

city, transformed

BOLOGNA

A Sustainable Culture

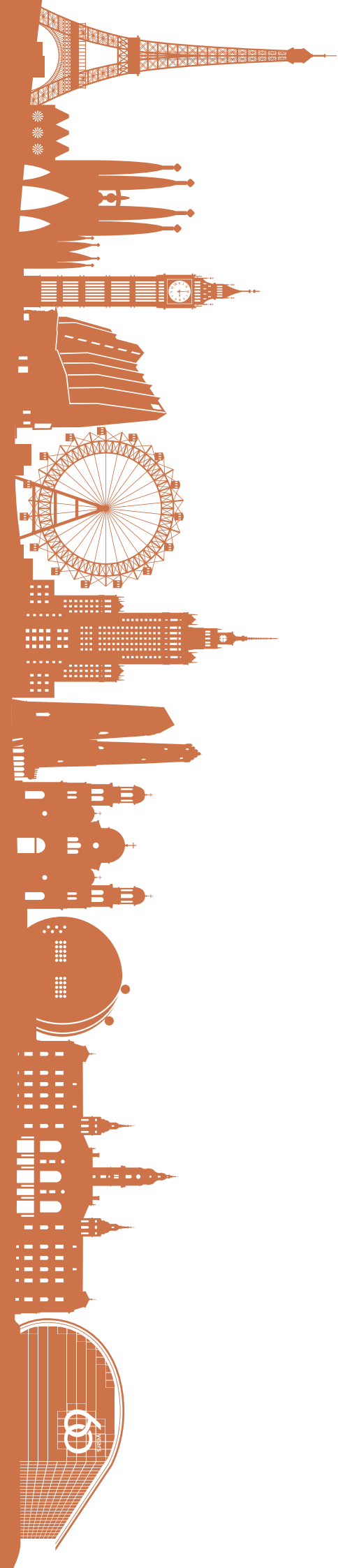
Gianni Carbonaro
Chiara Pancotti



European
Investment
Bank



The EU bank



BOLOGNA

A Sustainable Culture

Gianni Carbonaro
Chiara Pancotti

Gianni Carbonaro is a member of the Scientific Committee and a senior advisor at the Centre for Industrial Studies, Milan, and a fellow at QASER Lab, University College, London. He worked at the European Investment Bank for almost 30 years on the economic and financial assessments of big infrastructure projects. His current specialities include smart city investing, design of financial instruments, PPP evaluation and impact investment strategies. **Chiara Pancotti** specialises in the evaluation of development projects and in infrastructure investment analysis at the Centre for Industrial Studies and has worked on policy projects with institutions that include the European Commission and European Parliament.



Gianni Carbonaro



Chiara Pancotti

Bologna's unique political and cultural history helped it forge ahead of most Italian cities with strategic investments in services, health care and education. How well does its focus on sustainability in a range of areas set it up for continued success?

I Introduction

Bologna's development: the context

This essay provides an overview of the development of the Bologna metropolitan region in recent decades, emphasising the role of urban policy and investment within a wider territorial context — European, national and regional. We will discuss the changing nature of metropolitan development against the backdrop of four post-war periods, highlighting the links between national and metropolitan development and illustrating, where relevant, how European Investment Bank lending has accompanied the process.

Our discussion of Bologna's urban development keeps in mind the following four features specific to the local economy.

First, Bologna operates in a multi-polar regional economy that extends beyond the metropolitan area and includes several medium-sized cities in the corridor along the southern edge of the Po valley from Piacenza to the Adriatic coast. The role of Bologna should be seen in the context of this "city-region" economy¹. Figure 1 outlines the main flows emanating from Bologna to the wider region.

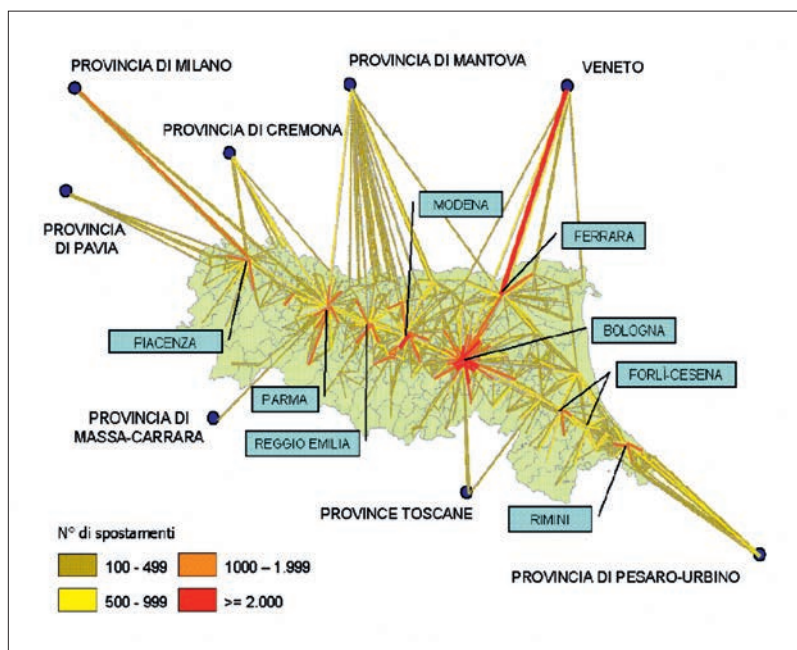


Figure 1. Bologna within the wider region

Source: Fallaci (2013)

Secondly, investment decisions shape urban development and affect the competitiveness of Bologna by operating at different spatial levels, potentially through national investment in rail and road schemes, such as Bologna’s motorway network, airport and high-speed rail links.

Thirdly, multiple actors have been involved in investment decisions, including public, private and utility companies — and it is important to highlight how cities like Bologna can influence and be influenced by these decisions. These affect urban development in addition to those areas, such as planning and urban infrastructure, which are under the more direct control of city authorities.

Finally, decisions in several investment areas have interacted to shape Bologna’s urban development. They are not limited to public works plans and productive investment, but in recent years also increasingly involve advanced services such as health and higher education.

This table summarises our approach and the key issues discussed in the essay:

Periods	Italy	Local/regional economy features	Urban investment/ metropolitan policy	EIB operations
1950-1973	Post-war recovery, the economic miracle and slowdown	Reconstruction and resumption of traditional agricultural and industrial activities in a period of rapid growth	Resumed role of administrative centre for the surrounding region; innovative municipal administration	No funding directly relevant to metro area – support for large-scale national infrastructure
1973-1992	First oil crisis, macroeconomic imbalances and emergence of the cluster economy	SME industrial districts consolidate (capturing productive externalities from proximity); development of service sector	Urban infrastructure modernisation and municipal welfare policy consolidate	Support for major infrastructure, but low coordination. In late 1980s, eligibility widened to urban sector.
1993-2007	Towards the single market, into the monetary union and the globalisation challenge	Local growth needs to adapt to increasingly open economy and competition. Some industrial sectors suffer	Urban strategy to accompany transition to advanced industry and services	In late 1990s, urban framework loans launched in Italy. Bologna is an early example
2008 onwards	The great recession and its aftermath	Diversifying into high value added sectors (agri-business, food industry, bio-science)	Development of services, moving to address sustainability and inclusion challenges	Urban funding tools increasingly aligned with sustainable and smart development

These periods provide the structure for our discussion in the four parts of Section 2. Conclusions follow in Section 3.

Historical and geographical background

The metropolitan city of Bologna is the administrative capital of the Emilia-Romagna region. It lies in north-central Italy, close to the southern edge of the Po river valley, with the Apennine Mountains bordering the city on the south-west side. The location provides easy access to a fertile agricultural plain, watercourses and potential trading routes. Given these favourable geographical features, settlements have existed in the area since the ninth century BC. The city of Felsina in Etruscan times (seventh to sixth century BC) became the Roman colony of Bononia in the first century BC. The city prospered as a trading centre on the Via Aemilia, one of the main road links of the empire running south-east from Piacenza (north-west of Bologna) to Ravenna and the Adriatic coast.

After a period of invasions following the fall of the western Roman empire, the city re-emerged as a centre of religious and legal activity in the tenth century. The University of Bologna, which many consider to be the oldest university in Europe, was established in 1088, crowning a tradition of legal and religious studies built over the years. The city itself acquired municipal powers conferred by Emperor Henry V in 1116, which is generally considered the birth of the Commune that today constitutes the central core of the metropolitan area. Bologna flourished in the Renaissance age of free communes and signorie, gradually expanding to become one of the largest European cities at the end of the 13th century. It reached the 70,000 population mark towards the end of the 16th century.

With the decline of municipal independence and the rise of the dynastic states, the city fell under the successive authority of a range of competing powers, including the Papal States from the early 16th century, through the Napoleonic and restoration eras, until the unification of Italy and the establishment of the Italian kingdom in 1861.

Bologna is currently a medium-sized metropolitan area (population approximately 1 million, with about 390,000 people living in the municipality of Bologna) and one of the wealthiest in Italy, with a high reputation for quality of life and good local administration and public services.

Population growth in the Bologna province (today the metropolitan city) in the years following unification (Figure 2) shows a typical long-term urban development pattern. After moderate long-term expansion over the period up to the mid-20th century, population growth accelerated with post-war industrialisation. This was a phase of sharp growth in the urban core (the Bologna municipality), which attracted people from the surrounding area, reaching a peak in the early 1970s, followed by decentralisation to the suburban ring with the exit of manufacturing from the urban core. In recent years, as in many urban areas, there has been a moderate resurgence in the urban core, with some re-centralisation of the population and advanced tertiary activities. Growth has naturally affected commuting patterns and the demand for urban infrastructure and services.

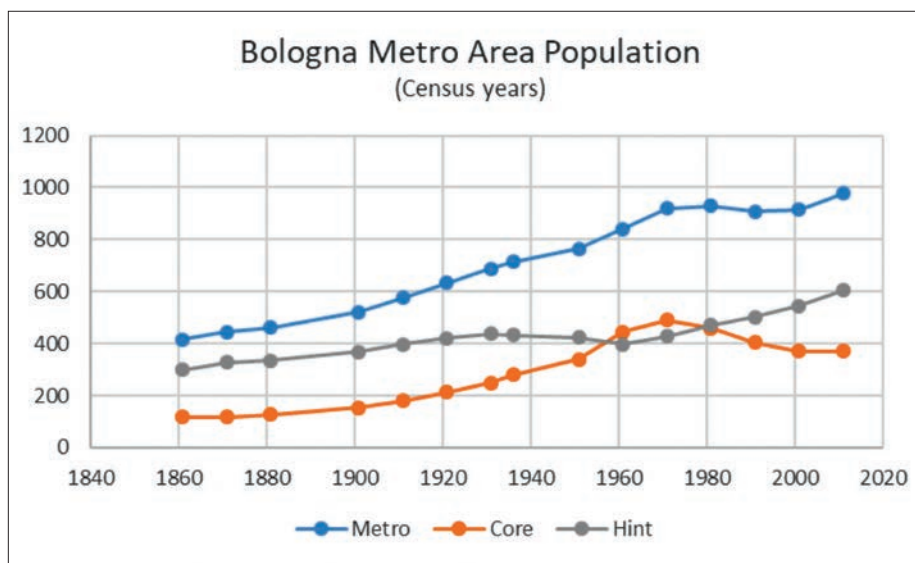


Figure 2. Bologna: metropolitan population growth 1861-2011²

Source: ISTAT – Elaborazione Tuttitalia.it (2018)

II Bologna's development since 1950

2.1 Post-war recovery, economic miracle and crisis (1950-1973)

Wider economic trends

After the early reconstruction years³ following the end of the war and between the late 1950s and early 1960s, Italy transformed from a largely agrarian and relatively poor country into a European economic and industrial power. Up to 1964 (and in particular during the “boom” years 1958-63), the country enjoyed an “economic miracle,” with industrial growth rates of more than 8% per year. The early part of this period is characterised by high investment rates in the private and public sectors and strong export performance. This investment and export-driven growth was compounded by the demand growth brought about by increasing disposable income, as labour transferred from the rural south to more productive activities in the industrialising north-west (centred on the so-called “industrial triangle” of Milan, Turin and Genoa). This virtuous circle generated an exceptional period of sustained growth over the 15 years from 1948 to 1963.

Following the years of the economic miracle, growth continued, though at a slower, occasionally sporadic rate. This was followed by a period of social unrest culminating in the “hot autumn” of 1969, a season of strikes, factory occupations and mass demonstrations throughout northern Italy, with their epicentre at Fiat in Turin. The protests were not only about pay and work-related matters, but also about conditions outside the factory, such as housing, transport, and pensions. They formed part of a more general wave of political and student protests.⁴ Increased conflict also brought to an end the low inflation years and heralded a period of instability exacerbated by the first oil crisis in 1973.⁵

Local economy and urban policy

The end of the war left Bologna's economy heavily disrupted, with most of the local industry in the metal manufacturing sector unable to operate and with unemployment at about one third of the labour force in 1948. A similar situation prevailed in agriculture, with agricultural labourers heavily affected. Only in the early 1950s did production and employment recover to pre-war levels. In the decade between 1950 and 1960, the local economy experienced rapid development, in line with the booming national economy, and deep transformation. The reconstruction and modernisation effort affected both agriculture and manufacturing, leading to very significant productivity increases in both sectors. It was a joint transformation, with industrial growth taking off and agriculture modernising and integrating with industrial practices, while also providing labour for growing manufacturing plants, including those in the rural Bologna hinterland.⁶

Several enterprises were set up in this decade in the province of Bologna. Typically, these were small companies, specialising in the manufacture of high-quality products, with high technical content, and often located in close proximity. In some cases, companies were created by technicians leaving larger firms, such as CAM, the first Italian designer of automatic machines for packaging in cartons, and GD, nowadays a leading supplier of high-tech machinery for cigarette making and packing. This system enabled the creation of what became in later years industrial districts in the Bologna metropolitan area, such as the so-called “Packaging Valley” and the motor engineering cluster. Gradually a new local entrepreneurial class formed and between 1951 and 1961 the industrialisation index⁷ of Bologna Province (151) rose to well above the Italian average (124.4).⁸ In the next decade, the industrialisation process accelerated and the economy of Bologna continued to grow, despite a slowdown in the mid-1960s.

In the 1960s, the municipality of Bologna experienced a period of large-scale infrastructural initiatives. During this period, the city needed to meet the demand for infrastructure generated by the rapid population growth and the parallel take-off of the national economy, in which the local economy participated fully. With the increasing diffusion of car ownership, the demand for road improvements rose sharply, particularly in transport nodes such as Bologna. To ease mobility within Bologna, the local government promoted the construction of a ring road,

built between 1965 and 1967 and considered to be Italy's first bypass road. Its construction reduced congestion within the city centre and contributed to the development of industrial areas north-east of the city, providing them with easy access to the trunk road network. In parallel, the construction of a number of intercity motorways, such as the A1 between Florence and Bologna, the Bologna-Taranto A14, and the Bologna-Padua A13, boosted Bologna's accessibility. The intersection of these motorways made Bologna one of the busiest hubs in Italy and consolidated its position at the centre of north-south transport corridors.

In 1960, the local Chamber of Commerce, together with the Aero Club, set up the Bologna Civil Airport Company, which was joined by the Municipality, the Province, the Tourism Agency, some credit institutions and other entities. Thanks to a small contribution from the central government, the first airstrip became operational at the end of 1962⁹. The air terminal was in an old manor house, originally the Aero Club headquarters, and the control tower was an old wartime building. Another important infrastructural investment dating back to the 1960s is the Bologna Exhibition Centre, which was built in a few months between 1964 and 1965¹⁰. This was the first step towards the construction of the "Fair District" in the northern part of the city. Within the Italian context, the Bologna ring road together with the airport and the development of the exhibition centre site constituted concrete examples of innovative territorial planning in the 1960s. They encompassed innovative planning practices, which included the use of municipal borrowing from financial institutions to support infrastructure investment. In 1971, a further feature of the national institutional environment was the establishment of regional authorities, which was to prove particularly relevant for the development of Bologna.

It is worth noting that in a country where the Communist Party (PCI) had been constantly excluded from power at the national level, the city of Bologna had remained uninterruptedly under communist administration from the end of the war to the early 1980s.¹¹ As a result, Bologna came to be seen as a showcase for the administrative capacity of the party. In fact, by diffusing a positive image of Bologna's administrative experience, the PCI intended to promote its role at the national level. Town planning had a central role in this scheme. As an example, the plan for the conservation and restoration of the historic centre was approved by the City Council in 1969 (on the basis of a framework established in 1963). The plan and its features achieved considerable attention even outside Italy. Of particular importance was the decision to promote a comprehensive, free¹² public transport system to curb private car use. The PCI model left a visible mark in the field of public housing and land policy, producing one of the earliest social housing plans in Italy¹³ with the implementation of schemes characterised by original technological and organisational solutions and the acquisition of extensive tracts of land in areas for potential expansion.¹⁴ Last but not least, Bologna took the lead in the development of what was later called "municipal welfare" in the Emilia-Romagna region, an example being the opening in 1963 of what is considered to be the first municipal day-care centre (*asilo nido*) in Italy.

In sum, the period until 1973 was critical for the development of the Bologna metropolitan area. It was in those years that the key features of the institutional environment and local economy — which were to remain in place and influence local development in the following decades — took shape.

EIB operations

After the establishment of the EIB in 1958, its operations in Italy focused on southern regions (the Mezzogiorno), supporting industrial development and large-scale infrastructure, mostly in the transport sector. During this period, the EIB's impact on Bologna's economy, if any, was indirect and possibly due to improvements in infrastructure in other parts of the country, notably on sections of the motorway network.¹⁵

2.2 Growth of the cluster economy (1973-1992)

Wider economic trends

The instability produced by the “hot autumn” of 1969 was followed by the first oil shock in 1973. Due to its strong dependence on oil imports, the Italian economy was hit hard by the two oil crises during the 1970s. As a result, it experienced a phase of stagflation, characterised by weak economic growth, high unemployment (especially among the young) and high inflation. By 1977 there were 1 million unemployed under the age of 24 and sustained inflation exacerbated by oil price increases in 1973 and 1979. In these years, the public sector deficit grew, averaging about 10% of gross domestic product, and was higher and more persistent than in other major industrialised countries.¹⁶ This period of fiscal indiscipline was one of the leading determinants of the large Italian public debt. Following the implementation of an austerity programme, the economy began to recover in the early 1980s, with restrictive monetary policies that brought inflation down, while fiscal and growth-oriented policies reduced public spending and cut the budget deficit. As a result, economic growth resumed in the 1980s. These were also the years when the relative loss of economic dominance and weaker business performance of large enterprises, including state-owned companies, was offset by the growth of small and medium-sized enterprises, geographically concentrated in central and north-eastern Italy. These companies, often family-owned and frequently located in close proximity to each other, contributed to the formation of clusters or industrial districts outside the traditional industrial north-west. This was the “third Italy” of industrial districts, which flourished in the north-eastern and central regions, including in Emilia-Romagna.¹⁷

The end of the 1980s and beginning of the 1990s were characterised by a round of privatisation. The diminishing role of the State in the economy created more space for private investment. This period is also linked with epochal changes in the political and economic landscape, following the fall of the Berlin Wall and German reunification. These shocks caused a severe European financial crisis and eventually the exit of the Italian lira from the European Monetary System in 1992.¹⁸

Local economy and urban policy

In the 1970s and 1980s, Bologna, like many other European cities, was subject to pressures from de-industrialisation and the need to adapt the local productive system to changed circumstances. Despite this new scenario, the industrial fabric of Bologna remains characterised by a system of small and micro-enterprises with a strong export orientation. However, the 1980s constitute a period of de-industrialisation and a shift towards the service sector. In fact, the introduction of technological innovations in production processes caused a loss in the number of employees in the industrial sector in favour of the tertiary sector. In those years, firms that succeeded in innovating were nonetheless hit by the crisis, though they recovered. Others faced extremely difficult times.

The 1980s and, above all, the 1990s were accompanied by important changes in the nature of the local productive system. For instance, some of the most successful local companies were bought by foreign enterprises. In 1996, Cagiva, owner of the historic motorcycling company Ducati, accepted an offer by Texas Pacific Group and sold a 51% stake in the company. Then, in 1998, Texas Pacific Group bought most of the remaining 49% to become sole owner of Ducati.

The plan for the conservation and restoration of the historic centre (approved by the City Council in 1969) became operational in 1973. It led to the restructuring of some historic districts in Bologna: the village around via Solferino, the San Leonardo complex near Porta San Vitale, the houses of Santa Caterina di Saragozza and the village of San Carlo. Then, starting in the 1980s, in the context of a demographic decline that contrasted with forecasts made during the previous decades, Bologna launched a new master plan, adopted in 1985. The plan excluded further expansion of the city at the expense of the surviving agricultural areas. Instead, it proposed measures to attract and retain tertiary activities and to use land for residential purposes, aiming for development to fill up gaps in the city's periphery.

EIB operations

In this period, a larger share of EIB operations were aimed directly at supporting the local economy in and around Bologna. This was partly due to the extension of eligibility criteria in the late 1980s to include urban development, so that EIB loans could support urban projects — notably integrated urban regeneration and urban transport. Loans included the renovation of the historic centre of Bologna, but were mostly aimed at transport infrastructure such as a new freight terminal at Guglielmo Marconi Airport and an intermodal rail/road freight terminal near Bologna. Other operations concerned a science park in Bologna, the extension of natural gas distribution networks and the upgrading of the drinking water supply system. The support went to investments in and around Bologna, in sectors critical for metropolitan development, notably transport. Nevertheless, alignment with the investment decisions of local stakeholders — the urban development strategy of the municipality of Bologna in particular — was loose and irregular, as shown by the fact that several of the projects were part of wider operations included in centrally funded national programmes.¹⁹

2.3 Single market, the euro and globalisation (1992-2007)

Wider economic trends

The period opens with the ejection of the Italian lira from the European Monetary system in September 1992 (“Black Wednesday”). This brought about a substantial devaluation. In addition, the first half of the 1990s constituted a moment of profound political transformation, destined to bring visible changes at national and local level. During the early part of this period, the action of the judiciary against political and administrative corruption²⁰ brought about a crisis within the traditional political parties and reshaped the Italian political system.

Italy’s involvement in the process to join the European Monetary Union had important consequences in the public finance domain. Some reform measures introduced from 1992 onwards — such as budgetary consolidation, incomes policy and restrictive monetary policy — enabled the Italian economy to make progress with respect to the macro-economic requirements for joining the Monetary Union. The budget deficit was brought back to below 3% of GDP, expected and actual inflation were brought down to the levels prevailing in the rest of Europe and interest rates fell. These achievements enabled Italy to enter the Monetary Union in 1999 and adopt the euro.²¹

However, changes that took place in the first half of the 1990s altered the economic environment in which businesses operated²² significantly. Firstly, increasing integration of real and financial markets together with increased exposure to emerging economies made competition more intense. Secondly, the diffusion of new ICT technologies radically transformed production systems and innovation paths and contributed to accelerating market globalisation. Thirdly, currency devaluation was not available as an option to regain competitiveness, because of the macro-economic stabilisation measures taken with a view to EMU membership. Italian firms did not react promptly to these changes by restructuring their production systems. On the contrary, reforms introduced in the labour market encouraged Italian firms to remain anchored to traditional sectors characterised by higher labour intensity, less developed technology and less differentiated products.

As a result, despite the reforms introduced and the low interest rates, from 1995 to 1999 the economy expanded by only 1.5% a year compared with the euro area average of around 2%²³. This was caused by a mix of factors including the sharp contraction of exports since early 1998. Between 1996 and 2000, Italy’s share of world exports fell from 4.7 to 3.7%.²⁴ According to a widely shared view, during these years the national economy witnessed a period of missed opportunities and Italy was unable to implement structural reforms that would modernise the country, leaving it highly vulnerable to the crisis of 2008.

Local economy and urban policy

During this period, the model of development propelled by SME industrial districts in the Emilia-Romagna region was still successful. However, it was threatened by increasing international competition. The local system suffered to some extent, with several recessionary periods in line with the vagaries encountered by the national economy, but the overall system was resilient. Flexible specialisation, process innovation and the use of numerically controlled equipment were common features in the regional industrial enterprise system, including at smaller companies.²⁵

From an investment standpoint, Bologna found itself at the centre of many large-scale transport improvements promoted by the national government between the end of the 1990s and the 2000s. These included the Milan-Bologna high-speed train line, which cut journey times between the two cities from 105 to 60 minutes, vastly enhancing the attractiveness of inter-city commuting and possibly encouraging inner-city corporate investment. A new section of the Florence-Bologna motorway, to be completed in 2019, will replace the obsolete one built in the 1960s and cut the journey time between the two cities from 90 to 50 minutes.

In 1998, Bologna was designated as one of the European Capitals of Culture for 2000. The city took advantage of this opportunity to enhance its historical and cultural heritage through a number of events and exhibitions. In addition, 2000 marked an important innovation in the city planning approach with Regional law n.20/2000 on "General regulation on the protection and use of the territory". Through the law, the General Master Plan (*Piano Regolatore Generale*) was replaced by three different planning instruments, which set out the strategic, regulatory and implementation stages of the planning process. These instruments are the Structural Municipal Plan (*Piano strutturale comunale*, or PSC), the Land Use Plan (*Regolamento urbanistico ed edilizio*, or RUE) and the Municipal Operational Plan (*Piano operativo comunale*, or POC). In 2004, the Provincial Council approved the new provincial Territorial Programme (*Piano Territoriale di Coordinamento Provinciale*, or PTCP).²⁶ This programme concerned the development of the Bologna provincial area (which overlaps with the metropolitan city officially established in 2011), reorganising the structure of new housing and settlements in line with large-scale mobility projects, and aiming to improve social and economic conditions, whilst protecting environmental resources. The Territorial Programme discouraged diffused construction throughout the provincial territory and promoted compact development, including urban renewal in Bologna itself. Its objective was to establish an integrated public transport network and reorganise private vehicle use. It was also aimed at promoting the Bologna area on the international scene, concentrating on attaining standards of excellence in sustainable development.

A further innovation was the launch in 1995 of the Iperbole network,²⁷ the earliest example in Italy of a municipal network destined to promote the use of IT community services. Initially launched to provide internet access to residents, it is today a highly structured platform for citizen participation and e-government.

EIB operations

In this period, EIB operations became increasingly aligned with the investment strategy of key stakeholders in the metropolitan area, notably the municipality of Bologna. In 1999 the first framework loan to the Bologna Commune was approved ("Bologna Ambiente Urbano"), and then followed by further similar operations in 2002 and 2006. The loan was one of the earliest of its kind²⁸ and inaugurated a product which was then extended to several other local authorities in Italy — and later to other EU countries. Over the years, the framework loan became one of the workhorses of EIB urban and local authority lending.²⁹ At the time, this pioneering operation went to Bologna because of the city's reputation for effective administration.

The framework approach was a way to enable EIB funding to support smaller projects, which constituted components of a wider strategy to deliver sustainable urban development. On the one hand, this enabled some of the restrictions associated with limiting eligibility to large projects to be avoided.³⁰ On the other hand, it required the delegation of some of the project selection and execution tasks to the local authority, which at the time required a re-think of EIB approval and monitoring procedures. The first operation (€52 million, covering about 25% of the cost of schemes in keeping with EIB eligibility criteria) was intended to assist investments included in the municipality's

1999-2001 rolling three-year public works plan. Its innovative features included the alignment between the investment strategy as reflected in the public works plan and the eligibility criteria of the EIB instrument, aimed at supporting the European policy of sustainable urban development. A further central feature of the product was its flexibility with respect to the speed of absorption of funds and the final selection of schemes. This was because the approval was for a credit line that the municipality was free to draw on, depending on funding needs associated with the implementation of individual schemes, to be selected from those included in the three-year plan according to agreed criteria. Eligible schemes included the restructuring and re-use of historic buildings such as the municipal theatre, the old commodity exchange (*Sala Borsa*) and a tobacco factory (*Manifattura Tabacchi*), the remodelling of public open spaces and parks, public lighting and streetscape improvements, cycle path and bus lane extensions, and improvements to municipal museum and library buildings.

Other operations approved during this period included large-scale transport infrastructure, namely the upgrading of the Florence-Bologna section of the A1 Milan-Rome motorway, the modernisation and expansion of the airport, the extension of the main intermodal freight terminal in Bologna and the Milan-Bologna section of the high-speed rail network. Bologna is one of the main transport nodes in Italy and the support for multiple modes is likely to have contributed to maintaining the city's competitive position as a transport hub and to producing synergies with investment in urban regeneration and renewal. EIB direct lending in this period also supported CAAB (Centro Agricolo-Alimentare di Bologna) in relocating the fruit and vegetable market out of the inner city, as well as physical asset improvements at several sites of the University of Bologna and the modernisation of ceramic tile factories. These can be seen as signs of a further evolution of lending operations, in line with the urban development strategy of the city-region, to assist the move towards the development of an advanced service and innovation-driven economy, which as we shall see developed further in the period following 2007.

2.4 The Great Recession and its aftermath (2008 onwards)

Wider economic trends

The first signs of the financial crisis came in 2007, followed by the Great Recession, which affected most of the industrialised economies in an unprecedented way. The fierce economic and social crisis hit Italy more seriously than other European economies. The recent recovery has been very modest and the relative decline in the Italian economy has continued unabated. It is worth noting, however, that the modest pace of growth hides wide regional differences and, as we will see, the development of the Bologna metropolitan economy illustrates this diversity. The territorial diversity in the response to the difficulties the Italian economy has faced in recent decades is illustrated in Figure 3.³¹

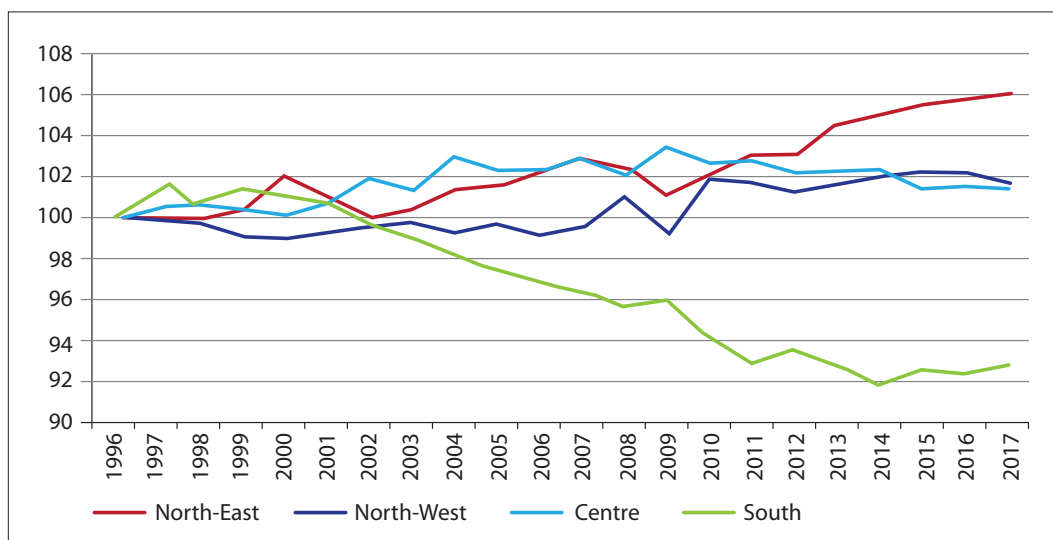


Figure 3. Geography of total-factor productivity 1996-2017³²

Source: *Confcommercio* (2018)

Figure 3 indicates that there have been sharp geographical differences in productivity growth, during a period when the overall productivity of the Italian economy has stagnated. The north-eastern regions, including Emilia-Romagna, have performed considerably better than the rest of the country, particularly in the years after 2009. Interestingly, the above productivity differentials correlate with the administrative environment (governance), the level of crime, and human capital and infrastructure quality (primarily transport accessibility).³³ The ability of the Bologna metropolitan area to maintain a good performance in these four domains may well be one of the critical determinants of local productivity growth in the years to come.

Local economy and urban policy

During the crisis, the administration of Bologna and the metropolitan territory faced, like the rest of the country, a severe economic contraction. The effects of the contraction were exacerbated by significant reductions in central government transfers, and reduced contributions from the Region and the local banking system, which was closely integrated with the industrial districts. The metropolitan city reacted with rigorous containment of operating expenses, a plan for progressive debt reduction, and increased local fiscal pressure on property. Despite expenditure limits imposed during the crisis years, Bologna maintained investment in urban renewal and regeneration³⁴ and supported large innovative projects, such as the Fabbrica Italiana Contadina (FICO Eataly World), a food theme park located in the Centro Agricolo Alimentare, and the Marconi Express, a 5-km monorail line linking the airport to the central railway station.³⁵

Population growth continued, driven by positive net migration. Over the last decade, almost 55,000 additional residents moved into metropolitan Bologna, swelling its population to 1,011,000 by the end of 2017. This increase occurred primarily in the municipalities around Bologna (nearly 40,000), but partially in the city (around 15,000 inhabitants). This is illustrated in Figures 4, 5 and 6, which cover a longer time frame and also highlight the recent growth in the number of foreign-born residents, who now account for about 12% of the residents of metropolitan Bologna.

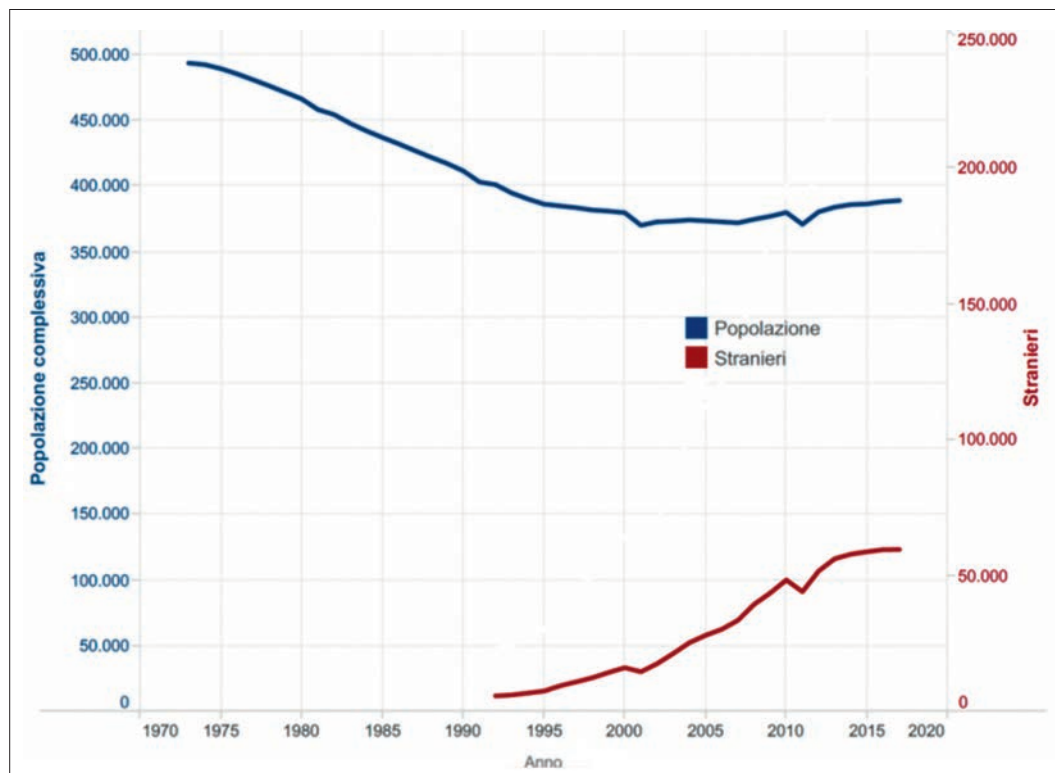


Figure 4. Population 1973-2017. Bologna Municipality (Metropolitan Core)³⁶

Source: Metropolitan City of Bologna (Città Metropolitana di Bologna) (2018)

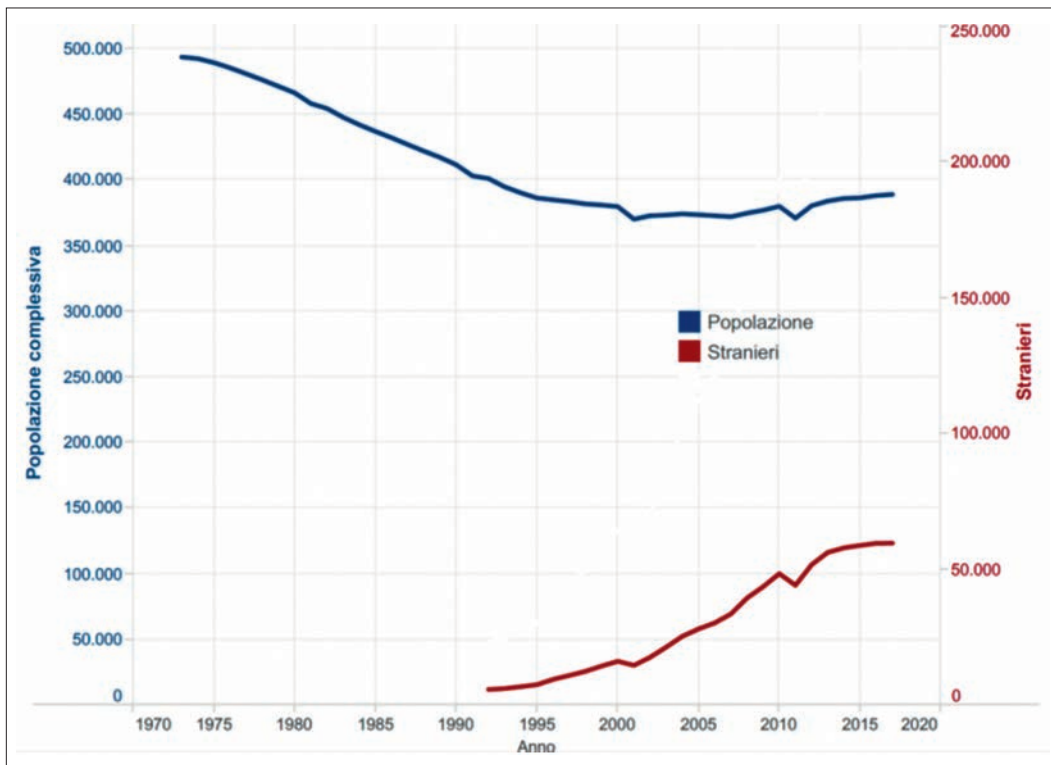


Figure 5. Population 1973-2017. Rest of the Metropolitan City (Hinterland)

Source: Metropolitan City of Bologna (Città Metropolitana di Bologna) (2018)

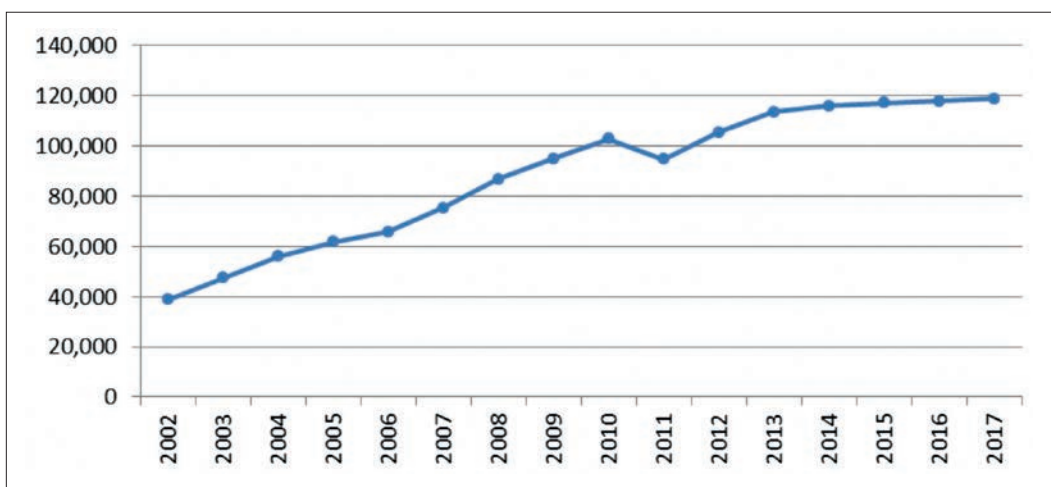


Figure 6. Foreign residents in the metropolitan area.³⁷

Source: Metropolitan City of Bologna (Città Metropolitana di Bologna) (2018)

The overall increase in the number of residents took place in the context of a falling birth rate, very much in line with the average Italian trend. Therefore, in the post-recession years, positive net migration compensated for the negative natural balance, confirming the great attraction Bologna continues to exert. Despite the negative natural balance, however, the number of children in the 0-15 age range has also increased in recent years, primarily due to the net inflow of younger families with children, a substantial proportion of whom are foreign-born. These trends, together with the contraction in average disposable income and increased poverty in Bologna³⁸, have generated further demand for social services, which will have to confront the twin challenge of increases at both ends of the population spectrum — the young and the elderly — with their specific service requirements.

In 2008, the municipality of Bologna approved the new Structural Municipal Plan. The plan identified “Seven Cities” within the Commune as areas offering various development opportunities with a view to integrating them into a common citywide transformation programme. The plan identifies various infrastructure projects for each “City”.

THE SEVEN CITIES

The “Seven Cities” are:

- the City of the Railway, which centres on a series of urban spaces (the new railway station, the airport, the exhibition centre, the business activity centres) designed to attract international activities;
- the City of the Bypass, which centres on neighbourhoods that lie on both sides of the bypass road in the northern area of the city, with a view to recovering their urban functions and limiting spatial separation;
- the City of the Hills, which seeks to give new urban functions to the south-west hillside area that has been subject to a process of progressive reduction in its use;
- the City of Western Via Emilia, which reconstructs the important relationship between the historical road and its surrounding settlements in the west of Bologna;
- the City of Eastern Via Emilia, which aims to re-establish urban functions along the link on the eastern side of the city by introducing a new public transport system, reducing private traffic and improving public areas;
- the Reno River City, which identifies the landscape of the river that flows westwards as a unifying element in a discontinuous metropolitan city, consisting of mainly residential settlements;
- the Savena River City, which concerns the development of a double riverside park (to the east as well as to the west) that is already a part of Bologna’s urban layout.³⁹

In the past decade, as in many other European cities, the strategy of post-industrial urban development envisaged by Bologna’s city administration also encompassed the “creative city” model. The strategic vision for the development of the municipality underlying the Structural Municipal Plan provides for the strengthening of advanced services, especially financial, high-tech industrial, and information and communication services, one of the main goals of Bologna’s future development strategy. Advanced service sector expansion is considered critical to secure the city’s position in territorial competition. In this respect the recent ranking of Bologna as the top smart city in Italy⁴⁰ is a positive indication that the city is on the right track to achieve its ambitious objectives.

Another key policy area focuses on resilience, as illustrated by the approval of the Sustainable Energy Action Plan for a “resilient Bologna” in June 2012,⁴¹ which built on the Bologna Local Urban Environment Adaptation Plan initiative.⁴² The latter was aimed at tackling the impacts of climate change on Bologna, notably heatwaves, drought and flooding. These strategic documents delineated the city’s resilience strategy underlying the municipal investment plans, including those supported by the EIB Resilient City framework loan in 2016. The Sustainable Energy Action Plan covers several areas of intervention — public buildings and public lighting, residential buildings, urban forestry, mobility and transport, energy production and the involvement of the service and production sectors in sustainable energy. A strong bottom-up emphasis is applied through a participatory model with extensive citizen involvement and a public-private cooperative approach to involve private sector parties.

Since January 2015, Bologna has been one of the ten Italian urban centres designated as “metropolitan cities”. Its territory, which corresponds to the former Province of Bologna, includes the Commune of Bologna plus 54 municipalities.⁴³ The metropolitan city took over the planning responsibilities of the former provincial administration. In 2011, Bologna produced a Metropolitan Strategic Plan (*Piano Strategico Metropolitan*, or PSM).

The plan identifies four areas for policy intervention and strategic investing: innovation and development; environment, urban amenities and mobility; knowledge, education and culture; and well-being and social cohesion. In this context, the plan has identified 67 projects to be implemented in order to foster shared and cohesive local development.

Over the last few years, the economy of the Emilia-Romagna region and, within the region, the metropolitan area have outperformed the national economy. Since 2011, the GDP growth rate was higher than the national level and, according to the OECD Metropolitan Area Database, in 2014, Bologna had the second-highest GDP per capita among Italy's metropolitan areas, after Milan.⁴⁴

The metropolitan city of Bologna is today: a major infrastructural node and gateway, attracting multiple flows related to the presence of facilities and functions of excellence; an important exhibition centre site (the second largest in Italy); a leading centre in specific productive sectors (e.g. precision mechanical industry and packaging); a retail, leisure and cultural hub; a major logistic platform of national relevance; a health service hub with a leading hospital system and strong pharmaceutical and biomedical sector; and a major university centre.

EIB operations

In the years since 2008, various EIB operations likely to affect the development of the metropolitan area have supported the investment strategy of regional stakeholders and their efforts to overcome the negative impact of the recession. As in previous periods, the loans have addressed the funding needs of several key investors, in addition to the municipality of Bologna and other public authorities. Examples in the infrastructure sector include the upgrading of the Bologna-Florence motorway in 2012-2013⁴⁵ and post-earthquake reconstruction measures throughout the Emilia Romagna region in 2015.⁴⁶ Loans have supported other sectors critical to the success of the metropolitan economy in addition to infrastructure, very often following up on previous operations with the same beneficiaries. These include operations supporting the investment plans of the Bologna-based multi-utility Hera, which operates in several north-eastern Italian regions, as well as the research and development strategy of SASIB, one of the more innovative enterprises in the metropolitan area⁴⁷ and a leading player in the packaging industrial cluster.

In 2018, a €130 million loan was granted to the University of Bologna — the largest to an Italian university to date — to support the University's five-year investment plan, including the modernisation and expansion of the university campuses in Bologna, Forlì, Cesena, Ravenna and Rimini. Works include some 130,000 m² of floor space and particular attention is to be paid to earthquake resilience and the energy efficiency of buildings.

In the post-recession period, the EIB continued its support for the municipality of Bologna through the framework loan tool. As already mentioned, since the early operations undertaken in Italy in the late 1990s, this product has evolved into one of the main tools to assist cities and regions with their long-term investment strategies.⁴⁸ The latest operation of this type, the €50 million Bologna Resilient City Framework Loan approved in 2016, is an example of support for the innovative strategy of the municipality of Bologna, whose three-year investment plan builds on the strategic documents mentioned on the previous pages. This loan underpins an investment strategy focusing on sustainability and the improvement of the urban built environment, including school renovation measures, bicycle paths, earthquake prevention and urban renewal and conservation schemes. A project aimed at the conservation and improvement of part of the 40-km long medieval porticos bordering the streets of Bologna's historic centre, one of the unique world-famous features of the city proposed for inclusion in the UNESCO World Heritage list, is also included in the municipality's multi-annual investment plan. This follows four similar framework loan operations between 1999 and 2011 for a total amount of €317 million.

III Conclusions

The EIB's strategy and its provision of financial products and services has evolved over time, becoming more aligned with Bologna's development strategy. Some of the key events are summarised in Figure 7.

Figure 7. Bologna – events timeline

	1955	Approval of new master plan
	1963	Opening of the first municipal day-care centre in Italy
Approval of the first socio-economic urban development plan in Italy (<i>Programma di sviluppo della città e del comprensorio</i>)	1963	
Approval of the Campos-Venuti social housing plan	1964	
	1967	Road bypass opened
Plans for new business district (<i>Centro Direzionale</i>) are commissioned from Kenzo Tange	1970	
	1971	Emilia-Romagna Regional Authority established
	1985	HQ of Emilia-Romagna regional government moves to the new business district
Launch of the Iperbole IT network	1995	
Designated as European City of Culture	1998	
Election of centre-right mayor ends over 50 years of left-wing leadership	1999	First "Ambiente Urbano" Framework Loan
New regional planning law introduced	2000	
Ranked as top city for quality of life in Il Sole-24 Ore survey	2007	
	2009	Opening of Milano-Bologna-Firenze high-speed railway
Approval of the Sustainable Energy Action Plan for a "resilient Bologna"	2012	
Unemployment reaches 8%, up from low of 2% in 2008	2013	Strategic Metropolitan Plan agreed between the Province and the municipality
	2015	Bologna officially designated as one of the ten metropolitan cities in Italy
Resilient city framework loan	2016	Classified as top smart city in Italy
	2017	Metropolitan population exceeds one million
	2018	Bologna University loan
	2019	Expected completion of new Florence-Bologna motorway

Its tradition of administrative efficiency and quality in the delivery of local services has helped Bologna successfully adapt to challenges over the years, on average better than other European and Italian cities. This tradition of good local governance and the relative resilience of the regional economy (based on a “flexible specialisation” model) are mutually reinforcing processes. They have helped to deliver relatively good performance levels compared to the rest of the Italian economy. This continued in the recession years, as shown in the diagrams below, which compare Bologna to other metropolitan areas in Italy. As illustrated in Figure 8, the area succeeded in maintaining some GDP growth in the recession period, while projected growth in 2015-2017 is also the highest among the ten Italian metropolitan areas. Trends in value-added per capita between 2000 and 2016 confirm that Bologna has maintained its advantage compared to Emilia-Romagna and the national average over the years.

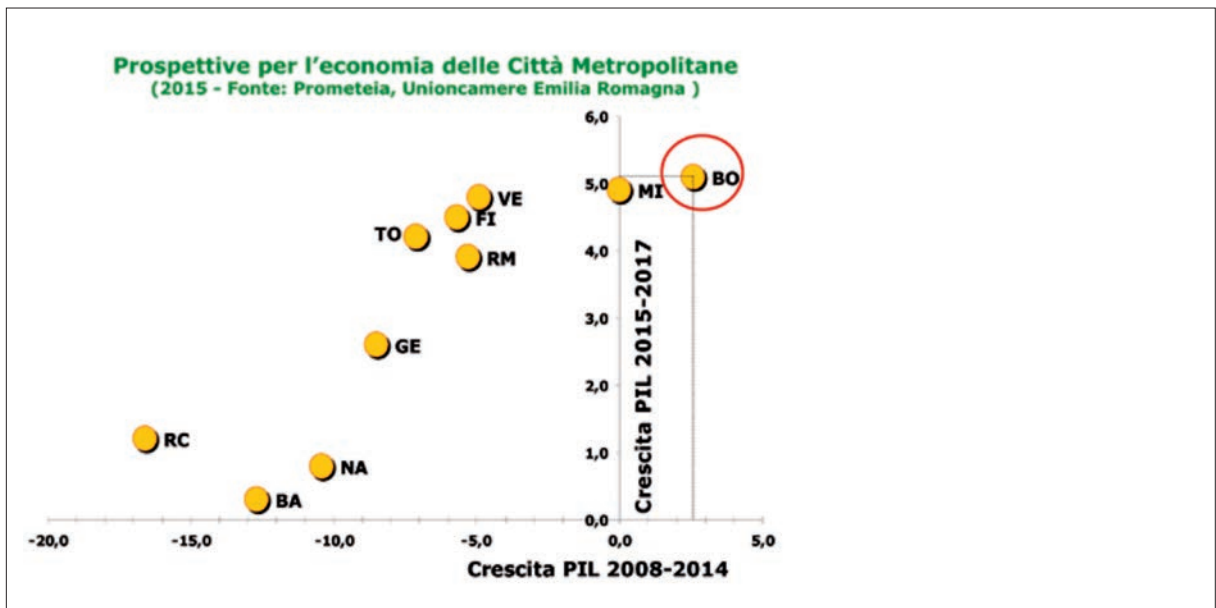


Figure 8. Metropolitan cities in Italy⁴⁹ – Growth prospects compared

Source: Metropolitan Strategic Plan (2016)⁵⁰

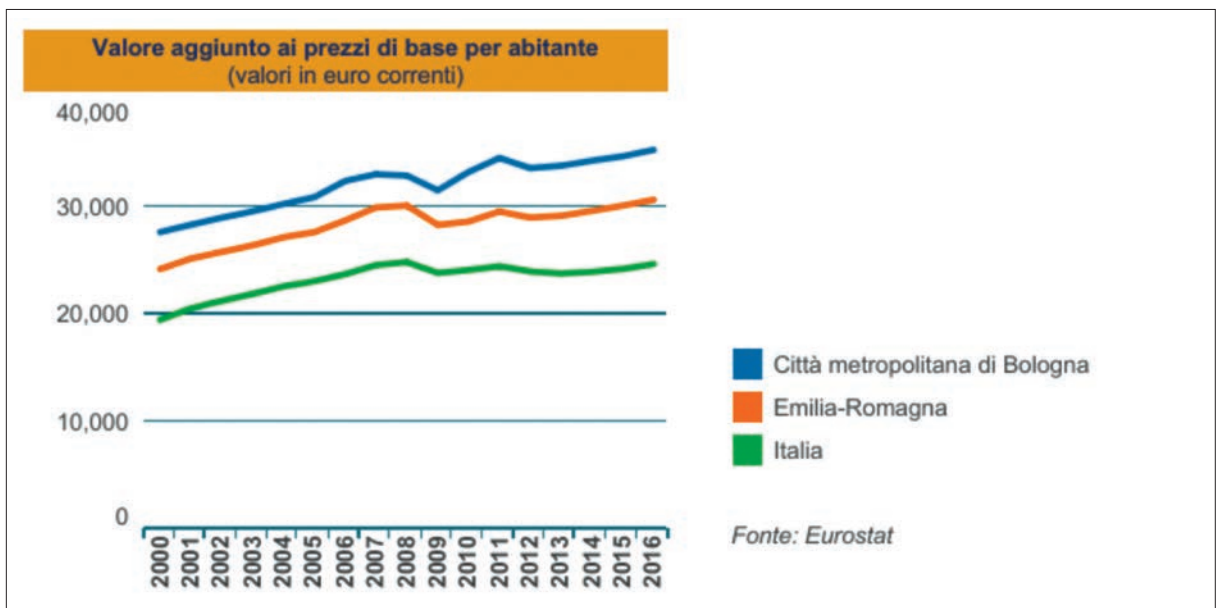


Figure 9. Per capita value-added 2000-2016

Source: Commune of Bologna (2018)⁵¹

Although the city and the region have recovered more rapidly than the rest of the Italian economy, the recovery was slow and painful compared to other European cities. Future challenges for the metropolitan economy are massive. Despite the relatively good performance, problems left over from the recession continue, and new ones have appeared. These relate to poverty, exclusion and the aging population — problems that have worsened despite the good overall performance of the metropolitan economy.⁵² They must be addressed while meeting the need to maintain and reinforce an environmentally sustainable and innovation-driven economy. It will be a complex task to achieve and maintain success in the digital and knowledge economy, together with environmental sustainability and inclusive growth in an open economy exposed to competition. However, local economic resilience will be supported by a rich ecosystem populated by a variety of public and private stakeholders capable of cooperating and generating innovative solutions to social and economic challenges.

Over time, three urban policy strands have evolved as the pillars of the development strategy of metropolitan Bologna in the near future. Firstly, it focuses on smart development, building on the tradition of innovative and technology-aware solutions to address urban challenges. A second focus is sustainability and resilience, drawing on the tradition of protection for the built and natural environment. Thirdly, quality of life and inclusive development builds on a culture of attention to the delivery of local services and municipal welfare.

The Commune, the metropolitan city and the Emilia-Romagna region appear therefore to have developed a coherent investment strategy, which can attract and benefit from EU support. The significant experience of several important stakeholders in securing EIB lending to enable strategic investment is an opportunity on which the city can capitalise. Recent operations, such as the 2018 Bologna University loan and the 2016 Resilient City Framework Loan mentioned in section 2.4, illustrate this. These operations may show the way forward in the spatial context of a wealthy multi-polar city-region with a medium-sized metropolitan area at its core.

How much and how well this way forward can be pursued relates to the role of the local ecosystem in supporting an innovative metropolitan economy and the surrounding industrial and productive fabric.⁵³ The city administration is a central element of this innovation-oriented ecosystem. It has been argued that various local players have helped structure a response “from below” to the recession. These players include enterprise associations at a lower level, intermediate entities such as local authorities and research centres and, at a higher level, those acting on a regional scale.⁵⁴

The flexible specialisation model of industrial development, with its strong client-driven orientation, has been a central feature of the region’s productive clusters. It is one of the key assets of the regional economy. This may facilitate the development of industrial activity, which will be a core asset of the regional economy in the foreseeable future, with the Industry 4.0 approach promoted in several European industrial regions, notably in Germany, as a model to maintain a competitive advantage in an open internationalised economy. The metropolitan area will play a critical role in facilitating the integration of ICT and digitalisation in manufacturing. The Metropolitan Strategic Plan is fully in line with the needs of the regional industrial base.

Historically, metropolitan and regional development in Emilia-Romagna has been characterised by a pragmatic approach and the ability to reconcile tradition and innovation. However, recent trends point to tension between an increasingly fragmented political environment, which may translate into policy fragmentation or deadlock, and the highly structured metropolitan governance tools in place since the early 2000s. While the well-structured governance tools may provide a solution to this fragmentation, there is a risk of policy discontinuity. Policy and investment trade-offs are likely to emerge as the city attempts to reconcile the need to attract and retain high-value activities in an open, internationalised economy with its concern for quality of life, social inclusion and environmental standards.

Some clusters in the region and in the metropolitan area have been successful in reacting to the economic crisis, maintaining their competitive advantage through technological innovation, internationalisation and diversification. This includes consolidated sectors, such as mechatronics and the agri-business and food industry, as well as emerging ones, such as the medical, cultural and creative spheres. Despite encouraging signs, some of the productive

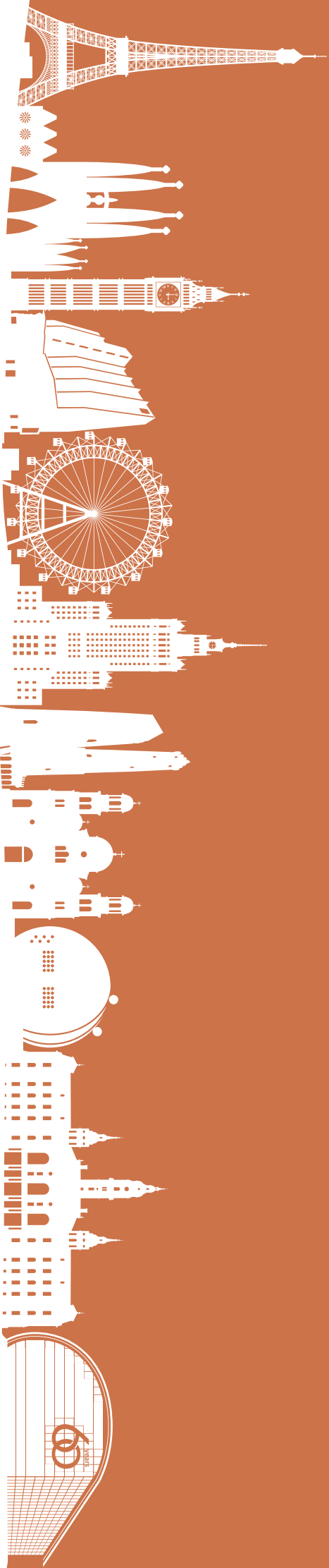
base has not responded to the recession and there have been significant losses and disruptions in the local labour market. One of the critical functions of the authorities in the metropolitan city of Bologna will be to offer an innovation-friendly, inclusive and sustainable urban environment, which is likely to play an important role in fostering the economic performance of the city-region.

Recent strategic documents and the positive economic performance of the Bologna metropolitan area of late are encouraging signs. However, these should be seen against the backdrop of the dismal economic performance and sustained decline of the Italian economy over the past two decades. The performance of the metropolitan area will be determined by a mix of factors, some partially under the control of the regional stakeholders (essentially those inhabiting the city-region ecosystem we have outlined), and some external and largely exogenous (such as national and international economic trends and technology developments). To what degree of success will the largely unprecedented challenges be addressed? To what extent will regional stakeholders be able to influence future outcomes and possibly contribute “from below” to the recovery of the wider Italian economy, confirming the role of the Bologna metropolitan area as an “engine of growth”? Metropolitan Bologna seems relatively well-equipped to respond. Tools and resources on offer from the EU, including those provided by the EIB, may assist the stakeholders in tackling these future challenges.

References

- 1 Fallaci R. (2013), *Assetti urbani, qualità urbana e territoriale, politiche per la casa*, Bologna, Piano Strategico Metropolitan, Tavolo Ambiente, assetti urbani e mobilità.
- 2 See <https://www.tuttitalia.it/emilia-romagna/32-bologna/statistiche/censimenti-popolazione/> (accessed 05.10.2018).
- 3 Among the many works dedicated to the development of the Italian economy in the post-war period, see Salvati M. (1983), *Economia e politica in Italia dal dopoguerra a oggi*, Milan: Garzanti, which contains an extensive bibliography of the key contributions in this area up to the early 1980s.
- 4 See Encyclopædia Britannica www.britannica.com/place/Italy/Economic-stagnation-and-labour-militancy-in-the-1960s-and-70s (accessed date 05.10.2018).
- 5 The social unrest in the late 1960s also initiated a long period of instability punctuated by acts of terrorism by mostly left-wing paramilitary groups, which lasted until the early 1980s (the so-called *anni di piombo*).
- 6 See Gobbo F., Varni A. (ed.) (1987), *Bologna 1937-1987. Cinquant'anni di vita economica*, Bologna: Cassa di Risparmio di Bologna. On agriculture, see in particular the chapter by G. Amadei "Le trasformazioni dell'agricoltura".
- 7 Number of industrial employees per 1,000 inhabitants.
- 8 See Gobbo F., Varni A. (ed.) (1987).
- 9 See Gobbo F., Pasini C. (1987) "Una industrializzazione compiuta", in Gobbo F., Varni A. (ed.) (1987).
- 10 In 1947 the Bologna Chamber of Commerce set up the Autonomous Fairs Corporation (*Ente Autonomo delle Fiere di Bologna*). Events did not have a fixed location at that time and were held in temporary facilities between the Montagnola Park and the Podestà Building.
- 11 De Pieri F., Scrivano P. (2004), Representing the "Historical Centre" of Bologna: Preservation Policies and Reinvention of an Urban Identity", *Urban History Review*, 33(1), 34-45.
- 12 This provision, which was introduced in April 1973, made bus services free at peak times, from the beginning of the service to 9 am and from 4.30 pm to 8 pm for workers and from 12 noon to 3 pm for students.
- 13 This was the so-called *Piano di Edilizia Economica e Popolare* (PEEP).
- 14 See De Pieri F., Scrivano P. (2004).
- 15 See EIB (2018), A History of Europe in 6 Projects, Chapter 1, "The 1960s. A Drive Along Italy's Roads".
- 16 Data on unemployment and deficit from Encyclopædia Britannica, www.britannica.com/place/Italy/Economic-stagnation-and-labour-militancy-in-the-1960s-and-70s (accessed on 05.10.2018).
- 17 See for instance Bagnasco A. (1973), *Tre Italie: la problematica territoriale dello sviluppo italiano*, Bologna: il Mulino, and Fuà G., Zacchia C. (1983), *Industrializzazione senza fratture*, Bologna: il Mulino.
- 18 The EMS was introduced in 1979 to create a "zone of monetary stability" in Europe. The Italian lira and British pound exited the EMS in September 1992 ("black Wednesday").
- 19 For instance, at that time, several of the infrastructure operations in Bologna were supported by the centrally funded FIO (Fondo per gli Investimenti e l'Occupazione), established in 1982 and operational until 1999. A number of FIO projects were co-financed by the EIB.
- 20 In 1992, the so-called Mani Pulite ("Clean Hands") operation uncovered a web of corruption that involved the country's main political parties, bringing about the disappearance of some of the parties that had dominated the country's political landscape in the post-war years.
- 21 The euro was officially introduced into the economy on 1 January 2002.
- 22 This paragraph is based on Ciccarone G, Saltari E. (2015), "Cyclical downturn or structural disease? The decline of the Italian economy in the last twenty years", *Journal of Modern Italian Studies*, March 2015.
- 23 See *OECD Economic Surveys: Italy 2000*, https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-italy-2000_eco_surveys-ita-2000-en (accessed 26.09.2018).
- 24 See http://www.dt.tesoro.it/export/sites/sitodt/modules/documenti_en/analisi_progammazione/documenti_programmatici/Italy-s-Report-2002.pdf (accessed 26.09.2018).
- 25 Banca d'Italia (2000), *Note sull'andamento dell'economia dell'Emilia-Romagna nel 1999*.
- 26 See <https://www.cittametropolitana.bo.it/pianificazione/Engine/RAServeFile.php/fi/Pubblicazioni/futurometropolitano.pdf> (accessed 26.09.2018).
- 27 The Iperbole acronym stands for "Internet per Bologna e l'Emilia Romagna".
- 28 In fact it was the second one, following the "Firenze Ambiente Urbano" operation.
- 29 For details on the way framework loans are operated today see EIB-Committee of the Regions (2016). *Financing a city's or region's long-term capital investment programme: EIB framework loans* and for the wider policy backdrop EIB-CoR (2016) The EU Urban Agenda Toolbox.
- 30 As a reminder, the typical project supported by so-called "direct" loans should reach a minimum cost size of €25 million.
- 31 See Ufficio Studi Confcommercio (2018), *Rapporto sulle economie territoriali*. March 2018.
- 32 In Figure 3, the Italian North-East includes the following four regions: Emilia-Romagna, Veneto, Friuli-Venezia Giulia, Trentino-Alto Adige.
- 33 According to the econometric exercise contained in Ufficio Studi Confcommercio (2018).
- 34 In the years 2013-2018, the three-year public works programmes of the municipality of Bologna have been within the €220-135 million range. See <http://www.comune.bologna.it/lavoripubblici/introduzione/123:7002/> (accessed 10.10.2018).
- 35 See <https://www.bologna-airport.it/System/files/IR/Comunicati/29.01.2018-CS-PIANO-INVESTIMENTI-18-22-eng.pdf> (accessed 26.09.2018).
- 36 Source <http://inumeridibolognametropolitana.it/dati-statistici/popolazione-residente-comune-dal-1973-0> (accessed 10.10.2018).
- 37 See <http://www.inumeridibolognametropolitana.it/dati-statistici/popolazione/movimento-della-popolazione>.
- 38 See Istituto Cattaneo (2017), *La situazione economica e sociale bolognese*, Bologna: Fondazione di Ricerca Istituto Carlo Cattaneo.
- 39 See http://informa.comune.bologna.it/iperbole/media/files/flyer_sette_citta_english_low.pdf (accessed 26.09.2018).
- 40 See Ernst and Young (2016), *Italia Smart. Rapporto Smart City Index 2016*.

- 41 Urban Centre Bologna (2016?), *Bologna città resiliente. Sostenibilità energetica e adattamento ai cambiamenti climatici*. http://www.fondazioneinnovazioneurbana.it/images/quaderni/PAES_LR.pdf (accessed 10.10.2018).
- 42 See <http://www.blueap.eu/site/en/> (accessed 10.10.2018).
- 43 This follows the approval of national Law 56/2014 on metropolitan cities (“Disposizioni sulle Città metropolitane, sulle Province, sulle Unioni e fusioni di comuni”).
- 44 <https://stats.oecd.org/Index.aspx?Datasetcode=CITIES#> (accessed 11.10.2018).
- 45 For details of the Florence – Bologna motorway upgrade, see <http://www.eib.org/en/infocentre/stories/all/2014-january-01/the-florence-bologna-motorway.htm> (accessed 25.09.2018).
- 46 This operation follows and complements an earlier 2012 global loan, also channelled through Cassa Depositi e Prestiti, the Italian promotional bank, to help SMEs recover from the consequences of the 2012 earthquake.
- 47 The company’s headquarters are located in Imola.
- 48 See the EIB–Committee of the Regions 2016 publication mentioned earlier.
- 49 In Figure 8, RC=Reggio Calabria, BA=Bari, NA=Naples, GE=Genoa, TO=Turin, FI=Florence, VE=Venice, RM=Rome, MI=Milan, BO=Bologna.
- 50 Piano Strategico Metropolitan (2016), *Il posizionamento di Bologna. La Città metropolitana di Bologna si confronta con le altre città italiane ed europee* http://psm.bologna.it/Engine/RAServeFile.php/f/News/Q3-Posizionamento_Bologna_%28doppia_pagina%29.pdf (accessed 11.10.2018).
- 51 See <http://statistica.comune.bologna.it/100grafici/prodotto-interno-lordo> (accessed 10.10.2018).
- 52 For recent trends, see Istituto Cattaneo (2017), *La situazione economica e sociale bolognese*, Bologna: Fondazione di Ricerca Istituto Carlo Cattaneo.
- 53 This section relies on research carried out by Capecchi and others (2015), *Tra storia e futuro, politiche per una regione smart*, Bologna, Il Mulino. See also <http://www.inchiestaonline.it/osservatorio-emilia-romagna/vittorio-capecchi-sergio-caserta-angiolo-tavanti-lemilia-romagna-tra-storia-e-futuro/> (accessed 25.09.2018).
- 54 See Capecchi and others (2015). These include departments of the regional authority (“assessorati”), and entities such as ERVET (the promotional agency of the Emilia-Romagna region) and ASTER (the region’s agency for innovation and technology transfer).



European
Investment
Bank



The EU bank