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Dynamics of retail-bank branching in Antwerp (Belgium) 1991–2006: Evidence from micro-geographic data

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ABSTRACT

We exploit a comprehensive new panel dataset on retailbank branch locations in 233 neighborhoods (local markets) in the metropolitan area of Antwerp to describe (i) how between 1991 and 2006 the patterns of bank presence, entry, exit and choice deeply evolve and (ii) whether and how changes in these "on the ground" patterns systematically diverge across Antwerp's different, highly segregated neighborhoods. We show that over the 15-year period under study entry and exit dynamics substantially intensify, the level change in branch desert grows significantly, and bank choice markedly declines; and that between 1996 and 2001, these changes are robustly associated with the neighborhood average income. In doing so, we advance a new technique for generating spatial measures that both minimize the discretization bias and can be reliably linked to neighborhoods. We demonstrate that the resulting measures are indeed more precise than traditional count measures.

1. Introduction

The past 20 years have witnessed a dramatic change in the geography of Belgium's (and Europe's) retail-banking landscape. While in several other European countries the number of bank branches increased between 1985 and 2004, Belgium's branch network (as the UK's) shrunk by over forty percent, from more than 8000 branches in 1985 to less than 5000 branches in 2004. Consumer choice over retail banks, as in most European countries, likewise diminished over this same period. Yet to date, no one, to the best of our knowledge, has investigated the nature and ramifications of these retail-banking transformations in more detail over time and "on the ground" at a scale most relevant to the everyday consumer.

In this paper, we exploit a comprehensive new panel dataset on retail-branch dynamics in 233 neighborhoods (local markets) in the metropolitan area of Antwerp to describe (i) how between 1991 and 2006 the patterns of bank presence, entry, exit and choice deeply evolved and (ii) whether and how these changes in "on the ground" patterns systematically diverged across Antwerp's different, highly segregated neighborhoods. We document and track all changes in branch dynamics over three 5-year windows between 1991 and 2006 and match these data with rich, fine-grained residential data from various sources resulting in a unique, very detailed panel dataset stretching over a 15-year period.

The reason why Antwerp is a particularly suitable candidate for our analyses is threefold. First, Antwerp's neighborhoods (even when we exclude green and harbor areas) vary substantially in size, population and average income – variation that we are keen to exploit empirically. Second, the city is characterized by a high degree of residential segregation, and large income and ethnic disparities, which are far more distinct than in any other Flemish city. Third, not only is there a strikingly high degree of residential segregation, but also a strong persistence in income and ethnic disparities over time.

We assess how the diversified neighborhoods of the metropolitan area of Antwerp are affected by the nationwide mutations of the banking sector. In doing so, we thus exploit the interaction of two factors that are exogenous in our setting – the wide and persistent socio-economic diversification of neighborhoods on the one hand, and the short-run dynamics of the banking sector on the other-to-shed light on the spatial dynamics of retail-branch

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entry and exit at a geographical scale which is plausibly most relevant to the everyday consumer.

The period 1991–2006 was characterized by intense changes in the environment in which banks had to operate (Goddard et al., 2007). Admittedly, this restructuring of Belgium's (and Europe's) financial sector has been ongoing for many years. It was spurred on since the late-1970s by the sustained legislative drive at the EU level aimed at abolishing capital controls and establishing freedom of cross-border financial services, and deregulation measures taken at the national level. In the early nineties then, improvements were made with key Directives being adopted for different kinds of financial services. For example, a single passport was created to set up a branch or provide cross-border services. Notwithstanding these efforts, by the mid-to-late 1990s Europe's financial markets remained fragmented. The realization of a truly integrated, internationalized retail-bank market in Europe was given a renewed impetus in 1999 with the launch of Europe's Financial Services Action Plan (FSAP) and the European Monetary Union (EMU) (Goddard et al., 2007). In particular, the FSAP advanced six key areas for action to help overcome the array of legal, administrative and private law obstacles, which were at the time still hampering the cross-border purchasing and provision of retail-banking services (e.g. single bank account, mortgage credit). The EMU in turn eliminated two significant sources of segmentation or competitive advantage of local banks (currency risk and expertise on national monetary policy), and further increased competitive pressures by making market practices more uniform and pricing more transparent. In the immediate shadows of the massive, physical reconfiguring of Belgium's retail-branch networks (that is, from 2001 onwards), availability and usage of online banking surged. Classic banks began to boost their online portals, cross-selling products via their website in order to reach new clients, diversify their distribution channels and introduce home-banking. In addition, new pure internet banks, such as the Rabobank, started to launch their services in Belgium from 2002 onwards. The three 5-year periods in our analysis therefore can be roughly described as (1) a period of intermediate liberalization efforts (1991–1996), (2) a period with intensified liberalization efforts (1996–2001) and a period characterized by technological change and innovations (2001–2006). We are of course aware that this is a stylized view, which summarizes some of the macroscopic dynamics affecting the sector, while many others are unobserved to us. Henceforth, to ease our exposition, we will refer to the periods 1991–1996, 1996–2001 and 2001–2006 as respectively period one, two and three.

This paper adds new empirical insights to a large literature on spatial competition and market structure. It is arguably most closely related to the works by Waldfogel and co-authors investigating how demographics (in particular consumer preference heterogeneity) impact a consumer market's structure and geography (George and Waldfogel, 2006; Waldfogel, 2007, 2010) Further, it is related to studies that empirically examine the geography of banks and its evolution over time (Avery et al., 1999; Greve, 2000; Morrison and O'Brien, 2001; Damar, 2007; Leyshon et al., 2008), though our paper does this with much higher statistical precision and at a more disaggregated level. Studying the geography of banks at a disaggregated scale is notably relevant, in particular as it is at a very local level that distance to bank branches (Ho and Ishii, 2011) and branch density (Dick, 2006, 2008) have been shown to considerably impact demand for banking services and consumer welfare. Finally, our paper adds to a vast body of literature on financial exclusion, and the closure of branches in low-income neighborhoods (Leyshon and Thrift, 1996; Leyshon et al., 2008). Much work in this area examines the effects of bank closure, having little or no access to formal bank services, or relatedly making little use of bank services on consumer welfare and decision-making, taking stylized facts about bank closures as a given (e.g. Thaler, 1990, 1999; Lusardi, 2002; Bertrand et al., 2006).

Apart from gaining new empirical insights, we also contribute to the methodological literature on spatial processes. More specifically we develop novel measures of branch presence, entry, exit and choice which (i) minimize the discretization bias that commonly affects traditional count measures, and (ii) unlike the measures from a pure point pattern approach (e.g. Marcon and Puech, 2003; Duranton and Overman, 2005), can reliably be linked to discrete neighborhoods. These neighborhood-specific statistics will be referred to as "zonal statistics" in the remainder of the paper.

The remainder of this article proceeds as follows: Section 2 presents the data, our empirical strategy and spatial approach. Section 3 presents the results. Section 4 concludes.

2. Materials and methods

We construct a new panel dataset on all 233 "neighborhoods" or local banking markets in the metropolitan area of Antwerp. For each neighborhood we collect data on bank presence, exits and entries, as well as on various neighborhood characteristics.

In Belgium, "neighborhoods" are the smallest spatial units for which statistical data can be obtained. They were created for the Census in 1970, and revised in 1981 and 2001. Originally they corresponded to areas with uniform social, economic and morphological characteristics. Over time this within-neighborhood uniformity somewhat diminished. Although the neighborhood borders were revised in 2001, changes due to evolutions in social, economic and morphological characteristics remained limited. Furthermore, because these neighborhoods are rather small (average area of 366.39 m^2, which – if they were circular – would correspond to a circle with a radius of 341 m), significant within-neighborhood differences are indeed very rare.

2.1. Variables

To construct our baseline measures of bank presence, exit and entry, we collect the addresses of all active banks in 1991, 1996, 2001 and 2006 from the National Telephone Directory's (paper) archives, and convert those addresses into x–y coordinates with the help of specialized software (CRAB). Ideally, we would have preferred to extract data for more years, but we limit the data collection to four years because of the labor- and time-intensity of the data collection process. The choice of the four years is driven by source availability and by some additional considerations like the coincidence of the overall period with significant changes in the retail-banking landscape at the level of Belgium as a whole.

We collect neighborhood level data from various sources. We use population data (total population per neighborhood as well as percentage active population, percentage elderly and percentage people from non-Belgian nationality) from the Belgium's Directorate General Statistics. The income data (average income per neighborhood) are all official tax data, corrected for purchasing power (by means of the consumer index) and denominated in Euro. Geographic measures, like neighborhood's area or whether a neighborhood should be included as part of the city's center, are computed with Geographic Information System (GIS).

In order to analyze whether neighborhood characteristics affect branch dynamics, we create neighborhood-specific bank branch variables. The presence, exits and entries of retail bank branches are essentially collections of "point events" in space, not defined by any meaningful spatial extension. Most of the time, data of this kind are aggregated into arbitrarily chosen spatial units, often by means of a simple count or density ratio (in our case these measures would translate into variables such as the number of banks