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LOCAL DISORDER AND THE SUCCESS OF FIRMS IN RESIDENTIAL NEIGHBOURHOODS

Abstract. According to economic geography literature, the success of firms is affected by the local context, in particular when firms are socio-spatially embedded. We expect this effect to be stronger when firms face an increase in local disorder. We analysed data on 344 firms (active in retail, eating and drinking establishments, personal services and private education, business services, cultural activities, manufacturing and building) in 108 Dutch residential neighbourhoods, and data on the changes in social and physical disorder of those neighbourhoods, to examine firm success determinants. We find that it is not the degree of disorder that matters to local firms turnover, but rather recent changes in local disorder. More in particular, we find that local firm turnover is negatively affected by an increase in local disorder, but only when a firm depends on daily visits from predominantly local customers. Our results suggest that physical and social local interventions to create safe and clean public spaces will indirectly positively influence local firms and subsequently, the neighbourhood economy. This spill-over effect is promising for both residents, who benefit from local amenities and local 'buzz', and local entrepreneurs, whose firm success is stimulated.

Key words: social and physical disorder; business turnover; neighbourhood; local dependency.

1. INTRODUCTION

Next to economic conditions (such as market opportunities, competitive power, human and financial capital) and entrepreneurs' personal characteristics, the local environment is important to firm success (De Bok, 2009; Dahl and Sorenson, 2012; Risselada, 2013). This is particularly applicable to firms in residential neighbourhoods – contemporary business environments where the number of

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firms is substantial and growing (Johannisson, 2011; Mason *et al*., 2011; Reuschke *et al*., 2015). Based on census data about firms, the Netherlands Environmental Assessment Agency (Raspe *et al*., 2010) has calculated that Dutch urban residential areas account for more than 35% of all Dutch firms and 40% of all Dutch jobs (averaged over 1999–2007). In many Western countries like The Netherlands, most firms are small (Davidsson *et al*., 2010), and remain small over time as many entrepreneurs have limited job growth ambitions (Kelley *et al*., 2016). Although empirical data is lacking at low spatial scales, it can be argued that both small size and low growth ambition particularly apply to firms located in residential neighbourhoods, that also often operate from the entrepreneurs' homes and/or are strongly oriented towards the neighbourhood market.

For business owners, home- or neighbourhood-basedness creates new opportunities and benefits, primarily in terms of time flexibility, the combination of the professional and private spheres, and their relatively low production (housing) costs (Mason *et al*., 2011; Risselada, 2013; Alsos *et al*., 2014; Bailey, 2015). However, such local businesses also face liabilities: running a (small) firm from a residential location makes the business vulnerable to detrimental conditions in the local environment. For instance, areas of high social and physical quality might attract visitors and customers and consequently increase a firm's success. In contrast, litter, graffiti and loitering adolescents (i.e., social and physical disorder) might be perceived as a sign of deterioration and negligence, harming a neighbourhood's reputation, and eventually the reputation of its firms.

These observations closely link to the spirited scientific discussion in economic geography (Oinas, 1998) and sociology on the socio-spatial 'embeddedness' of firms, and especially that of local businesses. The embeddedness concept acknowledges that entrepreneurial processes play at several spatial, social and economic layers. Recently, Korsgaard *et al*. clearly defined 'being embedded' as '…being situated in a context which enables and constraints the activities of actors…' (2015a, p. 576). With respect to entrepreneurs running a firm in their neighbourhood of residency, this means that they have to deal with multiple spheres simultaneously: local private and local professional spheres (Alsos *et al*., 2014; Bailey, 2015).

Our contribution to the existing literature on the relation between local disorder and firm performance is twofold. First, we look beyond the traditional entrepreneur- and firm-level determinants of local firm performance by including social and physical disorder conditions[1] at the local level (cf. Sleutjes *et al*., 2012a, 2012b; Folmer, 2014), which in this research are areas that on average include

[1] Social disorder and physical disorder are not the same. We combine both types of disorder in this research, because they show overlap, are strongly interrelated, and because separate measures of social and physical disorder correlate too strongly to be justifiably separated (see also Sleutjes 2012).

700 addresses.[2] Firms' allegedly socio-spatial embeddedness suggests that local order conditions have an impact on firm success. We assess the effects of both the *state* of local disorder conditions on the success of firms as well as *changes* in those conditions, because firms may learn how to cope with a particular state of physical and social (dis)order in the neighbourhood in which they are located.

Our second contribution relates to the measurement of firms' dependency on their local environment. In many residential neighbourhoods, (small) firms are in trouble. In the Netherlands, residential areas are lagging behind the Dutch average for growth in number of local firms and jobs; some districts are also witnessing a large number of firms and jobs leaving for other locations (Raspe *et al*., 2010). Williams and Huggins (2013) showed that deprived communities in the UK are persistent in displaying limited entrepreneurial activity. According to Bailey (2015), this is only partly caused by a specific local population composition, as deprived neighbourhoods often also lack the financial and social capital resources entrepreneurs require. However, he stresses that the importance of the local context varies between people, entrepreneurs and firms. In this line of reasoning, the effect of neighbourhood characteristics and neighbourhood (dis)order on a local business will also depend on a firm´s local embeddedness and dependency, for instance in terms of employees, markets and suppliers, which closely relates to the firm´s economic activities. In the past, attempts were made to capture this dependency on the local context by testing whether the effect of neighbourhood (dis)order on firm performance varies by a firm's business sector (Raspe *et al*., 2010; Sleutjes, 2012; Sleutjes *et al*., 2012b). However, business sector alone does not capture the actual visits and face-to-face contact and interaction between suppliers, customers and entrepreneurs (and among customers) in or around these neighbourhood firms. In other words, actual susceptibility to local disorder, by entrepreneurs and their business contacts, is neglected when using business sector as a proxy. Therefore, we study whether the effect of local disorder on firms' performance is dependent on the number of actual visits by local and non-local customers. With this we attempt to explore the actual mechanism involved in firms' local dependency.

We believe that a better understanding of the extent to which neighbourhood conditions impact on the success of local businesses may provide valuable tools for developing policy instruments to revitalise neighbourhood economies. Therefore this contribution presents an empirical study guided by the following question: *What are the consequences of changing local social and physical disorder to the performance of firms in residential neighbourhoods, taking into account their actual dependency on visits by (local) customers?* To answer this question, we used data collected via in-depth, face-to-face interviews with a sample of 344 owners

[2] In this article, we use the words 'local' and 'neighbourhood'. In the literature these are not always synonyms, but where we describe our own research and findings, these words refer to the same areas which are bounded by four-digit Dutch postal codes, which on average include 700 addresses.

of firms active in retail, eating and drinking establishments, personal services and private education, business services, cultural activities, manufacturing and building), who are living and working in 108 Dutch residential neighbourhoods.

The paper is structured as follows. In Section 2, we review arguments and empirical literature on determinants of firm success, with a focus on firms in residential neighbourhoods, and formulate our hypotheses accordingly. In Section 3, we describe our data collection and methodology. Section 4 describes our findings. Finally, in section 5 we discuss our findings and conclusions.

2. LITERATURE OVERVIEW AND HYPOTHESES

Traditionally, the study of the characteristics and determinants of firm success is the domain of the studies of entrepreneurship, strategy, small business management, organisational theory and industrial economics (Davidsson *et al*., 2010). Most studies on success determinants distinguish between firm-internal and external factors (Storey, 1994; Schutjens and Wever, 2000; Davidsson *et al*., 2010; Risselada and Schutjens, 2017). Numerous academic studies have shown that it is the characteristics of firms and entrepreneurs that are the primary 'firm-internal' drivers of firm success and firm growth, either as direct influences through entrepreneurial competences (Tamásy, 2006), management or strategic experience, or financial capital (Santarelli and Vivarelli, 2007), or indirect via personality factors that lead to ambitions for firm growth, which in turn is a prerequisite for firm success (Davidsson, 1991; De Tienne *et al*., 2008; for recent overviews, see Gilbert *et al*., 2006; Davidsson *et al*., 2010; Blackburn *et al*., 2013; Van Witteloostuijn *et al*., 2015).

However, firms and entrepreneurs are not 'lone wolves' (Bathelt and Glückler, 2003; Stam, 2009). Their existence and success depends on the balance of costs and returns, which is influenced by the opportunities and threats arising out of the production environment, such as easy access to customers, resources, and market opportunities that are closely linked to market structure (i.e., competition). As these scholars focus exclusively on the market or economic environments as determinants of firm dynamics, since the 1990s, the regional production environment has also received attention because of the characteristics of firms' physical environments (Love and Crompton, 1999; De Bok, 2009; Sleutjes, 2012) along with social, regional or urban contexts (Florida 2002; Lee *et al*., 2004; Rich, 2013). Firms and their entrepreneurs are neither impervious to their physical production contexts nor to their social living environments. The small explanatory power of individual- and firm-level determinants of firm success in academic empirical studies in the field of entrepreneurship and management (Davidsson

et al., 2010) suggests that other factors, including the local production environment, are also important (Kangasharju, 2000). This is especially true for the increasing number of part-time entrepreneurs who combine work and domestic, caring tasks at home (Mason *et al*., 2011; Johannisson, 2011; Reuschke and van Ham, 2013; Risselada and Schutjens, 2017). However, the context of entrepreneurship at this localized level is still under-researched (Ellen and O'Regan, 2010; Johannisson, 2011; Trettin and Welter, 2011), which recently led scholars to plea for more research on entrepreneurial processes at the local level (Lang *et al*., 2014; Korsgaard *et al*., 2015b) and even the household level (Alsos *et al*., 2014).

In subsection 2.1, we discuss these 'firm-external' locational and relational factors as additional explanations of firm success, and present the hypotheses derived from this literature overview in section 2.2.

2.1. Firm-External Determinants of Firm Success at the Local Level

Because the focus of this paper is on the local (i.e., neighbourhood) level, in this section we do not discuss (inter-) national, economic and sectorial influences on firm success. The local environment may offer economic potential – important for the emergence and growth of neighbourhood firms (Folmer, 2014). However, according to Sleutjes (2012), next to market potential, also social and physical (dis)order are primary dimensions of a neighbourhood's role in local firm success.

First, from firms' perspective, they have a strong connection to the neighbourhood through the market, or *customer relationships*, although this varies strongly among different economic sectors and types of organisations. The retail and consumer service sectors, for example, generally have many more regional or local customers than do firms in business services or manufacturing. For shops, eating and drinking establishments, and personal service firms, a large proportion of their customers are from the neighbourhood in which the business is located (Bulterman *et al*., 2007). Accordingly, for these local firms, neighbourhood market size (along with competition structure) is important. In addition, for firms that depend on their local market, the spending power of neighbourhood residents may almost be as relevant as market size. Because spending power varies considerably across urban neighbourhoods (as a result of income differences and income segregation), firms that depend on their local customer market perform better in more affluent neighbourhoods than in neighbourhoods that are relatively poor. E.g., Sleutjes *et al.* (2012a) show that employment growth in consumer services firms is positively related to local population size and its average age, income and education levels, whereas those effects are absent for local firms in the business service sector. Other empirical studies in the Netherlands confirm this result for shops and eating and drinking establishments: locally oriented firms in disadvantaged districts perform worse than competitors that are not primarily oriented towards the local customer

market (Aalders *et al*., 2008; Bulterman *et al*., 2007). Recently, Sleutjes and Schutjens (2013) have shown that investment growth in local firms is positively affected by being located in neighbourhoods characterised by relatively high income levels.

Second, neighbourhoods function as the physical environment of firms and entrepreneurs. For many entrepreneurs, and in particular for home-based entrepreneurs, their firm's neighbourhood is also their living environment. This implies that business decisions and strategies are not purely economic in nature, but rather are often intertwined with personal considerations (see also Hackler and Mayer, 2008; Risselada and Schutjens, 2017). Studies on the so-called 'Quality-of-Life' factors of entrepreneurial decisions (Love and Crompton, 1999) address these issues, including aspects such as safety and green space, which help determine whether a location is attractive for entrepreneurs, firms and skilled workers (Glaeser *et al*., 2001; Salvesen and Renski, 2002). Raspe *et al.* (2010) provide empirical evidence that liveability factors at the neighbourhood level influence both survival and growth opportunities for local firms in Dutch cities, controlled for other factors. Firms' survival chances, especially those of young firms, are lower in neighbourhoods with high reported levels of burglary, nuisance, or deterioration per resident than in other local contexts. Raspe *et al*. (2010) also show that local deterioration is negatively related to the number of new firms in a neighbourhood. Sleutjes *et al.* (2012a) have provided evidence for a negative effect of the perceived level of insecurity on employment growth of local consumer services firms again, this effect is absent for other local firms. In addition, a large share of local green space is positively related to the growth of consumer-service firms. Counter-intuitively, Sleutjes *et al.* (2012a) have found a positive relation between firm success and property crime, and violence and harassment, which may be due to reversed causality because specific economic activities also attract crime and nuisance. A follow-up study on a smaller number of neighbourhoods, which also includes the social aspects of neighbourhoods, shows that controlling for other factors, employment growth in local retail firms benefits from a strong local community, i.e., many contacts between neighbours and high levels of interpersonal trust among local residents (Sleutjes *et al*., 2012b). Unexpectedly, the level of collective efficacy is negatively related to employment growth in retail firms, presumably because collective efficacy is higher in 'problem neighbourhoods', in which social and physical order are in need of intervention. In other words, neighbourhoods characterised by high levels of collective efficacy are often social and physical disorderly areas. Consequently, the negative effect of local disorder on firm growth may offset a potential positive effect of neighbourhood collective efficacy.

Third, Sleutjes and Schutjens (2013) show that perceived insecurity in a neighbourhood reduces local firms' investment growth. Thus, with respect to the neighbourhood level, *community* and *safety* seem to be especially important

conditions for local firm success, which strongly depends on firm sector. This implies that at the crossroads of market effects and (dis)order effects, local social and physical (dis)order is most important for firms in locally oriented sectors (see Raspe *et al*., 2010). In particular, shops, bars and restaurants are affected by local order problems: the safety situation within the neighbourhood directly influences their customer potential.

Fourth, it is not only the state of local social and physical (dis)order that is important to firm success; changes in neighbourhood conditions are particularly significant. This finding stems from sociological studies on the effects of neighbourhood characteristics and neighbourhood dynamics on a number of outcomes, such as crime rates, health, and work prospects (Sampson *et al*., 2002; Van Wilsem *et al*., 2003, 2006; Völker *et al*., 2013). It has been found that although neighbourhood (dis)order clearly has an impact on its residents' assessment of the neighbourhood and whether they will move, perceived changes in neighbourhood order or reputation are also important (Feijten and van Ham, 2009; Bailey *et al*., 2013). We expect that local entrepreneurs are even more susceptible to changes in their neighbourhoods' social and physical order than are ordinary residents because neighbourhood conditions may affect not only entrepreneurs' social and personal lives, but also their professional success.

2.2. Hypotheses

We integrate the aforementioned neighbourhood effects on firm success by exploring whether, and under what conditions, local social and physical disorder, and especially changes therein, affect the turnover development of local firms. In the absence of empirical studies on the effect of firm-external factors on other indicators of firm performance, such as profits and sales, we assume that neighbourhood effects on firm success as described above also apply to turnover development. Accordingly, our most general hypotheses are: *Hypothesis 1a:* Local disorder negatively affects the turnover development of local firms. *Hypothesis 1b:* An increase in local disorder negatively affects the turnover development of local firms.

Empirical studies on the effects of neighbourhood liveability on firm performance by Raspe *et al*. (2010) and Sleutjes *et al*. (2012a) suggest that local (dis)order is especially significant for firms that are active in local economic sectors, such as retail or eating and drinking establishments. These scholars assume that this phenomenon is a consequence of the dependence of such firms on their local markets and the quality of nearby public spaces because such businesses need customers to actually visit them. The data used in these studies, however, do not allow for a further investigation of the sector effect. In our study, instead of using economic sector as a proxy for local dependency, we address this issue by studying directly

– and thus more adequately – the extent to which the consequences of local disorder for firm performance is different for firms that depend on actual customer visits compared to firms that are not physically visited by their customers. Accordingly, our next hypotheses are: *Hypothesis 2a:* The effect of local disorder on turnover development is stronger for local firms that are visited by many customers than for local firms without visiting clients. *Hypothesis 2b:* The effect of increasing local disorder on turnover development is stronger for local firms that are visited by many customers than for local firms without visiting clients.

Furthermore, based on Sleutjes *et al*. (2012a), we expect that firms with local customers are more vulnerable to local disorder than firms competing in non-local markets. Both firms with predominantly local customers and their local clientele (i.e., local residents or other local firms) are impacted by a disorderly neighbourhood, which may increase the negative effects of local disorder on firm performance. Residents of disorderly neighbourhoods may prefer not to spend a great deal of time in their area of residence, and thus avoid visiting local shops and firms as much as possible. Moreover, if residents observe that local entrepreneurs do not sustain or improve local liveability, or even negatively affect local liveability through their presence or activities, they may not buy products or services from those local entrepreneurs. We therefore hypothesise: *Hypothesis 3a:* The effect of local disorder on turnover development is stronger for local firms with predominantly local customers than for local firms that serve primarily non-local markets. *Hypothesis 3b:* The effect of increasing local disorder on turnover development is stronger for local firms with predominantly local customers than for local firms that serve primarily non-local markets.

3. DATA COLLECTION AND METHODS

3.1. Datasets

We used data from three different sources to test the hypotheses. First, we used survey data from 344 entrepreneurs, who were interviewed in 2008 about their firms, networks and local environments in the *Survey on the Social Networks of Entrepreneurs* (SSNE; see Völker *et al*., 2008b). To arrive at these entrepreneurs (including firms in retail, eating and drinking establishments, personal services and private education, business services, cultural activities, manufacturing and building), three sampling steps have been taken. First, this study of local entrepreneurs built on a large study of residents' personal networks in 40 Dutch municipalities (see Völker and Flap, 2000; Völker *et al*., 2008a). At the time of the first wave in 2000, these 40 municipalities were randomly drawn from the then approximately

500 Dutch municipalities, stratified to represent both urban and rural areas and accounting tor building density and population size. In the second step, in each of these municipalities, randomly four (in one case five) neighbourhoods were sampled at the five-digit postal code level, representing a rather small area including about 230 addresses and lacking large physical barriers, such as bridges or main roads. In the final and third step, we sampled all local firms and their entrepreneurs present in these 161 neighbourhoods, provided that the entrepreneurs lived within ten minutes walking distance from their firms.[3] With a total response rate of 37.3%, on average between 2 and 3 entrepreneurs were interviewed in each neighbourhood (385 in total). As the neighbourhood data (see next paragraph) were only available at the four-digit postal code level, we also aggregated these SSNE data to the four-digit postal code level (i.e., areas that included an average of 700 addresses). Unfortunately, some of the interviewed entrepreneurs were located in neighbourhoods that were not included in the surveys from which we have drawn neighbourhood data. Altogether, this implies that we used information on 344 firms and their entrepreneurs in 108 Dutch residential neighbourhoods (i.e., at the four-digit postal code level).[4] The survey contained specific questions about firm characteristics (such as product/service, age, size, turnover, turnover development, etc.), and entrepreneurs' local attachment (such as having (non)local customers).

Second, we used data from the Dutch Housing Demand Survey (Woning-Behoefte Onderzoek, WBO) at the four-digit postal code level. We used two survey waves from 2002 and 2006, which both included information about the social and physical (dis)order of the same residential areas as the SSNE. These data enabled us to describe whether changes in the social and physical order in local environments had affected the success of local firms in terms of turnover development over the previous two years. Third, we used data from Statistics Netherlands (CBS) about neighbourhood residents' spending power.

3.2. Dependent Variable

There is a growing consensus that within a cross-industry research design, the most preferable indicators for firm performance or firm success are 'sales growth' or 'turnover growth' (Wiklund, 1998; Ardishvili *et al*., 1998). Delmar's (1997) literature

[3] This selection was necessary to enable an overarching research question about the interactions among firms, entrepreneurs and neighbourhoods.

[4] One thousand and thirty-one of the 1,545 firms present in the 161 neighbourhoods (in 2008), were both run by an entrepreneur who lived in or near the firm neighbourhood and were actually contacted, because the maximum number of firms per neighbourhood had not yet been reached. Therefore, the response rate was 385/1031. Twelve of these 385 entrepreneurs were located in neighbourhoods that were not included in the WBO dataset, while another 29 entrepreneurs were located in neighbourhoods that were not included in the CBS dataset.

review has found that the turnover indicator is most frequently used (i.e., in more than 30% of all firm-growth studies). According to Davidsson *et al*. (2010), this is the most general indicator, because in every sector, firm turnover is necessary, even crucial, to firm survival. Furthermore, in most cases sales and an increase in sales precede other firm outcomes, such as investments, profits and employment growth. As mentioned in section 2, not all firms, and in particular not all local (and home-based) firms seek employment, turnover, or other types of firm growth. Many entrepreneurs in residential neighbourhoods are pleased and satisfied with their independence and ability to combine running their companies with child care or other domestic duties (Benz, 2009; see also Reijonen and Komppula, 2007; Risselada and Schutjens, 2017). However, even if an entrepreneur does not aspire to firm growth, to survive, turnover growth or at least turnover stability remains important. More precisely, turnover decrease indicates that a firm has become less successful and may find it difficult to survive. Therefore, we examine how local (dis)order and changes therein (in combination with dependency on visits by (local) customers) relate to turnover decrease over the past two years. Our indicator for turnover decrease is based on entrepreneurs' answers to the following SSNE question: 'Could you tell me how the turnover of your firm has developed over the past two years?' The answer categories were as follows: '1 – strong decrease', '2 – decrease', '3 – stable', '4 – increase', '5 – strong increase', and '6 – no answer'. For the main analyses, we recoded this variable into the binary dependent variable of 'turnover decrease', with '0' including answer categories 3 through 5, and '1' including answer categories 1 (strong decrease) and 2 (decrease).

3.3. Independent Variables

The primary independent variables related to 'local disorder' and its development over time are based on residents' answers to the following questions asked in the WBOs of 2002 and 2006: 'Now I would like to ask you some questions with regard to a number of unpleasant incidents and criminal acts that can occur in your neighbourhood. I would like to know whether, in your opinion, these unpleasant incidents and criminal acts occur 'often', 'sometimes', or '(almost) never''. The five unpleasant incidents and criminal acts that were the subjects of the inquiry included 'plastering of walls and/or buildings', 'vandalising phone booths, bus shelters or tram shelters', 'litter on the street', 'dog dirt on the street', and 'inconvenience by youth'. The possible categories of answers were '1 – often', '2 – sometimes', '3 – (almost) never', and '4 – don't know/no answer'. Although social disorder and physical disorder are not the same, they overlap and are strongly interrelated. We combined these, because separate measures of social and physical disorder correlated too strongly to be justifiably separated. Although the WBO was conducted in many neighbourhoods, we only selected the 119 neighbourhoods that were also included in the SSNE sample.

To determine the development of local (dis)order, we first recoded the variables into dichotomous variables, with '0' including the answer categories of '(almost) never', 'sometimes', and 'don't know/no answer', and '1' for the answer category of 'often'. We argue that only frequent occurrences of these unpleasant incidents and criminal acts in a neighbourhood are perceived as problematic by local residents, entrepreneurs, and their (local) customers, and therefore that only frequent occurrences affect the success of local firms. Next, for each respondent we counted the scores on these dichotomous variables, resulting in a score that ranged from 0 (none of the unpleasant incidents and criminal acts occurred often) to 5 (all five of the unpleasant incidents and criminal acts occurred often). Then, we calculated the mean of these scores for all of the respondents living in each 4-digit post-code area, resulting in a score for 'local disorder'. Finally, we subtracted the score of this variable in the 2006 dataset from the score of this variable in the 2002 dataset. Accordingly, the resulting variable 'local disorder increase' indicates the development of social and physical disorder between 2002 and 2006 in our selection of 119 Dutch neighbourhoods.

Our indicator for the importance of the local environment for entrepreneurs was based on the following SSNE question: 'How often do customers physically visit your firm?' The answer categories were '1 – more than 5 customers a day', '2 – daily, but never more than 1–5 a day', '3 – only a few times a week', '4 – once in two weeks', '5 – one customer a month at most', '6 – rarely if ever', and 'no answer'. For the main analyses, we recoded this variable into the dichotomous variable of 'customer visits', with '0' including answer categories 3 through 6, and '1' including answer categories 1 and 2. To indicate the extent to which firms mainly serve either local or non-local markets, we used the dichotomous variable of 'local customers', coded '1' for firms whose clientele consisted of 50% or more local customers, and '0' otherwise. This information originated with the SSNE. To assess whether a (potential) sector effect is indeed a consequence of dependency on actual customer visits (see Raspe *et al*., 2010; Sleutjes *et al*., 2012b), we performed additional analyses that included an economic-sector variable, including the categories of 'retail', 'eating and drinking establishments, 'personal services and private education', 'business services', 'cultural activities', 'manufacturing and building', and 'other'.

Finally, we controlled for (a) local residents' spending power (i.e., average income in Euros/1000), (b) whether the entrepreneurs had a profit growth goal (0 = No; 1 = Yes), (c) firm size (i.e., the number of employees; firms with more than 2 employees were recoded as '2' for the multivariate analyses), and (d) the number of years of a firm's existence (firm age; firms older than 50 years were recoded as '50' for the multivariate analyses), as important determinants at the neighbourhood (a) or firm (b to d) levels. Indicator (a) was based on data from Statistics Netherlands, whereas indicators (b), (c) and (d) were drawn from the SSNE.

4. RESULTS

Table 1 presents descriptive statistics on the dependent and the various independent variables used in this study (correlation matrix is presented in Appendix A). The data on turnover development reveal that approximately one-third of the studied entrepreneurs reported stable turnover during the previous two years, whereas 52% reported increased turnover during that time. Almost 15% of the studied firms experienced a turnover decrease, with 3% reporting a strong turnover decrease.

The various independent variables related to firm characteristics show that (a) nearly 60% of entrepreneurs aim for profit growth; (b) the average firm is composed of 2.3 persons; (c) the average firm exists for approximately twenty years (with a median of 12 years); (d) fewer than 30% of the studied firms receive at least one customer visit per day, and (e) three out of four of the firms that do receive daily customer visits have predominantly local customers (i.e., 50% or more of their customers are local). While Table 1 presents the economic sectors to which the firms belong, Appendix B shows that economic sector is not a very accurate indicator for dependency on visits by (local) customers (Raspe *et al*., 2010; Sleutjes *et al*., 2012b). The majority of both retail businesses and eating and drinking establishments indeed report having at least one customer visit per day. But although businesses that provide personal services and private education are also often assumed to be rather strongly dependent on customer visits, about 55% of these business report receiving less than one customer visit per day. With respect to the local context, Table 1 shows that the average firm is situated in a neighbourhood in which the mean income of residents is approximately 2,100 Euros per month. Furthermore, we observe a relatively low level of social and physical disorder in the selected neighbourhoods. The mean score on our indicator for disorder in 2006 is 0.38, which means that on average, residents in the studied neighbourhoods reported that only 0.38 of the five unpleasant incidents and criminal acts inquired about were regular occurrences in their neighbourhoods. Interestingly, between 2002 and 2006, the average level of disorder decreased in the studied neighbourhoods (mean score of -0.09). In other words, social and physical order in these neighbourhoods developed in a positive direction between 2002 and 2006.[5]

[5] Although the frequent occurrence of most unpleasant incidents and criminal acts decreased between 2002 and 2006, the frequent occurrence of 'inconvenience by youth' increased slightly (but not significantly). The frequent occurrence of plastering of walls and/or buildings was mentioned by 3.5% of respondents in 2002 and 2.8% in 2006. The frequent occurrence of vandalising phone booths, bus shelters or tram shelters was mentioned by 7.3% in 2002 and 5.8% in 2006. The frequent occurrence of litter on the street was mentioned by 11.4% in 2002 and 9.1% in 2006. The frequent occurrence of dog dirt on the street was mentioned by 20.1% in 2002 and 16.1% in 2006. The frequent occurrence of inconvenience by youth was mentioned by 5.8% in 2002 and 6.1% in 2006. Furthermore, social and physical (dis)order remained stable in approximately 7% of the studied neighbourhoods, improved in about 60% of the studied neighbourhoods and decreased in about 33% of the studied neighbourhoods.

Table 1. Descriptive statistics

Turnover development	Strong increase	9.0%	(344)
	Increase	43.0%	
	Stable	32.9%	
	Decrease	11.3%	
	Strong decrease	3.2%	
	No answer	0.6%	
Turnover decrease	No	85.4%	(342)
	Yes	14.6%	
Profit growth goal	No	40.7%	(339)
	Yes	59.3%	
Firm size (number of employees)	Mean	2.27	(342)
	St.dev.	7.57	
Firm age (number of years firm has existed)	Mean	20.61	(339)
	St.dev.	28.28	
Economic sector			(344)
Retail		15.4%	
Eating and drinking places		4.3%	
Personal services and private education		9.8%	
Business services		34.0%	
Cultural activities		7.8%	
Manufacturing and building		17.1%	
Other		11.3%	
Customer visits	< 1 per day	72.1%	(341)
	≥ 1 per day	27.9%	
Local customers (if ≥ 1 customer visits per day)	< 50%	24.2%	(95)
	≥ 50%	75.8%	
Local spending power (average income / 1000)	Mean	2.10	(344)
	St.dev.	0.42	
Local disorder in 2006	Mean	0.38	(344)
	St.dev.	0.28	
Local disorder increase 2002–2006	Mean	– 0.09	(344)
	St.dev.	0.27	

Sources: SSNE 2007; CBS; WBO 2002, 2006.Appendix B. Cross-tabulation of firms' economic sector and customer visits (% per row)

Table 2 presents the results of various multilevel logistics regression models on the likelihood that firms experienced a turnover decrease during the past two years. With regard to the control variables, Model 1 indicates that only profit growth goals significantly affect the turnover decrease of firms in residential areas. Entrepreneurs who reported in 2006 that they sought profit growth were less likely to have experienced a turnover decrease between 2006 and 2008.

Next, Models 2 to 4 (Table 2) show that in general – i.e., for all firms – neither the state of local order in 2006, nor its development between 2002 and 2006, affected the likelihood for turnover decrease between 2006 and 2008. This means that we do not find support for hypotheses 1a and 1b. Next, if we look at Models 5 to 7 (Table 2), we see that both (at least) daily customer visits and predominantly local customers negatively affect the likelihood for turnover decrease. The likelihood for turnover decrease is the same for firms in the retail business, eating and drinking establishments, and personal services and private education, compared to other economic sectors. Model 8 shows that if we place the variables for daily customer visits and local customers in the same model, both coefficients are not statistically significant because these variables are highly correlated.[6]

Finally, we included interaction terms for economic sector and local disorder increase (Model 9), for daily customer visits and local disorder increase (Model 10), and for daily visits from predominantly local customers and an increase in local disorder (Model 11). Of these three models, only Model 11 shows a substantial and significant interaction effect. Furthermore, if we compare Models 10 and 11 with Models 3, 6 and 7, we see that the main effects in Models 10 and 11 remain insignificant or rather similar. This means that – although an increase in local disorder between 2002 and 2006 has no general effect on local firms' turnover decrease between 2006 and 2008, and although having daily (local) customer visits in general negatively affects the likelihood for turnover decrease – firms that are dependent on daily visits of predominantly local customers are more likely to experience a turnover decrease when situated in a residential neighbourhood where social and physical order have deteriorated. These findings support hypothesis 3b. We note that additional analyses, which are not presented here, indicate that adding interaction terms for the state of local disorder and receiving daily visits from (local) customers did not improve these models. These findings are not in line with hypotheses 2a and 3a.

[6] Approximately 75% of all firms with (at least) daily customer visits have predominantly local customers (see Appendixes A and B).

Table 2. Multilevel logistic regression models of 'turnover decrease' over the past two years (Log Odds Ratios)[a]

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Profit growth goal (0/1)[b]	–0.69* (0.34)	–0.66† (0.34)	–0.69* (0.34)	–0.65† (0.34)	–0.64† (0.35)	–0.62† (0.35)	–0.64† (0.35)	–0.62† (0.35)	–0.60† (0.35)	–0.57 (0.35)	–0.59† (0.35)
Firm size (number of employees)[c]	–0.21 (0.22)	–0.19 (0.22)	–0.21 (0.22)	–0.19 (0.22)	–0.20 (0.22)	–0.16 (0.23)	–0.17 (0.23)	–0.16 (0.23)	–0.18 (0.23)	–0.11 (0.24)	–0.13 (0.23)
Firm age (number of months)[d]	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02† (0.01)	0.02† (0.01)	0.02† (0.01)	0.01 (0.01)	0.02† (0.01)	0.02* (0.01)
Local spending power (average income/1000)	0.55 (0.40)	0.68 (0.41)	0.56 (0.41)	0.66 (0.41)	0.52 (0.41)	0.45 (0.40)	0.47 (0.40)	0.45 (0.40)	0.63 (0.42)	0.49 (0.41)	0.51 (0.41)
Local disorder in 2006 (mean)[e]		0.85 (0.60)		0.90 (0.62)					0.95 (0.63)	0.88 (0.62)	0.92 (0.62)
Local disorder increase 2002–2006			0.06 (0.60)	–0.19 (0.61)					–0.14 (0.69)	–0.50 (0.65)	–0.54 (0.64)
Economic sector (0/1)[f]					–0.54 (0.40)				–0.63 (0.43)		
Economic sector * Local disorder increase									–0.54 (1.33)		
Customer visits (1= at least 1 per day)[g]						–0.95* (0.46)		–0.66 (0.79)		–0.88† (0.47)	
Customer visits * Local disorder increase										2.55 (1.66)	

Table 2. (cont.)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Local customers (proportion if 'customer visits'= 1)							–1.00† (0.53)	–0.39 (0.91)			–1.04† (0.57)
Local customers * Local disorder increase											3.86* (1.94)
Constant	–2.83** (0.98)	–3.46** (1.11)	–2.84** (0.99)	–3.48** (1.11)	–2.69*** (1.00)	–2.57** (0.99)	–2.66** (0.99)	–2.58** (0.99)	–3.36** (1.13)	–3.11** (1.11)	–3.23** (1.10)
Number of firms	342	342	342	342	342	342	342	342	342	342	342
Number of neighbourhoods	108	108	108	108	108	108	108	108	108	108	108
Wald Chi^2	9.50	11.02	9.52	11.07	10.81	12.74	12.22	12.83	12.56	14.97	15.46

Sources: SSND2 2007; CBS; WBO 2002, 2006 † $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$ (two-tailed tests).

a) Two cases with missing values were not included in the analyses.

a) Two cases with missing values were not included in the analyses

b) Missing values (four cases) were replaced by the modal value of the non-missing values on this variable.

c) Missing values (two cases) were replaced by the mean of the non-missing values on this variable. Next, firms with more than 2 employees were recoded as '2'.

d) Missing values (five cases) were replaced by the mean of the non-missing values on this variable. Next, firms older than 50 years were recoded as '50'.

e) We find no statistically significant interaction effects between the level of local disorder in 2006 on the one hand and either economic sector, customer visits, or local customer visits on the other hand.

f) The sectors retail, eating and drinking establishments, and personal services and private education were recoded as '1'; the sectors business services, cultural services, manufacturing and building, and 'other businesses' were recoded as '0'. Instead of using this binary variable, using seven separate categories for the different economic sectors indicated that turnover decrease is somewhat less likely for firms providing personal services or private education. No interaction effects between local disorder (increase) and each separate economic sector variable were statistically significant.

g) Missing values (three cases) were replaced by the modal value of the non-missing values on this variable.

5. CONCLUSIONS AND DISCUSSION

Based on the findings of this study, we conclude that firms' performance is indeed associated with the social and physical (dis)order of the neighbourhoods in which they are active. However, this conclusion neither generally applies to all types of firms nor does it simply refer to local environments that are in a disorderly state. Being economically active in a disorderly neighbourhood does not hamper the performance of every type of firm, nor does an increase in local disorder negatively affect the performance of firms in general. What is important is (a) whether a firm depends on daily visits from predominantly local customers, and (b) how local disorder has developed in previous years. We find a positive and strong significant effect on turnover decrease for the interaction between daily visits by predominantly local customers and an increase in local disorder: (log odds ratio = 3.86; Table 2, Model 11). In other words, firms who do receive a relatively large number of visits from local customers are susceptible to local disorder increase.

We find no significant differences among economic sectors with regard to the effects of (changes in) local disorder on turnover decrease. This contradicts previous research that has shown differences in firm survival and firm success among firms in different economic sectors while assuming that these differences are a result of a dependence on visits by (local) customers (e.g., Raspe *et al*., 2010; Sleutjes *et al*., 2012a, 2012b). Instead, we do find that local firms' turnover development is affected by the extent to which their local customers actually witness an increase in local disorder. Future research should reveal the extent to which sector differences in the effect of local (dis)order on firm success actually hide the effects of customer visit frequency and local market orientation, and/or whether sector and (local) clientele effects are different among various indicators of firm performance.

Our study has three main limitations. First, although this study directly assesses the effect of frequent visits of (local) customers on firm success instead of examining differences between economic sectors, it remains unclear exactly how social and physical order influence firm success. We do not know which aspect (social or physical) is most important, or the mechanisms by which firms (and their entrepreneurs) are affected by local disorder. It might well be that firms lose their regular customers if their neighbourhoods deteriorate. Second, although we used time lags (disorder in 2006, changes in disorder between 2002 and 2006, and turnover development of local firms between 2006 and 2008) the study is descriptive in nature, and some of the associations found cannot be regarded as causal effects. Third, as in all studies in which models attempt to grasp reality, there may be unmeasured variables that highly correlate with the state or development of local order. These unmeasured variables may actually be important determinants of firm performance. This limitation creates the need for

future research, including additional indicators of a firm's dependency on the local (neighbourhood) environments in which they are situated.

Actually, our finding about local disorder effects on local firms' success is good news for policy makers active in improving neighbourhood conditions for its residents. Our results suggest that interventions in local order, albeit in housing renewal, the housing allocation of residents, community building and community reinforcement, or creating safe and clear public spaces, may indirectly also influence local firms. Local business owners profit from these improving local circumstances, maybe reflecting an atmosphere of upgrading and future (market) potential. This economic spill-over effect of local policy interventions in the physical and social domain is promising for both residents – who benefit from local amenities and local 'buzz' – and local entrepreneurs, whose firm success may even increase. The spill-over effect of improving neighbourhood order might also diminish the dependence on supply-oriented direct enterprise support in deprived areas, which according to Williams and Huggins (2013) has had only limited success in the UK. Their final remark that in these areas '…the challenge to develop and implement appropriate policies remains as acute as ever…' (p. 176) can be seen in a more positive light considering the fact that local social and physical order improvements indirectly also benefit local entrepreneurs, their firms, and in the end, the neighbourhood economy.

Finally, our findings hint at the importance of (improving) the quality of public space for those local firms that serve local clients and visiting customers. Usually, these firms are also the most 'visible' businesses in their neighbourhoods, where people meet and greet one another. Consequently, these businesses provide opportunities for local social contacts that in turn, might support social and physical order (Steenbeek and Schutjens, 2014).

6. APPENDIX

Appendix A. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1) Turnover decrease	1.00									
(2) Profit growth goal	–0.13	1.00								
(3) Firm size (number of employees)	–0.06	0.15	1.00							

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(4) Firm age (number of years firm has existed)	0.06	–0.11	0.28	1.00						
(5) Local spending power (average income / 1000)	0.07	–0.05	–0.05	–0.11	1.00					
(6) Local disorder in 2006	0.07	–0.04	–0.13	–0.01	–0.19	1.00				
(7) Local disorder increase 2002–2006	0.00	0.04	–0.13	–0.02	–0.14	0.33	1.00			
(8) Sector[a]	–0.08	0.11	0.11	0.11	–0.12	0.05	–0.06	1.00		
(9) Customer visits	–0.12	0.12	0.20	0.21	–0.16	–0.02	–0.01	0.47	1.00	
(10) Local customers (if ≥ 1 customer visits per day)	–0.10	0.09	0.19	0.23	–0.14	0.03	–0.00	0.52	0.83	1.00

Sources: SSND2 2007; CBS; WBO 2002, 2006.

a) The sectors retail, eating and drinking places, and personal services and private education were recoded as '1'; The sectors business services, cultural activities, manufacturing and building, and 'other businesses' were recoded as '0'

Appendix B. Cross-tabulation of firms' economic sector and customer visits (% per row)

Economic sector	No daily customer visits	Daily customer visits	
		< 50% local	≥ 50% local
Retail	37.7%	9.4%	52.8%
Eating and drinking places	6.6%	13.3%	80.0%
Personal services and private education	55.8%	0.0%	44.1%
Business services	90.6%	3.4%	5.9%
Cultural activities	85.1%	11.1%	3.7%
Manufacturing and building	86.4%	3.3%	10.1%
Other	74.3%	17.9%	7.6%
Total	72.3%	6.6%	20.9%

Sources: SSND2 2007; CBS; WBO 2002, 2006.

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