

The economic geography of the Internet 2.0: digital social capital and cities

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Outline

- Introduction
- Internet geographies
- Internet and local economic growth
- ‘Digital’ social capital
- Concluding remarks

Introduction

- 15 years of Internet related economic geography research
- The spatiality of the Internet and economic geography
 - the Internet is unequally distributed across space
 - the Internet can positively affect firm productivity
 - and because of the above we can observe spatially heterogeneous Internet-related economic effects
- Explanatory value of the above
- What is missing: the **micro-processes** which underpin how the Internet affects the aggregated production function of cities and regions

Introduction

- Why can Internet affect productivity?
- The Internet is a General Purpose Technology:
- It is an **enabling** technology, “which was gradually developed, but once it reached a specific threshold – privatization – it was radically expanded across the economy with a huge variety of different applications, creating spillovers which enabled the emergence of the digital economy” (Tranos, 2013, p. 54; see also Lipsey et al., 2005; Harris, 1998; Malecki, 2002a; Atkinson & McKay, 2007; Jovanovic & Rousseau, 2005).
- Such spillovers have the capacity to generate productivity effects in downstream sectors (Helpman, 1998; Malecki, 2002a), which is a mechanism through which ICT and the Internet can support economic growth.

Introduction

Previous research:

- Supply-side measures
- Internet connectivity/capacity/speed is a proxy for the level of digitisation of local economies; productivity gains

Current Internet trends:

- Mobile Internet, the Internet of Things and Social Media cannot be easily reflected in infrastructural data (OECD, 2013)
- A rising portion of individual interactions is assisted nowadays by the plethora of Social Media

Introduction

- A new perspective to understand how the Internet can affect the economic activities of cities and regions
- Beyond productivity effects, decreasing returns
- **Social capital** of individuals, cities and regions
- The Internet:
 - connects individuals, often located in distant locations
 - enhances interactions between such remote actors
 - and therefore supports the creation and maintenance of *weak ties*
 - and through them can facilitate access to **diverse knowledge**, a determinant of **innovation**

Internet geographies

- Internet geographies (Zook, 2006)
- Starting point: Internet's physical infrastructure (backbone networks)
- Highest tier of Internet's hardware
- Digital connectivities of cities and urban hierarchies
- Urban character of the Internet infrastructure
- Global cities
- Reinforces existing globalization patterns and at the same time leads to the creation of new clusters (Malecki, 2002a)
- Hubs: London, Amsterdam, Paris and Frankfurt
- Gateways: Vienna, Prague and Copenhagen perform (Rutherford et al., 2004; Devriendt et al., 2008; Tranos, 2011)

Internet geographies

- End user connectivity and broadband speed
- A core-periphery pattern in the US (Grubestic, 2008)
- Not a clear urban/rural or rich/poor dichotomy
- Explanatory factors include: population, density, education, income and population age
- In the UK, Riddlesden and Singleton (2014) verified the importance of population density and urbanisation patterns
- Oughton et al. (2015) confirmed previous findings: dense, wealthy and well-educated areas attract more infrastructure

Internet geographies

- Demand side and Internet content
- Social Media, geo-located data and user generated content
- The geography of the Internet users and their (spatial) relations
- Distance decay effect in Twitter based interactions
- National borders, linguistic and cultural barriers (Stephens & Poorthuis, 2014; Takhteyev et al., 2012)

Internet geographies

- The spatial heterogeneity of the different layers of the Internet
 - the Internet's hardware
 - the Internet providers
 - the Internet content
 - the Internet users

Internet and local economic growth

- ICT and the Internet can be seen as a stimuli for economic growth
 - direct, structural changes on the economy (emergence of new sectors which are heavily based on such technologies including ICT production industries)
 - increase labour and total factor productivity (GPT)

Macro level

- Koutroumpis (2009) identified positive and causal effects of broadband Internet investments on economic growth for 22 OECD countries for the period 2002-2007
- This effect was equivalent to 10 per cent of the annual GDP growth of these countries
- In agreement with other relevant studies for OECD and developed countries (Qiang et al., 2009; Belorgey et al., 2006; Czernich et al., 2011)

Internet and local economic growth

- Justification for a **local/regional** approach
 - Unequal distribution of digital infrastructure across space
 - Absorbing capacity of places
 - ICT have drastically decreased communication costs and in general spatial transmission costs
- Positive effects the Internet broadband speed on property value (Ahlfeldt et al. 2015)
- Spatially heterogeneous effects of the Internet backbone networks on a sample European cities (Tranos 2012)
- Kolko (2012) identified a positive relationship between the expansion of broadband provision and local economic growth
- Tranos and Mack (2015) underlined a bidirectional causal relationship between the change of broadband providers and the change of knowledge intensive business in the US counties

Internet and local economic growth

To summarise (The What Works Centre for Local Economic Growth 2015):

- Increase in broadband provision in an area can affect firm productivity, business establishment and labour markets (e.g. employment, income and wages)
- The above effects are not always positive neither large.
- May be related to other complementary firm investments (e.g. labour force training, sales and supply chain related adjustments)
- Industry specific as more technologically sophisticated firms might be in a better position to capitalise broadband provision
- Following the urban/rural bias of the various digital geographies, broadband effects are appeared to be larger in urban areas.

'Digital' social capital

What is social capital

- Vague, intangible notion
- Trust, norms and social networks (Putnam et al. 1993; 2001)
- Bourdieu and Wacquant (1992, p. 14) defined social capital purely on the basis of **social relations**: “the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition”
- **Stock of social capital**: the sum of social ties an individual obtains over time, which enables access to resources, information or assistance and results to market and non-market benefits (Pénard et al., 2013; Pénard & Poussing, 2010; Glaeser et al., 2002)
- **Local** and **regional** social capital (e.g. Glaeser et al. 2002; Malecki, 2012)

'Digital' social capital

Positive economic effects of social capital

- Untraded interdependency (Storper, 1995)
- Social capital has joined financial capital as a critical, 'soft' type of territorial capital in regional development (Camagni, 2008)
- Innovation and economic growth (e.g. Whiteley, 2000; Pénard & Poussing, 2010)
- Trust → lubricant for collaboration establishment and reduces transaction cost
 - “In the absence of trust, it would become very costly to arrange for alternative sanctions and guarantees, and many opportunities for mutually beneficial co-operation would have to be foregone” (Arrow 1970, p. 22)
- Social ties → reduces the cost of and accelerates information flow
 - “good social relations facilitate knowledge transfers while absence of relations or bad relations do not” (Westlund 2006, p. 91)
- Bridging social capital (vs. bonding)
 - Weak/bridging ties (friends of friends) → access to diverse knowledge

'Digital' social capital

Local/regional social capital

- Social capital: instrument which converts technology to economic development through regional **innovation** networks (Rutten and Boekema 2007)
 - Mitigate the risk involved in innovation activities by establishing trust relations between researchers and entrepreneur (Akçomak and Ter Weel 2009)
 - Decrease the cost of obtaining **diverse** information (Malecki 2000; 2012)
- Social capital refers to the social relations between humans, and since these social relations have a **spatial dimension**, so does social capital too (Rutten et al 2010)

'Digital' social capital

ICT and Social Capital

- “Social capital is about networks, and the Net [i.e. the Internet] is the network to end all networks” Putnam (2001, p. 171)
- Broadband Internet connectivity: ↑ on social capital (Bauernschuster et al. 2014)
- Social Media: ↑ creation and maintenance of **bridging** ties (Donath & Boyd, 2004; Wellman et al., 2001; Steinfield et al., 2008)
- A robust connection between Facebook usage and indicators of social capital, especially of **bridging** type, but also of bonding type (Ellison et al., 2007; Steinfield et al., 2008)

'Digital' social capital

Social Capital → + Economic Effects

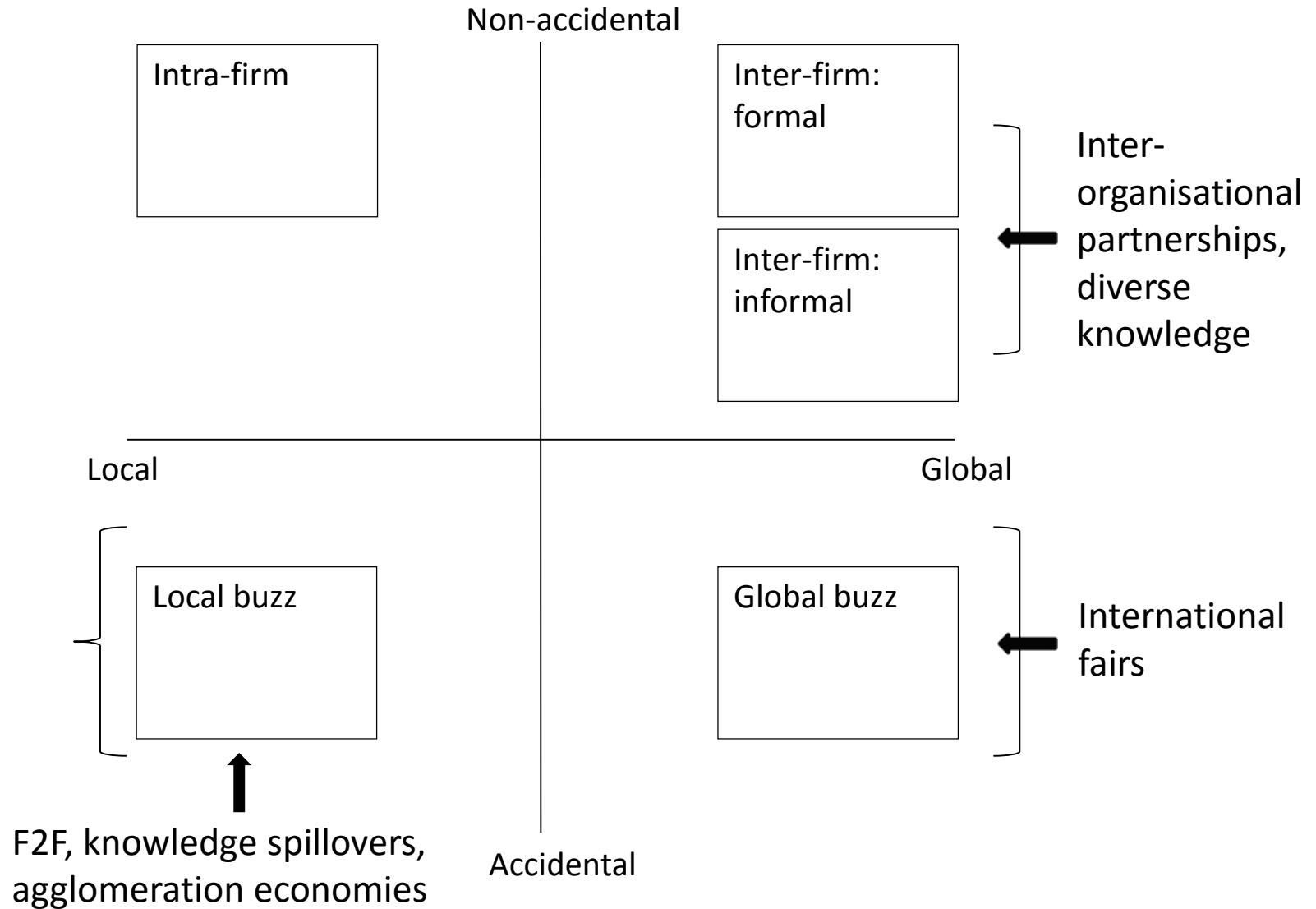
Social Capital → + Economic Effects in Cities and Regions

Social Media → ↑ Social Capital

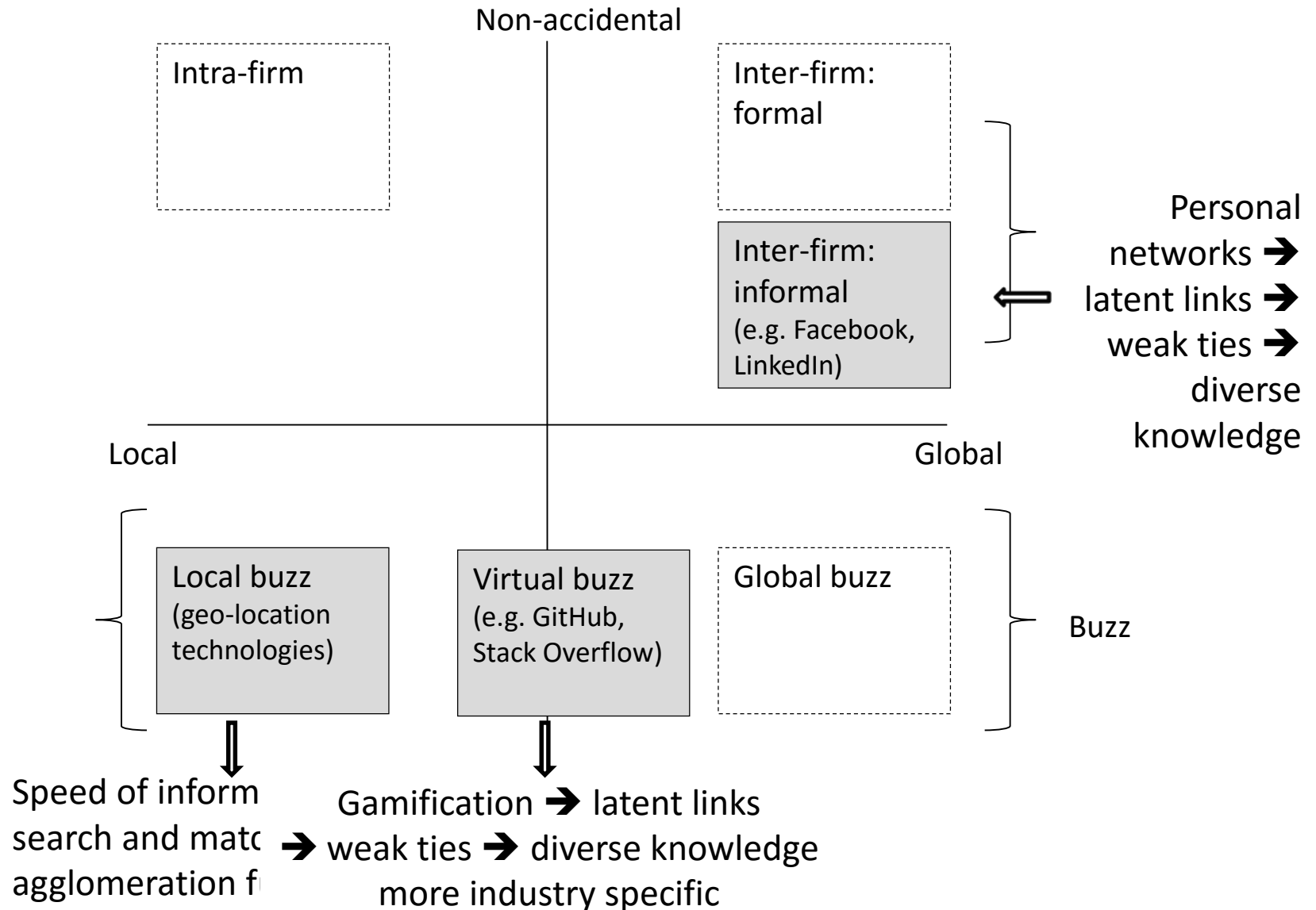
Social Media → + Economic Effects in Cities and Regions???

Framework: **local buzz and global pipeline** (Bathelt et al., 2004)

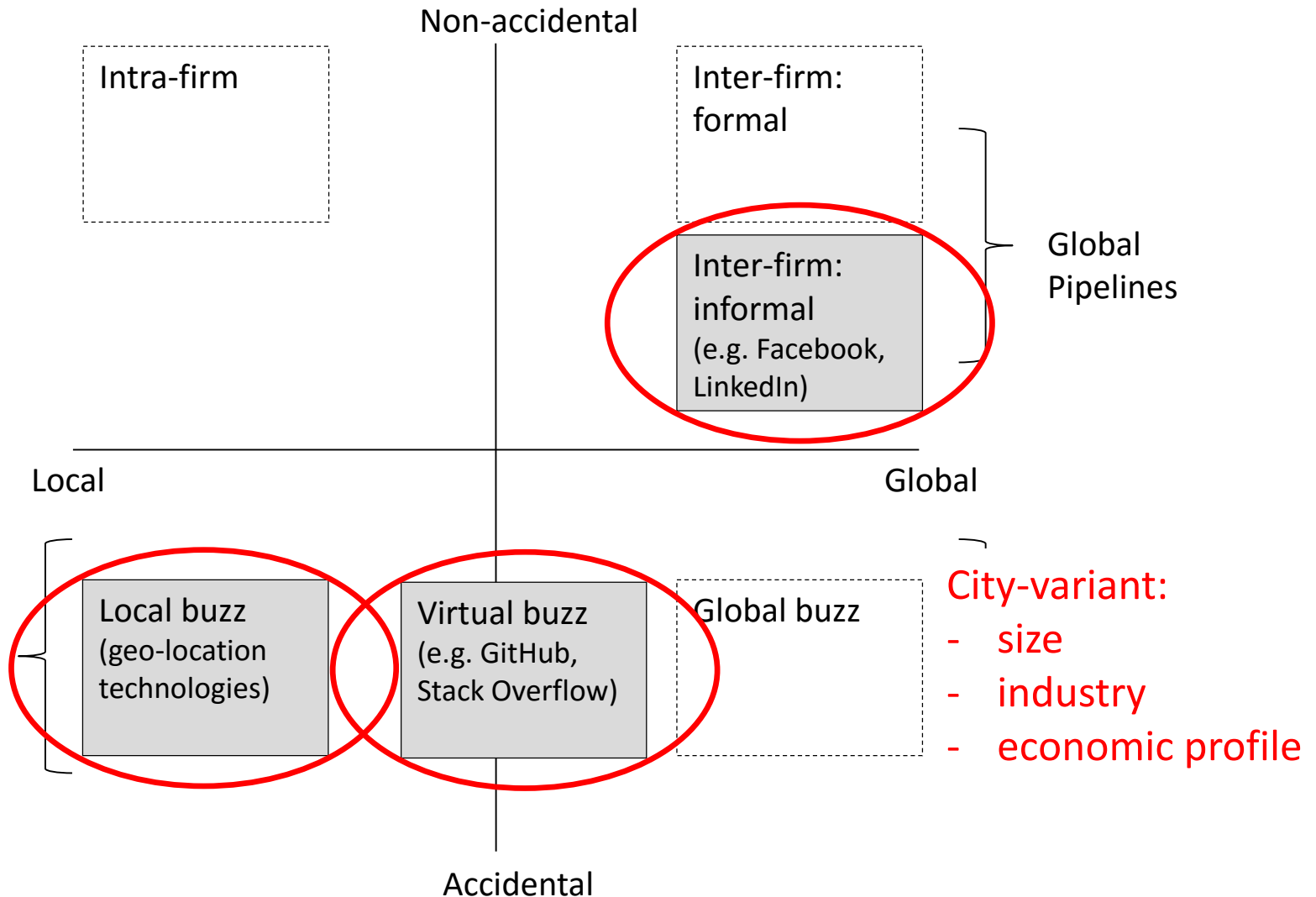
Spatiality of Knowledge Transfer



Spatiality of Knowledge Transfer



Spatiality of Knowledge Transfer



Concluding remarks

- Diminishing returns of capacity investments (in the Global North)
- Internet related economic geography research:
 - move beyond the supply side
 - Focus on knowledge transfer and social capital
- Social media have transformed knowledge transfer → economic effects
 - weak ties
 - infuse local industries and clusters with diverse knowledge embedded in remote locations
 - innovation activity
- Multi-scalar potential: from local to global
- Spatial heterogeneity

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