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GVC-Oriented Policies and Urban Manufacturing: The Role of Cities in Global Value Chains

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Abstract: Studies on policies oriented to Global Value Chains (GVC) focus much attention on developing countries and upgrading opportunities. Recent trends related to digitalization, market requests, and new consideration for value linked to manufacturing challenges GVC-oriented policies in developed countries. Such policies may refer to the attractiveness of foreign investments or increase the value captured through upgrading. At the city level, explicit policies promoted by municipalities are oriented to attract and support manufacturing activities to increase employment, entrepreneurship, and urban specializations while leveraging the new technological scenario. However, despite their interests in policies for economic growth at the national and cluster levels, research on the Global Value Chain has paid limited attention to cities and their role as production contexts within value chains. Linking to research on urban manufacturing and based on an empirical study on six cities (Barcelona, Detroit, London, Milan, New York, and Paris), the paper advances the theoretical debate on urban-related policies in the GVC framework by proposing three different policy directions related to (a) enhancing value related to urban production; (b) sustaining new urban entrepreneurship (digital craftsmanship); and (c) shortening GVC (Urban Value Chains).

Keywords: global value chains; urban manufacturing; cities; fourth industrial revolution; urban policy



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1. Introduction

The paper focuses on policies implemented at the urban level to attract and support manufacturing activities in developed countries and the implications in terms of the role of cities as nodes in global value chains (GVC). The GVC framework has been widely adopted by scholars and practitioners to explore globalization, how value chain activities are organized at the global level in different industries, by considering how value is produced and captured through different forms of power distribution (governance), as well as upgrading opportunities [1–3]. Global Value Chains have become relevant for policymakers in the last decades, both at the international and national levels [4]. International organizations have focused on how to leverage the GVC framework to sustain economic and social growth, particularly in less-developed countries [5]. Trade policies have been extensively considered to identify and shape the implications of the Global Value Chain configuration on the development of countries [6,7].

Scholars exploring GVC-related policies highlight the multiplicity of perspectives and goals adopted [8]. From one theoretical perspective, GVC-attraction policies aim at increasing the attractiveness of countries for foreign direct investments, where lead firms may find relevant resources and convenient locations for their sourcing strategies, thus enhancing economic development in the countries involved [9]. Alternatively, GVC-related policies may be focused on value capture, which refers to programs and initiatives of interventions aiming at increasing the amount of value produced within the GVC that remain in specific geographical areas and to local actors [2,10], connected to the mechanisms

of learning and upgrading [3]. Such policies are mainly focused on the country's broad geographical level or clusters (local manufacturing systems) as the primary domain of interest. On the contrary, very little emphasis is given to the urban scale to observe policy interventions and as level of Global Value Chain analysis.

Observing the dynamics of economic specializations at the urban level is becoming relevant in relation to recent trends in the technological and international institutional scenario that push forward the debate of scholars and practitioners on the future of globalization and the GVC framework [11]. Studies on regionalization of Global Value Chains suggest a reconfiguration in the global scale of Global Value Chain activities [12] toward a stricter geographical link between production and markets, while studies on reshoring dynamics further emphasize the transformation in the logic of the location of manufacturing activities of lead firms and multinational enterprises (MNEs) [13,14] in terms of interests toward advanced countries. Such trends are pushed forward by the rise of new technologies connected to the so-called fourth industrial revolution [15]—such as advanced robotics or 3D printing—that transform the organization of firms, but also the entire value chain [16,17] with consequences on the strategies of lead firms and implications for the global value chain structure [18].

These factors challenge the established “GVC world”, where manufacturing is mainly located in developing countries according to the “smiling curve” approach [19,20], compared to high value-added activities (R&D, brand management, retail) which is of interest for advanced countries. In the growing theoretical debate about the role of manufacturing for innovation and competitiveness of countries and Global Value Chains [21–23], such technological-related pressures open new issues about the configuration of Global Value Chains in future years [24,25], augmenting the need to also consider cities in the analysis. This trend asks for deeper discussion concerning the role of policies in developed countries in relation specifically to manufacturing activities, also intertwined with innovation dynamics, where cities can also have a role.

Interesting challenges for theoretical debate on GVC-related policies are linked to the opportunity to also include the urban level within the geographical scale of consideration, in addition to the international and national levels of GVC-related policies or sub-national level (clusters) [26]. The study of cities in the GVC framework has been limited or explored more within global production network studies [27,28] or in international business debate [29–31].

Notwithstanding these contributions, recent studies on urban manufacturing (UM) [32] suggest new potentialities of growth that can be linked to renovated policies and bottom-up investments at the urban level. From this point of view, cities in advanced countries may become new manufacturing nodes within Global Value Chain, besides their service-based characterization and thanks to specific policies promoted by municipalities. The paper aims at exploring the role of cities within the framework of GVC-oriented policies, considering manufacturing as the core of such policies in the context of developed countries, the goals to be achieved, and the actors of Global Value Chains involved. The qualitative empirical analyses (developed with the support of the Milan Municipality) refers to six cities (Barcelona, Detroit, London, Milan, New York, Paris) selected based on multiple criteria: their relevance at the global level (global cities), their industrial heritage, and presence of pioneering initiatives related to UM and digitalization. Based on the analyses of policies implemented at the urban level to create new economic development and value capture and interviews with city policymakers and experts, the paper advances the theoretical debate on policies in the GVC framework, in particular on how to include cities in the evolutionary trends of Global Value Chains taking into account the value linked to (advanced) manufacturing, proposing three different trajectories.

2. GVC-Oriented Policies and Urban Manufacturing

2.1. GVC-Oriented Policies and Upgrading

The relevance of Global Value Chain studies for policymakers is related to the opportunity to rely on key concepts and tools the GVC framework provides to define policies of interventions to sustain economic development and growth [33,34]. Being conceived in strong relation with literature on development studies, Global Value Chain contributions investigated how lead firms' offshoring strategies and different forms of governance within GVC impacted countries and their inclusion in Global Value Chains [35].

The key concept of upgrading in Global Value Chain and its intertwined governance issues [36] describes how firms and countries can "move up" in the value chain in terms of new, more qualified value-related activities. From this angle, GVC-related policies are more focused on targeting the development of skills and competencies as well as new activities (functional upgrading) in the value chain at the national level as well as in specific locations to sustain the value captured and increase the competitiveness of the economic systems [3,9,37].

With respect to the organization of Global Value Chain produced by the strategies of global lead firms, trade regulation policies have a remarkable role in shaping the trajectories of Global Value Chains, the rise of new powers, and the evolution of specializations across countries [38]. The growing attention of policymakers at the national and international level indirectly intervening in trade dynamics also became a consequence or in reaction to lead firms' private forms of governance [39]. International bi-lateral and multi-lateral definitions of tariffs and trade rules enhance Global Value Chain growth, with inclusions of new countries into globalization and the strengthening of regionalization of GVC, but with not necessarily positive consequences in terms of equal distribution of value and welfare [38,40,41]. Moreover, not all trade policies are necessarily equal in supporting gains at the national level of the inclusion of countries in Global Value Chains. Research suggests, for instance, that Bilateral Investments Treaties (BITs) are more able than Regional Trade Agreements (RTAs) to protect innovation investments in developed countries, while RTAs sustain more intense inclusion of sourcing countries in Global Value Chains [42].

Intertwined with trade, GVC-oriented policies have been set up aiming at attracting FDI and including (small) suppliers and clusters within Global Value Chains specifically to benefit from these backward linkages of lead firms [9,43,44], mainly in developing countries. From this point of view, a large set of studies explore how location choices of multinational enterprises (MNEs) are influenced by national policies, both among GVC scholars [45] and international business ones [46]. On the one hand, lead firms control and capture higher value [47,48] than their suppliers (in developing countries). However, on the other hand, specifically through the deployment and investments into manufacturing activities, suppliers—and countries—can develop and eventually upgrade through a combination of policies, lead firm support, and firm's own strategies [49].

Recent contributions by Crespi et al. [50] suggest an integrated framework to describe productive development policies (PDP) targeting mainly developing countries but with an extended view, as they are conceived as policies that focus on the entire economy and not only on industrialization, by emphasizing "competitiveness and integration within global value chains" [50]. Such policies are oriented toward enhancing innovation, human capital, entrepreneurship, and clusters. They can be framed by taking into account two dimensions. The first one refers to the scope of the policy, being vertical policies if they focus on specific industries or horizontal ones if they are "broad-based". The second dimension considers the type of interventions: either public inputs/public goods or market interventions (i.e., taxes) impacting economic actors' behaviors. This study helps in the better framing of GVC's development policies. A recent contribution by the World Bank [20] provides additional elements in the analysis of GVC-oriented policies exploring national policies taking into account the activities and related value within the smiling curve. (1) commodities to limited manufacturing. (2) limited manufacturing to advanced manufacturing and services. (3) advanced manufacturing and services to innovative activities. Policies have been categorized

in terms of endowment, market size, geography, and institutions, aiming at identifying the policies that effectively promote integration in more advanced GVCs. In addition, other complementary policies are also identified to GVC participation, which refers to labor market policies, compliance with labor regulation, or environmental protection measures.

2.2. A New Scenario for GVC-Oriented Policies: Manufacturing in the Digital Economy

Despite the relevance of those contributions, further knowledge has to be developed in considering the role of policies in the context of advanced countries, taking into account the rapid transformation in the emerging economic and technological scenario, which also affects GVCs [25,50]. The GVC framework discussing the policy of interventions has partially been revised through recent studies highlighting the rise of South-to-South connections [51,52] and the regionalization of Global Value Chains [12,53]. At the same time, policies in developed countries focus on investing in technology upgrading, also taking into account the industrial sphere and the opportunity to benefit from participation within GVCs. It is not only an issue of connecting upgrading in Global Value Chain and innovation systems from the point of view of developing countries [43,54]. On the contrary, from a policy perspective, the focus of attention is on advanced economies and their potential evolutionary trajectories within the Global Value Chain by taking into consideration the new competitive scenario related to the digital economy [16] and emerging trends in trade [51].

In this respect, advanced economies may increase and enhance their investments in knowledge-intensive activities to actively and positively participate in Global Value Chains [55]. From this perspective, policies mainly target: (a) FDI attraction related to technology and research activities; (b) innovative entrepreneurship; (c) knowledge spillovers toward the local knowledge base; (d) internationalization of domestic innovation actors and talent mobility; (e) skill development mixing innovation and training capacity [56]. In the attention toward high-value-added activities and their link to innovation and technological upgrading, scholars, and policymakers are putting growing attention on manufacturing activities as sources of value and economic growth. Many studies suggest a strong relationship between manufacturing and innovation from multiple points of view [21,57]. This thought is becoming further relevant by considering the rise of new digital technologies included under the umbrella concept of “industry 4.0” or advanced manufacturing—robotics, 3D printing, artificial intelligence, among others—that impact value chain activities and location choices concerning manufacturing [18,58]. Beyond the internationalization of firms in the scenario of Information and Communication Technologies (ICT) [59], the fourth industrial revolution pushes forward the reorganization of Global Value Chains within renovated industrial policies [60].

After decades of offshoring and global sourcing and investments on the extremes of the smiling curve generating high international fragmentation of production and the expansion of Global Value Chains [61,62], in advanced countries scholars and policymakers are discussing the possibility of supporting reshoring initiatives to increase manufacturing activities at home [13,23]. This is particularly relevant in the case of advanced economies, where the persistence of conditions (skills, infrastructures, and more in general what Pisano and Shih call “industrial commons”) should not be taken for granted for an effective process of reshoring of manufacturing [63]. As a consequence, policy interventions may be relevant to sustain firm investments in manufacturing activities in advanced countries, pushing lead firms to bring back production by connecting value creation and high-quality manufacturing [21,64,65].

2.3. GVC-Oriented Policies and Cities

From the geographical point of view of the domain of GVC-oriented policies, in addition to the international and country levels, many studies have investigated the relationship between Global Value Chain and clusters, as the latter local manufacturing systems are highly involved in policies for economic development and growth [66]. Contrary to clusters,

cities have received less attention in Global Value Chain studies and within GVC-oriented policies, with some recent contributions at the institutional level [67] or with respect to other streams of literature.

In international business studies, the urban dimension has been explored to outline the relationships between MNE's location strategies related to manufacturing and R&D activities both in advanced and emerging economies [28]. In particular, the attention is on how MNEs are pushing co-location of R&D centers and manufacturing functions in foreign countries [68], while other studies focus on how cities can overcome the problems of losing manufacturing (and employment) by leveraging or renovating their competencies and specializations [10].

Another relevant stream of research on cities and their links to globalization refers to studies on global cities. The relationship between globalization and cities has been widely explored by considering the key contribution of Sassen, whose research on "global cities" represents one of the main inputs for conceptualizing the evolution of cities in the context of globalization [69]. Much of the research field on cities has been connected to the emergence of a "globally networked knowledge economy" [70] in which advanced producer services firms (APS) such as financial institutions play a crucial role in the global economy. In this research stream, global cities are considered nodes of international economic and social networks, where specifically cities are connected by advanced service providers [71]. This perspective frames (global) cities as places that become the locations of high value-added activities, which we can relate to the two extremes of the smiling curve.

Recently, among the scholars exploring the urban level in Global Value Chain and Global Production Networks (GPN), Breul et al. referred to GPN and economic geography literature to discuss how cities can play the role of "gatekeeper" in connecting the global organization of economic activities with the local (urban) level [27]. More precisely, those scholars suggest that cities are nodes of GVC, but at the same time they can also generate spillovers and impacts in the hinterland.

Brown et al. [72] discuss the possibility of integrating the two works of literature of Global Commodity Chain and World City Network by referring to the common origin of the world-system framework discussed by Wallerstein [73]. They take this observation as a starting point for investigating the possible linkages between Global Cities and Global Value Chains in world-systems terms. Consequently, every global city is a service node for several GVCs, thus achieving their centrality and maintaining the connections between the networks of global cities and commodity chains—from a productive-based economy to a knowledge-based economy [74].

However, a new perspective is emerging that goes beyond the focus on services and is related to manufacturing. According to a pool of researchers dealing with the relationship between manufacturing and the city, after the 2008 financial crisis, "there has been a growing consciousness at a political level that the re-industrialisation of northern countries is necessary and a complement to the services sector is essential" [75] (p. 1). In recent years, the political debate in developed countries such as Europe has focused on responding to economic and environmental challenges by stating an "industrial renaissance," which embodies the values of environmental sustainability (circular economy) and Industry 4.0 [76,77]. The nature of labor in manufacturing is changing [78]. With the advancement of technologies such as high-precision 3D printing, CNC machines, cloud computing, and the IoT, such as the emergence of the maker culture and Fab Labs, a return of manufacturing in the city is possible [32]. Most authors refer to this phenomenon as urban manufacturing (UM). Lester et al. explain the state of the art of UM by presenting past and emerging research exploring the relationship between UM and industrial land conversion, but also the important role of UM for the "good-paying-jobs" creation and to promote social equality [79]. Similarly, Grodach et al. [80] recognized the role of UM as a lever for economic development by exploring the relationships among cultural industries and small urban manufacturers by connecting. The same scholars connect the UM phenomenon with a revived interest

in craft activity [81] about new technologies (maker movement and the new industrial revolution [82]).

In this scenario, the same scholars have highlighted the policy issues that would affect relationships and development-oriented toward cultural production and manufacturing at the city-region level. They argued that UM can provide economic growth (“stable, higher-quality and more accessible employment than tourism and consumption-orientated redevelopment” [80] (p. 8)). This kind of manufacturing is not easily outsourced because, as opposed to traditional manufacturing industries that compete on cost or volume, small manufacturers compete on innovative design, product differentiation, and specialize in customized production [80]. Moreover, they mainly identified three reasons why manufacturing returns to the city. First, the chance for niche, tailor-made production to be close to their (advanced) customers living in cities; second, the integration between manufacturing and retailing, offers the opportunity to customers to buy a product directly from the site of production. Third, interrelated motivation refers to the fact that the demand is increasingly asking for higher quality in service and speed in the delivery [78] that could occur in case of a shorter distance between production and market at the urban level. (Global) cities are rediscovering their manufacturing identity so that they are moving from service-based economies to a “services and production mix,” giving life to UM [83], in a scenario where services and manufacturing are intertwined and reinforce each other in the urban context [84].

Studies on UM highlight the rise of policies at the urban level oriented to attract and develop within the city manufacturing activities, overcoming the service dimension/vocation of cities. In this respect, cities become interesting locations for manufacturing activities beyond the pre-and post-production phases of the smiling curve. From this point of view, we support the opportunity to link the stream of literature focused on UM and GVC, where policies implemented at the urban level could be seen as PDP [50]. From the GVC perspective, policy interventions in cities of advanced countries may sustain value capture and upgrading by attracting and creating conditions for new activities (functional upgrading connected to manufacturing) and new linkages with the market within the broader aim of quality of employment and sustainability [8]. The paper aims at better connecting UM policies within the theoretical framework of GVC-oriented policies and the implications for GVC studies, based on an empirical study carried out on a sample of global cities. In particular, our research aims at answering the following questions: How can policies oriented to developing Urban Manufacturing be interpreted within GVC-oriented policies? How do such UM policies support the participation of cities of advanced countries in Global Value Chain? This research could contribute to enriching the debate on the evolutionary trajectories of Global Value Chains in the new technological and market scenario by focusing on the geographical scale of cities.

3. Empirical Analysis

3.1. Methodology: Case Study Selection and Data Collection

This study is based on a qualitative analysis carried out through a case study methodology [85] focused on cities and the policies implemented at the urban level in the domain of the study. The empirical analysis was carried out within a broader project supported by the Municipality of Milan (Italy) aiming at framing the UM initiatives occurring at the city level worldwide to obtain input for policy development. In this scenario, the selection of the case studies has been based on multiple criteria (purposive sampling): (a) global city dimension; (b) city industrial heritage; (c) presence of pioneering initiatives related to UM and digitalization. To identify our research sample, we referred to the “Global City Rank 2018” provided by A.T. Kearney. From this ranking, we selected global cities with two predefined characteristics. (1) the localization of the Global City is in the “North of the World” and (2) the Global City has a strong industrial heritage that includes cities that have “any tangible remains from the technological and industrial past of the human civilisation. Besides the architectural heritage, like abandoned factories and machines, this category

includes auxiliary warehouses, means of transport and infrastructure, as well as workers settlements” [86] (p. 1). From an initial sample of 135 cities, we selected six global cities taking into consideration the criteria and the framework of the study mentioned above: London, Paris, New York, Detroit, Barcelona, and Milan. Barcelona has been considered because of its leading role in the Fab Lab global movement being the 1st city to host a Fab Lab in Europe in 2007 (MIT in Boston founded the 1st worldwide in 2001) and the promoter of the Fab City Global Initiative (that grew up to 38 member cities up to 2021), thus providing relevant inputs in the understating on how to support the starting of UM initiatives related to digital technologies. In fact Fab Labs as Fabrication Laboratories are characterized by small-scale workshops offering (personal) digital fabrication, then complemented by training initiatives, entrepreneurial programs and agreement with firms to provide advanced digital services and projects. Milan and Barcelona are also the capital cities of two regions (Lombardy and Catalonia) with similar socio-economic characteristics. As far as Detroit is concerned, it has been the symbol of the second industrial revolution (Ford company and the automotive cluster), where—despite the urban decline in terms of population loss—manufacturing jobs are still relevant (only 4 other US cities with similar size have higher ratio of jobs per population) (see notes in the Appendix A).

Case studies have been developed through an extensive desk analysis on city development policies and original interviews gathered from six global cities in Europe and the US. The empirical analysis was conducted from May 2018 to October 2018 with the support of Milano Municipality (Economic Innovation and Business Support Department) and a team of 10 experts in public policies, innovation, labor, and economic development that collected and reviewed the empirical data. For each selected city, the study has been organized into two phases. (1) we conducted a qualitative analysis based on secondary data collection, useful for the subsequent. (2) field research phase (primary data collection based on interviews and site visits). In particular, for each city, we gathered the main demographic and economic indicators according to the OECD database dedicated to the “metropolitan areas”. Subsequently, we selected and analyzed the documents concerning the “metropolitan development policy strategy” published in the “OECDiLibrary” or in the official municipality website database to identify UM policies. After a policy review, we conducted a desk analysis on several initiatives that represent real initiatives of Urban Manufacturing with the support of local influencers that have a complete picture of the city context. The role of these local influencers (i.e., fab lab managers) was fundamental to identifying real cases to interview. Once a theoretical background was constructed, phase 2 started. We conducted field interviews with qualified local representatives, policymakers, and managers on the pre-identified initiatives occurring at the city level. The interviews aimed at gathering knowledge on the drives of the UM policies implemented, the governance and business models of the UM initiatives, and the results obtained. All interviews and visits were conducted between March and May 2018. What follows is a description of policies in each case study proposed in alphabetical order. The Appendix A detailed quotes from strategic documents at the urban level are proposed and analyzed based on [56].

3.2. Case Study Description

3.2.1. Barcelona: From Fab-Labs to “Fab-City”

The Àrea Metropolitana de Barcelona (AMB) is the public body that administers the metropolitan area of Barcelona, a large urban agglomeration consisting of 36 municipalities. AMB, with its 3.9 million inhabitants, compared to a reduced area of almost 600 km², represents one of the most densely populated metropolitan areas in Europe (source: Idescat—Statistical Institute of Catalonia). This high density of population, high accessibility to transport infrastructures, together with a high index of entrepreneurship, creativity, high foreign investments in start-ups, and a strong propensity for Research and Development, have made Barcelona the Southern Innovation Hub Europe [87,88].

Barcelona is not only a start-up city, but it is also the main promoter in the world of the “maker” movement [82] (hosting the 1st Fab Lab in Europe from 2007), thanks to the varied

offer of workshops, laboratories, and training proposed by the “Fab-labs” disseminated in the city. What profoundly distinguishes Barcelona from other cities on this issue is the municipality’s primary commitment to making Barcelona a “Fab-City” [89], highlighting the worldwide proactive role of the city in the renovation of urban trajectories rooted on digitalization and related manufacturing opportunities. Fab-City is an international initiative launched by the Municipality of Barcelona and other strategic partners, including the Fab-Foundation in 2011, to develop “locally productive and globally connected self-sufficient cities” [90,91] (at 2021 the network includes 38 city members). The project, linked to the global network of “Fab-Labs”, aims to change the current paradigm of the industrial economy that defines the functioning of cities according to a linear product import and waste production model, developing a new paradigm of a spiral innovation ecosystem. The Fab-city project is proposed as a solution to a problem of our time: uncontrolled and growing urbanization on a global scale. The Fab City project was launched at the FAB7 conference in Lima in 2011. In 2014, during the FAB10 conference, the mayor of Barcelona invited his colleagues around the world to join the project and set the goal of reaching by 2054 a city self-sufficiency of at least 50%. From this perspective, the case study highlights the role of digitalization connected to renovated (circular) manufacturing at the city level.

The characteristics of Barcelona’s political approach are embodied in two main directions: the “Digital City” with reference to the propensity of the municipality to make the city the “reference point for Southern Europe innovation”, and the “Fab-City” with reference to the propensity of the municipality to give life to a model of a circular economy by leveraging the values of a shared knowledge typical of the Fab-labs. These two dimensions converge in the “Make in BCN” policies, part of the innovation policies summarized in the “Barcelona Digital City” document. In particular, “Make in BCN”, in addition to the events dedicated to Industry 4.0 and IoT technology, is embodied in the pilot project of the “Maker District” [89]. This project started in the Poblenou area is based on a prototype of a productive and scalable city, which aims to contribute to the re-industrialization of the city through activities and projects that promote interaction between local communities and citizens’ initiatives, while being, at the same time, connected to a global community. In other words, the Maker District is one of the first pilot projects on the Fab-City model in the world.

3.2.2. London: New Spaces That Drive Production and New Forms of Retailing in the City

Greater London is one of the nine regions of England and forms the administrative boundaries of the metropolitan city of London. This area of 1.572 km² is alternately divided into three macro-areas: Inner London, Outer London, and a “Central Activities Zone”, which includes the City of London and part of the neighboring municipalities. According to periodic estimates by the London Greater Authority, the public body that administers London, the current population of the region is 8.9 million inhabitants and enjoys a GDP of 665.8 billion dollars in 2015 [92]. In the last few years, the metropolitan city of London has registered, in addition to constant population growth, an increase in employment, from 4.6 million in 1971 to 5.5 million in 2015 [93]. The economy of London specializes in professional, financial and insurance, information and communication services. However, in the last decade, even the “productive economy” is regaining its vitality [94–96], new production spaces such as incubators, accelerators, and co-working spaces dedicated to the craft of the future are driving UM in Greater London. In support of the economic growth of the next 20 years, the mayor has drawn up a development plan (The London Plan 2017) in which, through 103 policies, it describes the framework of rules to guide growth [97]. What emerges from the analysis of these policies and, consistent with the purpose of our research, is that London, in the face of an important workspace demand, is encouraging the conversion of empty commercial spaces into “Incubators, Accelerators, Co-working” (the IACs) for the creative industry and new forms of manufacturing. According to the mapping study promoted by policymakers to evaluate the multiplier effect of IACs at the urban level in terms of employment and which are the most interested sectors involved

(“Supporting places of work: Incubators, Accelerators, and Co-Working Spaces” is a study commissioned by the Greater London Authority), the London IACs offer workspaces for a wide range of sectors [98]. The data show that there is a significant interest in some key sectors for the London economy, such as “digital technology” which, with the highest percentage (29%), represents the main area of interest.

Generally, these types of initiatives tend to be located inside buildings classified as “post-industrial”. Almost half of the IACs identified in London are located in these buildings, which are often restructured and converted into workspaces [98], also redeveloping the urban area in which they are located. The regenerative benefit of these initiatives about the surrounding physical environment is often linked to the increasingly effective way in which “pop-up”/temporary spaces are used to improve and promote business ideas.

An example of these initiatives is Cockpitarts, “the UK’s only creative business incubator for craftspeople”. They support craft makers at the start of their careers, as well as those who are more established, to grow and build successful, thriving businesses in the UK and internationally. According to their impact report 2019. “the 80 makers who provided financial data during this year’s annual generated sales of 4.1M GBP in 2018, with a Gross Value Added of 1.8M GBP. Grossed up for the whole community of 144 makers, this equates to estimated sales of over 7M GBP and GVA of over 3M GBP” [99].

3.2.3. Milan: Towards a “Promise of a Job Full of Meaning”

Milan is the most populous city in Italy, and it is considered the Italian capital for the services world. Starting in 2014, the population of Milan returned to growth after decades of decline. In 2016, the number of residents in the Milan metropolitan area was 5.1 million, spread over an area of 6700 km² [100]. The indicators related to education and training support the image of Milan as a rich territory in terms of human capital. With almost one million employees and over 300,000 local units in the private sector, Milan is one of Italy’s major business centers. Seven percent of the 3300 medium-sized companies operating in Italy and 32.4% of the headquarters of multinational companies are located in Milan [101]. It is the metropolitan city with the highest GDP on a national scale (263 billion euros in 2015).

Despite the strong characterization of the service economy, one of the most important aspects for Milan is the return of manufacturing in the city. In particular, the creation of jobs in sectors such as furniture manufacturing, metallurgy, and metal products, printing, and the wood and food industry recorded a double-and triple-digit increase in the three years 2014–2017. Overall, the manufacturing sector in Milan recorded a +63% in terms of employment [101]. This new manufacturing activity leaves behind the idea of traditional industry and opens up to new hybrid models (i.e., bars that are also neighborhood social centers). Business incubators, makerspace, and Fab-labs are the places that welcome this set of new entrepreneurial activities that experience not only new business models and governance but also forms of inclusion of new social and economic subjects and that, also thanks to the commitment of the Municipal Administration, in Milan started to produce results for supporting employment and creating new businesses.

One of the projects launched by the Municipality is “Manifattura Milano” (Manufacturing Milan). Manifattura Milano, part of the Fab-City network, is the program of the Milan Municipality for the promotion of UM. The program aims to make Milan an enabling ecosystem for the birth, establishment, and growth of companies operating in the field of digital manufacturing and new craftsmanship to create new jobs, regenerate the suburbs, and promote social cohesion. In 2019, Milano Municipality has organized “Manifattura Camp” a day dedicated to the protagonists of UM in Milan: start-ups and high-tech companies, SMEs that combine digital and analog, makers, digital designers and artisans, and academic institutions. Fab labs, incubators, and accelerators in Milan have begun to produce fascinating results, confirming the importance of these places for supporting employment and creating new businesses.

3.2.4. Paris: The “Capital de la Création” and “Fabrication”

In the last decade, Paris has undergone profound changes. The boundaries between urban and suburban areas are increasingly blurred so that today the Île-de-France region is considered the metropolitan area of Paris (IDF-Paris) and corresponds to an area of 14,518 km². The IDF-Paris region today hosts 12 million inhabitants who benefit from a GDP that exceeded 743 US billion dollars in 2015 [100]. In this context of lively demographic and economic growth, the city felt the need to create a framework of rules within which to develop its metropolitan city strategy. What sets Paris apart from other Global Cities is the “Top-Down” development approach that is embodied in the ex-ante programming of the ecosystem, which allows the growth of public and private initiatives. These initiatives belong to two specific “directions”: the 26 billion euro investment project called “Grand Paris” for the sustainable development of the region; and the “Paris Capital de la création” for the promotion of “creative tourism” and French art masters [100,102]. These two projects can be interpreted as policies supporting the attraction and valorization of UM initiatives consistent with the increasing urban demand for high-end products jointly connected with global demand interested in local products (tourism).

To assist in the implementation of the “Grand Paris” project, a series of “territorial development contracts” belonging to seven monothematic clusters have been established, including digital and manufacturing, health, aeronautics, and innovation clusters (source: JLL) [103]. “Paris Capital de la creation” refers to the planning of Paris to position itself as a destination for “creative tourism” to promote all those small artisans recognized by law n. 2014-626 of 18 June 2014 as “masters of art”. Artisans are considered patrimony of the French regions representing not only a showcase of excellence but also ambassadors of a certain French lifestyle, which is a real resource for the territories in terms of development and tourist attraction. Today, France has over 38,000 artisan businesses belonging to the most varied sectors. They are often small and medium enterprises, and also small laboratories or factories whose total turnover amounts to 8 billion euros in 2007 [104].

A case of particular interest, which combines the two identified directions, is represented by the territorial development contract of “Est-Ensemble”, a suburb northeast of Paris. The Est-Ensemble is considered the “Fabrique du Grand Paris” as a variety of initiatives related to manufacturing and art crafts are growing within reused spaces, but also of newly built spaces in the Pantin and Montreuil areas [105,106]. This is the area in which Paris, ex-ante, decided to cultivate the creative soul of future artisans. An area made up of urban spaces transformed into laboratories where the masters of art meet the new manufacturing and new ways of organizing labor. Based on its industrial tradition, the territory of the Eastern Ensemble has been engaged for 15 years in a policy of support for the art and craft sector. Art craftsmen are particularly present in Pantin and Montreuil. The Est-Ensemble artisanship center today brings together around 70 artisans and art designers and is an ever-expanding network. The activities cover cabinetry, ceramics, jewelry, textile creation, and engraving/art printing. Several important economic actors have been present for many years: the Hermès laboratories have been in Pantin for more than 20 years, but also the goldsmith Odiot, or even the Bourjois cosmetics factory acquired by Chanel. In 1992, the famous luxury brand Hermès opened a branch in Pantin. At that time, leather goods laboratories were installed in a post-industrial site redesigned by Rena Dumas. Soon, the space was not sufficient, and Hermès decided to buy the surrounding land with the idea of creating its “cité des métiers” [107]. After a few years of work, the branded new building was finished. Nearly 1000 employees arrived at the Pantin site, creating jobs and wellness for the surrounding areas.

3.2.5. Detroit: From “Mass Production” to “Production from the Masses”

Detroit is the largest and most populous city in the US state of Michigan. The metropolitan area, known as Metro Detroit, is home to around 4.3 million people, making it the second-largest in the Midwest after the Chicago Metropolitan Area. In the years following the Great Recession, Detroit experienced strong growth, with jobs and wages up more

than proportionally compared to other US cities, reaching a GDP of around 200 billion dollars [100]. This growth is characterized by the creation of employment in the manufacturing sector, and therefore from the production of cars to business services. The city experienced also a strong fall in the population over the last decades, but still maintaining its position within the top 20 US largest cities [108]. Moreover, it is still characterized by an important job occupation in the private (mainly industrial) sector.

The Detroit region is not only the epicenter of the global automotive industry (representing the core of the regional manufacturing cluster), but it is also home to other specialized industries, including defense, education, information technology, and health-care. Detroit's innovative manufacturing companies generate around 60 billion dollars in annual revenue and employ around 350,000 people [109]. Job growth in this sector exceeds the national average of 5% per year. This region is the number one in the United States for offering advanced manufacturing jobs and first in the country for engineering services. Over the years, Detroit has also managed to attract talent from all over the world and create a tax structure for businesses that is considered one of the top 15 in the United States [110,111].

The two strategic documents that trace the lines of city growth are the "Detroit Master Plan," an official document promoted by the Detroit municipality, and the "Detroit Future City" study promoted by a policymaker think tank for the city [108,112–114]. What emerges from the two documents is that Detroit wants to promote the reuse of industrial spaces by combining creativity with industrial production, mixing tradition, art innovation, and culture. In this sense, the redevelopment policies of disused industrial spaces meet an increasingly high demand for flexibility and sharing from entrepreneurs. One of the proposed policies for sustainable development of the city refers to the reuse of vacant spaces of an industrial nature. These strategies would have the task of providing small businesses with the space needed to work and low-cost offices, access to a network of managerial and manufacturing skills, and equipment, tools, and machinery for the creation of new products. The city investments to support entrepreneurship and innovation in manufacturing has been obtaining results by keeping manufacturing as the Detroit second largest sector of employment (16% of the overall employment in 2020) [115]. This is consistent with the recent Michigan nomination of "top state 2021" for manufacturing jobs and investments including Detroit manufacturing system [116].

The city of Detroit is also part of the Fab City project. Indeed, Fab City Incite Focus is a cutting-edge, globally recognized production and training laboratory focused on the relationships between digital fabrication, permaculture, experiential learning, and appropriate technology [112]. In this regard, the "Live+Make" district wants to be a socio-economic experimentation neighborhood near previously industrial areas. According to the "Detroit Future City" plan, abandoned industrial buildings offer the opportunity to start an economic, creative, and productive revitalization. Residential spaces are mixed with productive spaces, providing the opportunity for owners to convert lofts into productive spaces, and vice versa. Research, small-scale production, and new commercial activities, and tax breaks will stimulate economic growth and widespread entrepreneurship. This district will also offer training opportunities on issues related to manufacturing 4.0 through the activation of training courses on production through CNC machines and "advanced manufacturing". From this perspective, UM policies are oriented to leverage digital technologies to support employment and entrepreneurship as well as to overcome city decline based on the connection with other cities at the global level to share models and formats of interventions.

3.2.6. New York: UM as a Means for Creating Good-Payed Jobs

The metropolitan area of New York, with its 11,640 km², is among the largest metropolitan areas in the world for surface extension. The New York metropolitan area, with its 20.2 million residents in 2017, with a density of 1690 inh/km², is the most populous metropolitan area in the United States [100]. The economic activity of the metropolitan

area, measured by the GDP, is almost 1500 billion dollars [100]. Total employment for the metropolitan area of New York, in July 2018, is equal to 9.8 million people (of which 50% are in NYC), adding 143,000 new jobs, especially in the “education & health services” sectors and “leisure and hospitality” [117]. However, the start-up ecosystem has also grown rapidly in the last five years, from 2.3 billion dollars invested in technology start-ups in 2012 to around 13 billion dollars invested in 2017. The three sectors that characterize competitiveness in the technological field are “advanced manufacturing and robotics,” “cybersecurity,” and “health and life sciences” [118]. Concerning advanced manufacturing, New York City has the largest activity in the world in the field of 3D printing, with a 2.7% market share, and it is known as the “world capital of 3D printing”, with over 500 3D printers and nearly 3800 manufacturers using them. In support of this digitized manufacturing activity, the municipality has launched Futureworks NYC, a program aimed to accelerate manufacturing start-ups through advanced technologies and to support the adoption of these technologies by traditional players. This program received an investment of 8 million dollars to create over 2600 well-paid jobs over the next decade [119].

The progress in Advanced Manufacturing supports the development of the city’s design sector, which includes 4000 design firms and 13,000 fashion companies, including around 1800 fashion manufacturers, who can benefit from new technologies to accelerate production and meet more demand for personalized orders and small lots. From this perspective, the UM policies promoted combine the attention toward the exploitation of (sophisticated) urban demand jointly combined with the central role of the new technologies available within the fourth industrial revolution.

With the “New York Works” plan, the municipality aims to create 100,000 well-paid jobs [120]. The De Blasio administration will invest heavily in technology, particularly in IT security (creating 30,000 jobs), life sciences and health care (aiming to create 15,000 jobs), manufacturing (aiming to create 20,000 jobs), and creative industry (aim to create 10,000 jobs). These strategies will be supported by real estate activity in the city aimed at building millions of square meters of new commercial office space (creating 25,000 jobs). Among the cities examined, New York represents the city that is investing most in urban manufacturing. The city can ensure that a wide range of manufacturing companies continue to play a crucial role in meeting local demand. In this regard, some of the major initiatives are concentrated in the Brookling area.

The Brooklyn Navy Yard is an industrial park that demonstrates how modern production can thrive in a global city. This initiative has involved public and private investments. The plan represents an investment of 2.5 billion dollars, which would bring the total number of jobs to the Yard to 30,000. To achieve this growth, the plan includes the development of 5.1 million square feet of urban manufacturing space. The Navy Yard offers services including access to a diverse community of businesses that offers opportunities for collaboration; an on-site property management team; a group of business support services to help companies expand and grow; a full-service on-site placement center to assist companies with human resource needs; a 60,000 square foot food hub; and a public exhibition center offering shop windows and sales spaces.

The Green Manufacturing Design Center (GMDC) is a solution for small and medium-sized manufacturing companies, artisans, and artists who need a production space that is flexible and convenient. Since its establishment in 1992, GMDC has redeveloped seven industrial spaces in Brooklyn. It is a private non-profit organization but has received support from economic development organizations, such as NYCEDC. This is a total of 600,000 square feet of space, where 111 businesses and 620 people are hosted. The main activities of GMDC companies are related to custom manufacturing, such as jewelry, metal, and ceramics, but also woodworking and fine art. GMDC has succeeded in building a model in which local New York companies can find security with long-term contracts and affordable rents. The small businesses that occupy GMDC’s buildings keep the city’s manufacturing sector active and profitable, providing over 600 quality jobs to a diverse group of New York residents. The average annual salary for 2016 is 48,208 dollars, compared

to 27,030 dollars in the retail sector and 27,310 dollars in the food sector, offering GMDC workers a path to the middle class. According to the latest annual report of GMDC's activities, the economic impact of this initiative, taking into account all the related activities, was about 199 USD million in 2016.

4. Discussion and Implications

The UM policies examined mixed financial and non-financial support instruments as well as infrastructure development to achieve multiple goals with the main aim of sustaining city competitiveness and growth over time. From this perspective, in the framework proposed by [50] in terms of productive development policies, UM policies can be seen as horizontal policies, where interventions refer to public inputs or public goods more than related to the market. Manufacturing activities become the focus of urban policies, which can be seen as grounded in GVC-oriented policies in all the cases when they attract lead firms' investments—such as in the case of Paris—and trigger economic development based on new high value connected to a renovated approach to manufacturing. The examined policies are oriented to generate a new quality of employment at the urban level [8] connected to manufacturing and not on (only) (high and low-skilled) services. Furthermore, UM policies allow enlarging the market for local firms (i.e., artisans) through new linkages with the end markets—directly (such as in the case of New York) or via lead firms (such as in the case of Paris). The analyses provided suggested paths of investments and results achieved by cities.

Moreover, the policies examined support investments in infrastructure enabling new entrepreneurial processes (i.e., incubators) as well as enhancing the endowments of cities in terms of technological and organizational structures available (i.e., Fablab), aiming at increasing skills of (local) workers and activities of new and existing firms. From this perspective, initiatives promoted by London or Barcelona generate knowledge spillovers and sustain skill development by mixing innovation and training capabilities [56]. Milan, Detroit, and New York also invest in UM aiming at achieving social sustainability goals, since manufacturing activities are seen as instruments for urban regeneration dynamics. Environmental sustainability is also a goal for other cities examined (Barcelona, London, or Detroit), where attention to the environment is considered a key element in designing urban development processes. This issue is also consistent with growing attention at the GVC level in terms of social and environmental upgrading [37,121].

Based on the empirical analyses of the six cities considered, we outline three different ways in which UM policies can be interpreted as GVC-oriented policies and how cities can have a role within the Global Value Chain evolutionary trajectories (Table 1).

The first scenario refers to UM policies enabling value creation and retention related to GVC manufacturing activities. What emerges from the analysis is that global cities like Paris have been able to retain global lead firms investing at the city level not only as headquarters but in terms of manufacturing activities—enhancing the local supply chain. This is the case of the luxury lead firm Hermès, which has located part of its production in the “Fabrique du Grand Paris” dedicated to art professions, workshops, and a new generation of artisans. This type of private activity has generated qualified work and the redevelopment of crumbling urban spaces. Moreover, this type of initiative could generate two types of effects: the shortening of the Global Value Chain (urbanization of Global Value Chain), generated by the “reshoring” of some production activities carried out by lead firms in the places where customers buy high-end products, and generate a product upgrading effect as an intertwined process. For example, in New York, the “Made in NY” etiquette is being born to emphasize the manufacturing origin of the product. If the consumer is willing to pay a premium price for the “Made In,” then the second possible effect of product upgrading may occur, generated by the localization of the production activities in the Global City (“Made In the City” effect).

Table 1. Urban Manufacturing Policies and GVC.

Global Cities	Barcelona	London	Milan	Paris	Detroit	New York
Population (OECD 2015)	3.9 M	11.9 M	5.1 M	12.0 M	4.4 M	20.2 M
Density (OECD 2015)	1523 inh/km ²	1831 inh/km ²	1324 inh/km ²	994 inh/km ²	429 inh/km ²	846 inh/km ²
GDP (OECD 2015)	182 B\$	697 B\$	263 B\$	743 B\$	227 B\$	1.500 B\$
UM Policies (contained in.)	“Barcelona Digital City” & “Fab City”	“Good Growth policies”	“Manifattura Milano”	“Grand Paris”	“Detroit Future City” & “Detroit master plan”	“The Futureworks” & “NY Works”
UM objective (based on [56])	Innovative Entrepreneurship Urban regeneration Skills development Talent attractiveness Knowledge spillovers	Innovative Entrepreneurship Urban regeneration Skills development Talent attractiveness Knowledge spillovers	Innovative Entrepreneurship Knowledge spillovers Talent attractiveness	Innovative Entrepreneurship Skills development Talent attractiveness Knowledge spillovers	Innovative Entrepreneurship Urban regeneration Skills development Talent attractiveness Knowledge spillovers	Innovative Entrepreneurship Urban regeneration Skills development Knowledge spillovers
UM projects/initiatives	Barcelona Fab City	Est London with Cockpit Arts	“Manifattura Camp”	Est-Ensemble (fabrique du Grand Paris) with Hermes	Make+live district	Green Manufacturing Design Center and Navy Yard
UM policies and GVC						
UM policies enabling value creation and retention related to GVC manufacturing activities	Attraction of lead firms’ investments related to manufacturing and upgrading of suppliers (i.e., artisans). The manufacturing attraction from the city could generate two types of effects: the shortening of the global value chain, generated by the “reshoring” of some production activities, and generating an “upgrading effect” of the smiling curve related to manufacturing (product and process upgrading). The “Made in the City” effect could be leverage to upgrade the smiling curve of GVCs (reference case studies: Paris; New York; London).					
UM policies targeting innovation and technological upgrading (digitalization) of manufacturing by investing in entrepreneurship and infrastructures at the city level	Investments to create new firms (digital artisanship) located within the city. These UM firms are often in charge of carrying out part of the research and development and prototyping activities for global clients (foreign demand, forward linkages). The digital craftsmanship competencies, developed in new manufacturing spaces, become unique, and they could allow intercepting GVCs and global clients’ interest (reference case studies: Paris, New York, Milan).					
UM policies supporting regionalization (urbanization) of GVCs (attracting and retaining most of the GVC activities within the city space)	As witnessed by the Fab-city initiatives (aiming to make the city self-sufficient), localization of a large part of GVCs activities will be established in a single region. In this regard, the role of local institutions can lead to an extreme shortening of the GVCs and therefore compress the smiling curve (urban value chain) by supporting manufacturing processes and entrepreneurial initiatives closely linked to the city (closing the loop in the use of urban resources—production and consumption). (reference case studies: Barcelona, Detroit, Milan, Paris)					

Source: Authors’ elaboration.

The second scenario refers to UM policies targeting innovation and technological upgrading (digitalization) of manufacturing by investing in entrepreneurship and infrastructures at the city level. From this point of view, such policies can be interpreted as GVC-oriented policies that support urban digital craftsmanship seen as R&D for global lead firms. The tools of digital manufacturing have allowed a new generation of “analogue” entrepreneurs to establish their manufacturing companies in urban areas. In particular, these new activities benefit from new production spaces that the city makes available thanks to specific urban redevelopment policies. Urban manufacturing firms are often in charge to carry out part of the R&D and prototyping activities for global clients. The digital craftsmanship competencies, developed in new manufacturing spaces, become unique and they could allow intercepting Global Value Chains and global clients’ interest. This is the case for many companies in the 3D printing sector belonging to the urban context of New York.

The second effect of such policies focused on entrepreneurship is also the creation of another type of firm in addition to the previous ones mentioned above: new urban manufacturing firms aimed at creating end-to-end products. Those firms benefit from the proximity to the potential targeted customers, which led to faster product testing, sales, and delivery. In these new production spaces (Fab-labs, Incubators, and Accelerators) new forms of retailing are tested (Cockpit Arts in London or Les-Art-Codes in Paris). From this point of view, such firms are not directly involved in Global Value Chains as

suppliers; rather, they focus on the urban market, indirectly catching global demand related to international touristic flows at the city level.

The third scenario refers to UM policies supporting regionalization—or better urbanization—of Global Value Chains as GVC-oriented policies aiming at attracting and retaining most of the GVC activities within the city space. Such policies are connected to the Fab City urban manufacturing network and the connected “extreme” regionalization of GVCs. Fab City is not just a pervasive project aimed at making cities “locally productive and globally connected,” but it could also represent a new idea of globalization. Four of the six municipalities in the analyzed sample joined the global Fab-City network (Barcelona, Detroit, Milan, and Paris). Fab-city aims to make the city self-sufficient. If so, the localization of a large part of GVCs activities will be established in a single region. In this regard, the role of local institutions could lead to an extreme shortening of the Global Value Chains and therefore compress the smile curve. If we take this concept to the extreme, the value chain of a given product will no longer be “global” but rather “urban”. If this were true, we would be facing a new concept: the urban value chains. A new kind of value chain that is “globally connected” thanks to information exchange and “locally productive” thanks to UM. In this sense, the case of “the Beer crafted in Paris” is emblematic. In particular, this kind of beer is completely cultivated and processed in the urban area of Paris.

5. Conclusions

This study introduced in Global Value Chain literature an element that has been limitedly observed before—Urban Manufacturing (UM)—seeking for the first time the relationship between UM and Global Value Chains in the discussion on GVC-related policies.

According to our perspective, cities of developed countries are not only locations for advanced services or places for consumption activities, but they could also be important nodes in the Global Value Chains, where policies promoted at the urban level can sustain this trend. More specifically, at the city level in many countries, there are explicit policies oriented to attract manufacturing activities within the urban borders and to outline new trajectories for local development beyond the scenario of the service economy. Taking into account the empirical analyses carried out on six global cities, we maintain that UM policies can be viewed as GVC-oriented policies to attract and retain high-value-added activities, whose value is rooted in upgrading processes of manufacturing connected to the new digital scenario [59]. Consistent with policies promoted at the country level in developed countries centered on innovation and technological improvement, UM policies also tackle those topics by combining investments in infrastructure, financial supports, and skill improvements, but they also generate urban regeneration outcomes. While the main geographical scope of municipalities is the city itself, we maintain that such UM policies also impact GVC trajectories since they offer new opportunities for lead firms in the location of manufacturing activities and support changes in the smiling curve [18]. At the same time, it is related to the broad discussion related to globalization trends and on how value chain activities are located worldwide, across countries [5]. Our study proposes to take into consideration in this regard also the urban perspective as other scholars developed in other streams of studies, enriching Global Value Chain literature. These results can also be considered within the recent dynamics linked to the pandemic [122], where it becomes more relevant the regionalization of Global Value Chains and the opportunity to support the shortening of value chains for a better link between production and consumption. From this perspective, all three directions of UM policies within Global Value Chain proposed can become viable paths to be adopted at the urban level in the post-pandemic scenario.

This paper has discussed these scenarios and the implications for Global Value Chain studies, based on an empirical study. Through the case analysis, the paper has provided insights on how to include cities in the evolutionary trends of Global Value Chains, proposing three different perspectives in interpreting UM policies and GVC-oriented policies. The main limitation of this study is related to the number of global cities that have been

analyzed and on the few data available on Urban Manufacturing. Future research in this area could be aimed at investigating the role of each trajectory and deepening the role of other global cities around the world. Future research should also consider whether UM policies may be applied to many Global Value Chains, in addition to ones analysed in the case studies.

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Appendix A

Table A1. Analysis of Strategic Documents (quotes and related sources provided in brackets at the bottom of the Table).

	FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
BARCELONA	In the field of electronic administration, Barcelona Activa has implemented a system to register business establishments online, in coordination with the central government, and has reduced the time needed to register an activity from 40 to 3 or 4 days. International companies can also use the service to facilitate the documentation of foreign professionals. The electronic procedures for the granting of building permits have also been generalized. (1)	Promote technological innovation to simplify administrative processes, with the aim of making Barcelona a leading city where it is possible to create a company in minutes through a one-stop-online-shop and also create virtual companies that operate in the markets digital internationals: Barcelona as the First Worldwide One-Click City. (4)	In this context, it is necessary to progress towards a more sustainable productive model, oriented to a low carbon economy, efficient in the use of resources; to promote new areas of activity, of high technological value and knowledge, relating to the development of green economy initiatives, the protection of tourism, the promotion of local commerce and the maximum quality in the sector; to improve infrastructures, public-service and telecommunications networks, and to identify emerging sectors, as well as clusters and/or the most powerful industrial districts with higher development potential. (6)	Encouraging diversification in destination markets, by identifying and promoting niche markets in which the SMEs in the metropolitan Barcelona can be competitive. Implementing actions, in consultation with business and research sectors, and centres of excellence to specialize production in its technological aspects. (8)	4th priority human capital and employment. Objective: To strengthen new productive clusters and their ability to generate employment, while bearing in mind the needs for re-industrialization, logistics and services. Actions: – Fostering measures to promote adequate training to address knowledge economy. – Promoting the facilitation of mechanisms that will help to create businesses, while coordinating different creation services which exist in the metropolitan territory and providing information on the availability of land and spaces (business incubators). (9)
	encourage crowdfunding and other forms of private capital raising. (2)	3rd priority: productivity, re-industrialization and knowledge economy. Establishing study mechanisms for creating centres of entrepreneurship based on public/private cooperation, business incubators and accelerators. (5)	Developing measures to enable industry to foster local demand for other industrial and service activities in the territory itself.. (7)		Connect qualified talent with startups and high-growth companies.. (10)

Table A1. Cont.

	FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
BARCELONA	Promote public-private management of areas of economic and commercial interest. Attract private funds to co-invest in strategic business projects. (3)				
LONDON	Innovation, including London's role as a location for research and development should be supported, and collaboration between businesses, higher education institutions and other relevant research and innovation organisations should be encouraged. (1)	Policy HC5 Supporting London's culture and creative industries: in areas of identified demand and more deprived areas where there is evidence that the designation of a Creative Enterprise Zone will enhance the local economy and provide facilities and workspace for the creative industries. (3)	Taking advantage of the knowledge and experience of local people will help to shape London's growth, creating a thriving city that works better for the full diversity of its inhabitants. (6)	Where appropriate, boroughs should use Cultural Quarters to seek synergies between cultural provision, schools, and higher and further education which can be used to nurture volunteering, new talent and audiences. This can include partnerships with a range of cultural organisations, such as libraries, museums, galleries, music venues, dance studios, and theatre. (7)	Policy E11: Skills and opportunities for all. The Mayor will work with strategic partners to address low pay and, supported by his Skills for Londoners Taskforce, co-ordinate national, regional and local initiatives to promote inclusive access to training, skills and employment opportunities for all Londoners. (9)
	The Mayor also supports measures to secure and develop London's leading role as a centre of higher and further education of national and international importance. London's higher and further education institutions have considerable potential for innovation supported by collaboration between businesses, the public sector and other relevant research organisations. (2)	It is important to ensure that there is sufficient space to support the growth of new start-up companies and to accommodate SMEs, including lower-cost and affordable business space. Development Plans and development proposals should support the provision of space suitable for SMEs in light of strategic and local assessments of demand and supply. (4)		Policy GG5: Ensure that London continues to provide leadership in innovation, research, policy and ideas, supporting its role as an international incubator and centre for learning.. (8)	

Table A1. Cont.

	FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
LONDON		Policy E3 Affordable workspace. In defined circumstances, planning obligations may be used to secure affordable workspace at rents maintained below the market rate for that space for a specific social, cultural or economic development purpose. (5)			
MILAN		Manifattura Milano is the City of Milan's programme to promote manufacturing in the city. The aim of the programme is to make Milan an enabling ecosystem for the birth, establishment and growth of companies operating in the field of digital manufacturing and new craftsmanship to create new jobs, regenerate the suburbs and promote social cohesion. (1)	A day of talks, presentations, workshops, exhibitions and interactive activities on new craftsmanship and urban manufacturing. The programme is based on an open call for start-ups, artisans, makers, SMEs, designers and research centres. (2)		
PARIS		Qualitative objectives: The financing, creation and management of existing and future business real estate (incubators and nurseries, craft premises, business hotels and industrial hotels). Among the existing facilities, the Atrium incubator in Montreuil. (1)	Create incubators and innovative real estate programmes dedicated to priority sectors and fields of activity It is proposed that Est Ensemble support and accompany the development of innovative real estate programmes (incubators, third places, co-working spaces, fab lab, etc.) in strategic sectors. (4)	The fab City prototype is an experimentation of the fab city approach on a part of Grand Paris. It is a POC (proof of concept) aiming to show the possible scenarios of the local, circular, distributed production, and the challenges and issues of a viable model at the scale of a city or a territory. (5)	The Grand Paris Express project is an extraordinary economic development lever for the Capital Region. It is a source of opportunities for the greatest number of people, in terms of employment, integration and training. (6)

Table A1. Cont.

	FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
PARIS		Promote the industries or sectors of activity already present in the territory that are innovative and create jobs. (2)			The Territorial Development Contract signed in February 2014 set a certain number of objectives for Est Ensemble in economic matters: Quantitative objectives: Create 50,000 jobs in 15 year. (2030). 1 job for 1 inhabitant. (7)
		Art and luxury crafts, digital and social protection are the two sectors of activity recognised by the majority of respondents as mature. (3)			Pantin appears to be highly specialised in fashion, as it has 58 establishments in the sector employing 1413 private employees, i.e., 66% of the jobs in fashion in Est Ensemble, and 49% of the private salaried jobs in the CCI in Pantin. Hermès is by far the largest employer, with at least 800 jobs recorded in Pantin according to Altares. (8)
DETROIT		GOAL 3: Improve the City's vacant spaces Policy 3.3: Provide survey and inventory of vacant land and vacant structures in order to identify their potential for future development. Policy 3.4: Encourage public and private initiatives to develop interim uses for vacant buildings and spaces. Policy 3.5: Encourage adaptive reuse of vacant commercial and industrial spaces before demolition. (1)	Detroit intends to emerge as a new symbol of a productive city through citizen empowerment and distributed economic activity including production . . . with expected benefits such as availability and quality of work; skills growth; clean industries and regional resilience. (5)	GOAL 8: Maximize regional, national and global collaboration Policy 8.2: Continue to promote the importance of a strong core city as fundamental to the economic vitality of the region. Policy 8.3: Support international trade agreements that benefit the city and the region. (8)	Policy 4.1: Encourage the participation of schools, libraries and major institutions in building residents' work readiness skills. Policy 4.2: Encourage business participation and investment in employee training programs. Policy 4.4: Support youth employment, apprenticeship, and mentorship initiatives. (10)

Table A1. Cont.

FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
DETROIT	We must use innovative approaches to transform our vacant land in ways that increase the value and productivity and promote long-term sustainability. (2)	Motor City Match connects new and expanding businesses with Detroit's quality real estate opportunities, providing them with funding and tools to fuel the city's entrepreneurial revolution. (6)	At the edge of Downtown, Corktown is envisioned as one of the City's most desirable Live+Make neighborhoods. New small businesses and creative enterprises will mix with existing industrial uses to further attract both national and global talent. (9)	Instead of 27 private sector jobs for every 100 Detroiters, by 2030 the city will have close to 50 jobs for every 100 city residents. Seven districts of employment located through all quadrants of the city provide jobs, business start-ups, and business growth opportunities in modern industry. (11)
	GOAL 6: Support business start-up and growth efforts. Policy 6.2: Provide access to the resources and information necessary for successful business operation. (3)	Neighborhoods that allow for the combination of living and production (Live+Make), whether clean manufacturing, processing, or creative arts. (7)		
	Entrepreneurship is crucial for providing goods and services to residents, but also for shaping who has economic and social power in the city. Detroit has a number of model programs that contribute to inclusive entrepreneurship, such as D2D, Hatch Detroit, NEIdeas, Entrepreneurs of Color Fund and Motor City Match. (4)			

Table A1. Cont.

	FDI Attraction Related to Technology and Research Activities	Innovative Entrepreneurship	Knowledge Spillovers toward the Local Knowledge Base	Internationalization of Domestic Innovation Actors and Talent Mobility	Skill Development Mixing Innovation and Training Capacity
	Initiative 1: Maintain New York as the global capital for innovation by supporting high-growth and high-value industries: Advanced Manufacturing, Advertising, Media, and Arts, Biotech/Life Sciences, Design, E-Commerce, Tech and Information. (1)	Small businesses are critical to the city's growth, providing entrepreneurial and employment opportunities to New Yorkers; delivering important local services; and attracting residents and visitors by adding to the urban fabric that makes New York City so compelling. (5)	Initiative 18: Provide financial support for New York garment manufacturers to modernize and expand their businesses. (9)		Goal: New York City will have a workforce equipped with the skills needed to participate in the 21st century economy. (14)
NEW YORK	The City will support the creation of an Advanced Manufacturing Network, which will link traditional and emerging firms to resources across the tech ecosystem. (2)	Reduce the regulatory burden on small businesses through the Small Business First plan. (6)	Launched in 2014, the Fashion Production Fund provides emerging designers with below market rate loans to finance production with the local garment manufacturers that they rely upon. To date, \$3 million has been awarded through 36 low interest loans. (10)		
	The creation of this fashion hub represents the City's commitment to encourage innovation and partnership between the public and private sectors. Such investments ensure that companies at the cutting edge of the fashion industry can grow and innovate right here in New York City. (3)	Initiative 20: Create affordable workspace for artists and artist groups. (7)	Initiative 19: Launch a Virtual Reality / Augmented Reality Lab to anchor this emerging industry in New York City. (11)		
	Direct financial investment and support to industries that have high potential for growth. (4)	Initiative 13: Make the Brooklyn Army Terminal a home for traditional and advanced manufacturing. (8)	Initiative 15: Develop facilities for creative industries at the Made in NY Campus at Bush Terminal. (12)		

Barcelona

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Milan

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Paris

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