

PART 2: POLICIES AND THEIR LIMITATIONS

Urban governance in the knowledge-based economy: Challenges for different city types

WILLEM VAN WINDEN

Professor, School of Economics and Business, Amsterdam University of Applied Sciences, and School of Economics, Erasmus University, Rotterdam, The Netherlands

ABSTRACT

This paper discusses the governance of cities in the knowledge economy. It focuses on three main aspects. First, it discusses the uneven urban impacts of the structural move towards a knowledge economy and concludes that different types of cities face different chances and opportunities because of their structural characteristics. Second, it addresses the issue of urban governance and discusses a number of successful interventions within cities via the concerted action of a number of key actors in the urban region. Moreover, it considers the unintended impacts of national policy on the urban level. Finally, the paper defines some key policy challenges for various city types and for national governments.

Keywords: cities, governance, urban policy, innovation, urban economies, urban development

INTRODUCTION

After a long period of urban decline, the end of the 1980s marked the beginning of a remarkable revival of urban areas in western countries, notably in Europe and the US. This process is often ascribed to the structural move towards a 'knowledge based economy'.

The urban revival is not visible everywhere, however: the outcomes are uneven. Some cities – national capitals, global cities, international service hubs – have grown very fast, acting as magnets for talent and investments, whereas others,

especially small cities in rural areas and cities with an outdated economic specialisation, have lost out in relative terms. These face severe difficulties in retaining knowledge workers and knowledge-intensive companies.

It is tempting to say that the uneven spatial outcome of structural change is a given. In other words; the 'winners' simply were lucky: they inherited a bundle of strong 'assets', especially universities, international airports and a highly educated population that helped them thrive in the knowledge economy. However, this view largely

ignores the importance and significance of local agency and governance. Cities are not passive 'receivers' of global trends: they can take action to make themselves 'fit' for the knowledge economy through initiatives of local leaders or coalitions. Concerted action in the form of co-operations between municipal authorities, companies, and local knowledge institutions in the city can be effective, if designed properly and realistically given the assets and opportunities of the city. Cities all over the world are experimenting with new types of concerted action of this kind.

Urban governance is not a matter of urban actors only. Increasingly, it is becoming clear that regional and national policies (innovation policy, R&D policy, university policy) have a deep impact on the urban level and a number of initiatives have been launched to improve the alignment of national 'knowledge economy' policies with urban and regional ones. Some national governments have recognized that cities are engines of national economic growth and innovation, and look for new ways to empower them.

In this paper, we consider the governance of cities in the knowledge economy as a form of concerted action by a number of actors that takes place in a dynamic context that can only be partially influenced by policy. We focus on three main aspects. First, we discuss the unequal urban impacts of the structural move towards a knowledge economy, arguing that different types of cities have different chances and opportunities because of their structural characteristics. Second, we focus on the issue of urban governance and discuss a number of successful interventions within cities via the concerted action of a number of key actors in the urban region. Third, we consider the role of national policy and describe a number of initiatives to improve the strategic alignment between national policy and urban policy. Finally, we define some key policy challenges for various city types and for national governments.

This paper is mainly based on an update of two comparative studies on the governance of cities in the knowledge economy conducted by

the author in 2003 and 2004 (Van Winden 2004; Van Winden et al. 2007).

Cities in the knowledge economy

Classical economists considered labour as the most important production factor. Later, in the area of industrialization, the emphasis was put on physical capital. Labour was considered a 'necessary evil' to enable the functioning of capital goods. In recent decades, knowledge has become recognized as a key production factor and a driving force of productivity growth (Lambooy 2007). Analytically, knowledge is often sub-divided into three categories: information (databases), codified knowledge (books, patents) and tacit knowledge, embedded in people. This last category is considered a key driver of economic growth, especially for cities (Fu 2007).

The creation of new knowledge mainly takes place in cities, and cities with a strong knowledge base seem to gain in the knowledge economy. Sometimes universities and science are the key. In Finland, for example, Helsinki and other university cities were the main drivers of economic growth during the second half of the 1990s (OECD 2002). Mathiessen et al. (2002) analyze the scientific output of 40 cities in Europe. They find that a solid knowledge base is reflected in the economic life of a city and that it is, therefore, of increasing importance for urban economic growth and change.

Moreover, urban regions attract talent. The urban knowledge economy thrives on talented people who create new knowledge and ideas. From this perspective, Florida (2000) studies the location behaviour of 'talent'. Among other things, he finds that quality of life in a place is a key determinant in attracting and retaining these people since 'Talented people do not simply select a place to work based on the highest salary, they are typically concerned with a whole series of place-based characteristics' (2000:25). Florida (2000) also found that cultural activities and amenities are increasingly central determinants of urban competitiveness. Talented people are

attracted by places where they can enjoy life (Castells 2000). There is also a cumulative effect since talent tends to attract talent. Many empirical studies confirm the link between human capital and urban economic growth (see notably Glaeser, Sheinkman & Sheifer 1995; Simon 1998). Results of the Urban Audit (a collection of comparable data for over 300 European cities, conducted by the European Commission) convincingly demonstrate the preference for urban living of the higher-educated (Dijkstra 2004).

It is often argued, following Jane Jacobs, that the economic and cultural diversity of cities is an economic asset, mainly because urban diversity promotes creativity. The scale of cities and their diversity of inhabitants create the interactions that generate new ideas. Diversity is a measure of the degree of system openness. The places that attract diverse groups of people (by ethnicity, nationality, gender and sexual orientation) can be said to have an environment that is easy to plug into; such places can be said to have low entry barriers for talent (Florida 2000). Economic diversity relates to the variety of industries in a city. Diversity and scale reinforce each other: from a critical threshold value, a cumulative process of growth and variation is set in motion, through which the structure of the urban economy may change (Batty 2005; Currid 2006).

In the evolving knowledge economy, the size of the city also matters as an attraction factor for both companies and knowledge workers. For companies, in a larger city it is easier to find specialized staff. Glaeser (2000) found that it is the need to access common pools of labour rather than access to suppliers and customers that drives the tendency of firms to cluster together in cities. For knowledge workers, being in a large metropolitan area increases the variety of jobs available. This is especially relevant for households with two knowledge workers. Larger cities tend to have bigger airports through which more destinations can be reached, and many of them are nodes on a high-speed rail network; larger metropolitan areas are relatively attractive for foreign

direct investment as well. Their scale offers scope for international subcultures and amenities such as international schools.

In sum, the evolving knowledge economy is associated with a reinforced role of cities as 'economic engines'. Cities can be regarded as the focal points of the knowledge economy because it is mainly in cities that knowledge is produced, processed, exchanged and marketed. Cities are best endowed with knowledge infrastructure (universities, other educational institutes, etc.); they tend to have higher than average shares of well-educated people; they are best endowed with electronic infrastructure; they are well connected to the global economy through airports; they function as a place where knowledge is exchanged and as a breeding nest for talent and new combinations.

Differing city trajectories

Do we see remarkable growth differences between city types? Henderson (1997) empirically finds that until 1990, in advanced economies, the size distribution of cities is very stable over time. In the US, for instance, the size distribution in 1990 was almost identical to that in 1970.

Although no sound empirical analysis is available, there is some evidence that large and diversified urban areas have grown relatively faster since that period.

More recent European data suggest that large cities outperform the national economy by a substantial degree. Data on employment growth, gross value added (GVA) growth and population growth in the 45 largest cities for the period 1995-2002 show that on average in that period population grew faster in urban regions (0.45% p.a.) than in the 27 countries (0.3% p.a.), although in some regions, population declined (Berlin, Budapest, Prague which were subject to a different regime). Employment and GVA also increased faster in the cities than the 27 country average, with some cities (most of them capitals) showing very high GVA growth compared to their national average. In terms of value added

per capita, most cities outperformed the national growth rate in the period 1995–2001.

How can this tendency be explained? First, major sectoral shifts may play a role again like that in the early days of modern urban growth. Large and diversified metropolitan areas have an overrepresentation of sectors that grew strongly during the late 1990s. Media, publishing, financial and commercial services, creative industries, and especially the ICT sector are all concentrated in these cities (van Winden, van der Meer & van den Berg 2004).

Another explanation is the increasing pace of knowledge and technology advancement. Due to globalisation and the use of new ICTs, the diffusion speed of information and knowledge has increased dramatically. ICTs, particularly the Internet, facilitates the codification and diffusion of knowledge (van Winden 2003). New technologies, ideas and concepts become public very quickly and are very easy to copy, which speeds up advancements in a number of knowledge fields. It has become crucial to be able to select and interpret new information and knowledge, and to turn it into profitable activities (Castells 2001), putting a premium on human capital that uses new technologies to improve service and products and become more productive. This tendency favours large and diversified cities with a highly educated workforce.

Third, the relative growth of diversified metropolitan areas may be caused by increasing linkages between different sectors. For instance, the ICT sector has become increasingly linked up with many other sectors, as ICTs are crucial enablers of business processes; logistics and manufacturing are increasingly integrated with Just-In-Time delivery systems. Design and technology are increasingly linked, as the design of high-tech products increasingly becomes a critical selling point. In new product development many companies have set up multi-disciplinary research teams consisting of engineers, designers, marketing professionals and finance experts.

In sum, there are large variations between cities concerning their potentials to thrive in the

knowledge economy. The best cards seem to be in the hands of internationally connected metropolitan areas that have a diversified economy, a strong knowledge base, and a high quality of life. In the coming years, these cities' relative position is likely to improve further: with increasing internationalisation of research and business, their cultural diversity and accessibility are clearly assets in attracting (foreign) firms and people. Also, they will benefit from the trend of improving co-operation between universities and business because they are strong in both respects. In some areas in Europe, the development of a high speed rail system will relatively improve cities' international connectivity. Smaller cities with an outstanding knowledge base are also likely to benefit, especially those located near large metropolitan areas.

GOVERNANCE ISSUES AT THE URBAN LEVEL

The development of cities is a co-production of many urban actors that follow their own agendas and interests. Cities differ in both the local alignment of agendas and their ability to pursue collective action that contributes to the competitiveness of the city as a whole. Van den Berg et al. (1997) use the term 'organising capacity' to describe the process of creating local strategic agendas. Organising capacity is the ability of public authorities to convene all stakeholders - public and private, internal and external - to jointly generate new ideas and formulate and implement policies that respond to fundamental challenges posed by the evolving knowledge economy. The term organising capacity is related to the concept of governance in that governance is about the capacity to get things done in the face of complexity, conflict and social change (Stoker 1995). In urban studies it is generally recognized that effective urban/metropolitan governance is an important factor underpinning competitiveness since adequate governance structures and institutions help to improve the asset base, to increase the utilization of the asset base and to mobilize resources.

Policy integration

A first key aspect of governance is the degree of policy integration. Metropolitan areas are receivers of a plethora of policies from a number of bodies. These policies affect the urban assets that determine competitiveness in the knowledge economy. In many cases, national, provincial and local policies are poorly co-ordinated: policies may be fragmented, overlapping, or worse, conflicting, and produce perverse outcomes. A higher level of policy integration positively affects urban competitiveness.

One may distinguish between three types of policy integration: sectoral, horizontal, and vertical. *Sectoral integration* relates to the co-ordination of policy fields and sectors: economic policy, transport policy, spatial planning, housing policy etc. The relevance of sectoral integration for metropolitan areas is evident but in practice very difficult to realise. *Horizontal integration* refers to the alignment of policies between authorities in a metropolitan area. The need for this type of integration has increased with the expansion of cities: most metropolitan areas are functional economic units but are governed by many municipalities, leading to unfruitful competition and foregone opportunities of resource sharing and co-ordination. They vie to attract inward investment, to attract higher educated inhabitants or to develop

new growth clusters. This often leads to a waste of resources and produces sub-optimal outcomes. In many important policy fields, notably spatial policy, housing policy and transportation, intra-metropolitan co-ordination can lead to much better results for the urban region as a whole. One small example of a solution to unproductive local competition for policy space is given in Box 1.

In their cluster policies, cities also hardly look beyond their administrative borders while cluster actors (firms, universities, workers) operate on a different scale level and do not respect administrative borders. With improving transportation systems (the high-speed train network is particularly important), functional regions are still growing: commuting distances will increase, and the relevant region for knowledge-based clusters will continue to grow accordingly. This is typically not reflected in policies.

There are several ways to improve horizontal integration. In some cases, integration can be reached in a bottom-up process (the Eindhoven case). The most radical solution is to create a strong metropolitan authority that replaces the existing municipalities, as was done in Montreal, Canada. In 2000, a new metropolitan authority was created, the Montreal Metropolitan Community (CMM), covering the functional area of

Box 1: Reducing intra regional competition: the Eindhoven region solution

Some 25 years ago, the municipalities in the Greater Eindhoven region jointly created a development company, and made it responsible for the development of business locations in the entire region. The main rationale for creating this organisation was a widespread 'sense of urgency' in the region that something had to be done: the dominant company Philips was shedding jobs and the regional economy was at the edge of a crisis. The municipalities in the region provided the working capital of the organisation, they devolved much of their economic policy to it, and financed its operational costs. The organisation was given substantial freedom of action, to speed up decision-making and avoid bureaucratic hurdles. In the early 1990s, as a response to a new crisis at Philips, the municipalities agreed to fund the organisation with an annual 'innovation impulse' (about 6 Euro per inhabitant per annum), as a tool to finance all kind of regional innovation projects.

One of the many positive effects of the creation of this regional development agency was strongly reduced inter-municipal competition for business. Over the years, the development company managed to develop 'specialised' business locations that suit the needs for particular types of firms, rather than generic business parks.

Montreal, including the urban fringe. Also, the municipal organisation was re-organised, resulting in the amalgamation of 28 municipalities in Montreal (OECD 2004). The Government of Quebec (the region of which Montreal is the capital) recognized the role of Montreal as strategic leader and promoter of the region's economic vitality. In January 2003, the City of Montreal and the Government of Quebec signed a city contract, a five year agreement to improve the competitiveness of the city. The aim of the contract is to give the city more room to shape its own destiny. The contract gives Montreal adequate tools to alleviate the tax burden and to upgrade the city's infrastructures in important areas such as housing, transportation, the environment, culture, and social and community development. In the 5-year contract, the City and the Government of Quebec agree to invest CAD 2.5b in total. The City will invest CAD 1b, and the Government of Quebec's commitment adds up to CAD 1.4b.

Finally here, *vertical integration* concerns the co-ordination between different layers of government, typically national, regional and local. City contracts (see Box 2) between national or state governments and cities are a way of promoting vertical integration.

Creating a comprehensive vision for a metropolitan region can be an important step in

achieving greater policy integration: it is a way to set shared priorities, to channel investments and to avoid fragmentation. The vision should be a reference point for all decision makers. Therefore it is crucial that all stakeholders are involved in the process of the creation of the vision.

National governments in Europe increasingly seek to promote horizontal, vertical and sectoral integration. One tool is to organise 'competitions' among cities or regions, with the aim of improving regional governance or to promote strong clusters. In some cases, competitions refer to a particular cluster type or technology. In the late 1990s, the German federal government, for instance, organised a competition for cities to create biotechnology clusters. The city that submitted the best plan was rewarded by substantial federal funds to elaborate it. The plan had to be a co-operative venture between universities, companies and (local) governments. Munich won the competition and created its BioM cluster, now one of the leading biotech clusters in Europe.

Promoting the metropolitan 'triple helix'

An important aspect of governing the urban knowledge economy is the organisation of the 'triple helix', co-operation between knowledge institutions, firms and public agencies. Cities and regions

Box 2: City contracts in The Netherlands

More formalized relations between government layers can lead to greater integrality of policy. One example is the National Big Cities Policy (Grote Steden Beleid, GSB), that was developed in the late 1990s. The objective is to integrate economic, physical and social policies devised by different ministries and to encourage cities to develop strategic plans that link social and economic issues. Cities with 'good plans' got extra money. In 1999, the cities eligible for support developed a ten-year period vision for their cities, which they translated into so-called 'long-term development programmes'. In these programmes the cities indicated their social, physical and economical goals that would contribute to the general GSB objectives and how they were going to reach these goals. The national government reviewed these programmes after which covenants were negotiated with the cities for the period 1999–2003, including the expected performance of the cities. On the basis of the city covenants, the national government assigned €10.3 billion to the implementation of the urban programmes till 2004. To stimulate cities to work in a more integrated way, the national government decided to finance long-term programmes, which also gave the cities long-term financial certainty.

in Europe are seeking ways to optimize these co-operations because it is increasingly recognized that they are the basis for innovation and wealth creation. Tordoir (2008) makes a distinction between three levels of co-operation in the triple helix:

- The institutional-strategic level. This refers to regional strategic coalitions between local 'hot-shots', key people from municipality, research and education institutes and the business sector. It helps when these coalitions are 'institutionalized' because that ensures frequent strategic communication.
- The facilitating level. Strategic co-operation has to be translated and implemented via more concrete initiatives. This can be done by the individual organizations that participate on the strategic level but often facilitating organizations, such as regional development companies, knowledge transfer institutions, incubators or science park organizations, are needed.
- The micro level. Innovative forms of knowledge transfer. These are 'bottom-up' initiatives that make knowledge flow and create real innovation beyond strategic frameworks. Examples are virtual networks and common platforms for experimentation.

The best results are achieved when there is a good balance between bottom-up initiatives and strategic co-ordination. Finally, and very importantly, to make the system work, funding is needed: it is the 'oil of the regional innovation machine'. New initiatives only work when there is at least initial funding.

Cities vary in the quality of the triple helix co-operation they manage to achieve. Part of the explanation for this variation lies in the composition of the asset mix. In cities with a high share of knowledge-intensive industries, such as Munich and Boston, co-operation between companies and universities/research institutes is smooth; this can partly be explained by the high 'absorptive capacity' of the local high-tech business sector. This environment typically does not exist in cities with a weaker economic structure and less innovative firms.

There are many barriers to university–business co-operation. Universities and companies too often are two worlds: they have different drivers (academic prestige vs. profit making), different time horizons, different work attitudes, and often lack incentives. Some of these bottlenecks can only be solved at the national level but there is a role for sub-national policy too.

To improve co-operation between universities and companies, several policy options are open to city policymakers:

- Financial incentives. City or city-regional or local governments can create incentives to improve business–university collaboration. In Münster, for example, the Polytechnic University now receives less untied funding from the region of North Rhine Westphalia. In the new system, the more successful the polytechnic is in attracting financial means from the industry, the more grants it receives from the region. Cities can also create networks by providing financial rewards for co-operation. In Eindhoven, the Stimulus project financially rewarded innovative co-operations between business and knowledge institutes.
- Investing in joint facilities and technology centres where firms and research institutes can co-operate. German cities are very active in this respect. One example is CeNTech, again in Münster, a centre for nanotechnology research. It provides high-level facilities for university research groups and encourages the creation of new businesses from research. Many cities have created technology parks near university establishments. In 1985, the city of Dortmund in Germany, in collaboration with the Fraunhofer Institute, the Chamber of Commerce and a bank created a technology park. By 2004, twenty years later (time is needed), it has 200 companies, most in high tech industries, which contribute substantially to the Dortmund economy.
- Create transfer agencies. In many cities, higher education institutes have transfer agencies that create links with business and help administra-

tive and contractual issues. In Munich, the FLÜGGE program, initiated by the government of the Free State of Bavaria as part of the Bavaria Hightech Offensive, also aims to increase the number of spin-offs from the universities. It supports the technology transfer centre at the Ludwig Maximilian University, that links business demand and university supply of knowledge. The program also offers university researchers the possibility of starting their own company while remaining university employees on a half-time basis to reduce the early stage risk of starting up a company.

- Open university facilities and knowledge to firms. In Munich, for instance, young firms are allowed to use the laboratories of the Technical University and may even use the university as their address.
- Support or set up industrial liaison programmes where companies pay a fee to have unlimited access to academic resources, such as specialised information services, seminar series and newsletters. One of the best known examples is the Industrial Liaison programme of the MIT in Boston and they exist in many places.

Improving co-operation among triple helix players is not only an urban or regional issue and needs support from other levels of government. Much depends on national innovation policies, the higher education system and education policies, intellectual property regulation and other policies concerning the functioning of the national innovation system as a whole. Cultural differences among countries also play a role – in the US, there is a long tradition of university researchers commercializing their research, whereas in Europe this is much less common (although now increasing).

Promoting entrepreneurship

While less directly in the purview of city governance agencies, institutional support for entrepreneurship is an important tool in promoting an urban knowledge economy. Support for entrepreneurship has many aspects, from the place of

entrepreneurship in educational institutions to infrastructure support for new firms. Cities differ widely in initiatives in this field. Van den Berg et al. (2001), in a study of growth clusters, found several types of start-up support policy. In some cities (Munich and in Helsinki are good examples), firms are offered not only office space and other support but also access to networks of established firms in the region. Eindhoven (The Netherlands) developed the concept of ‘twinning’ new firms with existing ones, where large firms contribute to a start-up facility, both financially and by sharing their knowledge and networks. In other clusters, for instance in the biotech cluster in Vienna, large firms were also willing to invest in young firms as they saw their own interest in the proximity of young, dynamic complementary firms.

Interactive policymaking

A city’s success in the knowledge economy greatly depends on the quality of co-operation between various urban actors. Involving all key actors in policy making is therefore crucial so that urban governments can tap into resources and skills from other organizations and citizens to gain strength, creativity, new ideas and resources. Research (Van den Berg, Braun & Otgaar 2000) suggests that companies are willing to contribute to achieving different aspects of sustainable urban development, partly to improve their image, to attract labour, or simply to improve the physical environment of their offices. The key challenge for urban management is to mobilise these resources, to identify leaders with an interest in the community, and to deal with the business community and city residents in new ways. Box 3 illustrates the partnerships between government and business in the Netherlands.

Smaller cities can play too: The case of Oulu, Finland

In many countries, the capital regions or other big metropolitan areas easily attract highly-skilled staff and are the prime receivers of foreign direct investment. The example of the city of Oulu

Box 3: Two Dutch examples

The city of Rotterdam created an economic development board, consisting of representatives of the city administration, the private sector, the cultural sector and external experts. The board advises the city council on economic policy priorities, and mobilises resources (time, funds and ideas) from urban actors to address particular challenges. For instance, the board created a taskforce 'student city', in which it mobilised and committed many actors (universities, housing corporations, neighborhood councils) to make the city more attractive for students.

The city of Eindhoven early on in its regeneration efforts mobilised both private and social sectors as drivers for knowledge-based policy. Eindhoven has a long tradition of bringing research and business together and develop clusters. Eindhoven's technical university (but also other institutes) are strongly linked to the high tech-firms in the region, yielding substantial benefits for both sides.

In the 1990s, the Horizon programme was developed with the main goal of improving the regional economy and develop the city-region into a top technology area. Horizon is a program with concrete projects carried and brought forward mainly by the private sector and knowledge institutes. The program nurtures a 'good start' for projects by contributing to the development stage via initial funding and organizational setup. Each project has a 'project owner', an influential person who takes the lead, and is characterized by a structured co-operation via partners from business, government, and knowledge institutes. From 2002 onwards, the programme has been very successful. The MERIT research institute (2006) has calculated that every single euro from the fund has led to an additional investment of 73 euros from public (56%) and private (44%) sources.

In recent years, Horizon has been transformed into the 'brainport' strategy and Brainport is now the brand for the region and beyond. The brainport organisation is the spider in the web, initiating projects, organising events and playing a key role in branding the region. Brainport secures and combines funds from many different sources and channels to regional innovation projects.

(180,000 inhabitants, located in the north of Finland), however, shows that, under some conditions, smaller provincial towns can also be successful in the new economy

Over the period since the 1980s, Oulu has managed to develop a highly specialized ICT cluster. In Oulu, more than in any of the other cases mentioned in this paper, public policy, both national and local, has shaped its major cluster. The city did not have a large home market to support an ICT cluster, nor was it located near other markets. It was strong in sectors such as R&D in which market nearness is less important. Joined-up national regional development policies, the creation of a technical university, strong and consistent local policies and a co-operative culture fostered the city's cluster success.

Instead of supporting local declining industries, in the 1970s the Oulu city region decided to enhance the co-operation between university and industry and rely on local competences in

building its future. It was helped in this by the establishment (via national policy) of the University of Oulu, the laboratories of the Technical Research Centre of Finland and the foundation of the first Science Park in the Nordic countries which proved crucial factors in growing local knowledge-based industries. Nokia, the lead firm, has had a very important impact on the economic development of the region. Regional policy of the time strongly influenced Nokia's decision to locate in Oulu because in the underdeveloped northern areas of Finland all the costs of buildings could be deducted in the year of construction. In 1972, it started production of US military radio equipment for the Finnish military forces and in 1973 the production of radio equipment, networks and radio links followed while in 1975 Nokia Plc transferred part of its production of modems and other equipment to Oulu. In 1981, the production of digital centres started in the city region, with 100 employees.

R&D for mobile phones was launched in 1988. Nowadays, Nokia Plc, with its two divisions, Nokia Networks and Nokia Mobile Phones, is one of the biggest private employers in the Oulu region, employing 4300 people. The establishment of Nokia in the region generated a further wave of establishment of new smaller firms in electronics and later in the software industry.

Local policy over the years has also strongly supported the cluster's development. The city's decision in 1982 to invest in a science park was an essential step and the city was determined to utilize the know-how and competence of the area by enhancing close co-operation between university and businesses, fuelled by strong interpersonal networks in the region. This has gradually resulted in a very strong co-operative culture in which knowledge is easily spilled over. Oulu was so successful that it became the model for national policies to create regional 'centres of excellence' in Finnish cities.

Over the 1990s, Oulu's fame as a technology centre rose and the city appeared frequently in the media. Oulu's fame as a world class R&D competence centre also attracted foreign companies. In 2000, Ericsson opened a large R&D unit in Oulu, concentrating on data security on the mobile Internet. The city grew rapidly during the 1990s and managed to attract more professionals, mainly from the northern part of Finland. One of Oulu's current challenges is to reduce its dependency on ICT and R&D and, in cooperation with the region, wants to diversify its economy and focus on the environmental sector, biotechnology, content production and media. This strategy is elaborated in a Growth Agreement backed by all the important actors in the region.

Coordination between several levels of policy development has been a key success factor. Also, the presence of a key private sector player was key for Oulu. Knowledge infrastructure was a precondition but in itself was not enough. In this respect, Oulu provides a lesson for other cities trying to change their development patterns for the better.

EMERGING NATIONAL POLICY FRAMEWORKS

Governing the urban knowledge economy is not a matter for local urban actors alone. Regional and national policies, especially innovation policy, R&D policy, and university policy have a deep impact at the city level. We discussed this already under the heading of 'vertical policy integration' but some aspects need some more attention.

A key policy field in this respect is *science and education policy*. This policy field is essentially intended to be spatially neutral but in practice the effects on different city types vary considerably and deserve further consideration. One common recent international policy trend is to focus research funding on excellent research teams. In the UK, this disproportionately benefits existing elite university centres such as Oxford and Cambridge at the expense of other universities if the quantum of research funding is not increased. This may be counterproductive at the urban development level. In Germany, the national government has selected some 'excellent universities', again mainly based on research performance, and rewards them with additional funding. Two of the three 'elite' universities are in Munich, arguably Germany's most successful knowledge city.

Many policymakers in Europe believe that promoting and rewarding excellent academic research will have significant economic impacts. Inspiring examples from the US are MIT and Stanford, that both propelled their regional knowledge economy in the last decades. Elite universities attract the best brains (and may stop the brain drain of top European academics to the US), produce top-level knowledge that is highly valuable to R&D departments of firms, and 'churn out' high tech start-up companies. In Europe, Cambridge and Oxford are cities where academic excellence has been a key driver of knowledge-based economic development. The same is true for Leuven in Belgium.

But it is questionable whether putting all bets on elite universities is a wise strategy. In this con-

nection, the Lambert Review (2003, commissioned by the UK government) which analysed the UK university system and its relation to regional economic development recommended NOT spending all research money on just a few academically top centres. Less prestigious universities, Lambert (2003) said, can play an important economic role in their regions, notably as partners for local business in new product development or applied research and upgrading the local knowledge base by conducting contract research and supporting incremental innovation processes in local firms. Reducing the funding for these universities so as to give more to elite universities may thus have negative impacts on the regional economies in which they are situated and contribute to the ongoing centralisation of knowledge based industries in a few leading academic centres.

Similarly, the policy trend to urging universities to co-operate more with businesses may backfire, especially if it reduces their untied funding levels. Although this policy shift was ostensibly spatially neutral, it most benefits cities with a strong and diversified economy and big firms. In these cities, co-operation between companies and universities/research institutes is easier and more fruitful because they work at a similar level of technological sophistication but others may not have this kind of balance and different policies may be more appropriate. Based on a number of case cities, van den Berg et al. (2005) conclude that cities with both a strong knowledge base and a strong economic base have the best perspectives for fruitful university–business interaction. In contrast, it may be hard for others who will subsequently find themselves going backwards in the R&D stakes or operating not with local firms but with firms at similar levels of technology outside the immediate urban environment.

KEY POLICY CHALLENGES

Cities face many challenges in improving their urban assets and in simultaneously striving for other goals which may at times be conflicting.

Matching policies for goals related to improving their economic vitality may clash with limiting social exclusion, improving quality of life and accessibility to urban amenities for all. To generate sustainable economic growth, cities need to be attractive places at many levels and the increasing mobility of human resources and companies will punish cities that fail to invest sufficiently in their attractiveness. Some of the challenges are common and cities may learn from each other.

Cities are challenged to better exploit their current assets and focus first on their strong points to promote economic development, promoting clusters in which they have a relative advantage. In the global economy, places can benefit enormously if they become concentrations of specialised knowledge, embedded in people, firms, and institutions as this will enable them to attract similar activities from elsewhere, further strengthening their local clusters. Almost all cities need to increase knowledge spillovers, mainly between universities and the business sector but also between different players to encourage the recombinations of knowledge that underpin innovation.

In every urban area, governance can be improved. Cities may need to take the initiative in improving co-operation with central, state or local governments and help create more appropriate roles for each and a shift in the types of city governance structures; they may design, and above all implement, a metropolitan vision that can promote policy integration and channel investments.

Given the intensifying competition between cities for mobile assets such as skilled personnel and other resources, urban marketing and branding (preferably at the metropolitan level) become more important in promoting the strong points of specific metropolitan areas. Integrated city marketing can be an important instrument, not only to promote and develop the region with all the stakeholders but also as a platform where the stakeholders meet and negotiate common goals.

Challenges for thriving metropolitan areas

Diversified and internationally oriented metropolitan areas are the main beneficiaries of globalisation and the transition towards a knowledge-based economy. The key challenge for them is to manage growth and make sure that growth does not harm the assets that were behind the city's success. Success creates its own problems. Core aspects of growth management are how to deal with gentrification, crowding out processes and increased pressure on hinterlands. Steeply rising costs of living, especially housing, may drive vital categories of workers – nurses, policemen, teachers – out of the city, with resulting negative repercussions on quality of life, and artists and creative industries may also flee. Equally importantly, the quantity and quality of basic research and education, one of the foundations of innovation in many respects, may be hollowed out when wages in public research are falling relative to wages in the booming private sector. Failure to invest further in promoting accessibility to the city for all may also have negative repercussions on the very aspects of city life which have underpinned success.

Challenges for cities with a disadvantageous economic structure

Cities with an outdated economic structure (an industrial legacy or specialised in other declining sectors) face particular difficulties. In brief, the key challenges for these cities are clearly to improve the quality of life, to renew the economic base and to attract/retain knowledge workers. For these cities more than for the others, *investments in quality of life* are needed for future competitiveness. This can be done through intelligent housing policy, investments in culture and events, reduction of pollution, investments in the quality of urban public space, provision of recreation facilities and so on.

Another key challenge for these cities is fighting their negative image; in addition to real quality of life improvements, integrative city marketing strategies are essential.

These cities should resist the temptation to support declining local industries; this may not always be easy, especially when there are powerful defensive institutions or interest groups. To overcome their problems, these cities are often tempted to invest massively in new physical infrastructure, such as port areas, science parks and stadiums, but this may be to waste resources. Softer policies based on indigenous strengths often yield much higher returns. To broaden their economic base, these cities may do better by facilitating innovative activity that prefers low-cost urban locations, such as artists or certain segments of the creative industries. Investing in good infrastructure for these may well pay off.

Challenges for small cities

In the knowledge-based economy, smaller cities located far from a major metropolitan area face the threat of losing skilled people and knowledge-intensive business to larger agglomerations. They will find also it hard to benefit from increasing international (temporary) migration and FDI. Their lack of scale brings a number of disadvantages in terms of international accessibility and infrastructures such as international schools and expat communities. For these cities, the challenge is finding ways to develop a distinctive niche or cluster, preferably one in which the city has strengths in both the business sector and the university. Developing their quality of life assets may put some of these cities in a good position to develop tourism or to attract (wealthy) elderly people as a source of growth.

Perhaps more promising and relevant to many strategies is taking steps to create scale by cooperating with neighbouring cities in setting up joint facilities and amenities.

Policy challenges for national governments

It is important for national governments to recognize the distinctive and growing role of cities as primary sources of both national growth and competitiveness and develop policies accordingly

and all levels of government must be prepared to co-design policies that affect what happens there. It is also important, however, that policymakers also understand that cities can be focal points for social problems and threats and develop policies to mitigate these.

An important challenge is to design policies and policy frameworks that fuel the urban engines that in turn power the nation. One role of national governments is to fight policy fragmentation. In many metropolitan areas, growth is hampered by lack of horizontal co-operation between local administrations. To counter this, national governments may have to introduce formal administrative reforms or, more easily, provide incentives that encourage such co-operation. Another instrument to empower urban regions is a decentralisation of fiscal resources to lower levels of government. A critical success factor for effective decentralisation in turn is the quality of urban management. Capacity-building for policy actors at the local level has to be a priority.

National governments should take the wide disparities between cities into account and create policy frameworks that allow for differentiated approaches. They can do so by supporting the design and implementation of local policy answers to local problems and opportunities within a national framework. They could encourage actors in the metropolitan region to develop strategies in public private partnerships and support the implementation of the strategies in different ways. 'City contracts' are a good instrument to achieve this.

National governments face the challenge of maintaining a reasonable spatial balance in the nation and not allowing growth of some regions to be at the expense of others. While such regional policy is by no means easy and will demand a lot of governments of all levels, this kind of 'equalisation' of chances and outcomes is important to national unity.

This paper has argued that in the knowledge-based economy, the best cards seem to be in the hands of internationally well-connected urban areas that have a diversified economy, a strong

knowledge base, and a high quality of life. In the coming years, these cities' relative position is likely to improve further; the increasing internationalisation of research and business make cities' cultural diversity and accessibility clear assets in the race to attract (foreign) firms and people. These cities will benefit from the trend of improving co-operation between universities and business because they are strong in both respects.

A key policy question for national governments is thus whether to back the winners or help the losers, or, in other words, whether to invest in the already thriving places or in the weaker areas. 'Backing the winners' would increase concentration of human capital and knowledge intensive business in already densely populated urban areas and make these regions even more attractive for investments from abroad. Concentration has a price too, however, in terms of congestion and crowding out. Also, it may further hollow out the knowledge base of provincial cities and disrupt the spatial balance.

The position of non-metropolitan urban regions needs specific policy attention. They are a vital part of the urban systems of many states and typically fulfil important functions for large hinterlands. To safeguard the vitality of these cities and in a bid to maintain reasonable spatial balance, governments could encourage smaller, non-metropolitan cities to develop specific niches and specialisations in a creative way and to engage in strategic partnerships with other cities.

References

- Batty M (2005) *Cities and complexity*, Cambridge MA: MIT Press.
- Castells M (2000) 'The Information City, the New Economy, and the Network Society' in *People, cities and the new information economy*, Materials from an International Conference in Helsinki. 14–15 December 2000, pp. 22–37
- Castells M (2001) 'The information city, the new economy, and the network society', in Kasvio A, Laitalainen V, Salonen H and Mero P (eds) *People, cities and the new information economy*, Proceedings of an International Conference in Helsinki, 14–15 December 2000, pp. 22–37.

- Currid E (2006) New York as a global creative hub, *Economic Development Quarterly* 20(4): 330–350.
- Dijkstra L (2004) European Cities in a Dynamic, Knowledge-based Economy, *Kaupunkiseutujen kasvun aika*, pp. 14–17
- European Economic Research Consortium (ERECO) (2004) *European Regional Prospects, Analysis and forecasts to 2008*, ERECO and Cambridge Econometrics.
- Florida R (2000) *The Economic Geography of Talent*, Pittsburgh PA: Carnegie Mellon University.
- Fu S (2007) Smart cafe cities: testing human capital externalities in the Boston metropolitan area, *Journal of Urban Economics* 61: 86–111.
- Glaeser E (2000) The new economics of urban and regional growth' in Clark G, Gertler M and Feldman M (eds) *The Oxford Handbook of Economic Geography*, Oxford: Oxford University Press, pp 83–98.
- Glaeser E, Sheinkman J and Sheifer A (1995) Economic growth in a cross-section of cities, *Journal of Monetary Economics* 36: 117–143.
- Henderson V (1997) Medium size cities, *Regional Science and Urban Economics* 27: 583–612.
- Jacobs J (1961) *The Death and Life of Great American Cities*. New York: Random House.
- Jacobs J (1984) *Cities and the Wealth of Nations: Principles of Economic Life*. New York: Random House.
- Lambert L (2003) Lambert Review of Business University Collaboration.
- Lambooy J (2007) Stedelijke economische groei: de locatie van de productiviteitsstijging, in Van Dijk J and Schutjens V (eds) *De economische kracht van de stad*, Assen: Van Gorcum.
- Matthiessen C, Schwarz A and Find S (2002) The Top-level Global Research System 1997–99: Centers, Networks and Nodality. An Analysis Based on Bibliometric Indicators, *Urban Studies* 39(5–6): 903–927.
- MERIT (2006) *Evaluatie Programma Horizon*, Maastricht: University of Maastricht.
- OECD (2002) *Territorial Review of Helsinki*. Paris: OECD.
- OECD (2004) OECD Territorial review of Montreal, *OECD Observer*, Policy Brief January, Paris: OECD.
- Simon C (1998) Human capital and metropolitan employment growth, *Journal of Urban Economics* 43: 223–243.
- Stoker G (1995) Public Private Partnerships and urban governance. Paper presented to the Housing Studies Association Conference, Edinburgh, July. Glasgow: Department of Government, University of Strathclyde.
- van den Berg L, Pol P, van Winden W and Woets P (2005) *European cities in the Knowledge Economy: The cases of Amsterdam, Dortmund, Eindhoven, Helsinki, Manchester, Munich, Münster, Rotterdam and Zaragoza*, Aldershot: Ashgate.
- van den Berg L, Braun E and van Winden W (2001) *Growth Clusters in European Metropolitan Cities*, Aldershot: Ashgate.
- van den Berg L, Braun E and Otgaar A (2000) *City and Enterprise: Corporate Social Responsibility in European and US cities*, Rotterdam: European Institute for Comparative Urban Research, Erasmus University.
- van den Berg L, Braun E and van der Meer J (1997) *Metropolitan Organising Capacity; Experiences with Organising Major Projects in European Cities*. Euricur Series, Aldershot: Ashgate.
- van Winden W, van den Berg L and Pol P (2007) European cities in the knowledge economy: towards a typology, *Urban Studies* 44(3): 525–550.
- van Winden W, van der Meer A and van den Berg L (2004) The development of ICT clusters in European cities: towards a typology, *International Journal of Technology Management* 31/4/5/6: 356–187.
- van Winden W and van den Berg L (2004) Cities in the knowledge economy: new governance challenges, Research paper for the Urbact project STRIKE (Strategies of Regions in the Knowledge Economy), Rotterdam: Euricur.
- van Winden W (2003) Essays on urban ICT policies, PhD thesis, Rotterdam: Tinbergen Institute, Erasmus University.

CALL FOR PAPERS

Innovation: Management, Policy & Practice (ISSN 1447 9338) **special issue**

Innovation in Social Entrepreneurship – Guest Editor: Kate Morrison.

Deadline for Papers: 1st March 2010. ISBN 978-1-921314-34-1. Pub. Dec 2010 as Vol 12/3.

Author Guidelines are available at www.innovation-enterprise.com.

eContent Management Pty Ltd, PO Box 1027, Maleny QLD 4552, Australia
Tel.: +61-7-5435-2900; Fax. +61-7-5435-2911; subscriptions@e-contentmanagement.com
www.e-contentmanagement.com