

Magdalena Szmytkowska

Polish migrants in urban space of Dublin

Bulletin of Geography. Socio-Economic Series nr 16, 139-152

2011

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej bazhum.muzhp.pl, gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.

MAGDALENA SZMYTKOWSKA

UNIVERSITY OF GDAŃSK, POLAND

POLISH MIGRANTS IN URBAN SPACE OF DUBLIN

DOI: 10.2478/v10089-011-0019-4

ABSTRACT. The end of Cold War in the late 1980s of the 20th century and the accession to EU in 2004 brought spectacular changes in Polish migrations during the last 20 years. The opening of borders in 1989 and labour markets for Poles in 2004 caused fundamental changes in the scale, intensity and directions of Polish migrations. This paper is an attempt to analyze the Polish wave of migration to Ireland, which is one of the three states that opened labour market for workers from the ‘new EU’ in 2004 without any restrictions. The special attention is paid to Dublin, where the presence of Polish immigrants is very visible both at the statistical level and within social and urban space.

KEY WORDS: Ireland, Dublin, Polish migration, labour market, urban space.

INTRODUCTION

Mobility of people is a very crucial social phenomenon observed in the history of civilization and contemporary world. The scale, motivation and distance are the factors which diversify migrations in time and space. S. Castles (2008, 2010) observes that traditional term of migration amounts to permanent (or at least long-term) movement from one nation-state to another, following the patterns of labour migration and settlement migration seen as typical of the 19th and 20th centuries. The 21st century by contrast is seen as an era of fluidity and openness, in which changes in transportation, technology and culture are making it normal for people to think beyond borders and to cross them frequently for many reasons. Movements for purposes of study, professional advancement, marriage, retirement or lifestyle are assuming greater significance, so that older ideas on migration are thought to be no longer relevant.

There is a very intensive discourse on factors determining migrations in theoretical deliberations of over the last hundred years. D. Massey (1999) compiled the main theories of mobility and prepared a synthesis in the form of causative factors of migrations. Firstly he noticed that international migrants tend not to come from poor isolated places that are disconnected from world markets, but from regions and nations that are undergoing rapid change and development as a result of their incorporation into global trade, information and production networks. Next factor is very obvious and undisputed. International wages differentials are not the only factor motivating people to migrate, however the most important. Moreover mass migrations are the consequence of permanent labour demand in the developed countries. In turn migration networks and other links between countries affect the scale and dynamics of migration. D. Massey underlines that social capital is an important determinant of movement. And finally the author notices that migration influences socio-economic processes not only in the receiving countries, but also in the sending states. It seems that factors cited above can be a relevant base for an analysis of characteristics of Polish migration to Ireland (Table 1).

Table 1. Polish migration to Ireland in the context of Massey's determinants of migrations

Massey's causative factors of migrations	Polish analogies in decisions on migration to Ireland
Sending countries – undergoing rapid change and development	Socio-economic transformation from 1989; accession to EU in 2004
Diversification of wages in sending and receiving countries	Strongly higher wages and better social safety in Ireland than in Poland
Mass migrations are the consequence of permanent labour demand in the developed countries	Dynamic development of Ireland in the turn of the century; absorbent labour market; high unemployment in Poland and lack of workplaces
Migration networks deciding on the scale and dynamics of migration	Migration to 'someone' – family, partner or friend; mistaken identity of both countries (religion, mobility, social structure, complicated history, etc.)
Social capital as the important determinant of mobility	Relatively high level of education of Polish immigrants (often better education and qualifications than Irish)
Influence of migration on socio-economic processes not only in receiving countries, but also in sending states	Improvement of the conditions and quality of life at family home; new social and family problems (separation of families, divorces, children without one or both parents)

Source: Own elaboration based on Massey, 1999

POLISH MIGRATIONS AFTER 1ST OF MAY 2004

The opening of labour markets for new members by three EU member states on 1st May 2004 was a crucial impulse for the outflow of Poles, mainly to United Kingdom and Ireland. The stream of migrations to UK, Ireland and Sweden increased four times after 2004, while the force of migrations to Germany, USA and Italy declined by 50% during analogical period (Table 2). Before Poland's accession to EU those countries were typical and most popular directions of Polish migrations.

Table 2. Essential changes in the directions of Polish migrations after 2004

Receiving countries	A		B	
	a	b	a	b
	c			
Great Britain, Ireland , Sweden	12.1	42.2	10.3	46.5
Germany, USA, Italy	62.9	36.1	63.7	34.8

Explanation: A – migrants; B – short-term migrants; a – before EU accession; b – after EU accession; c – in thousands

Source: Own evaluation based on Grabowska-Lusińska, Okólski, 2009

While the United Kingdom was historically one of the main directions of Polish migrations, Ireland is quite a new trend of Poles' mobility. Dynamic economic development in Ireland, shortage of well-skilled workers and low-skilled workforce were the main factors causing the inflow of foreign immigrants. Thus far Ireland had been a typical country of mass emigration because of historical, political, economic, and social reasons. That trend changed rapidly in the 1990s (Fig. 1). As a result of trade liberalization during the 1990s and the attractiveness of foreign direct investment, the Irish economy underwent a rapid growth, which induced many high-skilled emigrants to return (Mansoor, Quillin, 2006). Owing to their experience abroad, returning migrants were able to earn on average 10% more than similarly educated natives who had not moved (Barrett, O'Connell, 2000). Furthermore, thanks to its rapid economic growth, Ireland became a country of immigration that attracted high-skilled workers. The intensity of migration was growing dynamically in the following years mainly because of increasing number of migrants from Central and Eastern Europe (EU-8 since 2004 and Bulgaria and Romania since 2007).

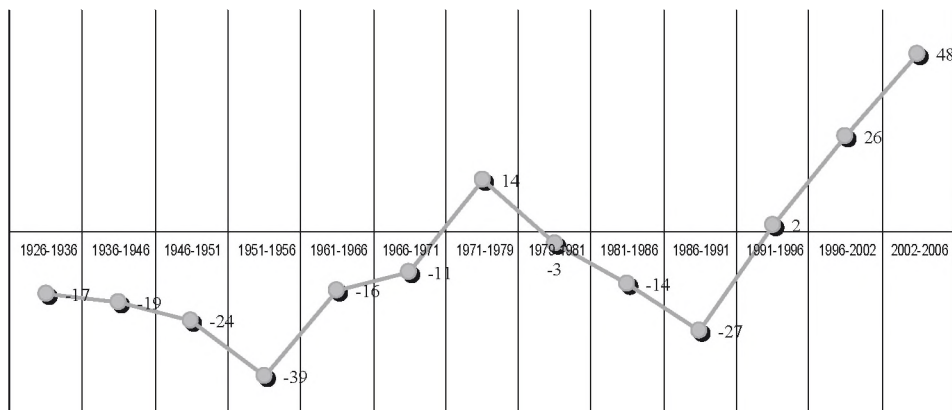


Fig. 1. Migration balance per 1,000 inhabitants in Ireland between 1926 and 2006

Source: Own evaluation based on Statistical Yearbook of Ireland 2009

Ireland has become a destination country for a new wave of immigrants. Official reports confirm an influx of over 300,000 immigrants from Eastern Europe, over 50% of them coming from Poland (Niehoff, Maciocha, 2008: 19–20). Immigrants primarily entered the Irish workforce through low wage jobs in the services, hospitality, construction, and other labour industries (Ledbetter, 2006). Ireland accepted the largest number of workers from EU-8 states, in relation to the total number of Irish population (Duszczuk, Wiśniewski, 2007: 7).

There is a basic difficulty with identification of exact number of Polish immigrants living and working in Ireland. The statistical and institutional discrepancies are very distinct. For instance, according to the Census of 2006 there were 63,276 Poles in Ireland. At the discretion of researchers and journalists statistical data are clearly underestimated. Other indicator of the scale of Polish migrations can be the quantity of Personal Public Service Numbers (PPS numbers) which were received by Polish immigrants. PPS number is a unique reference number that helps to gain access to social welfare benefits, public services and information in Ireland. The problem is that a simple analysis of those numbers is impossible because there is no obligation to resign from it, e.g., before the return to the home country. Nevertheless the sources of data presented above can be used in evaluation of approximate number of Polish immigrants in Ireland.

As previously mentioned, according to the last Irish Census the total number of Poles living in Ireland was approximately 63 thousand. Over 90% of Poles arrived to Ireland after 1st of May 2004 (in 2002 there were only 2,137 Polish people). Looking at demographic structures, the most important phenomena are: (a) domination of relatively young people (the average age is 27.5 years); (b) larger number of males (64%) than women (36%); (c) domination of

POLISH MIGRANTS IN URBAN SPACE OF DUBLIN

well-educated people (27% with completed high level and 58% with secondary level of education). The majority of Poles (84%) aged 15 years and over was working, mainly as employees. Such high percentage of working Polish migrants confirms that the wages are the main motivation of their mobility to Ireland. The dominating groups of Poles in the economic structure are low and semi-skilled workers (Fig. 2). There are only 3% of Polish workers who are employers and managers in Ireland, similarly to professionals – only 6%. It shows that Polish people find mainly low-paid jobs in the Irish labour market. The point is that proposed salaries are still much more attractive than in the Polish labour market.

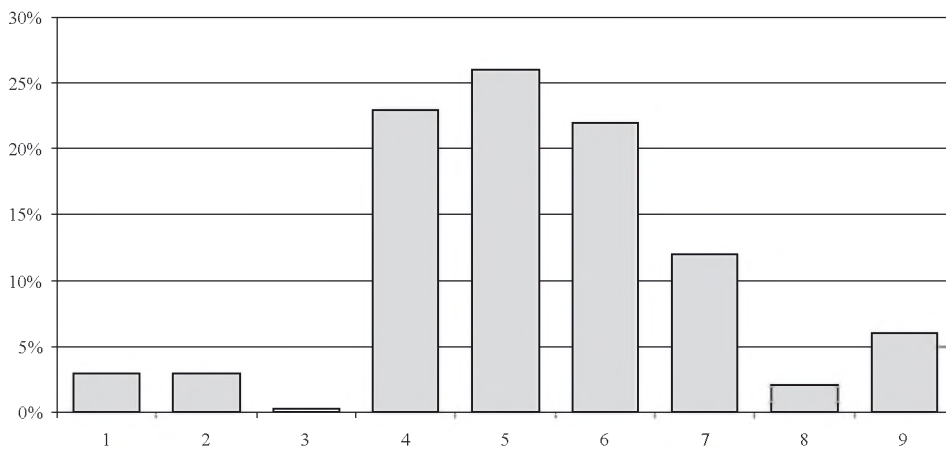


Fig. 2. Socio-economic groups of Poles working in the Irish labour market
 Explanation: 1 – employers and managers; 2 – higher professional; 3 – lower professional; 4 – non-manual; 5 – manual skilled; 6 – semi-skilled; 7 – unskilled; 8 – own account, agricultural workers and farmers; 9 – others (including unknown)

Source: Own evaluation based on Census 2006. Non-Irish Nationals living in Ireland, 2008

The majority of males worked in construction and manufacturing and every second female worked in shops, hotels and restaurants. The predominant occupations included sales assistants (7%), building labourers (6%), cleaners and domestics (5%), and carpenters and joiners (4%) (Census 2006..., 2008: 30).

As it was previously mentioned, the dynamically increasing number of PPS numbers received by Polish immigrants shows the spectacular scale of Polish migration to Ireland, especially between 2004 and 2006 (Fig. 3).

Although figures on PPS numbers give an indication of inward migration, they do not show how many people have left the country since registering. Similarly,

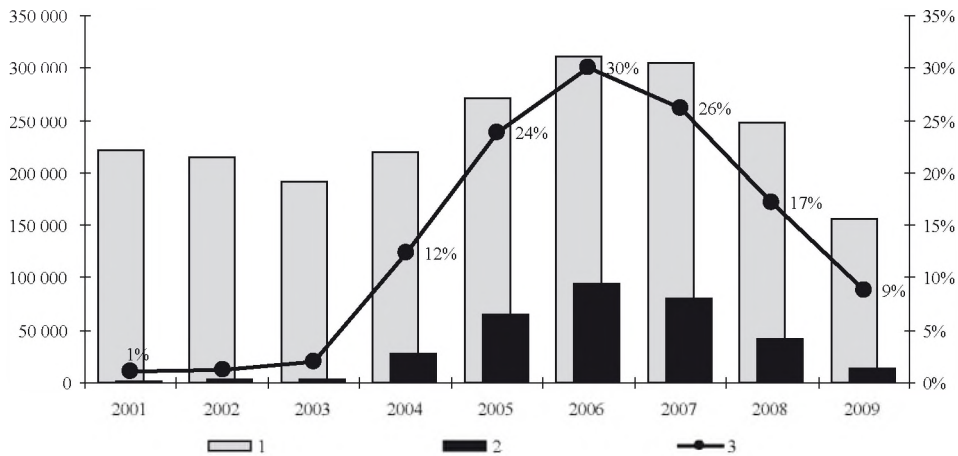


Fig. 3. PPS numbers issued in Ireland between 2001 and 2009

Explanation: 1 – total; 2 – Poland; 3 – in%

Source: Own evaluation based on data collected by Department of Social and Family Affairs, Dublin

they do not include migrants who chose not to register for a PPS number, or seasonal workers who re-activated numbers they held from previous stays (Cormaic, 2009). In spite of that, the analysis number of granted PPS number can be very helpful in the identification of scale and trends in migration. The current economic crisis, strongly experienced by Ireland, is reflected in declining numbers of newly registered people. For instance, whereas in 2006 almost 94,000 PPS numbers were issued to Polish nationals, who compose the largest migrant group in the Irish workforce, this quantity has declined to less than 14,000 in 2009 (see Fig. 3). As J. Wickham and T. Krings (2008: 1) notice, this appears to be linked to an improved labour market situation in Poland and to the fact that the pool of potential emigrants has diminished as many young Poles, the most mobile section of Polish society, have already left the country. However, it is also likely to reflect declining economic opportunities in Ireland, together with certain bettering of the condition of Polish economy.

Regardless of the statistical and institutional discrepancies it is obvious and undisputed that the relatively high wage rate is a powerful force inciting Polish migration. The point is why Ireland – the country which has never been attractive for Polish migrants before – is such a popular direction now. The opening of the labour market in 2004 was absolutely the crucial factor motivating Polish migrants. However the number of Poles' coming to Ireland was increasing until 2006–2007 in spite of opening of new labour markets of 'Old' Europe for new

members of the EU. Certainly there are some social and psychological reasons for this phenomenon observed among Polish migrants in Ireland. An attempt to identify those reasons is an important aim of author's research realized in Dublin in 2008.

POLISH MIGRANTS IN DUBLIN – SOME NOTES AND SURVEY RESULTS

The present study is an initial investigation into the motivation of Polish immigrants who have entered the Irish workplace and society. The field research took place in Greater Dublin area in September 2008. According to the data collected during the last Census (2006) Polish migrants were the biggest group (29%) of all coming to Ireland. The data were collected from a sample of 100 Polish immigrants. The focus of the study is not only an examination of the Poles' workplace experiences. Everyday life of Polish immigrants and their integration into Irish society as well as identification of 'Polish places' in urban space of Dublin are also research issues undertaken in the presented study.

A survey was developed and distributed by multiple methods to Polish immigrants. Respondents completed the survey of out hand, mostly at their workplaces. Another group of people took the inquiry form home and returned it the following day, while a few scanned the completed questionnaire and sent it by e-mail. A snowball method was applied to approach immigrants for the study. People who decided to take part in the survey, were asked if they knew of others who would be willing to participate. The sampling process resulted in the participation of 108 persons, but finally 100 correctly completed surveys were chosen for analysis.

The survey included information on demographics (e.g., gender, age, marital status, age, education, place of living in Poland), immigration information (e.g., when they immigrated to Ireland, how long they planned to stay, living arrangements), current employment or other engagements, use of Polish shops, services and other institutions, ways and places for leisure, etc.

Pararell to the survey described above, the author realized some interviews with Polish citizens. Their answers helped in formulation of some comments and supplements. Among the interlocutors there were for instance: a Polish priest working in one of the Catholic parishes in Dublin, a woman from Polish Information & Culture Centre in Dublin, PhD student from Poland – member of a project realized by Trinity Immigration Initiative in Dublin, an engineer hired in the construction sector and some people working in shops, restaurants and hotels.

Demographic characteristics of Polish ‘Dubliners’ taking part in research were as follows: (a) determined advantage of young people (78% under 30 years); (b) equal proportions of women and men; (c) visible majority (71%) of singles (37% unmarried men and 34% unmarried women); (d) high percentage of well-educated people (49% with higher and 47% with secondary level of education). For a vast majority of the migrants a job opportunity was the main reason of coming to Dublin. Over 90% of surveyed Poles said that it was the first motive for the decision on migration. Moreover 28% of respondents declared that learning English language was important to them. Some people indicated the education (8%) and tourism (4%) as the additional goals of their stay in Ireland.

It is underlined that in the case of Polish migration to Dublin social networks played the main role (Fig. 4). 40% of respondents came there directly to friends who had come there before, while the next 22% arrived there to cohabitants or spouses and 15% to other family members. Only a quarter of Poles said that they moved to Dublin on spec, not having any contacts with the local people beforehand. It means that people having closer relations decide on mobility much more easily, because they feel more safe and self-confident. Moreover they usually can stay with friends or family and count on their basic support.

Duration of a job-seeking period in Ireland was found to be absolutely shorter than in Poland, especially between 2004 and 2006. Additionally, average wages in Irish labour market were much higher than Polish ones. Those factors were

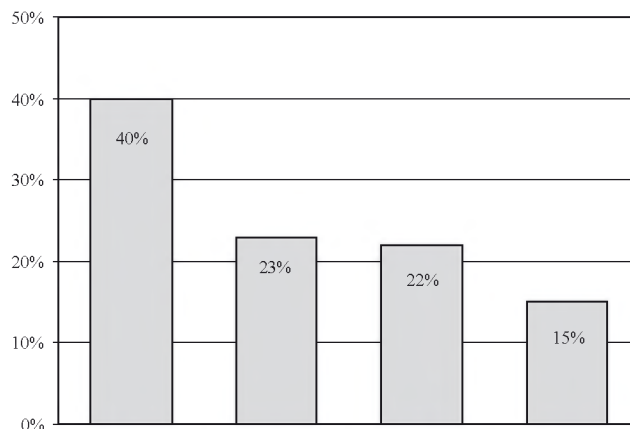


Fig. 4. The role of social networks in Polish migration to Dublin

Explanation: 1 – arrival to friends; 2 – arrival on spec; 3 – arrival to partner; 4 – arrival to family

Source: Own evaluation based on results of author’s research

crucial for the decision to migrate. Among 90% of Polish migrants who came to Dublin to work, 12 on spec had signed contracts before and over 75 on spec were looking for a job for less than one month.

On the other hand the majority of Polish employed has a job below their qualifications. Polish immigrants often underline that it is quite easy to find a job but then it is much more difficult to be promoted, even despite the employer's satisfaction. Irish employers perceive Polish workers as well-educated and high-skilled workers and professionals. It seems that the crucial factor deciding on the position on the labour market and prospects of promotion in work is the level of knowledge of English language. The results and findings of studies on Polish migration in Ireland affirm this thesis. K. Kropiwek and R. Chiyoko King-O'Riain (2006) note that 'insufficient knowledge of English is the main problem of Polish society in Ireland and prevalent reason of social (auto) isolation'. Also A. Barrett et al. (2006) underline the close connections between knowledge of language and chances on the local labour market: 'this is of particular importance as migrants in Ireland are often employed below their qualifications which can partially be attributed to a lack of language proficiency'. In turn A. Bobek et al. (2008) affirm that 'while a good command of English may not be required for an entry position in technical occupations, it can however play an important role when progressing with the career'. Summing up, the good knowledge of English is for Polish migrants doubly important: firstly as the factor giving the valuable advantage in the moment of choosing a job and secondly as a strong reason for promotion.

The costs of living in Ireland – especially in Dublin – are quite high comparing with other European capitals. This is an important problem for Polish migrants who think not only about good living there but – maybe much more intensively – about earning money for a wealthy life back in Poland in future. That is why Poles try to find relatively cheap places for living. According to the Census of 2006 nearly 93% of Poles lived in rented accommodation. It was the highest percentage for any ethnic group. The results of author's research performed in Dublin affirm statistical proportions (Fig. 5).

About 60% of respondents live with people they are not related to. It means that for them lower rent and costs of living are definitely more important than the housing or residential quality. On the other hand it can amount that the Polish migration is temporary and immigrants plan to return to Poland in indefinite future. Only 2% of Polish people declare that they live in a flat of their own. It is a very spectacular indicator which confirms observations described above: mainly too high prices on the housing market for Poles and temporary stay in Dublin/Ireland.

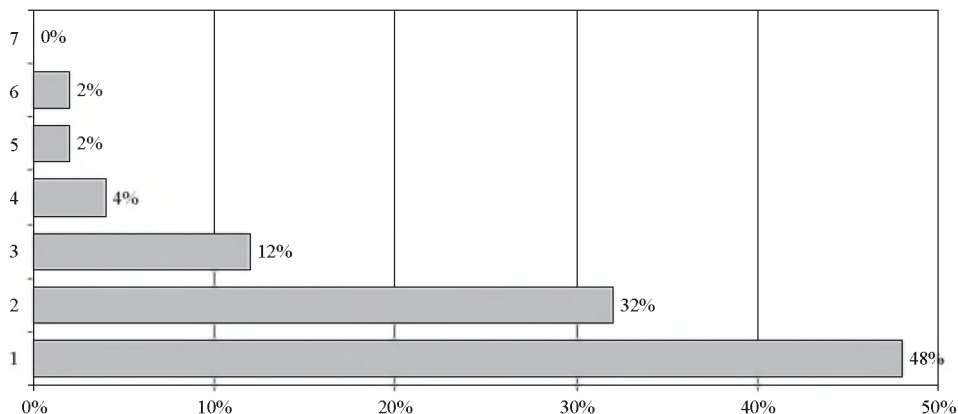


Fig. 5. Polish immigrants' places of living in Dublin

Explanation: 1 – with friends in rented flat; 2 – with family in rented flat; 3 – with Poles who have not know before; 4 – alone in rented flat; 5 – in rented room at Irish home; 6 – with family in own flat; 7 – alone in own flat

Source: Own evaluation based on results of author's research

POLES AND POLISH PLACES IN URBAN SPACE OF DUBLIN

There are two main clusters of Polish immigrants in Greater Dublin Area: City Centre of Dublin (D1 and D2 districts) and in South Dublin County (D24 district) with Tallaght as the largest urban centre. The variety of Poles' opinions about the most favourite places of living and leisure for Polish immigrants in indicated districts of Greater Dublin is presented below (Table 3). The choice of Central districts of Dublin for a place of living results from the better accessibility to workplaces and and/or to bus/tram/train services. In turn the concentration of Polish immigrants in Tallaght is a result of lower renting prices of flats and good

Table 3. Main clusters of Polish immigrants in the urban space of Great Dublin

	A	B
Location of place of living	24%	13%
Most popular districts for living for Poles	25%	24%
Concentration of Polish shops and services	92%	3%
Places of frequent presence of Poles	52%	5%
Favourite places of leisure	42%	8%

Explanation: A – City Centre; B – Tallaght

Source: Own evaluation based on results of author's research

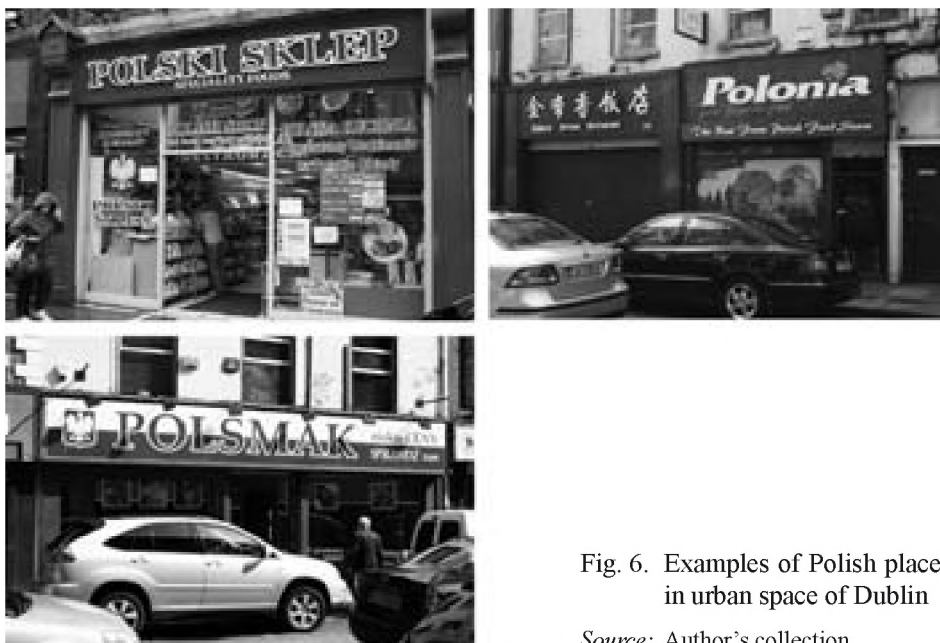


Fig. 6. Examples of Polish places in urban space of Dublin

Source: Author's collection

connections with the city centre by tram LUAS. Increasing number of Polish shops and services was the consequence of the significant number of Poles living and working there.

Among numerous Polish institutions, shops, services, and media the most attractive for Polish migrants are the Polish shops (Fig. 6) and the Polish Catholic Church. According to author's research results almost 90% of all respondents declare that they do their shopping in Polish shops. About 60% of Polish immigrants regularly (once a week) attend the Polish church in Dublin (Lisak, 2008).

The presence of Polish places in urban space of Dublin is very visible. The quantity of Polish institutions and their activity in real and virtual space is really spectacular and shows that Polish immigrants occupy significant and relevant spaces and places in urban and social sphere. It is very interesting that Polish people demonstrate their presence in Dublin and in other Irish cities using Polish national colours, emblems and other typical Polish symbols. It means that Poles feel safely and are an accepted ethnic group in a multicultural city. The network of Polish shops and services is well organized and accessible. Analysis of the network of Polish public places (in the real and virtual sense) allows to claim that Polish immigrants are socially engaged, friendly and helpful for their countrymen. It may be the result of 'the ride in the same boat' and understanding the situation of a typical migrant.

CONCLUSIONS

Republic of Ireland is one of the most popular destination countries chosen by Polish migrants after 1st May of 2004, mainly thanks to the opening the Irish labour market for new members of the EU. In the structure of Polish migration Ireland became an important destination along with traditional receiving countries, like Germany, Great Britain and the USA. Compared to other sending countries from Eastern Europe, definitely the force of wave Polish immigrants is the biggest. Although the scale of the Polish migration to Ireland is certainly massive, there are fundamental difficulties with evaluation of number of Polish migrants in Ireland. There is a distinct discord between census data and estimates of researchers, public and private institutions or media. One of the reasons of problems with estimation is the substantial alternation and fluctuation of migrants in Ireland. Moreover the consecutive issue complicating the accurate evaluation of quantity of Polish minority in Ireland is the discussion on the scale of return migration. It is especially difficult to quantify because migrants' declarations and final decisions are sometimes extremely different. Poles often declare that will come back their home country soon, but on the other hand they underline the lack of prospects after their eventual return to Poland. The economic crisis in Ireland which had started in 2008 became the further complicated identification of the scale of migrations from Poland. It seems that case studies implemented in smaller groups of migrants or in concrete spaces occupied by them are an important research method facilitating the explanation of phenomenon of Polish migration to Ireland.

The presented case study is an attempt to identify Polish immigrants living in Dublin. Work appears to be the dominant reason of their decision to migrate to Ireland. Statistically they are relatively young, mainly single and well-educated. They are relatively satisfied with living in Ireland, which seems to be easier and more comfortable. The city centre of Dublin is the main area of Poles' absorption, mainly because of the workplaces concentrated there. Moreover there are numerous Polish institutions, shops and services located in the vicinity. Finally, the city centre is the most popular place for leisure, shopping and clubbing not only for Irish but for Polish people as well. A very interesting and specific aspect of Polish migration in Dublin and other Irish cities and towns is the demonstration of Polish presence in urban spaces by using Polish names, symbols, state emblems and colours, etc. Such 'visualization' is characteristic of the new wave of Polish migration after the EU enlargement. It means that Poles do not have typical Polish complexes ('poor and worse') and feel safe in Ireland. On the other hand, the Irish society accepts Polish minority and in general perceives them positively.

Polish economic and social activity is visible both in urban and in virtual space. The networks created by the Polish migrants in virtual world are a good example of integration of Polish Diaspora in Dublin and whole Ireland.

The substantial scale of the Polish migration to Ireland and serious problems with evaluation of this phenomenon commented in the paper are the ultimate reason for continuation of research. The diversity of issues and problems observed among Polish immigrants legitimizes the necessity for interdisciplinary studies on economic, demographic, social, legal, cultural, and political aspects of Polish migration to Ireland.

REFERENCES

- Barrett, A., Bergin, A. and Duffy, D.** 2006: The Labour Market Characteristics and Labour Market Impacts of Immigrants in Ireland. In: *Economic and Social Review*, 37, pp. 1–26.
- Barrett, A. and O’Connell, P.J.** 2000: Is There a Wage Premium for Returning Irish Migrants? In: *Discussion Paper*, 135, Bonn: IZA.
- Bobek, A., Krings, T., Moriarty, E., Wickham, J. and Salamonska J.** 2008: Migrant Workers and the Construction Sector in Ireland. A preliminary report from the Migrant Careers and Aspirations research project, Dublin: Trinity Immigration Initiative, Trinity College Dublin.
- Castles, S.** 2008: Development and Migration – Migration and Development: What comes first? In: *SSRC Migration & Development Conference Paper*, No. 2, New York: Social Science Research Council.
- Castles, S.** 2010: Understanding Global Migration: A Social Transformation Perspective. In: *Journal of Ethnic and Migration Studies*, No. 36, Issue 10, Routledge, pp. 1565–1586.
- Census 2006. Non-Irish Nationals Living in Ireland, 2008: Dublin: Stationery Office.
- Cormaic, R.** 2009: Citizens from new EU states take 47% less PPS numbers. In: *The Irish Times*, (available at: www.irishtimes.com; DoA: 30.01.2009).
- Duszyk, M. and Wiśniewski, J.** 2007: Analiza społeczno-demograficzna migracji zarobkowej Polaków do państw EOG po 1 maja 2004 roku. Warszawa: Instytut Polityki Społecznej Uniwersytetu Warszawskiego.
- Grabowska-Lusińska, I. and Okólski, M.** 2009: Emigracja ostatnia?. Warszawa: Scholar.
- Ledbetter, J.** 2006: Enter the Polish. In: *Time*, Vol. 168, No. 13.
- Lisak, M.** 2008: Immigrant Churches – faces of World Christianity. Phenomenon of Polish Catholics Living in Dublin, Trinity College Dublin (in press).
- Kropiwek, K. and Chiyo King-O’Riain, R.** 2006: Polish Migrant Workers in Ireland. National Consultative Committee on Racism and Interculturalism (NCCRI), Community Profiles Series, (available at http://www.nccri.ie/pdf/06_Polish_Report.pdf, DoA: 12.12.2009).

Magdalena Szmytkowska

- Mansoor, A. and Quillin, B.** 2006: Migration and Remittances: Eastern Europe and the Former Soviet Union, Washington: The World Bank.
- Massey, D.** 1999: Why Does Immigration Occur? A Theoretical Synthesis. In: Hirschman, Ch., DeWind, J. and Kasnitz, P. editors, *Handbook of International Migration: the American Experience*, New York: Russell Sage, pp. 34–52.
- Niehoff, B.P. and Maciocha, A.** 2008: An Initial Exploration of the Cultural Adaptation and Motivations of Immigrant Workers in Ireland. In: *Irish Journal of Management*, 29, pp. 19–44.
- Statistical Yearbook of Ireland 2009, 2009: Dublin: Stationery Office.
- Wickham, J. and Krings, T.** 2008: Migration and Recession. In: *MCA Newsletter*, No. 1, Dublin: Trinity Immigration Initiative, Trinity College Dublin.

CORRESPONDENCE TO:

Magdalena Szmytkowska
University of Gdańsk
Institute of Geography, Department of Economic Geography
Bażyńskiego 4, 80–952 Gdańsk, Poland
[e-mail: geoms@univ.gda.pl]