

White Paper

Competitive Cities and their Connections to Global Value Chains

World Economic Forum Global Agenda Council on Competitiveness

June 2016



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REF 060616

Case: 00018174

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Introduction

The World Economic Forum's Global Agenda Council on Competitiveness is pleased to present *Competitive Cities and their Connections to Global Value Chains*. The purpose of this white paper is to inform the policy debate on the relationship between two important drivers of growth, productivity and jobs today – competitive cities and global value chains (GVCs). The aim is to highlight policy elements that can be put in place at the city level to foster participation and upgrading in international production networks.

This is an important and timely topic. On one hand, policy-makers are striving to enhance the competitiveness of cities, guided by similar frameworks such as those discussed in the taxonomy developed by the council's *The Competitiveness of Cities* report. On the other hand, GVCs have delocalized production, opening new opportunities to bring countries, cities, firms and individuals to participate in the benefits of international trade. Competitive cities are natural anchors for GVCs while GVCs can contribute to making cities vibrant magnets for innovation, productivity increases and employment, giving rise to a virtual circle that reinforces itself.

This paper builds on *The Competitiveness of Cities* report, as well as on work done by the Global Agenda Council on Trade & FDI in the area of GVCs. This includes *The Case for Trade and Competitiveness* report, jointly produced by the two councils. This paper also draws from the review of a sample of seven mini case studies, presenting the successes and challenges of cities at different stages of development and in different parts of the world.

The document was prepared with the contribution of the Members of the Global Agenda Council on Competitiveness and edited by the Council's Chair for 2014-2016, Anabel González. It also benefited from the collaboration of the Economic Policy and Research Foundation of Turkey, the Detroit Regional Chamber, Ruta-N Medellín and Matthias Chikamordi of the National Competitiveness Council of Nigeria. Special thanks go to Margareta Drzeniek Hanouz, Head of the World Economic Forum's Global Competitiveness team, and to Silja Baller, for their support in the process.

The white paper is organized in four sections. Section 1 introduces the notion of GVCs and refers to their impact on public policies. Section 2 presents the competitiveness taxonomy for cities. Section 3 makes the connection between GVCs and cities, presenting case studies from Bilbao, Bursa, Detroit, Dubai, Medellín, Monterrey and Singapore. Section 4 draws on lessons learned and concludes.

1. Global Value Chains for the 21st Century*

From traditional to 21st-century trade

Traditional trade involved producing goods “from start to finish” in one country and exporting them to other countries; countries that industrialized in the 19th and 20th centuries had to build full supply chains domestically before becoming internationally competitive. An “unbundling” began in the 1970s as parts of the value chain were offshored. But, from the 1980s, a “Great Unbundling” has occurred. Production has fragmented; production stages that were originally housed in a single factory have dispersed across borders. As the trade economist Richard Baldwin notes, now factories – not just goods – cross borders, uniting advanced and emerging economies (see Figure 1). Globally, competitive firms produce their inputs in the most cost-effective locations, bring everything together through complex logistics systems, and serve global markets. Firms that are not in this game struggle to compete.

This is the world of GVCs. It bundles up traditional trade in goods with foreign direct investment (FDI) and the international flow of services, people and ideas. What used to be concentrated in advanced countries has spread to middle-income and poor countries. Its enablers are technology, driving down transport and communication costs, and policy – the opening up of markets around the world.

Today, emerging economies do not have to build whole supply chains to be competitive internationally; rather they can join GVCs by inserting themselves into niches and performing specialized tasks along the value chain. In 30 years, the world has gone from products “made in one country” to those “made in the world”, and from “trade in goods” to “trade in tasks”.

Manufacturing is at the heart of GVCs. The first and still the most extensive GVCs are in ICT products, linking production hubs in North America, Europe and East Asia to serve global markets. This has powered industrial revolutions in East Asia. GVCs integrate exports with imports; imported inputs account for increasing value-added in exports. FDI drives GVCs; multinational enterprises are their “system integrators”. And GVCs are increasingly about services, including services that feed into global manufacturing. Business, communication and infrastructure services (such as financial, telecommunications, transport and professional services) are the fastest growing parts of international trade; they coordinate international production and are the glue within GVCs.

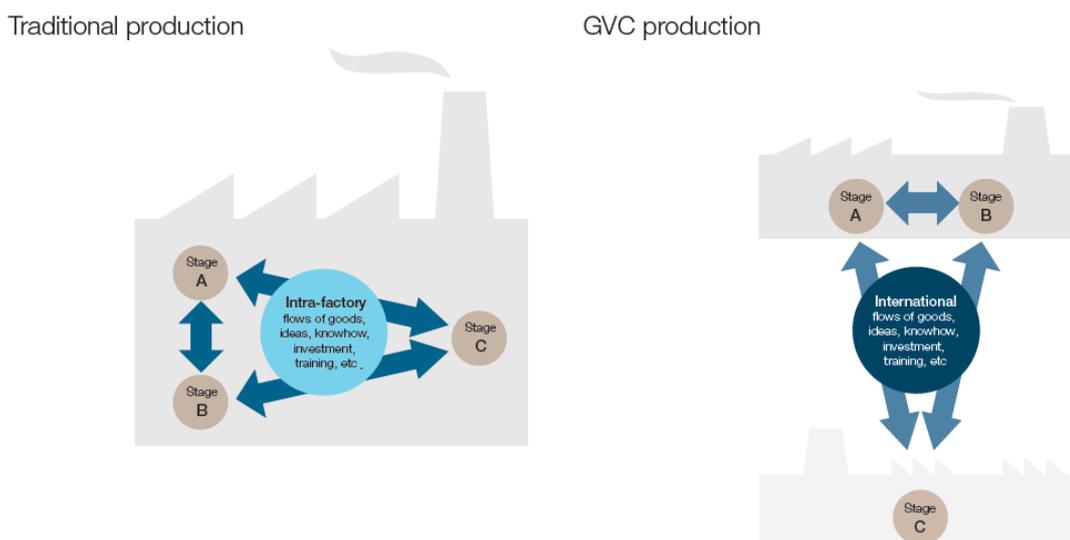
* Prepared by Janamitra Devan, Senior Adviser to the B20 Chair, Union of Chambers and Commodity Exchanges (TOBB); Daniel Koh, Chief of Staff, City of Boston; Kevin Murphy, President and Chief Executive Officer, J.E. Austin Associates Inc. (JAA); and Razeen Sally, Associate Professor, Lee Kuan Yew School of Public Policy, National University of Singapore and Co-Chair of the Global Agenda Council on Competitiveness. All authors are Members of the Global Agenda Council on Competitiveness.

The value chain for Apple products provides a good example of how this works. Expanding high value is created in the United States through research and development (R&D), marketing, logistics and after-sales service. A vast ecosystem of apps is a telling illustration. Many East Asian countries have found niches with sub-contractors making parts and components for iPhones, iPads, Macs and now the Apple Watch; so have software programmers in India. And China has its foot on the lower rungs of the GVC ladder with assembly operations from which Apple products are shipped abroad. But this is not a static state. As comparative advantage evolves, the richer coastal regions of China may move up the value chain, thereby opening new

opportunities higher up and lower down the value chain for other countries, regions and cities. This translates into all-round gains for jobs, productivity and growth in rich, middle-income and poor countries.

In short, the GVC revolution has shortened the shelf life of national comparative advantage. It has changed the options facing developed and developing nations, and cities and regions within them.

Figure 1: Traditional production and GVC production



Source: Baldwin (2011)

GVCs and public policy

How do GVCs change public policy? The logic of GVCs is to have open borders, non-discrimination between foreign and domestic enterprises, secure property rights and a welcome business climate. A country, city or region has to be open to exports and imports in goods and services, as well as to FDI. Being selectively open would disrupt GVCs, which would go elsewhere.

But being open to trade, investment and services is not enough: it must be reinforced with the right domestic business climate. This means efficient governance (political leadership, public administration and the rule of law); pro-market, pro-competition business regulations; and good physical capital (machines and infrastructure), human capital (education and training) and knowledge capital (technology and product development). In GVCs, businesses are concerned with a much broader range of policies and barriers, including business visas, product and non-product standards, labour-market regulations, intellectual property protection, capital restrictions, and distortions caused by state-owned enterprises (SOEs) and private-sector incumbents.

In the first instance, national-government actions, both “at the border” and “behind the border”, affect GVCs. National pro-GVC policies work better when locked in by international agreements. Some pro-GVC policies figure in “deep integration” regional trade agreements (such as the Trans-Pacific Partnership and the Pacific Alliance), and in some bilateral investment treaties. The World Trade Organization rules cover most 20th-century trade, but they have not kept up with GVCs.

2. Cities: Key Concepts and an Analytical Framework*

Defining city competitiveness

GVCs provide vast new opportunities for cities; they open new doors to prosperity. Cities in turn need to be open to GVCs. But to attract GVCs they need to be competitive at home. But what does city competitiveness mean exactly? Priorities in each city will differ, based on different endowments, starting points and levels of development. However, the four-part taxonomy of the World Economic Forum's Global Agenda Council on Competitiveness report, *The Competitiveness of Cities*, provides an overall framework for action.

McKinsey Global Institute defines cities as metropolitan areas having populations of over 150,000, grouped into "small middleweight" cities up to five million in population, "large middleweight" cities up to 10 million, and "megacities" with populations over 10 million. Many cities are embedded in elongated multi-city corridors; others are embedded in wider sub-national regions.

City competitiveness can be defined as *the set of factors – policies, institutions, strategies and processes – that determine the level of sustainable productivity of a city. Sustainability encompasses economic, environmental and social issues.*

The council's city-based definition resembles the definition of national competitiveness used by World Economic Forum's Global Competitiveness Report in that it centres on productivity. Productivity is the efficiency with which an economy uses available inputs to produce outputs. It determines the rate of return on investments, which fundamentally drives economic growth. It sets the level of prosperity of an economy. It has to be sustainable – maintained beyond the short term, that is – and in a way that reconciles economic, environmental and social goals.

A framework for city competitiveness

The four parts of our taxonomy are: policies and regulation; institutions; hard connectivity; and soft connectivity.

1. The "what" of competitiveness: Policies, regulations, priorities

This is the framework of public policies and regulation that shape competitiveness. It indicates what to reform – key policy reforms already done, and those that are needed for

"unfinished business". Many of the same factors affecting competitiveness at the national level are relevant at the city level where city leaders develop their own economic policies and focus on enhancing the business climate. The main factors are:

- Budgetary policies relating to the city's fiscal policies (revenue and expenditure)
- Business-environment policies and regulations that relate to markets for goods, services, capital and labour, many of which are captured in the World Bank *Doing Business Index*
- Foreign economic policies that position the city in the global economy through international trade, finance, FDI, foreign workers and tourism, all as part of clusters of economic activity linked to GVCs

2. Institutions: How to reform

This is the governance or decision-making framework for competitiveness. It is about how key decisions get made and how key reforms come about. As one studies the economic histories of cities (as well as nations), it becomes clear that policy priorities ("what to reform") may be the easier part of the challenge. Many of these are well known. It is more difficult to understand why some cities manage to implement initiatives that set their economic life on a new trajectory while others struggle to do so. It is easy to ascribe this difference to leadership, which is always important but often difficult to emulate. Leadership is part of the equation, but understanding how institutions emerge, how social capital is built and how cooperation is fostered, provides a much more nuanced challenge to those wishing to understand how to drive change.

The following are the factors of "how to reform":

- The political and legal systems of city government
- Relations with national and state/provincial levels of government
- Relations with organised interests, especially business
- Public-private collaboration
- Individuals and leadership
- Role of ideas ("vision") and the city brand
- Timing of major reforms, including taking advantage of crises and critical turning points

3. Hard connectivity

Infrastructure has been a key factor in city competitiveness from ancient times through the Middle Ages to modernity and the present. Today, it is about connectivity. But connectivity has two components: hard and soft. Hard connectivity is the core physical infrastructure that connects people to energy, water and other services, and to markets. The main elements are transportation (air, road and air), information and communications technology, high-speed internet, energy and logistical systems (especially those that feed into regional production clusters and GVCs).

* Prepared by Janamitra Devan, Senior Adviser to the B20 Chair, Union of Chambers and Commodity Exchanges (TOBB); Daniel Koh, Chief of Staff, City of Boston; Kevin Murphy, President and Chief Executive Officer, J.E. Austin Associates Inc. (JAA); and Razeen Sally, Associate Professor, Lee Kuan Yew School of Public Policy, National University of Singapore and Co-Chair of the Global Agenda Council on Competitiveness. All authors are Members of the Global Agenda Council on Competitiveness..

4. Soft connectivity

Soft connectivity encompasses all the global linkages that are not physical in nature. It is the “social capital” and “knowledge capital” that make investments in hard infrastructure and new technology (such as broadband access) more productive. Recently, soft connectivity has taken on more prominence and is viewed on par with hard connectivity. In fact, they are mutually reinforcing. The context of innovation discussed here expands beyond the realm of just technological innovation. It concerns an atmosphere of tolerance, free expression and cosmopolitanism. These are characteristics of what the philosopher Sir Karl Popper calls the “open society”. They are highly conducive to the generation and dissemination of ideas, entrepreneurship, innovation and economic growth.

Soft-connectivity factors include:

- Technological innovation and diffusion (in government, in business and through public-private linkages)
- Education and training systems
- Innovative ecosystems involving small and medium-sized enterprises
- Entrepreneurial culture
- Hubs for intellectual property, including data storage
- “Liveability” – quality-of-life factors – to attract and retain talent
- Relationships that foster trust and affinity leading to commercial and financial interactions
- An “open society”

These four components of the taxonomy are, of course, highly interactive. Technology and other “soft connectivity” factors feed centrally into the other three components. The decision-making setting of the city shapes the quality of policies and regulatory implementation; the latter bears directly on connectivity, hard and soft, and so on.

3. Cities and GVCs

According to the World Bank's *Competitive Cities for Jobs and Growth* report, competitive cities grow faster, create more jobs, increase the average disposable income of their households and are magnets for FDI.

Competitive cities also play a critical role in GVCs and vice versa. Cities offer economies of scale for employment and the provision of adequate infrastructure; they are places where talented, and skilled people and bright ideas cluster. And cities with ports provide particularly easy access. Cities, then, have all sorts of “network” effects, which are necessary, though by no means sufficient, conditions for GVCs. GVCs, on the other hand, provide a vehicle for cities to integrate to the global economy through trade and investment.

As a first attempt to understand the links between cities and GVCs, this paper looks at how GVCs have evolved in seven cities: Bilbao, Bursa, Detroit, Dubai, Medellín, Monterrey and Singapore, identifying key drivers of GVC participation at the city level.

Bilbao*

In a period of 30 years, Bilbao-Basque Country has successfully undergone a radical transformation from an old manufacturing port city built around its strategic geographic position and initial trade needs and pre-maritime industries, to a city-region aligned behind a roadmap of openness and connectivity built from the renewed strength of its citizens, companies, participatory and democratic laws, industrial clusters and essential activities.

Several factors have contributed to this success, including a shared leadership across all government institutions aligned under a common and sustainable vision; a shared mindset around advanced manufacturing driving the innovative, knowledge and technology changes on the new economic revolution; the development of a cluster-based economy breaking traditional sectors, industries and government-business silos; and building new competitive spaces where well-being and productivity come together in a unique co-created value. New institutions, confidence and trust have been developed to manage the “new value proposition”, enhancing former industries, transforming education and human capital, as well as providing new soft and hard infrastructure and a financing model to support the strategy where public health, high-quality education and social income for all were identified as a priority.

In the future, Bilbao-Basque Country aims at building a strong network linked to three main areas of specialized development that have been identified: energy, bioscience and advanced manufacturing. Additionally, some niches related to territory (such as leisure and culture, food and others) are also being explored.

* Prepared by Jon Azua Mendia, President and Chief Executive Officer, Enovatinglab, and Member of the Global Agenda Council on Competitiveness.

In the area of advanced manufacturing, the city-country is exploring the intelligent incorporation to production means and systems, the use of emerging capabilities and technologies in new products and processes, advanced materials integration in higher added-value solutions or enhanced processes, efficiency and sustainability in employed resources, and high added-value services integration.

In the field of energy, themes of potential emphasis are high specialization in industrial sectors, large exporting companies and smaller companies leaders in specific market niches, presence in all stages of the value chain (including generation, energy transportation, storage, distribution and related auxiliary services) and high R&D intensity.

As relates to bioscience, priority areas include personalized medicine, medical technology, health supplies, ageing health development, health ecosystems for agro-food and nutrition, pharmaceutical equipment, healthcare and bio health-related machine tools, robotics and biotech solutions, among others.

To support the development of these sectors, Bilbao-Basque Country continues to improve on its roadmap, in particular to deal with existing and new challenges. This includes the need to redefine its political status within Spain, to enhance its role in a changing Europe, and to reinforce the whole Basque key framework to compete in the fields of science and technology, education, entrepreneurship, governance, economic development organizations and cluster institutions, as well as government ministries – all of this in a context of participation and democratic accountability.

New infrastructure is required to address the new demands. Besides ports, airports, roads and logistic centres, the target is now “new connectivity” in order to provide public, free access to the cloud, internet and 3-D and 4-D telecom. Additionally, shared labs for different clusters, entrepreneur fabrication laboratories (fab labs), innovation centres, energy hubs and biolabs are also under way. This new infrastructure is combined with an urban innovation system aimed at redefining and revitalizing the cities and municipalities within the area.

Soft connectivity is essential to understand, adapt, lead and manage the new Bilbao roadmap. The new initiatives take into consideration the understanding, use and management of interconnected key technologies, such as the Internet of things, cloud computing, tech connectivity, additive manufacturing and others. This will lead to the reinvention of business models and global value chains.

Bilbao has entered a new stage in its competitiveness journey and aspires to become a key player in the next GVC map. It aims at achieving this in a context of internationalization, partnering with main clusters, entities and companies in regions with a similar vision. The city-region strategy is not looking for isolated champions, but is rather implementing coordinated initiatives that reinforce the competitive advantages of the Basque platform in a way that can bring technology, knowledge, jobs and value to the region.

Bursa*

If there is one city in Turkey for which integration into GVCs is a defining feature, it is Bursa. One of the early capital cities of the Ottoman Empire, Bursa has long been a commercial and cultural hub connecting the East with the West. Today, Bursa is Turkey's fourth largest city. Its proximity to Istanbul and strategic location near the Sea of Marmara, with easy access to the Mediterranean and Black Seas, has allowed it to integrate into GVCs and modernize. Economic reforms in the wake of the 2001 crisis, as well as EU accession negotiations, made Turkey a desirable location for GVC activities. Bursa's industrial capacity, supplier base, qualified labour force and ideal location attracted considerable domestic and foreign investment to the city.

Leveraging these conditions, Bursa has built itself into a highly diverse economy with robust tradable sectors. Today, its top five globally integrated (tradable) sectors are automotive, textiles, machinery, furniture and metals, with the automotive cluster being the largest exporter at \$3.5 billion.

For the period 2003-2014, Bursa attracted the highest level of FDI into the automotive sector, indicating that the export performance of its automotive industry was also largely driven by multinational original equipment manufacturers (OEMs) – that is, companies that make a part or subsystem that is used in another company's end product. However, there was no significant FDI coming into Bursa's other tradable sectors such as textile, machinery, or furniture. Instead, hotels and tourism, and real estate attracted substantial FDI. France, Italy and Germany play critical roles in Bursa's FDI, a testament to the city's integration into EU value chains.

Bursa's automotive cluster is one of the most competitive in Turkey and Europe, with a very high degree of GVC integration. The cluster is home to 40% of Turkey's automotive production, with several original design manufacturers (ODMs) and their suppliers. Entrepreneurs prefer to invest in Bursa mostly for three reasons: its geographic advantage, qualified labour force and supporting industries. Strong institutions, national regulatory and policy reforms, and investment incentives have also played a role.

The primary advantage of Bursa is its logistical position, affording easy access to global markets through its rapidly expanding Gemlik Port. Bursa is also a gateway into Anatolia, in which domestic consumption has rapidly increased in the last decade with per capita income rising from \$3,000 to more than \$10,000. Bursa will be soon connected to Ankara via high speed train. And, its air connectivity with foreign destinations, while dependent on Istanbul, appears to be growing as well. This intermodal infrastructure connectivity that Bursa has between Europe and its hinterland explains part of Bursa's allure with potential GVCs.

Its commercial and social ties to Istanbul have long given Bursa a leg up in attracting a higher quality labour force. Bursa's Uludağ University, founded in 1975, contributed

* Prepared by a team from the Economic Policy Research Foundation of Turkey (TEPAV), comprising Esen Çağlar, Yakup Peker and Ayşegül Taşöz, with Janamitra Devan, Senior Adviser to the B20 Chair, Union of Chambers and Commodity Exchanges (TOBB) and Member of the Global Agenda Council on Competitiveness.

greatly in attracting quality professionals, and the migration of well-educated Turks from Bulgaria have also made a substantial contribution to the industrial growth of the city.

Design, R&D and innovation have been growing rapidly in Bursa's automotive cluster throughout the last decade. Bursa's automotive cluster accounts for around 40% of the city's total expenditure on R&D while ODMs are integrating a growing number of their suppliers with part producers through the design processes of new automobile models. Bursa's new emphasis on the emerging economic trends, such as Industry 4.0, information and communications technology and nanotechnology, will increase product quality in the city's automotive cluster.

Strong institutions have played a critical role in Bursa. The Bursa Chamber of Commerce and Industry, for example, actively promotes GVC integration. Also critical have been important institutional reforms such as the establishment of the Bursa Development Agency and the Bursa Investment Support and Promotion Agency that successfully promoted investment opportunities and the business environment to local and foreign investors.

National regulatory and policy reforms play a major role in GVC opportunities for Bursa city. Turkey entered the Customs Union with the EU in 1996, which further strengthened the linkages with buyers in Europe thanks to the freer facilitation of movement of goods between EU and Turkey. The beginning of open negotiations for Turkey's accession to the EU was another turning point extending the foreign trade and investment volumes between the EU and Turkey. Bursa is one of the beneficiary cities of these developments, given its industrial capacity and proximity to EU markets.

Investment incentives in the 1990s played a role in Bursa's growth, especially in increasing the capacity of the textile sector. In the 2000s, R&D subsidies, provided by ministries and other institutions became widespread and innovation activities in Bursa rose rapidly.

To sustain Bursa's growth trajectory in GVCs, additional steps need to be taken. These include effective protection of intellectual and industrial property rights and one-stop-shops that help foreign investors navigate legal and administrative requirements of Turkey.

Detroit*

In 2013, Detroit gained global notoriety for filing the largest municipal bankruptcy in the history of the United States. Industrial disinvestment over the preceding decades had eliminated thousands of jobs and the city confronted blight, crime, racial inequality, economic stagnation, educational dysfunction and municipal failure.

After 17 months, however, Detroit successfully emerged from bankruptcy and the comeback of the city is under way. The city's motto – "We hope for better things, it will rise from the ashes" – was strangely appropriate despite having been coined in the early 1800s.

Detroit's early competitiveness, as the epicentre of the US auto industry, had much to do with its "hard connectivity" advantage connecting the Great Lakes and the St. Lawrence Seaway, and having access to both abundant raw materials as well as markets. It also had a business environment conducive to new suppliers and innovators. But if hard connectivity explained much of Detroit's historical rise to prominence, the current revival has much to do with "soft connectivity".

Several factors have contributed to Detroit's turnaround, an important one being the recovery of the American automotive sector. The industry, which dropped to annual sales of 10.4 million in 2009, rebounded sharply, including 2015's record 17.5 million units sold in the United States. Vehicle production at the three assembly plants located in the city of Detroit was up 6.8% in 2015 over 2014. From December 2014 to July 2015, automotive manufacturers and suppliers announced investments of \$3.3 billion, adding 9,169 jobs in the Detroit region.

Several elements drive Detroit's central role in the automotive GVC, most notably its leadership role in innovation. Other important features include a mixture of location and infrastructure assets, a solid and integrated cluster of OEM and suppliers, a strong export orientation and a talent pipeline.

Detroit enjoys a leadership position on innovation in the automotive sector. This includes the Detroit Innovation District, a cluster of innovation resources, including NextEnergy, to accelerate job growth and commercialize new technologies. The city also has five major mobility initiatives, including the Detroit Test Bed, which is the only urban test bed in the nation providing features such as an "urban canyon" and building tunnels that present challenges to connected vehicle technology that will need to be solved for widespread integration.

Another sign of Detroit as a hub for innovation is the recent opening of the Lightweight Innovations for Tomorrow, operated by the American Lightweight Materials Manufacturing Innovation Institute. It is designed to develop and deploy advanced lightweight materials manufacturing technologies and is pioneering the research and implementation of new lightweight metals in vehicles and components.

The ecosystem of innovation centred in Detroit includes other regional resources such as MCity, the world's first full-scale simulated urban environment designed expressly for testing the performance and safety of connected, automated and autonomous vehicles. The state of Michigan is investing, along with government groups and businesses, in a 335-acre test facility for autonomous vehicles to be known as the American Center for Mobility at Willow Run. Michigan's Department of Transportation has invested over \$97 million on intelligent transportation system assets in the Detroit region. As from 2013, manufacturers are allowed to test driverless vehicles throughout the region.

Detroit has become a central GVC hub for automotive results, in part from its position on the busiest northern border area in North America and its significant infrastructure assets. Annually, more than 10.2 million cars and trucks cross through border crossings in the city of Detroit. The

* Prepared by Brad Williams, James Martinez, Angela Ladetto and Sandy Baruah of the Detroit Regional Chamber.

Port of Detroit is the third largest North America gateway in the United States and connects the Great Lakes and the entire Midwest to the St. Lawrence Seaway. Detroit Metro ranks as a top 30 airport globally and is an international hub handling more than three million international passengers annually.

Detroit is the fifth largest export market in the United States and the largest metropolitan exporter to Mexico and second to Canada. It also ranks as the second largest metro exporter to countries with which the United States has entered into free trade agreements. As a result, Detroit companies exported nearly \$16 billion in goods in 2014.

The existing supply chain supports the concentration of automotive and manufacturing-related resources in Detroit and the surrounding region. Michigan is home to 12 domestic OEM assembly plants with one foreign OEM conducting heavy truck assembly components. An additional 35 OEM components/materials plants and 61 of the top automotive suppliers to North America call Michigan home.

The city of Detroit's talent pipeline is also critical to the growth of the automotive and manufacturing industries. Colleges and universities in the city of Detroit conferred more than 12,500 degrees in 2014, with more than 7,300 in fields of science, technology, engineering and math (STEM). Two of Michigan's 15 universities with nationally ranked engineering programs are located within the city of Detroit. Engineering talent has grown by 3% in the city of Detroit since 2014.

While the momentum in Detroit is real, there is a tremendous amount of work remaining and significant challenges ahead, including improving the public education system, addressing worker shortages and skills misalignment, diversify participation in GVCs, maintaining fiscal discipline and continue with an ambitious infrastructure investments program.

The focus on GVCs has proven helpful not only to cities aspiring to make a leap into global competitiveness, but also for cities in decline that seek to renew their former competitiveness. In the case of Detroit this means adding to its hard infrastructure a new dimension of soft infrastructure.

Dubai

The rise of Dubai has been as breathtaking as the ambition of its visionaries, planners and business people. Dubai's earlier reliance on hydrocarbons has been superseded by its excellence as a hub for maritime shipping, its success in tourism and its positioning as a business-friendly home for the regional and even global headquarters of multinational firms. Dubai is on track to become the global air hub. Business and conference tourism also contributes to its remarkable rise as it boasts some of the largest and most impressive expositions for a variety of industries, from food to aerospace.

Dubai is now a rich economy with a gross national income (GNI) per capita in 2015 of \$38,620. Dubai ranks as one of the top 10 tourist destinations in the world, boasting more than 70 malls. Logistics accounts for 6% of GDP. Its

knowledge industries include soft skills such as consulting, auditing and financial advisory services. Construction, which adds to the attractiveness of the emirate, make it the place to be for visionary architects involved in the design and building of skyscrapers, artificial islands, theme parks, an expanding metro system and residential and business areas. The creation of knowledge parks, grouped by specific industry, has led to the attraction of many knowledge-based companies and universities.

These activities have flourished as a result of Dubai having strong governance and institutions with vision and execution capabilities, regulations allowing flexible free zone that eased doing business, hard connectivity with a well-developed transport and telecommunications infrastructure, and soft connectivity with smart services and a balanced social environment.

Dubai plays major roles in the GVCs of retail, offshore services and tourism. These value chains have been impacted to different extents by the competitiveness framework of Dubai. Dubai is well connected to the retail GVC through distribution activities, both local, with an impressive 70 malls that cater to a market of more than 4 million local residents and 15 million tourists annually, as well as regional, through import and re-export to an estimated market of 3 billion people. Marketing services complement the distribution activities, with seven out of the top 10 marketing agencies having their regional headquarters in Dubai. Finally, Dubai seems to be making notable efforts to grow the R&D part of the retail value chain by enhancing the value of retail spaces with smart technologies that deliver consumer insights.

To strengthen its position in this offshore services GVC, Dubai attracts companies seeking to develop their business in one of the world's richest corners. These companies capitalized on several factors, including: the availability of a well-qualified and diverse workforce attracted from around the region by the soft connectivity of Dubai and its labour regulations; hard connectivity providing international communications links and advanced local broadband networks facilitating the setup of regional headquarters and communications centres; and a conducive business environment, with facilities provided to firms, especially opening in free trade zones, in terms of tax incentives, labour and currency flow, residency permits and rapid setup.

Dubai's privileged position in the tourism GVC is based on three key drivers: international air transport, lodging and excursions, all of which developed thanks to an ambitious strategy well executed by public and private institutions. Emirates Airlines, the flagship of Dubai, set new standards for quality and luxury, inspiring other regional airlines to keep pace. The airports of Dubai area among the biggest and the busiest in the world and offer unmatched facilities by their counterparts in the remaining continents.

In terms of lodging, Dubai upgraded its hotel segment by directly going to multinational hotel brands such as Hilton, Ramada, Radisson and Sheraton, and shows today 70% occupancy rates in four and five star hotels. The focus on excursions includes theme parks, artificial islands, shopping malls, tours and extreme sports. It has helped that Abu Dhabi, within easy driving distance, is also developing its

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tourism offerings including Formula 1 Racing and world-class museums.

Dubai aims to continue to leverage existing GVCs and explore opportunities in new sectors such as hybrid car manufacturing, healthcare, aviation, green energy and the agro-food sector. A deeper look into labour policies, particularly social policies and education, can raise the competitive posture of Dubai with respect to GVCs. Changes such as the inclusion of private sector employees in the social security system, increasing public sector working hours, and aligning private and public sector salaries can bring further efficiencies. Additionally, scaling up the quality of education and innovation and R&D centres in universities can support Dubai in playing a wider role in the high value contribution parts of GVCs.

Medellin*

Medellin, Colombia's second city with 2.5 million inhabitants, has undergone in the last two decades significant structural changes that have allowed the city and its people to set a pathway of continuing transformation towards a more equal and developed society. These changes have facilitated the quest for solutions to the city's greatest problems and the challenges that it has yet to overcome.

Medellin's renaissance has been mostly driven by two perspectives that have sought to integrate the people into the city's dynamics. First, the city strove to build social inclusion through urban interventions that connected citizens from less developed areas to the city's central areas, including a sustainable transport system, quality public schools, library parks and a series of comprehensive urban projects. Second, recognized as the industrial capital of Colombia, and considering the rapid changes in the global economic context, the city decided to migrate from an industry-based economy into a knowledge-intensive one where citizens acquire the capabilities to become involved in its economic development. It aims at becoming a hub for the highly skilled talent that the knowledge and service economy requires, through the construction of a world class innovation ecosystem by design.

Joint work between the public and private sector and academia, along with the bold vision of its leaders, has built enormous social capital and has strengthened the institutional framework of the city. This multi-sector harmony has enabled the continuity and coherence in a long-term plan for the ecosystem. For instance, having a university-enterprise-state committee as a meeting space for businessmen, academia and government representatives since 2003 has created a unique field for discussion around science, technology and innovation as the main engine of economic growth. This committee has become an important asset for a cohesive agenda in terms of competitiveness and as a result, new mechanisms to connect different actors have emerged.

With the purpose of leading the economic evolution of the city towards knowledge-based activities in an inclusive and sustainable way, the Ruta N business and innovation centre has worked since 2009 to articulate the different actors in

order to create a true value chain around knowledge and to catalyse the innovation ecosystem. Ruta N aims to increase the amount and quality of scientific, technological and entrepreneurial talent, develop networks inside and outside the ecosystem, increase the capital available and, most importantly, to develop a culture of innovation – these are essential elements to consolidate the soft infrastructure of the city in terms of innovation capabilities to deliver products and services with aggregated value.

Medellin is the first city of Colombia to build a public policy around science, technology and innovation (STi). With the special leadership of Ruta N, the STi Plan 2011-2021 guarantees not only the resources, but the commitment of the municipal government while directing the efforts to added-value activities as a mechanism for competitive advantage. The plan currently focuses on enhancing economic growth through innovation, developing new businesses and creating jobs for a more proper distribution of income. Furthermore, the city aims at increasing the investment in STi activities, from 0.77% of regional GDP in 2014 to 2.7% in 2021, mainly driven by the private sector. As proof of commitment to increase this investment, more than 3,800 citizens and 2,000 companies have signed a regional innovation pact. A study developed jointly between Ruta N and the Medellin Chamber of Commerce found that the rate of investment in STi activities was 1.15% of the local GDP in 2015.

Medellin has also made great strides towards becoming an important hub in the global knowledge and services value chain. The city has facilitated the landing of more than 130 companies from 21 different countries that have found in Medellin the right conditions to grow, and have created more than 2,000 qualified new jobs mainly in ICT, energy and healthcare. In the northern area of the city, where Ruta N is located, an innovation district of 172 hectares is being developed with the objective of becoming the epicentre where different actors converge around STi activities and where 28,000 new quality jobs will be created by 2021.

The development of new high-impact technological businesses is also being promoted through different mechanisms. For instance, more than 500 knowledge-intensive projects have been connected with smart capital, specialized mentoring and numerous global markets and, on average, have a growth rate of 44% per year.

In addition, the city has been working to engage youth in STEM through science clubs and technology appropriation initiatives such as Horizontes, a programme that has already inspired more than 7,000 underprivileged children to change their reality by using technological knowledge in electronics and robotics; by 2021, the programme will have transformed the lives of more than 90,000 students, making it a true innovation for social transformation.

To strengthen its participation in knowledge-based GVCs and added-value activities based on STi, Medellin still needs to focus on creating the proper conditions in the education system and working in the generation of a critical mass of specialized, driven talent, with both technical knowledge and entrepreneurial spirit.

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Monterrey*

Monterrey is the capital of the State of Nuevo León, Mexico. It is the centre of a wider metropolitan area with a population of 4.1 million people, the third largest in the country. The metropolitan city of Monterrey is a “small middleweight” city trying to find its place in the knowledge-based economy and to become relevant for the high value GVCs, while facing the challenges of growth and of a fragile institutional framework.

The success of Monterrey started in the beginning of the 20th century with the economic growth brought by big industries – mainly steel, glass, beer and cement. In the last 50 years, Monterrey has contributed almost 8% to the national GDP with only 4.5% of the national labour force. Monterrey’s proximity to the south border of the United States (Texas) represents an ideal location for businesses serving the strong US-Mexico trade relationship, which reached an estimated \$531 billion in 2015, and the wider North American market.

Monterrey is served by 1,092km of railroads and two international airports. It is connected by a strong highway network to the United States border, to the Gulf of Mexico and to the rest of the country. It has freight service by rail to the port of Tampico and other parts of the country. Monterrey’s hard connectivity and location offers a privileged logistic position in the North American market region.

The dynamism, productivity, location, talent base and industrial diversity of Monterrey have attracted more than 2,200 foreign companies in the sectors of appliances, automotive, information technologies, aerospace, electric-electronic, metal manufacturing, among others, making Monterrey an active player in the GVCs of these sectors. In 2015, the state received \$2.6 billion in FDI, ranking third out of 32 states in Mexico.

Universities in Monterrey provide a solid soft connectivity platform, including the Tecnológico de Monterrey, the Universidad Autónoma de Nuevo León and the Universidad de Monterrey. The average schooling in Monterrey is 11 years, 2.4 years more than the national mean; 18% of the city’s population has finished either a bachelor or graduate degree. Nuevo León is the state with the second highest number of students enrolled in master and PhD programmes.

Important efforts have been implemented that support Monterrey’s potential as an economic epicentre in the new knowledge economy and the GVCs competitive arena. In 2004, the Monterrey International City of Knowledge initiative was launched with the intention of promoting technological development, positioning the education sector internationally, developing the necessary urban infrastructure, and reinforcing the competitiveness of the public and private sectors.

An Innovation and Technology Transfer Institute and the Technological Innovation Park, founded in 2009, is home to 34 public, private and academic research and development centres, 3,000 highly qualified jobs, two high-impact

incubators and a total investment of over \$600 million. Derived from this broader initiative, 12 strategic economic clusters have been formed in the sectors of nanotechnology, biotechnology, aerospace, medical services, energy, automotive, electronic–electrical appliances, information technologies and software, agro-business, logistics and transportation, sustainable housing, and multimedia and creative industries.

Despite Monterrey’s modest improvements in business regulation, other cities/regions in Mexico are performing better in the business environment. The 2014 Subnational Doing Business report in Mexico positions Monterrey in 16th place out of 32 cities/regions evaluated. This result sends a clear message that a coordinated and well-supported programme to streamline, modernize and simplify business regulation is needed.

For the last several years, Monterrey has been facing a number of challenges including: the erosion of comparative advantages due to the emergence of GVCs in the manufacturing sector; the rise of other cities/regions in México and the world that are driving innovation, economic growth and attracting investment; the fast, uncoordinated and messy expansion of its metropolitan area and the lack of a legal framework to engage the municipalities into a coordinated development strategy; a frail institutional framework that lacks transparency and accountability, thus eroding public credibility and confidence; a political environment that clouds long-term vision and collaboration; and a lack of capacity to instrument a clear, inclusive and shared value proposition for driving Monterrey’s sustainable growth strategy.

Monterrey has also been falling behind in institutional development. To address the situation, government officials, the private sector, universities and NGOs are engaged in several programmes to drive Monterrey’s sustainable development, strengthen its institutions and identify its value proposition to position itself in the competitive world’s economic arena. In particular, the 2014 Law of Strategic Planning for the State of Nuevo León aims at fostering an integral vision of development, with specific strategies and programmes to accomplish such vision. A strategic plan for 2015-2030 has already been published and is generating strong momentum.

Monterrey has strong capabilities to position itself in GVCs and craft a strong position in the knowledge economy – strong economic capabilities that have been built for decades, solid public and private academic institutions, a society with a strong work ethic and a wide entrepreneurial culture, a great location near the US border that provides a strong base for servicing the North American market, an expanding understanding that the city needs to productively engage in the knowledge-based economy, and a new institutional framework that enables the participation of all sectors.

The coming years are crucial for establishing and strengthening the institutional framework that will enable Monterrey to find its place in the knowledge-based economy and to become a relevant player in the high value GVCs.

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Singapore*

Singapore's history as a free port, situated at one of the world's "chokepoints" for seagoing trade, and its psychology of leapfrogging its geography, have moulded its insertion into modern GVCs. The global economy is its lifeblood; it disciplines the city's institutions and policies like nothing else. Trade in goods and services was over \$1 billion in 2014, and inward investment stock is over \$900 million. Hence, Singapore's psychology of adapting to changing global conditions faster and better than others.

Singapore got into GVCs early, starting in the late 1960s, by attracting American and then Japanese multinational enterprises (MNEs) to set up labour-intensive light manufacturing assembly operations for export. Then it shifted rapidly into capital-intensive production in manufacturing GVCs, notably electronics. Then, from the mid-1980s, came the shift to evermore specialized, higher-value manufacturing niches, and diversification into services.

In the last 15 or so, Singapore has become a global city. Its core competitiveness strength is as a central node in global services supply chains – as one of the world's four major financial centres, as the Asian hub (along with Hong Kong) of a transport-and-logistics cluster, and as Asia's premier location for an expanding range of other services. It competes with Hong Kong to be the preferred location for MNEs' regional headquarters operations. It has advantage in financial services niches such as wealth management, forex trading and offshore finance. It has also become Asia's hub for education and commodities trading, and a global hub for water technology and urban planning.

Singapore's success as a GVC hub can be explained by applying the four-part taxonomy. From the perspective of institutions, Singapore provides a textbook example of leadership and vision, lean and efficient government, excellent public services and strong anti-corruption ethos. And the rule of law is strong on commercial matters: private property rights and contracts are enforced efficiently. If Singapore does have a generic institutional weakness, it is the public sector's overreach in the economy which has probably crowded out domestic private-sector development. Singapore conspicuously lacks a home-grown entrepreneurial culture and thus the innovative, entrepreneurial buzz of London, New York and other cities.

In terms of policies and regulations, Singapore is arguably best-in-class in "getting the basics right" on economic policy – it is generally simple and predictable; macroeconomic policy is consistently stable and prudent; personal and corporate income taxes are low; it takes less than a day to set up a business; the Economic Development Board acts as a one-stop-shop for MNCs setting up production in Singapore; the labour market is flexible; free trade is integral to Singapore's policy mix; and by international standards it is extremely open to migrants and foreign workers across the skill spectrum.

Getting these basics right translates into top-of-the-world rankings. Singapore ranks No. 1 in the World Bank's

Doing Business Index, No. 2 in the World Economic Forum's Global Competitiveness Index, No. 2 in the Globalization Index (in terms of attractiveness for foreign trade and investment), No. 5 in the World Bank's Logistics Performance Index (for which it is No. 1 in Asia), and No. 2 in the Fraser Institute's Economic Freedom of the World Index.

But policy challenges are now more complex than they were in previous phases of Singapore's growth. The core economic problem is sluggish productivity: total factor productivity growth has declined since the 1980s; it is still only 70% of what it is in the US. Other challenges include the future of manufacturing, a weak domestic private sector, labour shortages and rising costs, and limited land availability.

On hard and soft connectivity, Singapore has first-class physical infrastructure, including roads, public transport, science parks and industrial estates. The port is among the top five for container traffic in the world. Changi Airport is consistently ranked the best airport in the world. The country's also places a strong emphasis on education and skills. It came first in the OECD's global schools rankings for maths and science in 2015, and it has become the higher education hub of Asia. "Liveability" – improving the quality of life – has become a higher priority as Singapore has become richer.

In sum, Singapore's stellar success with GVCs is due to favourable geography, its city-state history of openness to the world, strong leadership and solid institutions, getting the basics right better than others, excellent hard infrastructure, and improving soft infrastructure.

Now Singapore faces more complex internal and external challenges. Externally, geopolitics is less stable, with rivalry between a weaker US and a rising China in the region. And global growth, especially global trade growth, has slowed down since the global financial crisis.

Singapore's elite consensus is that pragmatic tweaking of what has worked so well in the last 50 years will ensure success in the future. But that is questionable. Singapore needs to become a more dynamic, innovative, productivity-led city. It needs more Schumpeterian "creative destruction", which can only come from more competition in its economy and a more open, plural society. Arguably, this is necessary to retain GVC advantage, especially in the services-oriented GVCs of the future. Getting there will require hard decisions – about the role of the public sector, fostering innovation in the domestic private sector, and moving towards a more liberal polity and society.

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4. Lessons and conclusions*

The case studies showcased above present some interesting lessons. First, insertion in GVCs can be central to city competitiveness. Much of the rapid transformation of Bursa and Dubai are a testament to this. This has been very much the story of Monterrey and Singapore as well.

Second, integration into GVCs requires sustained effort by cities to re-invent and reposition themselves; is not a matter of just one major push to insert. This was seen in the cases of Bilbao and Detroit, which have gone through ebbs and flows of competitiveness. City leaders need to scan the global and local economic horizon to identify initiatives that can most enable their cities to catch the momentum of economic forces. This is applicable for newly emerging cities such as Dubai, as well as for cities seeking renewal such as Bilbao, Detroit and Medellín.

Third, creating robust soft connectivity advantages to build on hard connectivity advantages is essential. Success in the 21st century does not depend on hard connectivity alone; adding soft connectivity has been key in the cases of the seven cities studied in this paper. And, it is the connections between these two that Dubai and Singapore have captured by understanding the strategic role of their ports, air hubs and real estate developments to the attraction of talent and a cluster of firms in knowledge-based industries.

Fourth, successful cities have flourished in a context of openness. The city competitiveness framework may also be useful in understanding how some cities, like Medellín, made the transition from the import substitution/protection era to the era of globalization. It is also relevant to understand the role that trade and integration policies have in connecting cities to the opportunities of international markets, as the cases of Bursa, Monterrey and Singapore demonstrate.

Fifth, openness to global talent strengthens the skills base of a city. It has been important for Bursa, open to Turkish-Bulgarian immigrants, and for Dubai, where citizens from all over the world come to settle.

Sixth, understanding why and how domestic and foreign investors make their site selection decisions is important to guide competitiveness decisions. Investors are constantly looking for new venues to locate particular tasks of their production chains and they gravitate to spaces that present the right conditions for their business. Competitive cities are thus natural anchors for GVCs. But cities can also maximize their potential for attracting, nurturing and growing production networks by applying the competitiveness framework presented above, paying particular attention to the nature of GVCs. When deciding on the allocation of scarce resources to enhance competitiveness at the city level, policy makers can maximize the impact of their

investments by addressing bottlenecks and challenges that are particularly relevant to attract and facilitate the operation of GVCs, as well as foster value addition in the city.

Thus, beyond paying attention to the elements necessary to build a competitive city, policy-makers need to understand how GVCs work and focus on policies and measures that are relevant to GVCs in general and to the specific value chains that a city may nurture.

Though each city faces its own challenges and is engaged in fostering different GVCs, the case studies documented in this paper highlight some elements that are particularly relevant if the competitiveness framework is applied in a way that aims at maximizing insertion in GVCs. These include the following:

- *Institutions*
 - Leadership and vision, coupled with strong institutions, clear alignment of government institutions and strong public-private collaboration
- *Policies and regulations*
 - A conducive business environment, both at the national and city level, and including policies such as macroeconomic stability and open trade and investment regimes, but also simplification and elimination of regulatory barriers at both levels of government
 - An integrated, open economy, connected to larger markets and a trading vocation – never has openness to international trade in goods and services become more important than in the GVC context
- *Hard connectivity*
 - Maritime and air connectivity and intermodal infrastructure to connect to regional and global markets in a rapid, secure and efficient way
 - Hard connectivity that links people to essential services of transportation communications, water and power so that they can be productive
 - Transportation systems that boost productivity by minimizing commuting time and expenditure on energy resources
- *Soft connectivity*
 - A qualified and educated labour force closely aligned with the demands of the market
 - Policies and institutions necessary to attract talent from other regions and from abroad, including attraction for jobs as well as having a liveable and pleasant city
 - A strong supplier base composed of local and/or foreign investors
 - Innovation and R&D policies to foster GVC task, product and process upgrading and lead the way
 - Digital infrastructure to deepen connectivity and facilitate GVC operation
 - Trade facilitation and logistic policies to expedite movement of goods
 - Policies and decisions that link and involve people, encourage their positive identification with the city and contribute to city branding

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A competitive city will attract domestic and foreign investors, but a city with a clear value proposition deliberately articulated around the above mentioned elements to foster the operation of GVCs and nurture their expansion and development will have a clear advantage in enticing, retaining and growing those chains.

This value proposition must be constructed in an inclusive manner so as to open opportunities for all members of society to participate in the benefits of GVCs. This is important in itself, but also as a means to consolidate the sustainability of a competitive city.

Finally, as mentioned in *The Competitiveness of Cities* report, successful cities need to be flexible and adapt quickly to changing conditions. This is even more the case in a world of GVCs. Technology, trade and other factors are constantly impacting how production networks are organized.

Competitive cities must be ready to tackle those opportunities. For example, will 3D printing tend to refocus GVCs closer to their headquarters? Will the costs of energy or the desire to reduce global warming result in effectively raising the cost of shipping and tend to recentralize production closer to sources of raw materials, markets or shipping lanes? Will the desire for locally grown food further reduce the spread out nature of global value chains? These trends need to be carefully monitored by municipal leaders so they are ready to respond to the inevitable future challenges.

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