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Social Capital and the Economics of Cities

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Social Capital and the Economics of Cities

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1 Introduction

1.1 Where has the social capital gone?

Since Putnam's (2000) "Bowling Alone", there appears to be a growing notion that social capital is on the decline in cities, that smaller cities exhibit stronger social capital, or alternatively that social capital theory is an unsuitable framework for analyzing urban settings. Previous research has for instance indicated that local trust levels are inversely proportional to population density (Glaeser, 2000). Some studies have attempted to quantify rural-urban differences, for instance by differentiating between bonding and bridging social capital (Sorensen 2016). All in all, however, the prevailing impression appears to be that that social capital is not as present and important in large and dense cities as it is in small, rural towns.

Yet, you only need to walk through a busy neighborhood in a big city to observe myriads of relationships, social ties and exchanges. Such interactions may not be comparable to the activity around a small town square, but that does not mean that they do not pertain to social capital. Bourdieu (1985) and Coleman (1988), as well as Putnam (2001) define social capital as a social network phenomenon. Given this definition, it seems counterintuitive that social capital would be absent in large cities where interactions between people thrive, and it appears relevant to ask how the distribution and dynamics of social capital differ between sparse and dense places. That is, if there is a decline in local trust measures and civic engagement in larger cities, then where has the social capital gone?

In this chapter we make the case that social capital theory is useful to understand large cities and their productivity benefits. We outline an analytical framework to illustrate not only the role of social capital in cities, but also differences between small and large cities in terms of the characteristics of social capital and how it develops, accumulates and is maintained.

1.2 Urban economics and social capital

The social dimension is not absent in the urban economics literature, but it rarely connects to social capital. Research has for instance shown that larger, denser cities are associated with higher wages, increased innovation and even faster walking pace (Bettencourt et al., 2007). A common explanation is that cities breed learning effects in terms of knowledge and information spillovers, and local 'buzz' (Storper and Venables, 2004; Duranton and Puga, 2004). However, we argue that knowledge and information spillovers provide only a partial view of the role of social interaction effects. First, what spills over, i.e. the contents of the interaction, is not limited to ideas or knowledge in a strict sense, but also includes behaviors, attitudes and norms – attributes more intuitively related to social capital. Differences in productivity and growth between small rural towns and large, densely populated cities

could at least partially be explained by large cities fostering social capital favoring industriousness and career-mindedness (cf. Rosenthal & Strange, 2008), which is spread among workers and inhabitants.¹

Second, it is often implicitly assumed that social interactions, although considered highly heterogeneous in nature, are uniformly spread across the entire city. Although there is a growing literature addressing the spatial extent and decay of social interaction effects and other density-related phenomena (Andersson et al., 2015; Larsson, 2014), less attention has been paid to connecting the spatial and social structures of such interactions. For example, questions related to why interaction effects may vary between people, groups and places are in general given more attention in social capital research.

Influenza, fashion and entrepreneurship all depend on social interactions to grow and spread, but it is evident that these three types of interactions rely on very different structures. Influenza depends, roughly, on physical proximity and timing to spread, whereas fashion spreads through role models, marketing and trends that do not require physical contact but could still be affected by distance, context and timing. As for entrepreneurship, as we shall see, a higher neighborhood density of entrepreneurs influences the emergence of new future entrepreneurs (Andersson & Larsson, 2016). That is, entrepreneurship is to some extent contagious, which is often explained by social interactions and network externalities in the literature (e.g. Minniti, 2005; Giannetti & Simonov, 2004, 2009). However, social interactions and network externalities are to our knowledge rarely treated as social capital components. In order to understand the socioeconomic dynamics of cities, there is a need to formalize and investigate these structures that - like distance and incubation time for contagion or role models and imitation for fashion - govern social interactions and their output. We argue that social capital provides some valuable tools to address these issues.

In conclusion, the social capital and urban economics literatures acknowledge social interactions and networks, as well as significant differences between small towns and large cities in this regard, but they do so in different ways. The framework presented in this chapter suggests that they are to some extent two sides of the same coin and that they could benefit greatly from each other.

¹For instance, in an article about the origins of the so-called “Swedish music miracle”, the Stockholm-based songwriter Jörgen Elofsson refers not to information and knowledge, but to work habits and attitudes: “*We work and work – and then we work some more. I do not think there is any special reason behind the Swedish music miracle. What there is is hard work, and a determination and drive among a small number of people who have succeeded and drawn others along with them*” (<https://scandinaviantraveler.com/no/node/2155>).

1.3 A framework for social capital networks

We build our framework on the proposition that social interactions act as vehicles of social capital in networks, i.e. as *social capital transactions*. Such transactions can occur along links that are either *direct* or *indirect* and either *thick* or *thin*. Direct links connect people who are mutually acquainted in some way, whereas indirect links connect people who don't know each other but who implicitly interact for instance by going to the same gym or coffee shop. Link thickness refers to the frequency by which interactions occur. As an example, family and best friends may share thick links, whereas people who go to the same dance class once per month probably share thinner links.

The proposed framework allows us to analyze types of social capital transactions that are quite unique to larger, denser cities, namely those that occur along indirect and thin links. In their extreme, such links could form a network of people who do not know each other, but who frequently or infrequently cross paths and influence each other. Although they do not connect directly and actively mobilize resources from each other, they still build and accumulate social capital for instance by imitating styles, attitudes and behaviors that translate into social capital, even in their respective networks of direct links. These links would not register in terms of civic engagement or local trust measures in the same way as thicker direct links, for instance associated to a smaller town where everyone knows everyone else, would. Even so, social capital transactions along these indirect and/or thin links could arguably translate into very real effects. It could, as mentioned above, be the case that some fast-growing cities have fostered the spread of social capital in social and professional networks that favors industriousness or career-mindedness. Conversely, this could also be described as agglomeration effects driven by the price and availability of production inputs (e.g. knowledge and information spillovers), where social capital structures affect the effectiveness by which such inputs are being utilized.

Consider a college graduate who relocates to a new city and moves into a new neighborhood in a large city. She will not randomly start bumping into people all over the city with the aim of improving her skills, establishing a social network or generating growth. Social interactions are not random with respect to either people or places. Instead, there are structures that will affect her interactions, both directly through professional networks or new friends, and indirectly by how people behave in the neighborhood where she lives, or at her favorite coffee shop. If people in her surroundings are career-minded and work longer hours, it is likely that she will too. And how she relates to these different influences will in turn affect other peoples' perception of her, and thereby her social capital in the networks she is a part of. After a year, she may hardly know the names of her closest neighbors, but she may in turn have a vast thin network of people that she interacts directly or indirectly with every week, which is larger than the population of a typical small town. Put differently, social interactions are not random. They are governed by structures that could be understood and can be at least partly explained by social capital. Accordingly, social capital is not absent in large cities, it is just expressed differently.

In fact, the city is an infrastructure for social interactions which in turn act as transactions of social capital.

As with many ideas in this field, they can be traced back to journalist and author Jane Jacobs. She argues that there is a profound difference between “knowing everyone” and having large numbers of people unknowable to you in the close surroundings. In *The Death and Life of Great American Cities* (1961) she was in fact very explicit:

“Towns, suburbs and even little cities are totally different organisms from great cities. (...) To try to understand towns in terms of big cities will only compound confusion.” Jacobs (1961, p. 22).

In her analysis, Jacobs (1961) describes cities as vehicles for what we define as thin and indirect links, i.e. links to people with whom an agent has no closer personal affinity. Conversely, the countryside mediates knowledge through thicker links.

1.4 Outline

The remainder of the chapter is divided into two parts. Part two is dedicated to exploring and making the connection between social capital and social interactions in the city. Here we outline an analytical framework of direct/indirect and thick/thin links to describe social interactions as social capital transactions. Zooming in on networks of predominantly indirect and thin links, we end this section by focusing on two types of mediating mechanisms by which social capital can be developed, spread and accumulated in networks between people: *peer effects & learning* and *imitation & emulation*. In part three we apply the analytical framework, specifically the effects associated with thin and indirect links, to a recent study of social interaction effects on entrepreneurship at the neighborhood level in Swedish cities. Part four concludes and summarizes suggestions for further research.

As a matter of definition, in this chapter we refer to the difference between small towns, or cities, and large cities with respect to population density. We will relate these differences to the more general notion of rural-urban differences, but our particular focus is primarily limited to comparisons between human settlements consisting of adjacent buildings and some degree of shared built infrastructure, for instance small rural towns and large densely populated cities. That is, our findings may not as readily apply to the most sparsely populated of rural areas where there is no discernable town formation.

2 Social capital, networks and interaction mechanisms

2.1 Social capital in networks

There is no one strictly formal definition of social capital, but a common denominator in several of the classic approaches to the subject is that it is a social network phenomenon. Bourdieu (1985) defines social capital as “the aggregate of actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition”. Coleman (1988) in turn defines social capital by its function as “a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors - whether persons or corporate actors - within the structure”. Putnam (2001) states that “The central idea of social capital, in my view, is that networks and the associated norms of reciprocity have value”. We draw on these definitions, especially that of Coleman (1988), in order to frame social capital as the combination of social networks and the material as well as immaterial resources that are shared and mobilized through them. These networks can be formal or informal, professional or purely social and, as we shall argue, involve both direct and indirect links.

This generalized network approach, assumes that an individual’s social capital will be affected by links to other people, activities along these links and by how the individual allocates time and attention, the ultimate scarce resource, across these links. That is, one person may spend time and attention on a small number of links, whereas another person may spend an equal amount of time and attention evenly spread over a large amount of links. As a result, the first person will have few but frequent contacts with other people, whereas the second person will have a large network of infrequent connections. We define this difference in how individuals allocate time and attention across links to others as *link thickness*. A thick link involves frequent interactions, whereas a thin link is associated with low- or infrequent interactions.²

As stated previously, Putnam’s (2000) book “Bowling Alone” seems to have inspired the notion that overall social capital declines with rising population size, and that a small rural town would have more social capital than a large, densely populated city (cf. Sorensen 2016). Many studies emphasize

² Note that the frequency of interaction on a link, i.e. the link thickness, says nothing about what specific resources that are (or can be) mobilized through a particular link, since that depends on what resources each individual commands and what their relationships or friendships actually entail. However, it may say something important about the network nature of social capital. Consider two individuals with two equally large networks of people, one in which each individual has two links to others and one in which each individual has four links to others. The latter network will have a higher degree of connectedness, even if individuals in the first network may share thicker links. This also means, for example, that information will spread differently across the two networks, and that it may be easier for each individual in the second network to reach other people that they do not share a link with. Intuitively, this suggests that there should be some differences in how social capital presents itself in small cities and communities vis-à-vis large, densely populated cities.

indicators such as civic engagement, membership in civic associations, and local trust measures to quantify social capital. Research has also indicated that local trust levels are inversely proportional to population density (Glaeser 2000, Putnam 2000). These indicators might reflect expressions of social capital that are biased towards small towns rather than large cities, where everyone knows everyone and problems of collective action are overcome through local associations.

Some recent studies have tried to quantify and measure rural-urban differences in social capital using what Putnam (2000) defines as “bonding”, i.e. social ties in highly connected and homogenous groups, and “bridging” social capital, i.e. social ties in loosely connected heterogeneous groups. Sorensen (2016) finds evidence suggesting that bonding social capital is stronger in rural areas, whereas bridging social capital is at best marginally stronger in larger cities. Although this could be interpreted as social capital being all but absent in large cities, we argue that social capital is indeed an important part of urban life.

Consider two networks; one between the people in a small rural city and one between people in a large and dense city. Suppose that the network in the small city is composed predominantly of few but thick links per individual, compared to the network in the large city. Such a structure could simply be an outcome of people in small cities having less of a choice when it comes to allocating their time and attention across links. To exemplify, in the large city each individual in need of a haircut is able to choose between many different barber shops, but in a small city there may be only one barber shop, forcing people to actually become acquainted with their barber whether they want to or not. Conversely, large cities offer each individual a greater choice set with regards to her distribution of time across links to other people. Residents in large cities are also more likely to be exposed to a large set of incoming thin links from others. That is, they will probably be in contact with more people than their small city counterparts, regardless of whether they want to or not. People in large cities can of course also uphold thick links. In fact, Schläper's et al. (2014) analysis of Portuguese mobile phone traffic data suggests that people in larger cities both have a larger total number of contacts and communicate more with their contacts than people in small towns. Their study also indicates that the clustering coefficient, i.e. the share of an individual's contacts who are also connected to each other, remains constant between small towns and large cities, even though the number of contacts per individual grows with local density. This suggests that Coleman's (1988) argument about the need for closure - that an individual's contacts should know each other in order to maintain norms and social capital structures - could equally be satisfied in large cities and small towns.

The difference between small and large cities in terms of network size and characteristics of links outlined above suggests that social capital is important in both types of cities, but that it is manifested in different ways. If everyone in a small city knows everyone and interact frequently amongst each other,

then the observation that bonding social capital and local trust is strong is likely to be confirmed with measures of local trust. They interact frequently and are likely to influence each other, reinforce an exclusive identity and converge towards homogeneity, i.e. a hallmark characteristic of bonding social capital. This would also stimulate mutual trust. If everyone knows who you are and you know everyone, then local trust benefits both from recognition and from the potential social punishment of betraying that trust. However, it does not necessarily follow that lower levels of bonding social capital or local trust in a large city implies lower overall social capital.

Suppose that large cities are characterized by bigger overall networks and a greater amount of thin links compared to smaller towns. Then, paraphrasing the conclusions from Schlöpfer et al. (2014), people can still choose their own ‘village’ *within* a large city.³ That is, they may develop thick links in the network, while concurrently having a large amount of thin links. A high level of reciprocated trust, and bonding, can be maintained within sub-groups sharing thick links, without translating into trust or bonding social capital to others in general within the city. Illustratively, Sorensen (2016) distinguishes between “social trust”, i.e. whether most people can be trusted, and “localized trust”, i.e. if people in the local community can be trusted. Social trust is meant to indicate bridging social capital, whereas localized trust indicates bonding social capital. This distinction captures the effect of spatial distance on trust, but not the social distance associated with peoples’ social networks. There is surely a relation between the two, but they are not necessarily the same from a social capital point of view. Your most trusted friends may not be your neighbors, and conversely you may not trust your neighbors at all but still share bonding social capital with others.

This leads to a second dimension of links in social capital networks. We define *direct links* as mutual relationships, ranging from family and close friends to casual acquaintances (see Figure 1). This resonates with a strict interpretation of what Bourdieu (1985) refers to as “mutual acquaintance and recognition”, i.e. some form of personal affinity. In contrast, we define *indirect links* as connections between people who do not explicitly know each other, but who implicitly interact, for instance by being neighbors, going to the same gym class or working in the same building. People do not need to be acquainted with each other, or otherwise actively maintain any form of relationship, in order for them to share some type of mutual recognition and influence each other (cf. Granovetter 1973). Norms, attitudes and behavior can be imitated and spread between people without them engaging in a direct interaction with each other, and accordingly contribute to breeding social capital in the network. Such links are perhaps rare in small towns, but common in large cities. They may be difficult to observe empirically, but they nonetheless constitute a potentially important form of influence.

³This perspective also relates to Westlund’s (2006) discussion of ‘competing social capitals’.

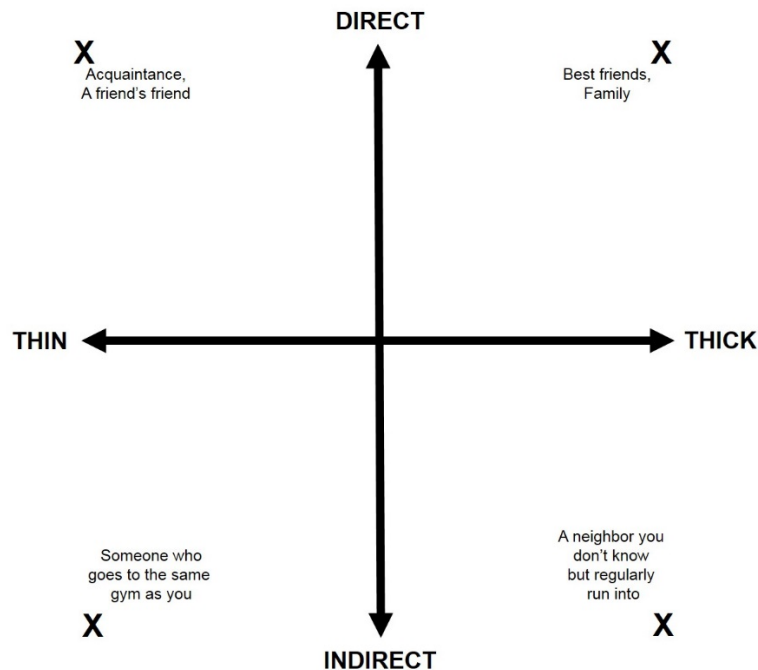


Figure 1: Social capital networks consisting of a continuous scale of direct and indirect, thick and thin links.

Putnam (2001) makes the following remark about such indirect links:

"Don't be too dismissive of very casual forms of social connection, because there has been good experimental evidence that if you nod to people in the hall, they are more likely to come to your aid if you should have a fit or have a heart attack, than if you don't nod to them, even if you don't otherwise know them. Merely nodding to someone in the hall generates visible, measurable forms of reciprocity."

Let us consider the network example again. Through thick and thin links, as well as direct and indirect links, it is possible to elaborate on how social capital is distributed differently across the networks in small rural and large dense cities, respectively. Each individual has a limited amount of time and attention to allocate on their contacts and relationships with other people, as illustrated by for instance "Dunbar's (1992) number". The small rural city network is predominantly characterized by thick and direct links, whereas the big city network has a comparatively larger share of thin and indirect links, including thin direct and thick indirect links. To illustrate, neighbors in the small city may share thick direct links because they are part of the same civic association, whereas neighbors in a big city may share thick indirect links, because they regularly cross paths in the neighborhood, although they do not know each other. The city dweller may instead share a thick direct link with a friend who lives on the

other side of the city, or several thin direct links with a crowd of people who regularly spend time together but do not maintain individual relationships. Accordingly, how social capital is built up and maintained may differ significantly between these two stereotypical networks.

To conclude, our argument is that social capital is at play both in small rural cities and in large densely populated cities, but in different ways. There is an inherent difficulty in measuring social capital, which is one reason why it is common to study outcomes rather than social capital per se. Yet, measuring for example local trust or membership in civic associations can only tell us how a specific attribute of social capital varies between places. Reducing social capital to its observable attributes associated with one type of network links does not account for the full richness of the concept. We argue that the proposed framework of direct/indirect and thick/thin links provides a more nuanced perspective on social capital in both rural and urban environments.

Thick direct links translate to Putnam's definition of bonding capital, in that they are associated with frequent interaction between people and are also more likely to produce an exclusive group identity as well as converging attitudes and behaviors. Thick direct links are closely related to so-called *in-group bias* in the evolutionary sciences: the tendency for people to provide much more help and care to their in-groups, and also to care disproportionately about the opinions of other members of the same group. Such links are often based on, and reinforced over time by, religion, ethnicity, and religious affiliation, but may also be entirely trivial in terms of group delineation (Fu et al. 2012).

Thin direct links relates to, but is not restricted to, bridging social capital. They represent infrequent forms of mutual acquaintances, meaning that each party gets substantial influences from other links which promotes heterogeneity between them. In its extreme, thin direct links could also be related to Granovetter's (1973) concept of weak ties. Both bridging social capital and weak ties are associated with innovation and the spread of new ideas (Crescenzi et al 2013). However, it may not only be the presence of thin links - but the absence of certain thick links - that promotes entrepreneurial behavior. In a network of mostly thick direct links, a potential entrepreneur may be inhibited by the risk of social punishment, perceived or real, associated with failing. On the other hand, anonymity in a big network of thin links in a large city could arguably promote entrepreneurial ventures by counteracting the risk of social punishment.

Thin direct links also include more shallow acquaintances, such as the barista you always buy your coffee from and talk to, even though you do not know his name, or a person you only know by first name who goes to the same art class as you every week. These links contribute to spreading behaviors,

attitudes and norms through direct interaction, but they may fall outside the scope of weak ties that could transmit job offerings or to promote people to come together to start a new firm.

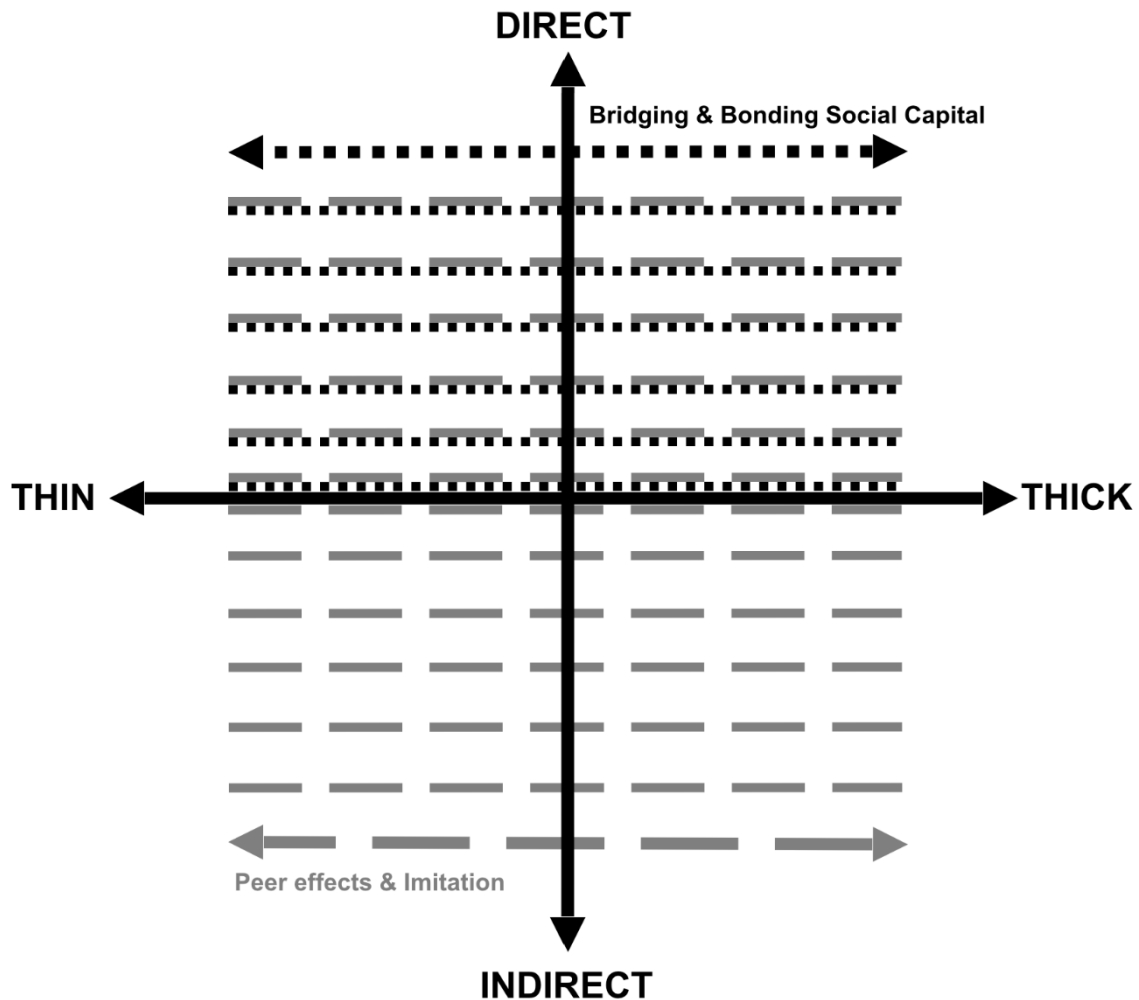


Figure 2: The social capital network framework displaying bridging and bonding social capital spanning the interval between thin and thick direct links along the upper half of the vertical axis. Indirect thick and thin links are instead covered by interaction mechanisms like peer effects and imitation. Note that these mechanisms also cover direct links and thus span the entire vertical axis.

In addition, this framework allows us to relate social capital to indirect links. Indirect links are connections, frequent or infrequent, between people who don't know each other personally, but whose paths cross, who go to the same gym or frequent the same coffee shops, restaurants or pubs. While bridging and bonding social capital mainly pertains to direct links, indirect links can mediate social interaction mechanisms, such as peer effects and imitation, which also affect social capital. Peer effects and imitation can of course also operate through direct links, but the role of indirect links in social capital is normally not recognized. Thick indirect links can contribute to setting and reinforcing differences in attitudes or styles between different parts of the city, giving a neighborhood its certain social character.

Thin indirect links are more or less unique to big, densely populated areas. These are infrequent and impersonal interactions between people who influence each other, while remaining strangers.⁴

Interactions along thin indirect links correspond well with the concept of social multipliers, i.e. the magnitude of the effect of an individual's behavior or choice on third parties – a social ripple effect. Accordingly, understanding how social capital is accumulated and transmitted across thin indirect links has important policy implications, for instance for promoting entrepreneurial behavior or discouraging destructive behavior.

The outlined framework of direct and indirect, thick and thin links in social capital networks begets the question of how influence and social capital moves along the different types of links. To address these issues, we turn our attention to agglomeration economies and the role of social interactions.

2.2 Social interactions

In the previous section, we made the case that social capital is accumulated and maintained in networks between people consisting of thick and thin as well as direct and indirect links, and that the characteristics of these networks will differ for instance between small towns and big cities. In this section, we discuss how social interactions and interaction effects relate to social capital networks.

Generally speaking, social interactions occur whenever individuals influence each other without exchanging means of payment (Glaeser, 2000; Scheinkman, 2008). Social interaction effects are implicitly, and sometimes explicitly, incorporated into theories of agglomeration economies and urban growth. In spatial sciences, such as urban economics or economic geography, proponents of the idea that big cities are fundamentally different from smaller places are legion. However, quite opposite of the notion that social capital would decline in big cities, the assumption is that social interactions are more plentiful in large, dense urban environments where they contribute to agglomeration economies and urban productivity gains. The potential time that people can spend on social interactions is expanded through the compression of space between people in big and dense cities compared to small rural towns.

Agglomeration economies, defined as place-specific external economies of scale, are attributed to micro foundations – such as sharing infrastructure, improved matching in the labor market and learning

⁴ For instance, an individual may consider how late she should work, and sees ten different people in the building where she works, none of whom she knows, working late every evening. This could inspire working longer hours, translating into career-enhancing behavior, and corresponds to accumulation of social capital through changed norms and behaviors (cf. Rosenthal and Strange 2008).

between individuals through knowledge and information spillovers (Duranton & Puga, 2004). Many urban economists emphasize the role of learning and knowledge spillovers, for instance through face-to-face contacts and local ‘buzz’ (Storper and Venables 2004). This is also the type of interaction effects perhaps most intuitively related to social capital and the framework outlined in the previous section.

Glaeser (2000) suggests that local social interactions depend on what can be seen, heard and felt, giving them a clear link to population density. A growing literature is highlighting the spatial decay and attenuation of social interaction effects and density-related phenomena. A number of studies have shown that agglomeration gains decay fast, even within cities (cf. Andersson et al 2015, Larsson 2014). Arzaghi and Henderson (2008) show that advertising firms on Manhattan in New York benefit from notable externalities between firms, but also that these externalities decay sharply with distance - just a block or so. Similarly, Jaffe et al (1993) have shown that patent citations cluster disproportionately in dense cities and that this effect vanishes with distance.

Connecting social capital networks and social interactions contributes to a better understanding not only of social capital in cities, but also of how cities function and develop over time in at least two respects. First, by expanding the notion of what is being transmitted, i.e. the contents of the interaction. Social interaction effects also comprise behaviors, values, attitudes and norms, which are closely associated to social capital theory. Second, social interactions are oftentimes assumed to be uniformly or randomly distributed across space, without regard to the structures that govern the interactions. Interactions do not simply occur at random between people bumping into each other in the street. It may be a tempting simplification, but it does not reflect how people actually behave. Rather, interactions depend on who you know, how you meet your friends’ friends, where you work, what interests you have in common with people you meet and what they might get out of interacting with you. These structures may in turn depend on socio-economic factors like education, income, occupation and place of birth. Social capital can complement the spatial decay of interaction effects by adding social structures to interaction patterns.

Suppose that an allocation of social capital between N actors describes the current state of a social network between these actors at time t . Some individuals share direct links, others are connected by indirect links. Some links are thick and some are thin. Direct links may facilitate for an individual to make use of another actor’s resources, for instance by borrowing something or by receiving help in carrying a heavy piano from the street to their apartment. Indirect links instead include the opportunity to be inspired by (or envious of) a neighbor who has successfully become an entrepreneur, or to imitate a style from someone you regularly observe in a coffee shop. In total, the allocation of social capital is an actor’s capacity to mobilize and make use of resources from their surroundings, which includes

knowledge of skills, behaviors and attitudes manifested in those surroundings. Now suppose that social interactions between people can be interpreted both as a result of the current state of the social network between them and a feedback signal which contributes to transforming that network, for instance by adding, strengthening, weakening or removing ties between people or by improving a single individual's status, career or life quality at time $t+1$. Then, social interactions are the difference between the state of a social network at time t and $t+1$. Consequently, social interactions are *social capital transactions*.

It might be tempting to think that such social capital transactions could be calculated in much the same way as monetary capital transactions between actors. However, these are primarily non-market (social) interactions. It is not evident that an investment by an actor in time or effort will be turned into an exactly equal income receipt held by the receiving actor (Glaeser, 2000). Moreover, in terms of link thickness, an investment by one actor to connect two acquaintances with each other might in fact not only create a new tie but also strengthen both of the original ties between the connector and the connectees, thus yielding a social capital result that is greater than the sum of its parts.

When it comes to measuring and analyzing social interactions, there are some substantial differences between direct and indirect links. Direct links, whether thick or thin, rely on personal interaction to be sustained – physical meetings, telephone calls, emails, or other types of correspondence. This type of indicators are often used to map social networks and quantify relationship links and are fairly straightforward even if they may sometimes be difficult to quantify. Measuring membership in civic associations is not only a proxy for social capital, but also a measure of thick direct links between the members of the organization. Interactions across indirect links are more complex; both with regards to measurement and analysis. The reason is that they generally lack a paper trail to confirm that two people were actually exposed to each other's influence. Even if we know that they live in the same neighborhood or regularly go to the same coffee shop, it would be difficult to determine the exact interactions between them. Next section will give two examples of relevant interaction mechanisms to study indirect and thin links.

2.3 Interaction mechanisms

Following the outlining of the analytical framework and the derivation of social interactions as social capital transactions, we now turn our attention to mechanisms for social interaction effects. We address two important, but non-exhaustive, mechanisms associated with thin and indirect links in social capital networks: Peer effects and imitation.

2.3.1. *Peer effects & learning*

The effects of social interaction where the characteristics (values, behavior, etc.) of some reference group are an important determinant of individual behavior may be understood as *peer effects*. Peer effects are inferred in a wide array of social phenomena, e.g. when there is talk about peer pressure, when it is postulated that “people who talk together, vote together” (one of the original meanings of the term “neighborhood effect”), or when it is concluded that the number of close friends is closely related to measures of human happiness (e.g. Glaeser, 2000).

Group composition has turned out to be a powerful determinant of individual outcomes in a wide variety of areas. There is now a rather large literature on social interactions explaining persistence in geographical differences with respect to numerous economic and socio-economic phenomena, including sickness absenteeism (Lindbeck et al 2008), unemployment (Topa, 2001), and crime (Glaeser et al 1996). Other related studies establish effects from a peer group on individual outcomes on topics such as smoking (Fletcher, 2010), and physical fitness (Carrell et al 2011).

Differences in distributions across space can be explained both by sorting and by peer effects: in part, there is reason to believe that individuals segregate according to behavioral characteristics, but also that groups conform on behavior. Manski (1993) referred to this duality as the reflection problem, which is manifested in spatial economics by a large literature on sorting and selection. The tendency for individuals to self-select to certain areas is at this point considered a stylized fact in urban economics (Andersson et al 2014, Combes et al. 2008). This phenomenon also amplifies certain peer group effects. If members of a person’s peer group works hard and earns well, other members are probable to go the extra mile to reach the same status. This process may be thought of as having a much faster convergence process if agents are sorted prior to interaction, since people who work in similar jobs are prone to having similar lifestyles and are more likely to affect each other’s’ behavior in a peer effect (or in-group) setting. The proposition that human capital externalities are the product of *interaction*, i.e. the product of at least two forces (Glaeser and Maré, 2001), reinforces this point.

Apart from explaining behaviors at the micro level, peer groups are particularly valuable for appreciating differences in network structures between urban and rural places. In a metropolitan locality, there are a very large number of geographically and cognitively overlapping peer groups, each of which exhibiting some degree of within-group bonding social capital. Further, in a sufficiently densely populated area, almost every person is likely to be a member of more than one peer group. By construction, every such person becomes weak links (cf. Granovetter, 1973) in between nodes that may internally be very tightly bonded. Within each of these peer groups, trust is high and transaction costs low, implying that individual group members to some extent can draw on the social capital of *other* group members’ links

to other groups. Such a social capital “transaction” may simply take place by someone asking an entrepreneur neighbor for information that he or she may acquire through business contacts. Local knowledge may be very swiftly disseminated, through such networks, and hence there is a clear connection between social capital and what Hayek (1945, p. 520) identified as “*the crucial problem for any theory explaining the economic process*” namely identifying how relevant knowledge reaches the “planner”.⁵

In a rural locality, the number of overlapping peer groups is lower. It may even be the case that some sparse places are virtually one bounded peer group. The sheer amount of skills and knowledge that may be contained in such a “network of networks” described above is then naturally constrained by local population density. This does not speak about the depth and local validity of the knowledge, but it does indeed constrain the number of activities that may be profitably carried out in a locality. For instance, in a small rural town, people may not be able to access scientific knowledge about life sciences through their local social networks. It is, however, entirely possible that an *average* person in a large city might be able to do just that. A person who is in multiple overlapping peer groups near a life sciences cluster can access information that a rural location simply cannot compete with. This is a reason why some of the effects identified under the umbrella of “density” or agglomeration economies, may in part be appreciated as effects of social capital.

A certain thickness of markets is a precondition for social interaction to work efficiently in the first place (Roth, 2008), meaning that certain types of skills, particularly those that are intensely interactive, *can* only be cultivated in dense environments. Hence, this framework may also explain part of why knowledge-intensive industries are so dependent on dense cities, and even on dense neighborhoods (Andersson et al 2015, Larsson 2014).

Learning, understood as an inter-personal transfer of a skill or piece of information from one (teaching) agent to another (the learner), is particularly pronounced in cities because of the wide variety of skills that may be learned in dense environments (Glaeser 1999). A person in control of a wide network of thin links, in practice has an incredibly wide distribution of skills at their disposal. Such a person can use their networks to draw on those skills for assistance and problem solving, which are pronounced areas in the social capital literature. But the person may also draw on those networks in order to consciously learn some of the skills. For example, in studies of “contagious entrepreneurship”, information asymmetries are often invoked such that people who live close to other entrepreneurs are more likely to learn about the intricacies of entrepreneurship (Andersson and Larsson, 2016). Learning

⁵ Hayek (1945) uses the term “planner” in a deliberate way since (p. 520) “*all economic activity [decisions about the allocation of resources] is in this sense planning*”.

may involve thick or thin links and may be bonding or bridging. A neighbor, for instance, is on average tied in with a thick link on the countryside, but a thin link in a large city.

2.3.2. *Imitation and emulation*

In our context, *imitation* may be thought of as a kind of peer effect that does not necessitate a strict peer group. Imitation then tends to build bridging social capital through thin links. Imitation may e.g. occur subject to local competition, friends of friends, or complete unknowns on the street. In the opening paragraph in a paper about imitation Huber et al. (2009, p. 2299) point to the richness of the imitation concept, while noting how difficult it is to pin down:

“Imitation is a relatively ambiguous phenomenon. For some it is a cheap trick by which an observer saves time and energy in solving a problem by stealing the solution from a master. For others it is one of the most advanced cognitive faculties: the observer acquires information about new techniques while at the same time drawing inferences about the efficiency of the observed methods, the constraints of the situation, and the intentions and goals of the model.”

This quote is about marmosets, but also provides a general picture of how humans learn from imitation. Like most animals, human beings are equipped with faculties for observing and learning by interacting with other group members, and members of society at large. The way in which we interact has been thoroughly researched e.g. in biology and evolutionary psychology.⁶ Imitation works as a mechanism for transmission of know-how and techniques across time and space.

By its very nature, imitation requires a certain level of density of agents to replicate behavior from. During the time when the human race became distinct from its ancestors, learned how to walk upright, and was refined by further selection, the maximum society size was in the order of 50-150 people (Geary 1998). Today, when a majority of people live in cities, the setup and the potential is much different. As humans have learned how to use the price mechanism to aggregate over enormous amounts of knowledge, and with the invention of efficient government, there is for all practical purposes no upper limit on the population size of society. With millions of people to imitate and emulate, city life poses as

⁶ Our closest living relative, chimpanzees, copy behavior with a surprising level of sophistication. They imitate and emulate (defined as copying the *outcome* of an action) other members of their social surroundings, sometimes even intentionally so; the main difference being that human beings are more selective and ‘rational’ in their imitating behavior. One result is that chimpanzees, much like humans, have cultures. In fact, imitation is such an important driver of local behavior that different ‘cultures’ have been created in different populations of chimpanzees simply by seeding some behavior in only one member of each group (Whiten, 2011).

an exhilarating arena for interaction. The results are accents, the regionalization of work ethics, and widely diverging entrepreneurship rates, to mention but a few.

Emulation, as alluded to above, refers to the copying of the outcome of an action. In practice, we may think of the difference as manifested in how firms adapt to local competition. Imitation may be thought of as copying the attributes of other local firms such as longer working hours (cf. Rosenthal and Strange, 2008). Emulation may instead lead to the convergence on some “desirable” quality of local firms, such as different measures at keeping up with innovations or profit margins of the local competition, possibly even with counteracting moves, and so on.

Many of the skills that could typically be learned by imitation and emulation are classified as human universals: they have existed in all known human societies, independently of each other. Hence, universals are features of culture and society to which there is no exception, meaning that they are either innate, or otherwise the source of a massive evolutionary advantage and transmitted through culture. Such features include gestures and facial expressions, tool-making, music and dancing, art, taboos, cooperative labor and its division, property, pride, and jealousy, among many other things as categorized in the seminal work by Brown (1991). Many of these “intrinsic” qualities of human culture fit remarkably well into the range of activities that are powerfully conveyed by trial and error type adaptation through observation - conscious or otherwise.

3 An empirical case of thin links and contagious entrepreneurship

In this part, we apply the outlined framework for social capital networks to an empirical case. The literature on entrepreneurship has for a long time recognized the role of the social environment in explaining the decision to become an entrepreneur (Licht and Siegel 2006, Davidsson and Honig 2003, Westlund et al., 2014, Westlund and Bolton 2003). Individual engagement in entrepreneurship has for instance been claimed to be influenced by role models, entrepreneurial parents and friends, as well as the general ‘social acceptance’ of entrepreneurship that prevails in a local society. That is, people can be influenced and inspired into becoming entrepreneurs via thin direct or indirect links, for instance through peer effects and learning or imitation.

The results presented here build directly on Andersson and Larsson (2016), henceforth AL, who devise an empirical test of social interactions in entrepreneurship within cities. Using high-resolution Swedish data on neighborhoods within cities, they test the importance of the local stock of established entrepreneurs in explaining the emergence of new entrepreneurs on the neighborhood level. Put differently, AL test the effect of local social capital transactions along thin indirect and direct links on

the emergence of new entrepreneurs based on the current stock of entrepreneur role models in the neighborhood.

Within-city neighborhoods are often claimed to constitute pertinent “arenas” for social interactions. For example, urban sociologist Barry Wellman has in a series of studies shown that contacts tend to be localized. One of his findings is that 42% of frequent contacts occur between individuals who live less than 1 mile apart (Wellman 1996). Glaeser and Sacerdote (2000) use data from the General Social Survey (GSS) in the US and report that a similar pattern. They find a correlation between the frequency with which an individual sees a friend, and the distance to that friend of -67%, and a corresponding association between distance to a relative and the frequency of visiting that relative of -73%. That is, the further away friends are the less likely you are to see them regularly. Social interactions are thus likely to exhibit sharp distance decay, rendering within-city residential neighborhoods relevant arenas to test for social interactions (Glaeser 2000, Durlauf 2004).

AL devise a simple empirical test of the presence of local social interactions in entrepreneurship, applied to the neighborhood level in Swedish regions. Using geocoded micro-level data, AL divide the observed regions into a uniform grid of squares of 1 km², representing “neighborhoods”. The sheer distributions of entrepreneurs in the Stockholm and Jönköping regions, based on their place of residence, are displayed in Figure 3 for all neighborhoods with a population density of at least 50 working-age (25-64) people per km².

Entrepreneurs are heavily clustered to certain areas in the geography, e.g. to the north-east in Stockholm (upper panel) and around the city-center in Jönköping (lower panel). In and of itself, this is not a revolutionary finding and it is not evidence of social interaction effects. The pattern may for instance be determined by people sorting themselves based on an unobserved variable that is positively associated with entrepreneurship, such as disposable income, schooling, or parental status. Even so, the observed clustering provides a good ground for the model to test the correlation between current and future entrepreneurial activity.

In order to identify the role that social interactions play in explaining these local clusters of entrepreneurship within cities, AL formulate an identification strategy based on workers leaving employment for full-time entrepreneurship. Given that social interactions involving existing entrepreneurs are a quantitatively important source of entrepreneurial behavior among others, neighborhoods with many entrepreneurs should - all else equal - consistently produce more new entrepreneurs. Hence, the probability of leaving employment for entrepreneurship should be higher in a neighborhood that is dense in entrepreneurship. Accordingly, in a neighborhood with these

characteristics, social capital transactions through thin and indirect links involving current entrepreneurs are likely to promote future entrepreneurial endeavors.

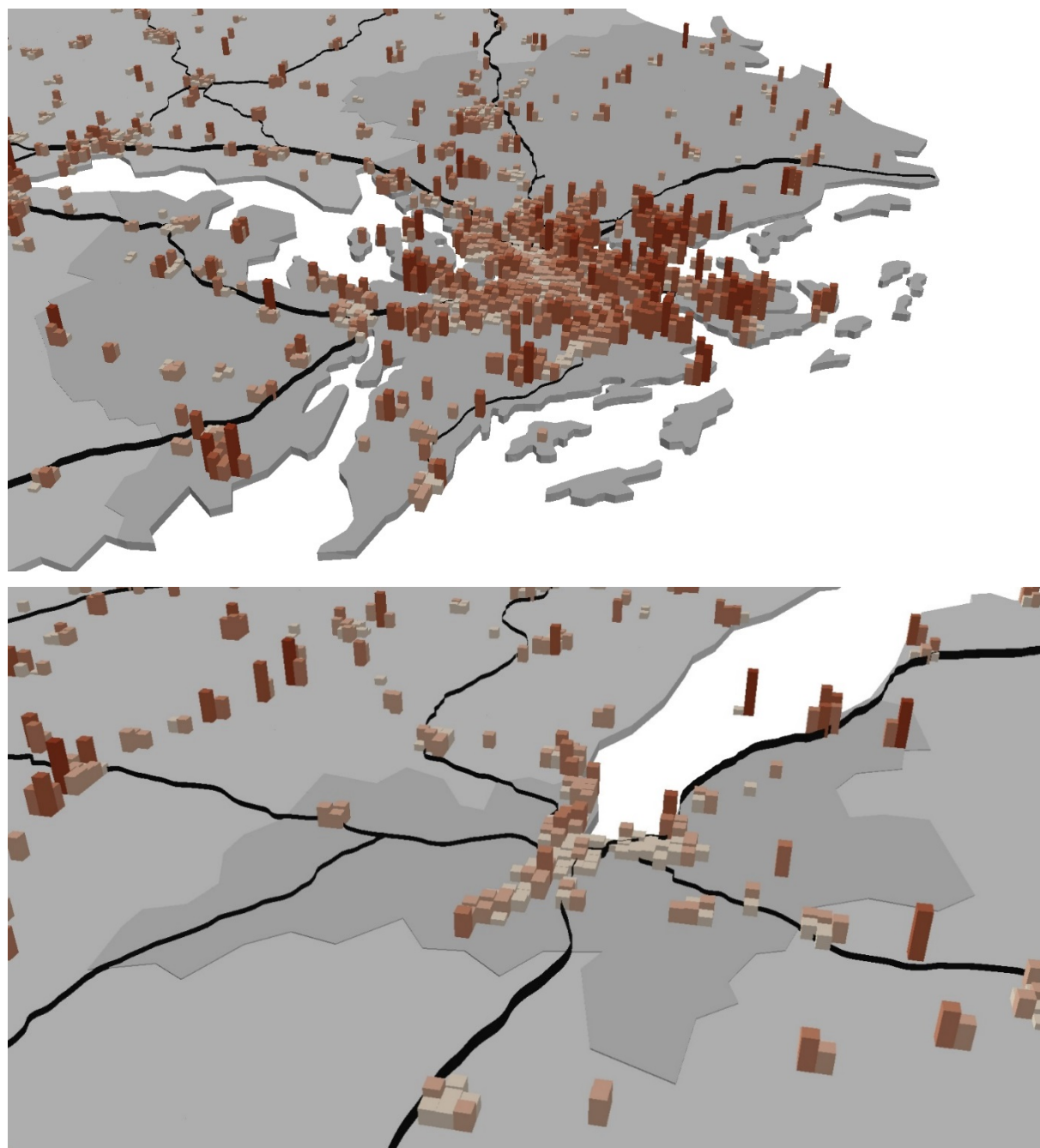


Figure 3. Spatial distribution of entrepreneurs in the Stockholm metropolitan region (top) and Jönköping urban region (bottom). Each 1-by-1 km square represents a neighborhood, and the bars' colors and heights indicate the fraction of entrepreneurs in that neighborhood. (Source: Andersson and Larsson 2016)

Table A1 in Appendix presents the main results of AL, along with mean values and standard deviations for the variables. The decision to become self-employed is here modeled as a function of the stock of entrepreneurs in the residential neighborhood. We have reason to believe that the relationship has an inverted U shape indicating a threshold effect, e.g. since only a subset of the population is likely to become entrepreneurs under any circumstance. The regression also includes a rich set of control variables on the individual, employer, neighborhood and regional levels. AL also perform a large number of robustness checks, with respect to e.g. age intervals, immigration status, startup type, historical entrepreneurship rates, and local demand. These tests, together with complete motivations and identifying assumptions are available in the original article. All results presented below are remarkably robust to such considerations.

The results suggest a feedback-effect, since the “entrepreneurship share” variable has a positive and statistically significant influence on peoples’ decision to leave employment for entrepreneurship. This is consistent with the idea that a local neighborhood in a city with many established entrepreneurs over time builds local social capital that favors entrepreneurship. It is clear that the results are in line with the conceptual framework for social capital networks presented in this chapter. Both the mechanisms explored, peer effects and imitation, can be attributed to the transaction of social capital in this particular case. In other words, the study by AL is consistent with the idea of local social capital in cities built-up through interaction effects along thin links.

4. Summary and Conclusion

In this chapter, we have addressed the view that social capital is low in big cities. We have done so by outlining an analytical framework to map social capital in networks of direct and indirect, as well as thick and thin (in terms of interaction frequency), links between people. We argue that while small towns are predominantly associated with thick direct links, big cities will have a larger share of indirect and thin links. The variety of thin links in cities forms networks that can mediate the diffusion of behaviors, attitudes and information. Social interaction theories, i.e. the theories about how people influence each other, provide building blocks for a better understanding of how these thin networks breed social capital. We posit that social interactions are social capital transactions, moving influence along the different types of links to maintain, expand, and exploit social capital in the networks. We have also attempted to bridge the literatures of social capital and agglomeration economies, thereby providing a better foundation for understanding the inner workings of cities.

What does the proposed framework bring to the table? First, the approach sheds light on types of social capital, as well as structures that transmit and builds up social capital, that are generally not captured in social capital research that tends to focus on thick, direct links. The outlined framework provides a new

conceptual approach not only to social capital in cities but also to how social capital varies and can be compared between small rural communities and large urban cities. Second, it captures a type of social capital dynamics, indirect links and especially thin indirect links, which must be considered fairly unique to large, densely populated cities. Social capital networks also provide an important contribution to understanding structures and content of social interactions in urban growth.

There are at least five broad implications for approaches to future research on cities: First, exploring what is transmitted in networks of thin, indirect links would contribute to a better understanding of urban social capital as well as learning and knowledge spillovers in agglomeration economies and urban growth. Second, comparing the distribution of different types of links in social capital networks between rural and urban places as well as between cities of different sizes and population densities provides a new take on how social capital is expressed in different contexts. Third, studying how different types of links and corresponding interactions are distributed spatially within a city through further analyses of location, mobility and interaction patterns would illustrate of how different parts of the city are interconnected or isolated from each other and thus how influences and information can spread. Fourth, examining how physical environments enable or inhibit social capital transactions, especially through thin and indirect links, could add to urban planning initiatives, for instance with regards to amenities. Fifth, combining different forms of social capital transactions with the spatial decay identified for interaction effects and density-related phenomena would provide a fuller picture of the spatial and social variation of interaction effects in cities.

Many of the typical economic outcomes in cities, such as higher wages, productivity and greater intensity in innovation, could be explained in terms of social interaction effects that foster adoption of, adaption to, or formation of social capital favoring industriousness and ambition among urban workers. Since the outcomes of such effects are observationally equivalent to outcomes of the more common argument of knowledge and information spillovers, it is certainly a relevant task for research to try to discriminate between the two. Steps in this direction certainly bode for useful and potentially productive lines of research that helps to clarify the nature of the benefits that cities bring and its inner workings. It is clear that firms as well as workers tend to adapt, either through convergence or differentiation, and be influenced by their local context. In this sense, dense environments constitute a melting pot where skills, customs, and traditions, are observed, thereafter copied and kept, or discarded.

Our analysis does not provide any detailed answers on specific urban policy, but provides an important and to some extent new approach to how policy can relate to social capital and the spread of norms and behaviors in rural as well as urban environments. Rural policy cannot solely rely on a comparative advantage of having “higher” social capital than large cities, but may also need to counteract the

potentially negative influence of thick direct links that for instance can inhibit entrepreneurial ventures by socially punishing failure. Urban policy on the other hand needs to address the challenge of promoting trust and reciprocity in thin networks. This is very much in line with what Jane Jacobs (1961) refers to as the misunderstood social life of sidewalks, where people who do not know each other jointly contribute to building trust by having eyes on the street. In addition, the spread of negative outcomes such as criminal behavior can also be tied to the growth of social capital networks between people.

The idea that social capital is transacted and built-up through social interactions further helps to examine the time it takes for immigrants and newcomers to establish themselves in a new city and a local labor market, how trust is built between people in a city, or why some clusters work while others do not. The results also tie into why and how some people, like smokers for instance, are integrated faster into new social environments or how people who engage in different (heterogeneous) parts of a city adapt to and adopt different social capitals.

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APPENDIX

Table A1. Determinants of leaving employment for entrepreneurship.

Variable	Coefficient Estimate	Variable mean	Variable standard deviation
Entrepreneurship share (neighborhood)	0.159* (0.0102)	.05	.02
Entrepreneurship share (neighborhood, squared)	-0.00541* (0.000654)	-	-
Neighborhood density (ln)	-0.000661 (0.00831)	4.03	1.18
Human capital (neighborhood)	1.042* (0.0981)	.20	.10
Entrepreneurship share (city-wide)	0.00283 (0.00600)	.07	.02
Years of schooling	0.0315* (0.00433)	12.49	2.63
Tenure	-0.0192* (0.00180)	7.31	5.68
Wage _{t-1} (2007 SEK, ln)	-0.522* (0.00894)	7.82	.67
Age	0.0669* (0.00668)	43.84	1.99
Age squared	-0.000646* (7.52e-05)	-	-
Male (dummy)	0.872* (0.0202)	.49	.50
Immigrant (dummy)	0.00472 (0.0211)	.16	.37
Establishment exit _{t-1}	0.0885* (0.0340)	.02	.15
Establishment employment size (ln)	-0.400* (0.00904)	4.62	2.82
Married	0.158* (0.0169)	.47	.50
Children in residence	0.148* (0.0178)	.53	.50
Pseudo R2	0.15		
Observations	2,719,697		

Source: Andersson and Larsson (2016). The table reports coefficient of the model using a Logit estimator. The underlying data is a matched employer-employee dataset for Sweden for the year 2007, covering all employees in the age interval 25-64 that live in city areas. The dependent variable is a dummy which is 1 if the individual leaves employment to become self-employed in 2008, either through a sole proprietorship or ownership of an incorporated business. The model includes a full set of dummies for the educational specialization of individuals, dummies for occupation at the 1-digit ISCO-88 standard, dummies for the industry in which the individual works in 2007 at the 2-digit NACE industry level and dummies for each local labor market region. Robust standard errors are presented in parentheses. * $p < .01$.



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