and the local labour market area (LLMA).

42   The results show that the spatial mismatch in every definition of the city region is greater for the low-skilled. The mismatch is mainly due to the fact that job seekers do not live in the municipalities where the vacancies can be found. If we make a comparison between the low-skilled with and without language skills, the spatial mismatch for the low-skilled without language skills in BCR appears to be smaller, mainly due to a significant relative shortage of low-skilled with language skills in the municipality of Brussels, but greater when we also consider the periphery, because of the high concentration of vacancies that require language skills in the BCR.

43   Based on these results we can first conclude that for the jobseeker it pays to invest in (language) skills: not only is the competition in the job market lower for the low-skilled with language skills, the spreading of jobseekers and vacancies is also more evenly distributed. The same applies to the labour market for the high-skilled, in comparison with the low-skilled.

44   A second conclusion that emerges is the crucial importance of mobility: in order to eliminate the spatial mismatch, it is inevitable that a considerable percentage of the low-skilled in the BCR make the move to the municipalities in the belts around the BCR.

45   In particular, a smooth connection between the BCR and the 22 peripheral municipalities in the EUA seems important: out of the 42 561[1] low-skilled job seekers who have to move to another municipality to eliminate the spatial mismatch in the LLMA, 74,9 %[2] have to move away from the BCR to the periphery. In principle, two thirds of these job seekers can go to a municipality in the EUA belt, since there is a strong relative shortage there. However, the importance of mobility is not only limited to the BCR and the EUA belt: one-third of the low-skilled movers in the BCR have to travel to the LLMA belt (47 of the municipalities in the LLMA that do not lie in the EUA). In addition, the remaining 25,1 % of low-skilled commuters should not be forgotten: in order to completely eliminate the spatial mismatch, they too must move. In a scenario where the movers from the BCR largely start working in the EUA belt, a part of this remaining group will inevitably be on the road for a longer time.

46   Although moving job seekers to places with a relatively high amount of vacancies is the most obvious approach to counter mismatch, there also are alternatives. The opposite dynamic, where companies looking for employees settle in places where many

employees can be found, can also be part of the solution. The growing succes of teleworking could also alleviate the impact of spatial mismatch.

47   Finally, it is important to draw attention to the institutional context. One of the possible mechanisms that explain why a greater distance to jobs has a negative impact on the employability of job seekers, is the rising degree of difficulty to obtain information about vacancies that are further away [Gobillon, Selod and Zenou, 2007]. Although considerable efforts are already being made to improve mutual cooperation and communication, it is likely that the existence of three different employment offices in the region makes it more difficult to gather information for job seekers. In the BCR, where a large number of job seekers have to move away to reduce the spatial mismatch, another employment agency is active than in the two belts that these job seekers have to go to. Moreover, the official language in vacancies at the VDAB is often Dutch, while the majority of job seekers in the BCR do not speak Dutch. A further expansion and deepening of the cooperation between the three agencies that can lead to automatic availability of vacancies in the language of the job seeker can therefore be a quick win to counteract the spatial mismatch.

48   Although the results of this study clearly demonstrate the importance of spatial mismatch, the possible conclusions based on this study are only a first step towards measures that could reduce the impact of spatial mismatch. To cope with the challenges identified in this study, it is necessary to combine the insights of this study with research from other perspectives, such as spatial planning and transport.

BIBLIOGRAPHY

AMIOR, M., 2019. Education and Geographical Mobility: The Role of Wage Rents. London: LSE US Center. Working paper.

DUJARDIN, C., SELOD, H., and THOMAS, I., 2008. Residential Segregation and Unemployment: The Case of Brussels. In: *Urban Studies.* 01/01/2008. Vol. 45, nr 1, pp. 89-113.

DUJARDIN, C., THOMAS, I., and TULKENS H., 2007. Quelles frontières pour Bruxelles ? Une mise à jour. In: *Reflets et Perspectives de la Vie économique.* 2007. Vol. 46, nr 2-3, pp. 155-176.

DURLAUF, Steven N., 2004. Neighborhood effects. In: THISSE, Jean-François and HENDERSON, Vernon (dir.). *Handbook of Regional and Urban Economics.* Amsterdam: Elsevier Science, pp. 2173-2242.

ELHORST, J. P., 2003. The mystery of regional unemployment differentials: Theoretical and empirical explanations. In: *Journal of Economic Surveys.* 12/11/2003. Vol. 17, nr 5, pp. 709-748.

EUROSTAT, 2017. *Methodological manual on city statistics: 2017 edition.* Luxemburg: Office des publications de l'Union européenne.

GOBILLON, L., SELOD, H., and ZENOU, Y., 2007. The mechanisms of spatial mismatch. In: *Urban Studies.* 11/2007. Vol. 44, nr 12, pp. 2401-2427.

HERMIA, J.-P., 2014. *Baromètre démographique 2013 de la Région de Bruxelles-Capitale.* Brussels: Institut bruxellois de Statistique et d'Analyse. Focus nr 3.

IHLANFELDT, K. R., and SJOQUIST, D. L., 1998. The spatial mismatch hypothesis: A review of recent studies and their implications for welfare reform. In: *Housing Policy Debate.* 1998. Vol. 9, nr 4, pp. 849-892.

KAIN, John F., 1968. Housing segregation, Negro employment and metropolitan decentralization. In: *The Quarterly Journal of Economics.* 05/1968. Vol. 82, nr 2, pp. 175-197.

MARTIN, R. W., 2001. The adjustment of black residents to metropolitan employment shifts: How persistent is spatial mismatch? In: *Journal of Urban Economics.* 07/2001. Vol. 50, nr 1, pp. 52-76.

OBSERVATOIRE BRUXELLOIS DE L'EMPLOI, 2011. *Portrait statistique de la jeunesse bruxelloise à son arrivée sur le marché du travail.* Brussels: Observatoire bruxellois de l'Emploi.

STATBEL, 2018. Indicateurs annuels du marché du travail selon l'âge et le sexe – Chiffres absolus et relatifs (1999 - 2016). In: *Statbel – Emploi et chômage – plus de chiffres* [en ligne]. [Consulté le 29/11/2018]. Available at the address: https://statbel.fgov.be/fr/themes/emploi-formation/marche-du-travail/emploi-et-chomage/plus

THEYS, T., DESCHACHT, N., ADRIAENSSENS, S., and VERHAEST, D., 2018. The evolution of inter-regional spatial mismatch in the USA: The role of skills and spatial structure. In: *Urban Studies.* https://doi.org/10.1177/0042098018803017

THOMAS, I., COTTEELS, C., JONES, J., and PEETERS, D., 2012. Revisiting the extension of the Brussels urban agglomeration: new methods, new data... new results? In: *Belgeo.* 2012. Nr 1-2, pp. 1-15.

VANDERBIESEN, W., HERREMANS, W., and SELS, L., 2013. *Afbakening en profiel van lokale arbeidsmarkten in Vlaanderen.* Louvain: Steunpunt Werk en Sociale Economie.

APPENDIXES

Appendix 1 – List of municipalities in each zone

Brussels Capital Region	1st belt	2nd belt	
Anderlecht	Beersel	Affligem	Malines
Auderghem	Braine-l'Alleud	Asse	Manage
Berchem-Sainte-Agathe	Dilbeek	Biévène	Meise
Brussels	Drogenbos	Binche	Merchtem
Etterbeek	Grimbergen	Bonheiden	Mont-Saint-Guibert
Evere	Hal	Boortmeerbeek	Morlanwelz
Forest	Hoeilaart	Braine-le-Château	Ninove
Ganshoren	Kraainem	Braine-le-Comte	Nivelles

Ixelles	La Hulpe	Chastre	Opwijk
Jette	Lasne	Cortenbergh	Ottignies-Louvain-la-Neuve
Koekelberg	Leeuw-Saint-Pierre	Court-Saint-Etienne	Pepingen
Molenbeek-Saint-Jean	Linkebeek	Denderleeuw	Putte
Saint-Gilles	Machelen	Enghien	Rebecq
Saint-Josse-ten-Noode	Overijse	Gammerages	Roosdaal
Schaerbeek	Rhode-Saint-Genèse	Grammont	Silly
Uccle	Rixensart	Gooik	Steenokkerzeel
Watermael-Boitsfort	Tervuren	Hérinnes	Ternat
Woluwe-Saint-Lambert	Vilvorde	Ittre	Tubize
Woluwe-Saint-Pierre	Waterloo	Kampenhout	Villers-la-Ville
	Wemmel	Keerbergen	Walhain
	Wezembeek-Oppem	La Louvière	Wavre
	Zaventem	Le Roeulx	Wavre-Sainte-Catherine
		Lennik	Zemst
		Liedekerke	

NOTES

1. SMI x total amount of job seekers
2. The number of low-skilled job seekers in the BCR is 32,3 percentage points higher than the number of low-skilled vacancies. 32,3 % of the total number of job seekers in the LLMA must therefore leave the BCR in order to obtain an equal percentage of job seekers and vacancies in the BCR. Calculating the deficit in the LLMA belt is done in the same way.

ABSTRACTS

Spatial mismatch, where job seekers do not live where jobs can be found, can be an important barrier on the labour market, especially for vulnerable groups. In this study we look at the role that spatial mismatch plays in the Brussels metropolis. Using an improved benchmark, the

distance-weighted spatial mismatch index, that also considers location-driven mismatch, we compare the spatial mismatch between the high- and low-skilled labour market and the labour market for the low-skilled with and without language skills. In the largest possible definition of the Brussels metropolis, results show a spatial mismatch of up to 50 % larger for the low-skilled, in comparison with the high-skilled. For the low-skilled without language skills, the spatial mismatch is 115 % higher than for the low-skilled with language skills. This difference is mainly due to a relative surplus of low-skilled job seekers (without language skills) in the Brussels-Capital Region and a relative shortage in the first belt of municipalities around the Region.

Le mauvais appariement spatial – les demandeurs d'emploi ne résident pas là où se trouvent les emplois – peut constituer une entrave importante sur le marché du travail, surtout pour les groupes vulnérables. Dans cette étude, nous examinons le rôle de cette inadéquation spatiale dans la métropole bruxelloise. À l'aide d'un indice de pondération amélioré, le *distance-weighted spatial mismatch index*, qui intègre l'inadéquation induite par la localisation, nous comparons le mauvais appariement spatial entre le marché de l'emploi hautement et faiblement qualifié et le marché de l'emploi faiblement qualifié avec et sans connaissances linguistiques. Au sens le plus large de la métropole bruxelloise, les résultats montrent un mauvais appariement spatial jusqu'à 50 % plus élevé pour les demandeurs d'emploi faiblement qualifiés par rapport aux hautement qualifiés. Pour les faiblement qualifiés sans connaissances linguistiques, il apparaît jusqu'à 115 % plus élevé par rapport aux faiblement qualifiés avec connaissances linguistiques. Cette différence découle principalement d'un excédent relatif de demandeurs d'emploi faiblement qualifiés (sans connaissances linguistiques) en Région de Bruxelles-Capitale et d'un déficit relatif dans les communes de la première ceinture autour de la Région.

Ruimtelijke *mismatch*, waarbij werkzoekenden niet wonen waar jobs te vinden zijn, kan een belangrijke barrière zijn op de arbeidsmarkt, vooral voor kwetsbare groepen. In deze studie bekijken we de rol die ruimtelijke mismatch speelt in de Brusselse metropool. Met behulp van een verbeterde maatstaf, de *distance-weighted spatial mismatch index*, die locatie-gedreven mismatch mee in rekening brengt, vergelijken we de ruimtelijke mismatch tussen de hoog- en laaggeschoolde arbeidsmarkt en de arbeidsmarkt voor laaggeschoolden met en zonder talenkennis. In de meest ruime definitie van de Brusselse metropool, tonen de resultaten een ruimtelijke mismatch die 50 % groter is voor laaggeschoolden, in vergelijking met hooggeschoolden. Voor laaggeschoolden zonder talenkennis is de ruimtelijke mismatch 115 % groter dan voor laaggeschoolden met talenkennis. Dit verschil komt hoofdzakelijk voort uit een relatief teveel aan laaggeschoolde werkzoekenden (zonder talenkennis) in het Brussels-Hoofdstedelijk Gewest en een relatieve tekort in de eerste gordel gemeenten rond het Gewest.

INDEX

AUTHORS

TOBIAS THEYS

Tobias Theys is a PhD-researcher at the Faculty of Economics and Business of KU Leuven, campus Brussels. He is a labour economist, his research involves spatial, linguistic and educational mismatches on (urban) labour markets, their interactions and the different dynamics on high- and low-skilled labour markets. In his recent work (Theys and al., 2018, published in *Urban Studies*), he developed an improved measure of spatial mismatch that includes location-driven factors.
tobias.theys[at]kuleuven.be

NICK DESCHACHT

Nick Deschacht is Assistant Professor in Economics at KU Leuven and Guest Professor in Labour Economics at the University of Antwerp. His research is focused on discrimination, wage formation, unemployment, migration and the political economy of labour markets. His recent work includes studies on migration patterns in 19th century Flanders and Antwerp (Deschacht and Winter, 2019, *Journal of Migration History*) and on the importance of working hours for gender gaps in career promotions (Deschacht, 2017, *Journal of Labor Research*).

STEF ADRIAENSENS

Stef Adriaenssens is an economic sociologist, teaching courses in (Economic) Sociology, and Policy at KU Leuven, Campus Brussels. His core research interest involves underground, informal, and poorly protected economic activities, and low-skilled work, ranging from topics such as tax evasion and black market work to activities and groups that are often hardly recognized as work, such as begging and prostitution. Recent publication: Adriaenssens, Stef, and Hendrickx, Jef. (2019). *'Bad jobs': a case study of toilet attendants. Employee*
stef.adriaenssens[at]kuleuven.be

DIETER VERHAEST

Dieter Verhaest (PhD Economics) is assistant professor in Economics at KU Leuven, campus Brussel, where he is a member of the ECON research group. He is also affiliated to the Leuven Economics of Education Research group (KU Leuven) and visiting professor in Labour Economics at Ghent University. Some of his research interests include the economics of education and post-school training activities, labour market mismatches, and the youth labour market.