



Comparison and one-stop shopping after big-box retail entry: A spatial difference-in-difference analysis



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ABSTRACT

This paper empirically measures the potential spillover effects of big-box retail entry on the productivity of incumbent retailers in the entry regions, and investigates whether the effects differ depending on 1) if the entry is in a rural or urban area, and 2) if the incumbent retailers are within retail industries selling substitute or complement goods to those found in IKEA. To identify the IKEA-entry effect, a difference-in-difference model is suitable, but traditionally such estimators neglect the possibility that firms' sales are determined by a process with spatially interactive responses. If ignored, these responses may cause biased estimates of the IKEA entry effect due to spatial heterogeneity of the treatment effect. One objective of this paper is thus to propose a spatial difference-in-difference estimator accounting for possible spatial spillover effects of IKEA entry. Particular emphasis is placed on the development of a suitable weight matrix accounting for the spatial links between firms, where we allow for local spatial interactions such that the outcome of observed units depends both on their own treatment as well as on the treatment of their neighbors. Our results show that for complementary goods retailers (or one-stop shopping retailers) in Haparanda and Kalmar, productivity increased by 35% and 18%, respectively, due to IKEA entry. No statistically significant effects were found for the entries in Karlstad and Gothenburg, indicating that it is mainly incumbents in smaller entry regions that benefit from IKEA entry. Also, for incumbent retailers selling substitute (or comparison shopping) goods no significant effects were found in any of the entry regions, indicating that it is mainly retailers selling complementary goods that benefit from IKEA entry. Finally, our results also show that ignoring the possibility of spatially correlated treatment effects in the regression models reduces the estimated impact of the IKEA entries in Haparanda and Kalmar on productivity in one-stop shopping retail firms with 3% and 0.1% points, respectively.

1. Introduction

The question of how big-box retail entry affects the productivity of existing retail firms in the entry regions is paramount to local policy-makers. Local governments are often ready to subsidize big-box retail entry under the justification that it will have significant positive spillover effects on the existing businesses in the region (Nilsson, 2015). There has been, however, little interest in empirically testing this argument in spite of the fact that if positive externalities on productivity are absent, the use of taxpayer money for such subsidies cannot be justified on economic efficiency grounds (Greenstone et al., 2010).

Previous studies on the effects of big-box retail entry on surrounding businesses have mainly investigated the impact on retail revenues or retail employment, and have been mainly based on the entry of Wal-Mart stores in the USA. The results of these studies diverge, with some

finding positive (Davidson and Rummel, 2000; Artz and Stone, 2012) and others negative (e.g., Merriman et al., 2012) impacts on retail revenues. Furthermore, while Basker (2005) and Hicks (2007) both found that Wal-Mart entry increase retail employment by approximately 100 jobs in the entry regions in the year of entry, others have found that big-box entry negatively affects retail employment (Jones and Doucet, 2000; Hicks, 2008; Neumark et al., 2008).

Outside Wal-Mart and the US market, Jones and Doucet (2000) and Hernandez (2003) studied the Canadian market and big-box entry in general, while Daunfeldt et al. (2016, 2017) investigated the impact of IKEA entry on revenues and employment in Swedish municipalities. Daunfeldt et al. reported an increase in durable goods retail revenues by an average of 20% and in durable goods retail employment by an average of 17% in Swedish municipalities where IKEA chose to enter during the 2004–2007 period (Daunfeldt et al., 2017). They also

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reported that these effects decrease with distance from IKEA (Daunfeldt et al., 2016).

Most studies on the effects of big-box retail entry on productivity have investigated the effect on regional level productivity, while those focusing on firm-level productivity are scarce. In 2007, Basker reported that much of the productivity growth in the US general merchandise sector was driven by the growth of Wal-Mart, while Maican and Orth (2012a) found that big-box entry in the Swedish retail food sector increased the productivity of incumbent firms in the entry regions. Additionally, Maican and Orth (2012b) also showed that more liberal entry regulations increased productivity in the Swedish retail sector, the effect being larger in smaller markets in Sweden. The inverse relationship between the size of the local retail market and the effect of big-box entry on productivity was also emphasized in Håkansson et al. (2016). Their results indicated that big-box entry increased the productivity of incumbent firms in rural entry regions where the IKEA entry was large relative to the local retail market, while no productivity spillover effects could be found in the case of the urban IKEA entry included in the analysis.

From theory, we know that the impact of big-box entry on incumbent retailer productivity might differ depending on what type of products the incumbents are selling. Increases in the productivity of incumbent firms due to big-box retail entry is a result of both supply- and demand-side spillovers, and while it has been argued that there is no difference in how supply-side spillovers impact existing firms within the same industry (McCann, 2001), demand-side spillovers may have different effects on productivity depending on whether the products sold by the incumbents are substitutes or complements to those sold by the big-box retailer. Co-location of retailers selling substitutes establishes the basis for comparison shopping, while co-location of retailers selling complements establishes the basis for one-stop shopping (Håkansson et al., 2016). But while both comparison and one-stop shopping have the power to increase the customer base and thus sales for the firms in the retail cluster, comparison shopping also increases competition for the incumbent retailers in the cluster (McCann, 2001).

The purpose of this study is to investigate a question overlooked in previous studies: do the effects of big-box retail entry differ depending on if the incumbent retailers are within retail industries selling substitutes or complements to goods found in IKEA? Additionally, we will also research whether the impact differs depending on if the entry is in a rural or urban area.

Methodologically, the estimation of how IKEA entry might affect the productivity of incumbent retailers in the entry municipalities is not an easy task. Previous studies of how IKEA affects incumbent retailers in local economies (Daunfeldt et al., 2016; Håkansson et al., 2016) use traditional difference-in-difference estimations, after first having tried to select control group municipalities with similar characteristics to the entry municipalities under study. We follow these studies in that we first select control group municipalities we believe to be similar to the entry regions in terms of the determinants of incumbent retailers' productivity development in the absence of entry. As in Håkansson et al. (2016), for the rural IKEA entries in the period 2006–2007, we use the municipalities deemed suitable for entry by IKEA in the period 2013–2016 as controls, while for the urban entry in Gothenburg, Stockholm is used as the control region.

As in Daunfeldt et al. (2016) and Håkansson et al. (2016), we use a difference-in-difference model to identify the IKEA-entry effect. The estimators used in these papers neglect however the possibility that firms' sales are determined by a process with spatially interactive responses, which, if ignored, may cause biased estimates of the IKEA entry effect due to spatial heterogeneity of the treatment effect. One additional purpose of this paper is thus to propose a spatial difference-in-difference estimator that accounts for possible spatial spillover effects of IKEA entry. Particular emphasis is placed on the development of a suitable spatial weight matrix accounting for the spatial links between firms, where we allow for local spatial interactions such that the

outcome of one incumbent retailer depends both on their own treatment as well as on the treatment of their neighboring incumbent retailers.

Our results show that for complementary and non-related goods retailers (or one-stop shopping retailers) in Haparanda and Kalmar, productivity increased by 35% and 18%, respectively, due to IKEA entry. No statistically significant effects were found for the entries in Karlstad and Gothenburg, indicating that it is mainly incumbents in smaller entry regions that benefit from IKEA entry. Also, for incumbent retailers selling substitute goods no significant effects were found in any of the entry regions, indicating that it is mainly retailers selling complementary goods that benefit from IKEA entry. Finally, our results also show that ignoring the possibility of spatially correlated treatment effects in the regression models reduces the estimated impact of the IKEA entries in Haparanda and Kalmar on productivity with 3% and 0.1% points, respectively.

The article is organized as follows: Section 2 presents the theoretical foundations for why big-box entry should affect incumbent retailer productivity and the importance of considering industry differences in retailing; Section 3 presents our identification strategy and empirical model; Section 4 presents the data, descriptive statistics and estimation results; and Section 5 summarizes and discusses the findings of the study.

2. Theoretical framework and previous studies

Big-box retail entry can have both direct and indirect effects on productivity in the entry regions. IKEA entry will have a direct effect on average productivity if IKEA itself is more productive than the average for the already existing retailers in the entry area, and it will have indirect effects if there are also productivity spillovers to incumbent retailers in the entry area. Such spillovers can affect the supply and demand of the incumbent retailers.

As mentioned in the introduction, most studies on the effects of big-box retail entry have investigated the effect on the regional level, also including the output of the big-box retailer in the data. As such, these studies focus on the aggregate of both direct and indirect effects of big-box entry on productivity (and other outcome variables such as sales or employment). For the case of IKEA entry in Sweden, the studies of Daunfeldt et al. (2017) and Rudholm et al. (2017), take this approach while using different empirical methods to measure the impact of IKEA entry on sales, employment and productivity, respectively.

In this paper, we instead study the impact of IKEA entry on incumbent retailers in the entry areas. As such, our focus is on the indirect, or spillover, effects of IKEA entry on the productivity of incumbent retailers in the IKEA entry areas. We start by discussing supply side spillovers and then turn to demand side spillovers of big-box entry.

Ever since the early contributions of Marshall (1890), Hotelling (1929), and Weber (1929), economists and economic geographers alike have analyzed supply-side spillovers due to firm co-location. According to these theories, firm co-location decreases input costs, facilitates labor matching, and creates knowledge spillovers (McCann, 2001; O'Sullivan, 2003). More recent literature has further associated knowledge spillovers to increases in productivity (Lucas, 1988; Grossman and Helpman, 1991; Glaeser, 1999) and pointed out that inter-firm learning might be affected not only by geographical, but by other types of proximity as well (e.g., cognitive, organizational, social, and institutional) (Boschma, 2005). Moreover, these theoretical contributions also find that there must be some optimal level of specialization in the type of firms that co-locate for knowledge spillovers to occur. An increase in retail density through co-location by very similar retailers would yield a low level of knowledge spillovers (as firms are very similar one firms' knowledge will already be known by other, similar firms), while also creating a high level of competition for the co-located firms. If co-located firms are instead too dissimilar, for example from totally different industries, the knowledge of one firm would contain little or no value

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