NYC/EDC

Economic Diversification, Resilience, and the Path to Inclusive Growth

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Contents

Executive Summary

In the aftermath of the 2008–09 crisis, traditional industries (e.g., manufacturing and construction) in the New York City economy faced increased competitive pressure. However, NYC's status as a global leader in innovation and entrepreneurship enabled it to reinvent its industrial structure, while remaining home to some of the most valuable and fastest growing companies in the world. While significant gains were made in the aftermath of the Great Recession, the recovery from the crisis was not equitable.

In March 2020, the COVID-19 pandemic brought the longest economic expansion in US history to an abrupt halt. The pandemic has disproportionately affected marginalized populations, and certain industries and occupations. The unprecedented magnitude of the decline in employment and production heralded by COVID-19 has laid bare many flaws in existing social and economic structures. The public health crisis and measures taken in response to the pandemic continue to have second-order effects. Given that long-term economic impacts are generally difficult to measure, the current trends have major implications for NYC's future economic growth trajectory and societal well-being.

This paper explores NYC economic resilience and structural changes over the 2001–2018 period through three key metrics: resistance, adaptability, and diversification. We analyze how the city's economic structure has evolved since the turn of the century, with a focus on post-crisis trajectory. The report is intended as a guide as regional and City policymakers devise strategies to address structural issues in the economy.

The more inequality that exists in an economy, the less likely it is for economic growth alone to sufficiently lift up those at the bottom. Given NYC's status as an economic base with fast-growing industries (e.g., information, high-tech innovation, health care and social assistance), all in a polarized labor market environment, policies targeted at diversification must recognize the structural economic dynamics of the city. Otherwise, they may produce unintended consequences in the presence of market failures and disruptions.

Using data from the US Bureau of Economic Analysis (BEA), Quarterly Census of Employment and Wages (QCEW) and Quarterly Workforce Indicators (QWI), we find that:

- NYC's economy has become more diversified, resistant, and adaptable to shocks over time, but the recovery from the Great Recession was not equitable

- Finance remains a key driver of investment and output growth in the city economy, although industries such as information, professional services, and health care and social assistance, among others, continue on steady growth trajectories and are becoming important contributors to the city economy.

- Prior to the 2008–09 crisis, economic growth was concentrated in Manhattan, but in the post-recession period, the revitalization efforts of neighborhoods throughout the city, especially outside Manhattan, have contributed to strong growth.

- As the city witnessed increased diversification over time, the Bronx appeared as a bright spot, with remarkable progress toward industrial diversification.

- Overall, the Great Recession negatively impacted all demographic groups, but marginalized populations were disproportionately impacted. Low-income earners, youth, minorities, and the less-educated experienced greater declines in employment relative to their comparators. After more than a decade, these groups are still reeling from the impacts of the recession.

As key actors in the city's economic development space navigate the uncharted waters of COVID-19, the findings in this report serve as a first step in understanding how resistant and adaptive the NYC economy is to shocks. In particular, this work serves as a useful baseline for post-pandemic economic recovery efforts, especially from a pre- and post-Great Recession perspective.

The paper is intended to be a guide to improve policymakers' understanding of the diversification-resilience-growth nexus. In the past, learnings from previous recessions have led the city to undertake massive investments in expanding industries that can support economic recovery, like life sciences, technology, and advanced manufacturing. Furthermore, the city is also supporting business expansion opportunities in high-growth areas like Brooklyn and Queens.

1. Introduction

Recessionary shocks often result from global imbalances due to business cycle downturns or structural economic problems, leading to a significant decline in economic activity. Since a recession is typically triggered by a decline in aggregate demand, relative to the potential productive capacity of the economy, stimulating the economy in the immediate aftermath of a downturn is only a short-term solution. Instead, analyzing economic crises in structural, rather than cyclical, terms provides additional insights that can help move the needle on inclusive economic development.

Before the COVID-19 pandemic brought the longest economic expansion in US history to a halt, the unprecedented, historic level of income inequality was a major structural drag on aggregate demand growth. While a traditional Keynesian fiscal stimulus can help restore an economy to its pre-crisis growth path, the disproportionate impact of COVID-19 on certain industries, occupations, and demographics underscores the need to address underlying structural economic issues—issues that perpetuate widening inequality and its concomitant effect on aggregate demand—as a more sustainable approach at building an equitable and resilient economy.

High income gaps restrict socioeconomic mobility of the less well-off, in addition to constraining economic growth. To the extent that a shortfall of demand relative to the economy's full potential is a major trigger of recessions, replenishing aggregate demand through interventions capable of reversing the increased inequality of the past decades will go a long way in building a more inclusive and prosperous society. For instance, both theory and empirical evidence support the notion that high-income earners spend significantly lower shares of extra incomes on consumption, compared to low-income earners. As such, increasing the earning potential of individuals at the lower end of the income distribution can help unlock growth, especially when an economy is operating below its productive capacity.

Unlike in previous crises, job losses during this pandemic-induced recession have been more significant for low-wage workers. From a demand perspective, high income inequality is a drag on economic growth through its contractionary impact on aggregate consumption. On the supply side, its adverse impact on both human and physical capital accumulation is well-documented. Also, public investments in health, education, and infrastructure are productivity drivers that enhance socioeconomic mobility, leading to higher wages and sustained aggregate demand.

Policies targeted at addressing structural imbalances not only restore an economy to its pre-crisis growth path, they also spur a more equitable and resilient recovery. Given the increases in the flow of income and wealth to the top of the economic ladder in recent times, building a more equitable and resilient economy requires a comprehensive, robust approach with all policy options on the table. One of the ways to achieve this is by looking at the structural

dynamics of the economy over time, while paying attention to exogenous shocks and their impacts. This is the major preoccupation of this paper.

The diversification-resilience-growth nexus remains highly endogenous in economic analysis. In the NYC case, pre- and post-Great Recession dynamics show that structural transformation of industrial clusters has contributed to diversification and economic resilience over time.

In this paper, we use a two-pronged approach to analyze the implications of major disruptions for regional economic prosperity. This framework enables us to shed light on the macro- and micro-dynamics of output and employment growth paths following the Great Recession. While an empirical framework based on the notion of economic resilience is developed for the growth paths of NYC's output and employment, a diversification index is used to gauge performance, over time. As key actors focus on long-term efforts targeted at rebuilding a more inclusive, dynamic, and resilient economy that can better withstand and adjust to future economic shocks, the findings in this paper will serve as a useful guide.

In the next section, we review output and employment trends in the aftermath of the 2008–09 downturn. This is followed in Section 3 by an analysis of resistance and adaptability as determinants of economic resilience. Section 4 focuses on economic diversification calibration and its implications, while distributional effects are looked into in the fifth section. Section 6 provides concluding comments.

2. Descriptive Analytics

The Great Recession

How did output and employment fare in NYC in the aftermath of the Great Recession? In 2008, output decreased by 4.5 percent from the previous year, a loss of over $24 billion. Employment fell by 3 percent, with over 100,000 jobs lost over a year.[1,2,3] However, the city has followed a fairly consistent recovery path since then, with output expanding 3.3 percent annually since 2008 and adding nearly 678,000 jobs.

In this section, we analyze the trajectories of output and employment loss and recovery since 2008, using data from the US Bureau of Economic Analysis (BEA), Quarterly Census of Employment and Wages (QCEW), and Quarterly Workforce Indicators (QWI).

Output and employment by industry

Table 1 shows output and employment disaggregated by industry in NYC. The top five industry sectors with the highest share of output are finance and real estate with about 20 percent each, followed by information (14 percent), professional services (11 percent), and health care (7 percent) (Table 1A). The information sector experienced the fastest growth since 2008, at an average of 7.2 percent per annum.

In terms of the size of the workforce, health care is by far the largest industry in the city, with its share of employment almost double (19 percent) that of the next largest industry, professional services (11 percent) (Table 1B). The other industries that employ a large share of NYC's workforce are accommodation and food services, and retail trade and finance, at 9 percent each. Accommodation and food services added workers to its ranks at the highest rate of all the industry sectors, at an average of 4.2 percent per annum.

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[1]   Output and employment in this paper refer to private nonfarm output and employment. This convention holds for the rest of the paper, unless otherwise specified. "Output" refers to real output hereafter.

[2]   Job change here is measured over 2008-09 to account for lagged employment effects, while output change is measured over 2007-08.

[3]   Growth is calculated as compound annual growth rate in this section.

Table 1: Output and employment industry shares and growth in NYC

A. Output

Industry	2008 Output ($M)	2018 Output ($M)	Share in 2018 (%)	2008-18 annual growth (%)
Finance and insurance	82,182	142,008	19.7	5.6
Real estate and rental and leasing	112,594	141,777	19.6	2.3
Information	50,899	101,596	14.1	7.2
Professional, scientific, and technical services	67,194	81,418	11.3	1.9
Health care and social assistance	39,365	51,913	7.2	2.8
Wholesale trade	28,386	30,228	4.2	0.6
Retail trade	20,354	26,005	3.6	2.5
Administrative and support and waste management and remediation services	13,759	20,141	2.8	3.9
Accommodation and food services	13,752	18,249	2.5	2.9
Transportation and warehousing	13,204	16,348	2.3	2.2
Arts, entertainment, and recreation	11,244	15,754	2.2	3.4
Construction	14,947	15,581	2.2	0.4
Educational services	11,713	15,535	2.2	2.9
Management of companies and enterprises	12,268	14,763	2.0	1.9
Other services [except public administration]	12,362	12,841	1.8	0.4
Manufacturing	10,470	9,374	1.3	-1.1
Utilities	7,095	8,397	1.2	1.7
Natural resources and mining	47	32	0.0	-3.9
Total Private Output	521,833	721,960	100.0	3.3

B. Employment

Industry	2008 Employment ('000)	2018 Employment ('000)	Share in 2018 (%)	2008-18 annual growth (%)
Health care and social assistance	555	739	18.8	2.9
Professional, scientific, and technical services	346	418	10.6	1.9
Accommodation and food services	242	365	9.3	4.2
Retail trade	299	344	8.7	1.4
Finance and insurance	347	342	8.7	-0.1
Administrative and support and waste management and remediation services	198	267	6.8	3.1
Educational services	178	250	6.4	3.5
Information	166	200	5.1	1.9
Other services (except public administration)	168	196	5.0	1.5
Construction	134	156	4.0	1.6
Wholesale trade	147	141	3.6	-0.4
Real estate and rental and leasing	121	134	3.4	1.0
Transportation and warehousing	111	133	3.4	1.9
Arts, entertainment, and recreation	71	92	2.3	2.6
Manufacturing	94	73	1.8	-2.6
Management of companies and enterprises	66	71	1.8	0.7
Utilities	16	16	0.4	-0.3
Natural resources and mining	0	0	0.0	-3.7
Total Private Employment	3,260	3,938	100.0	1.9

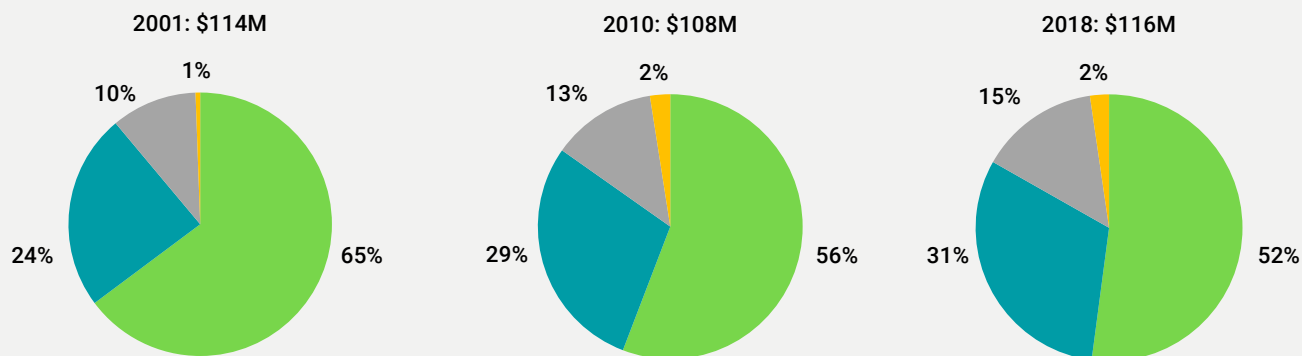Source: Author calculations using BEA data

The financial services sector

The finance and insurance industry is the mainstay of NYC's economy, considering how vital the sector is to the city's overall economic health, in addition to the city's status as the capital of the global financial services industry. With one out of every five dollars earned in the city coming from this sector alone, finance remains a key driver of investment and output growth in other key sectors. While it continues to play an outsized role in the economy, the contributions of other sectors have been steadily increasing.
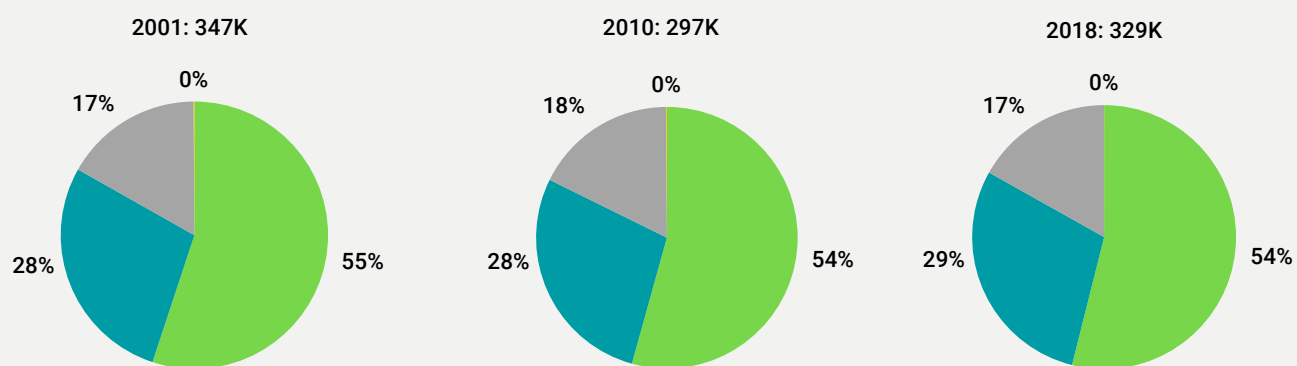
Figure 1 shows output and employment shares of the four subsectors of the financial services industry: securities, commodity contracts, and other financial investments (i.e., Wall Street); credit intermediation; insurance; and funds, trusts, and other financial vehicles. The share of Wall Street output has been falling steadily since 2001, and shares of credit intermediation activities and insurance have been increasing (Figure 1A). However, proportionate employment shares in the four subsectors have remained roughly consistent over this time period (Figure 1B). These trends are mirrored in the finance sector as a whole: In 2001, the sector accounted for 28 percent of the city's output and its share has steadily declined since then—falling to a quarter in 2010, and then to a fifth in 2018 (Figure 2A). In terms of employment, in 2018, roughly 340,000 workers in the finance industry accounted for about 9 percent of the NYC workforce, but the sector has witnessed a gradual fall over the 2001–2018 period (Figure 2B). In 2001, finance was the second largest employment sector in the city; now it accounts for about the same proportion of workforce as accommodation and food services, and retail trade.

Figure 1: Output and employment shares of four subsectors of the finance and insurance industry

A. Output

2001: $114M

10% 1%
24% 65%

2010: $108M

13% 2%
29% 56%

2018: $116M

15% 2%
31% 52%

B. Employment

2001: 347K

17% 0%
28% 55%

2010: 297K

18% 0%
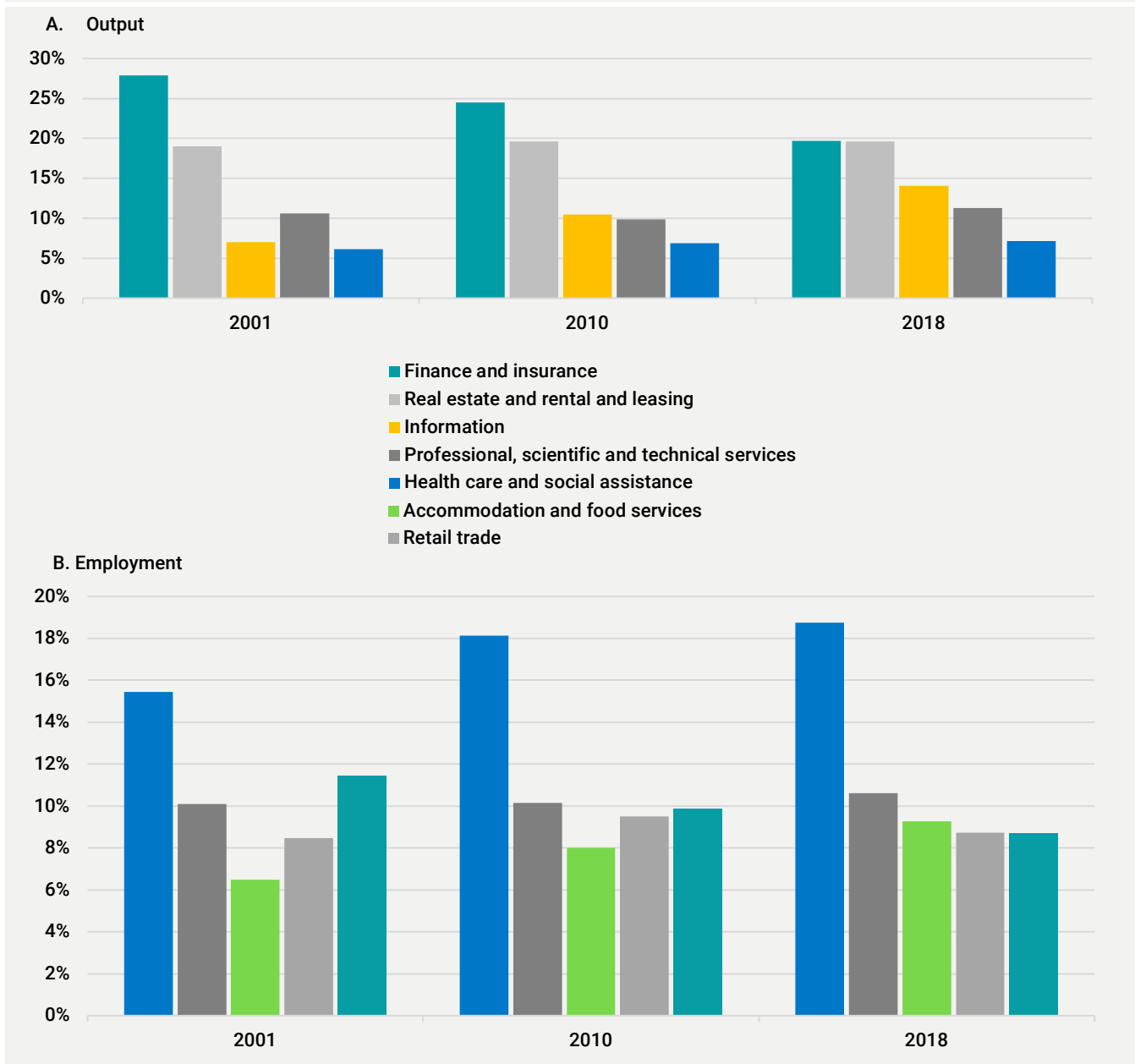28% 54%

2018: 329K

17% 0%
29% 54%

- 🟩 Securities, Commodity Contracts, and Other Financial Investments and Related Opportunities
- ⬜ Credit Intermediation and Related Activities
- 🟧 Insurance Carriers and Related Activities
- 🟦 Funds, Trusts, and Other Financial Vehicles

Source: Author calculations using BEA and QCEW data. Note: Excludes subsector of monetary authorities

Other key sectors

Meanwhile, the information sector has been steadily growing over the same time period, with its output contributing 7 percent in 2001, 11 percent in 2010, and 14 percent in 2018 to the city's economy. The real estate sector has maintained a consistent contribution, at 19–20 percent over the same period. Similarly, the professional services sector and the health care and social assistance sector have also preserved a stable 10–11 percent and 6–7 percent contribution to gross city product over this time (Figure 2A). Health care and accommodation and food services' share in citywide employment have consistently increased over 2001–18. Health care, as the largest employment sector in NYC, increased employment from 15 percent in 2001 to 18 percent in 2018, and accommodation and food services increased from 6 percent in 2001 to 9 percent in 2018 (Figure 2B).

Figure 2: Output and employment shares in the top five industries in NYC

A. Output

Legend:
- ■ Finance and insurance
- ■ Real estate and rental and leasing
- ■ Information
- ■ Professional, scientific and technical services
- ■ Health care and social assistance
- ■ Accommodation and food services
- ■ Retail trade

B. Employment

Source: Author calculations using BEA data

Note: The industries are selected and sorted by the top five highest 2018 shares.

Compared to finance, many industries experienced higher output growth and job creation in the city in recent years (2016–18) (Figure 3A). While finance had a negative growth rate of 3 percent, the following industry sectors posted average annual growth rates of above 5 percent: administrative services; information; arts and entertainment; management of companies and enterprises; and health care. Immediately prior to the 2008 crisis (2005–07), finance was growing at a negative average rate of 0.6 percent but rebounded after the crisis (2010–12) from the low levels reached in 2008, with an average growth rate of 5 percent, before reverting to negative growth again in recent years.

In terms of new jobs created in the city, health care, administrative services, accommodation and food services, education, and professional services added more than 10,000 jobs each in recent years, compared to about 2,500 jobs added by finance (Figure 3B). Immediately prior to the 2008 recession, the finance sector added about 11,000 jobs over 2005–07, but after the crisis, the number of new jobs added dropped to 4,000 over the 2010–12 period.

Figure 3: Highest output growth and net job creating sectors in NYC

A.   Top 10 industries with highest output growth in 2016-18, compared to finance

B.   Top 10 industries with highest net job creation in 2016-18, compared to finance
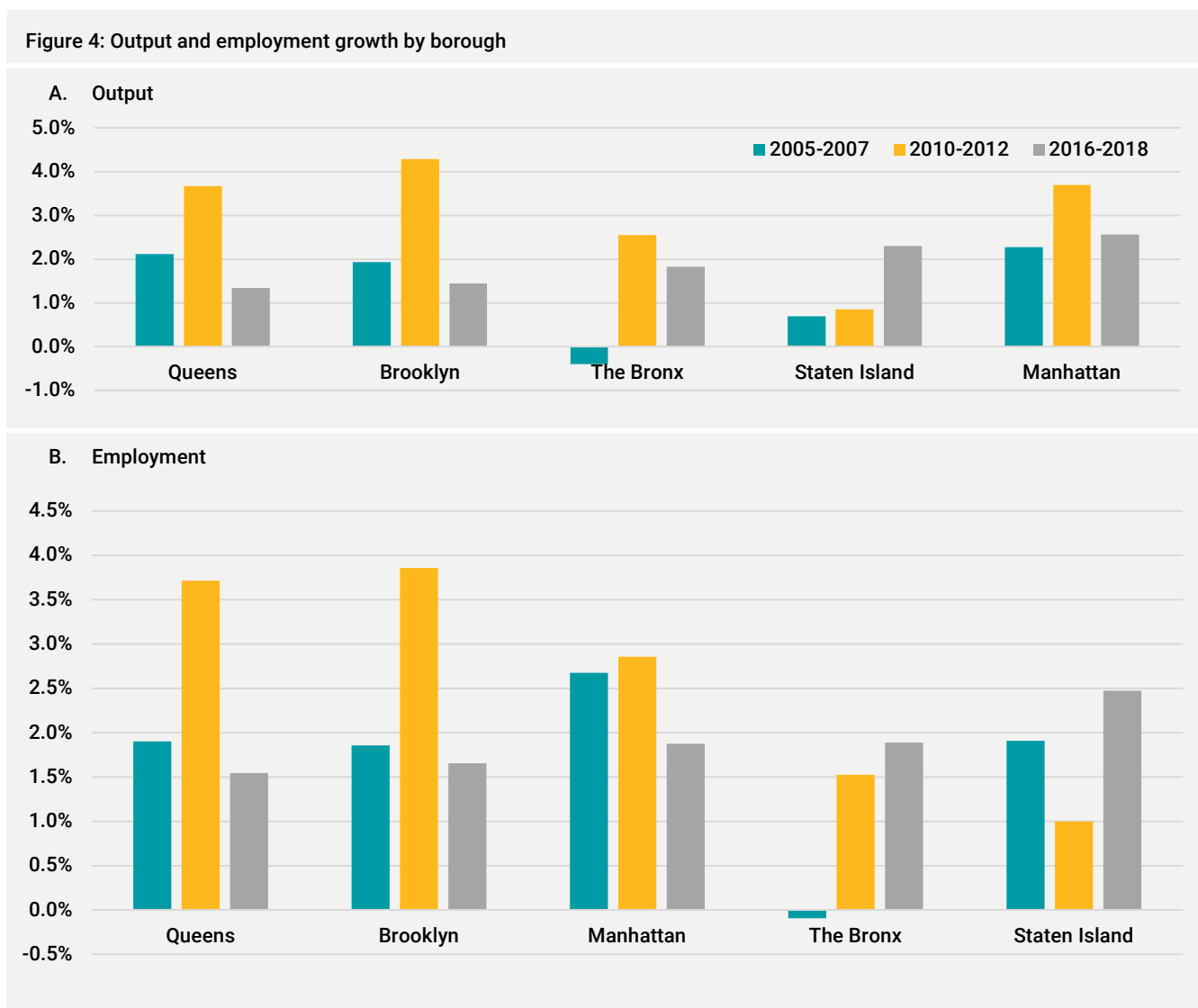
Source: Author calculations using BEA and QWI data

Note: The industries are selected and sorted by the top 10 highest 2016–18 values, compared to the finance sector. The abbreviations in this panel stand for: ACC: Accommodation and food services, ADM: Administrative and waste services; CON: Construction; EDU: Educational services; ENT: Arts, entertainment, and recreation; FIN: Finance and insurance; HCA: Health care and social assistance; INF: Information; PRF: Professional, scientific, and technical services; MAN: Manufacturing; MNG: Management of companies and enterprises; OTH: Other services, except public administration; REL: Real estate and rental and leasing; RET: Retail trade; TRN: Transportation and warehousing; WHL: Wholesale trade. Excludes utilities, agriculture, forestry, fishing and hunting, and mining, quarrying, and oil and gas extraction owing to their relatively small size in NYC's economy.

Output and employment by borough

Figure 4 shows output and employment trends disaggregated by borough[4] in NYC. By output, Manhattan recorded the highest growth rate immediately prior to the recession but was overtaken by Brooklyn and Queens immediately after. More recently, Manhattan has again emerged as the fastest growing borough in NYC, followed by Staten Island and the Bronx. Staten Island and the Bronx also recorded the fastest job growth in the city in recent years (Figure 4B).

Manhattan was leading employment growth prior to the recession, but like output growth, it was overtaken by Brooklyn and Queens immediately after. These trends reveal that, prior to the recession, growth was concentrated in Manhattan, but in the post-recession period, the revitalization efforts of neighborhoods throughout the city, especially outside Manhattan, have contributed to strong growth.

Figure 4: Output and employment growth by borough

A. Output

B. Employment

Source: Author calculations using BEA data
Note: The boroughs are sorted by increasing 2016–18 growth rates.

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4   Borough and county are used interchangeably

In summary, the analysis in this section reiterates the well-known fact that while finance remains a key pillar supporting the NYC economy, the share of the sector has been on a downward trend since 2001. Among others, this trend can be explained by the ongoing digitalization in the financial services industry, relocation of lower-wage jobs in financial services to lower-cost locations, and recent growth in non-financial sectors such as health, education, tourism, and professional services segments of the city economy. Meanwhile, industries such as information and health care are becoming increasingly important, with traditionally less-represented sectors like accommodation and food services also gaining ground. Prior to the 2008 recession, job and output growth was concentrated in Manhattan, but in more recent years, other boroughs have been leading the way.

Building on these exploratory statistics, as a next step, we delve deeper into the performance of the NYC economy relative to its peers after the 2008 crisis. To do that, we introduce the concept of resilience, i.e., what did the recovery look like after the shock of the crisis? We apply an analytical framework to examine the post-shock trajectory of the city. This is followed by a discussion of an important contributing factor of resilience, and an evaluation of the city's performance.

3. Resistance and Adaptability: An Economic Resilience Model of NYC

Economic resilience and why it matters

Resilience, in a generic sense, is the ability of a system to recover after a shock or disturbance. By extension, economic resilience is the ability of an economy to adapt and return to a pre-existing state, or to a new, better path of growth and development, after undergoing certain shocks.

Broadly speaking, there are three components of resilience: (i) resistance: the ability to bounce back after a shock, (ii) adaptability: the ability to take over the shock and recover to a former state, and (iii) reorientation: the ability of the system to structurally change and restore to a new, better, and higher equilibrium than that of the initial state (Martin, 2012). These components are interlinked and interact in nuanced ways to determine a region's post-shock trajectory. A number of factors influence all three components and their interactions, including the region's prior economic growth path and the following underlying growth dynamics, among others: economic structure, degree of diversification, innovation, productivity, competitiveness, human capital base, culture of entrepreneurship, institutions, governance, etc.

The Great Recession heralded a wide range of economic shocks across the US, producing notable differences in the vulnerability of regions, firms, and households. Our paper uses the notion of resilience to develop an empirical framework for the growth paths of NYC's output and employment after the 2008 recession. We measure resilience in terms of the first two components, resistance and adaptability, followed by a discussion of an important factor that influences the third aspect of resilience as a structural determinant: economic diversification.

This approach has a major advantage: the notion of economic resilience can be extended to individual households or firms, with emphasis on the distributional implications of changes in the wider economy. Economic shocks tend to have disproportionate negative impacts on certain minority populations: low-income earners, racial and ethnic minorities, women, and those with lower levels of educational attainment. These nuanced insights offer a first opportunity to ensure economic and social systems are designed in a sustainable and inclusive manner, capable of building resilience to future shocks.

A resistance and adaptability model of resilience

Our model is adapted from Martin (2012) and Eriksson and Hane-Weijmann (2017) where resistance is defined as the reaction to the initial phase of the crisis, while adaptability is the phase after the shock and the path followed after the initial disturbance.

Resistance is measured as output/employment change from the peak of the recession to the trough of the shock, and adaptability is the average annual growth in output/employment in the post-shock phase. Resilience in this context is measured through a combination of certain performance thresholds on the resistance and adaptability metrics.

An illustration of the resilience metric is graphed in Figure 5. The y-axis shows resistance to recession by comparing output and employment at their trough (2009) compared to their pre-recession peak (2008).[5] The x-axis shows adaptability (i.e., the annual average growth in the subsequent period of recovery (2010–18)). The further up a point of reference is on the y-axis, the lower the impact the recession had on output/employment—a sign of high resistance. The further to the right the point of reference is on the x-axis, the higher the average annual growth rate—a sign of high adaptability.

The graph is divided into four quadrants based on the median values of adaptability and resistance of the cities, counties, or industries. There are four possible outcomes: (I) High-High, (II) Stable, (III) Turbulent, and (IV) Low-Low. The top right quadrant can be interpreted as outcomes that showed both high resistance and adaptability, depicting resilience relative to the others (High-High). Those in the top-left quadrant showed high resistance (Stable); those in the bottom-right showed high adaptability (in that they suffered a setback immediately after the 2008 recession but were able to demonstrate strong subsequent growth (Turbulent)); and those in the bottom-left showed low resistance and adaptability, relative to comparators (Low-Low).

Figure 5: Illustration of resilience in response to a major shock

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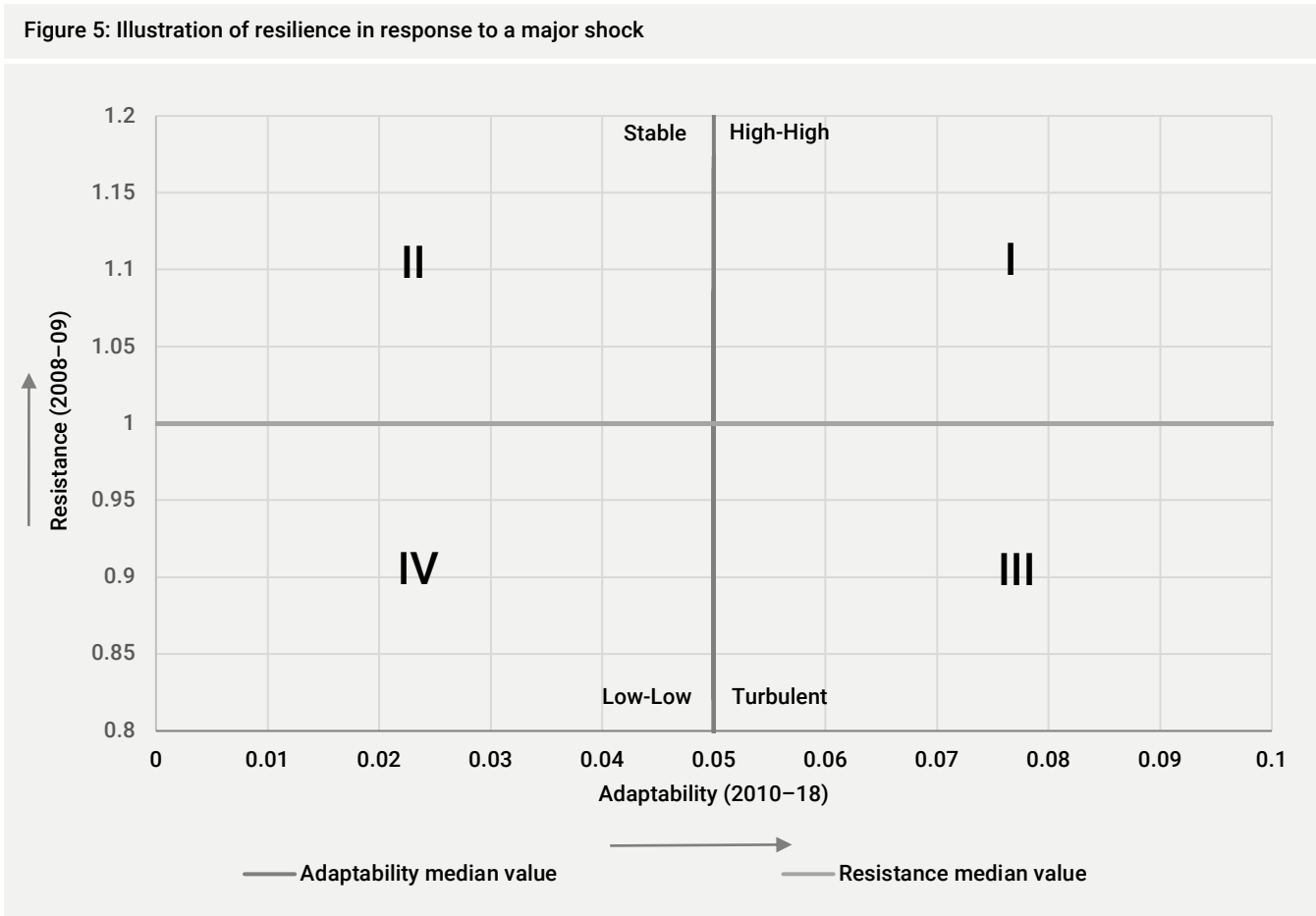
[5] Output and employment numbers across metros/counties/industries broadly reach their trough in 2009 rather than 2008 because the impact of the crisis was not fully accounted for in the 2008 numbers. The impact was more visible in the 2009 numbers, since the full effects of a shock tend to appear with some lag. Out of 384, there were 311 MSAs that experienced a decline in output from 2008 to 2009, while 378 experienced a decline in employment.

In the analysis that follows, we use the above framework to shed light on the macro- and micro-dynamics of output and employment growth paths following the Great Recession. We look at the variation in economic trajectories of cities in the US, counties in New York State (NYS), and industries within NYC. Doing so clarifies three important issues: (i) where the New York metro stands in relation to other metro areas within the US, (ii) how the five boroughs of NYC fared in relation to the other counties in NYS, and (iii) which industries within NYC displayed more resilience after 2008 relative to others. These clarifications offer useful insights that can help mitigate the inevitable disruptions from future recessionary shocks.

New York metro resilience relative to other metro areas in the US

Figure 6 shows the varied impacts of the recession on output and employment of the 384 metropolitan statistical areas (MSAs) in the US, using BEA data from 2008 to 2018. In terms of output, metro areas of New York, Washington, D.C., Houston, and Boston stand out as having been resistant to the shock, in addition to experiencing the fastest post-recession growth.

In fact, the New York metro area was the only large metro area to experience output expansion from 2008 to 2009. In terms of employment, in addition to the above four regions, Philadelphia and Dallas displayed resilience to the shock.

In general, the larger metro areas were more resilient, compared to most other MSAs. These differences can be explained, partly, by the characteristics of the regions' respective industry compositions. As noted in previous studies (e.g., Weinstein and Patrick, 2019), and Atkinson, Muro, and Whiton (2019)), diverse economic activities as well as high-skilled industries and jobs tend to be located in urban centers—and these often play a role in their recovery from economic downturns. Furthermore, city size also contributes to increased resilience after a shock (Polese, 2010).

Figure 6: Resilience in output and employment by MSA
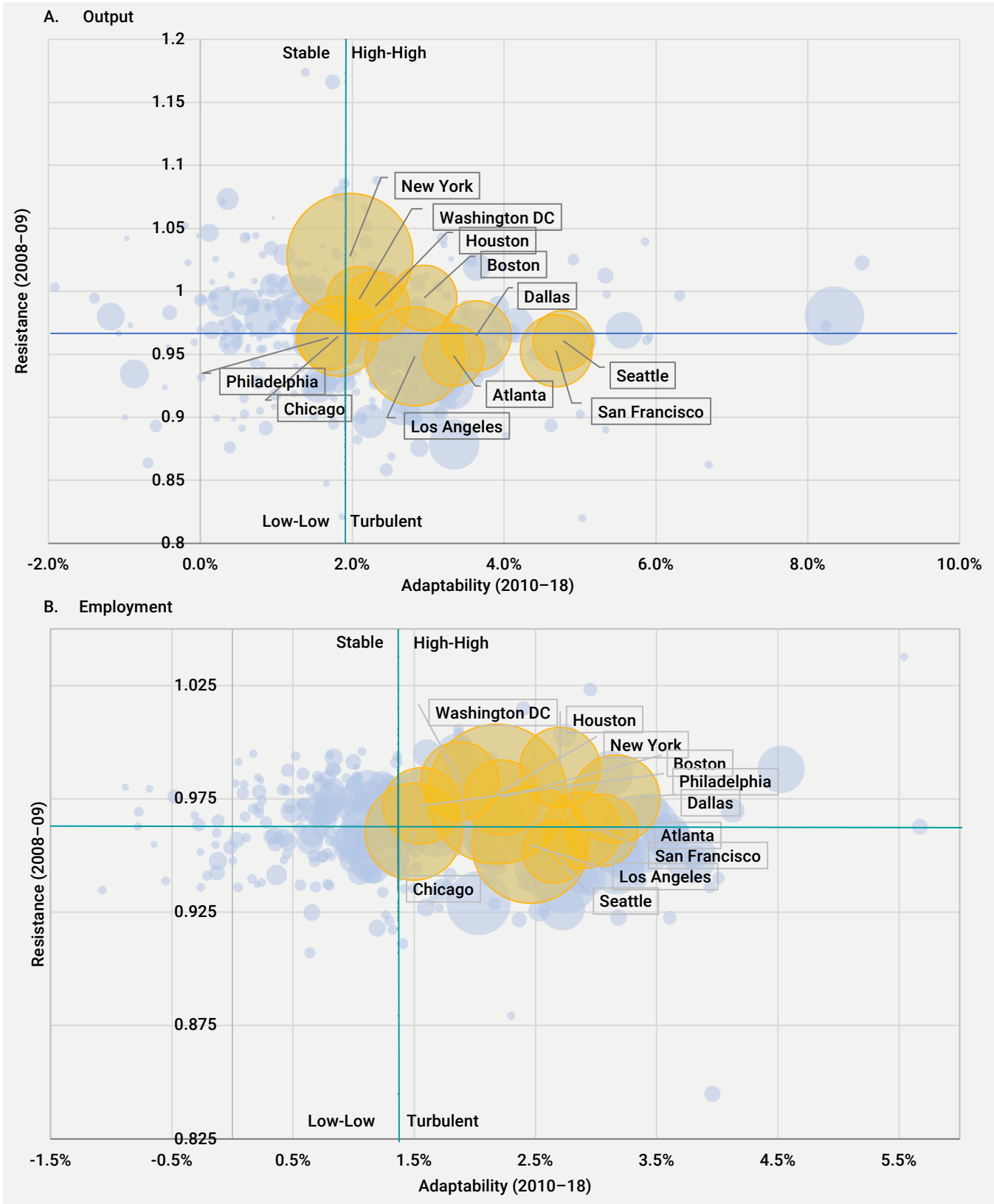
A. Output

B. Employment

Source: Author calculations using BEA data. Note: Bubble size denotes relative size of output and employment. The yellow bubbles represent the 10 largest MSAs by 2018 output (in addition to New York), and the blue bubbles represent the rest of the metros in the US.

NYC counties resilience relative to other counties in NYS

Next, we apply the resilience framework to all 62 counties in NYS, with a focus on how NYC's five boroughs fared relative to the other counties. In terms of output, all five boroughs were resilient, with Manhattan demonstrating the strongest resilience (i.e., strongest resistance and highest adaptability) (Figure 7).

Compared to the other four boroughs, Manhattan experienced the highest relative and absolute expansion in output from 2008 to 2009 and, thereafter, output grew at an annual average growth rate of 2.8 percent from 2010 to 2018. In comparison, only Brooklyn posted similar growth at 2.8 percent, while the other boroughs grew more slowly: The Bronx (1.3 percent), Queens (1.9 percent), and Staten Island (1.5 percent).

In contrast, Manhattan is the only one of the five boroughs to be categorized as non-resilient with respect to employment under the resistance-adaptability framework. Even though employment adapted well in the post-shock scenario, it suffered a decline during the immediate crisis. Employment expanded from 2008 to 2009 in the Bronx and Brooklyn, in addition to exhibiting strong growth in the post-shock recovery period. In the 2010–2018 recovery period, the Bronx recorded 2.7 percent average employment growth, Brooklyn 4.3 percent, Manhattan 2.4 percent, Queens 3.3 percent, and Staten Island 2 percent.

Figure 7: Resilience in output and employment by NYS counties

A. Output

B. Employment

Source: Author calculations using BEA data
Note: Bubble size denotes relative size of output and employment. The yellow bubbles represent the five NYC counties while the blue bubbles represent the rest of the counties in NYS.

Resilience of industries within NYC

A micro-level analysis of 15 industry sectors within NYC under resistance-adaptability shows varied responses to the 2008 crisis: Finance, entertainment, education, and information were resilient after the recessionary shock in terms of output (Figure 8A). While in terms of employment, entertainment, health care, accommodation and food services, and other services (except public administration) were resilient to the shock (Figure 8B).

Output in finance and insurance rebounded rapidly—by almost 50 percent between 2008 and 2009—whereas employment suffered a more prolonged setback, both in terms of the setback between 2008 and 2009, and the slow growth in the recovery phase. While most industry sectors lost jobs between 2008 and 2009, educational services and health care were the only two sectors that added jobs, expanding by 2.2 percent and 1.7 percent, respectively.

Figure 8: Resilience in output and employment by NYC industry

A. Output

Resistance (2008–09) vs Adaptability (2010–18)

Labeled quadrants: Stable | High-High ; Low-Low | Turbulent

Labeled bubbles: Finance and insurance; Health care and social assistance; Real estate and rental and leasing; Information; Professional and technical services

B. Employment

Resistance (2008–09) vs Adaptability (2010–18)

Labeled quadrants: Stable | High-High ; Low-Low | Turbulent

Labeled bubbles: Health care and social assistance; Retail trade; Accommodation and food services; Professional and technical services; Finance and insurance

Source: Author calculations using QCEW data
Note: Bubble size denotes relative size of output and employment. Excludes utilities, agriculture, forestry, fishing and hunting, and mining, quarrying, and oil and gas extraction owing to their relatively small size in NYC's economy.

In summary, in this section we find that New York metro was resilient in the aftermath of the recession, in comparison to most other major metro areas, and it was the only large metro area to experience output expansion from 2008 to 2009. Secondly, at the borough level, we find that while Manhattan was resilient in terms of output, the other boroughs displayed resilience in terms of employment. Finally, the sectors of finance, entertainment, education, information, health care, and accommodation and food services were the industries displaying resilience in output and employment.

Having explored resilience through its components of resistance and adaptability, we turn to the third aspect: diversification. In the next section, we analyze how the city's economic structure has evolved since the turn of the century, with a focus on trajectory after the crisis.

4. NYC Industrial Diversification Patterns

The diversification vs. specialization debate

The modern global economy is increasingly driven by technologies and based on knowledge and information. Economic theory supports the notion that competitiveness is the outcome of specialization, through trade openness. Despite its flaws, the theory of comparative advantage succinctly explains specialization and trade patterns in terms of productivity differences. The simplistic argument of the theory sheds light on how workers choose jobs in which to specialize, and how countries and regions decide which goods to produce for export.

While the sources of competitiveness in today's economy are far more dynamic, opportunity costs remain a major driver of specialization. However, given that returns across economic sectors are often highly variable, leading to a wide range of risks and costly adjustments to consumption, the risks of too little diversification are often more compelling to policymakers, compared to the efficiency benefits argument for specialization. Put simply, diversification mitigates the economic impact of shocks. This has implications for the real sector, and more broadly, for economic policy.

Apart from playing an important role in enabling adjustments to major disruptions, a large and growing body of literature abounds on how economic structure and is determinants—e.g., competitiveness, innovation, productivity, trade openness, entrepreneurship, institutions, and governance—shape an economy's underlying growth dynamics. Following McLaughlin (1930), Glaeser et al. (1992), Quigley (1998), Deitz and Garcia (2002), and Dissart (2003), our analysis in this section recognizes the critical role of economic diversification in shaping the resilience of an economy.

Conroy (1975) provides evidence in support of the view that a region's industrial portfolio (i.e., the mix of industries, relationships, and interdependencies) influences the region's response to macroeconomic volatilities. In general, a more diverse regional portfolio is expected to be more resilient than a more specialized one, ceteris paribus. A broad industry output and employment mix would reduce economic vulnerability in the same way a diversified portfolio mitigates investment risk.

The confounding evidence regarding diversification and specialization as alternative strategies for economic development remains attractive in the literature, and researchers continue to generate new empirical evidence in a bid to close the gap on this contradiction. However, this does not pose a problem in the NYC context. For decades, policymakers and key actors in the city's economic development space have recognized the dangers inherent in overreliance of the city's economy on the financial services industry, while also not discounting the concomitant high-paying jobs that support the city's fiscal capacity to fund a wide range of social services and programs.

Index of diversification

We use the Hachman Index (HI) to analyze how NYC and its component counties have performed on the diversification metric over time, compared to their peers. An index of similarity, the HI in its most general form measures how closely the employment distribution of a region resembles that of the nation (Hachman, 1995).

The HI is calculated as follows:

$$HI_i = \frac{1}{\sum_{i=1}^{J} \left(\frac{E_{ij}}{E_{USj}} \right) * E_{ij}}$$

where E_{ij} represents the share of total employment in industry j (at the two-digit NAICS) for region *i*,

E_{USj} denotes national share of employment in industry *j*

It is the inverse of the mean location quotient for a region, with weights equal to each industry's employment share. An index value of 1 indicates that a regional industry mix is identical to that of the US, as a whole. Readings closer to 0 indicate extreme specialization. We compare the diversification of New York metro area with the largest MSAs in the US, followed by a comparison of the five NYC counties with the 62 counties of NYS.

The generalizability of the results in the following section is limited by the HI methodology. First, since the index is measured relative to a comparator, if the comparator objectively became more specialized over time, due for instance to a specific competitive advantage, then the HI would be misleading. Also, as a result of changes in labor productivity over time, HI measures based on employment by industry may show a divergent pattern over time, compared to a GDP-based index.

Diversification of New York metro relative to other metropolitan areas in the US

New York metro area's economy has become moderately more diversified over the 2001–2018 period, with the index value rising from 0.90 to 0.96 (Figure 9).[6]

Figure 9: New York metro area industrial diversification
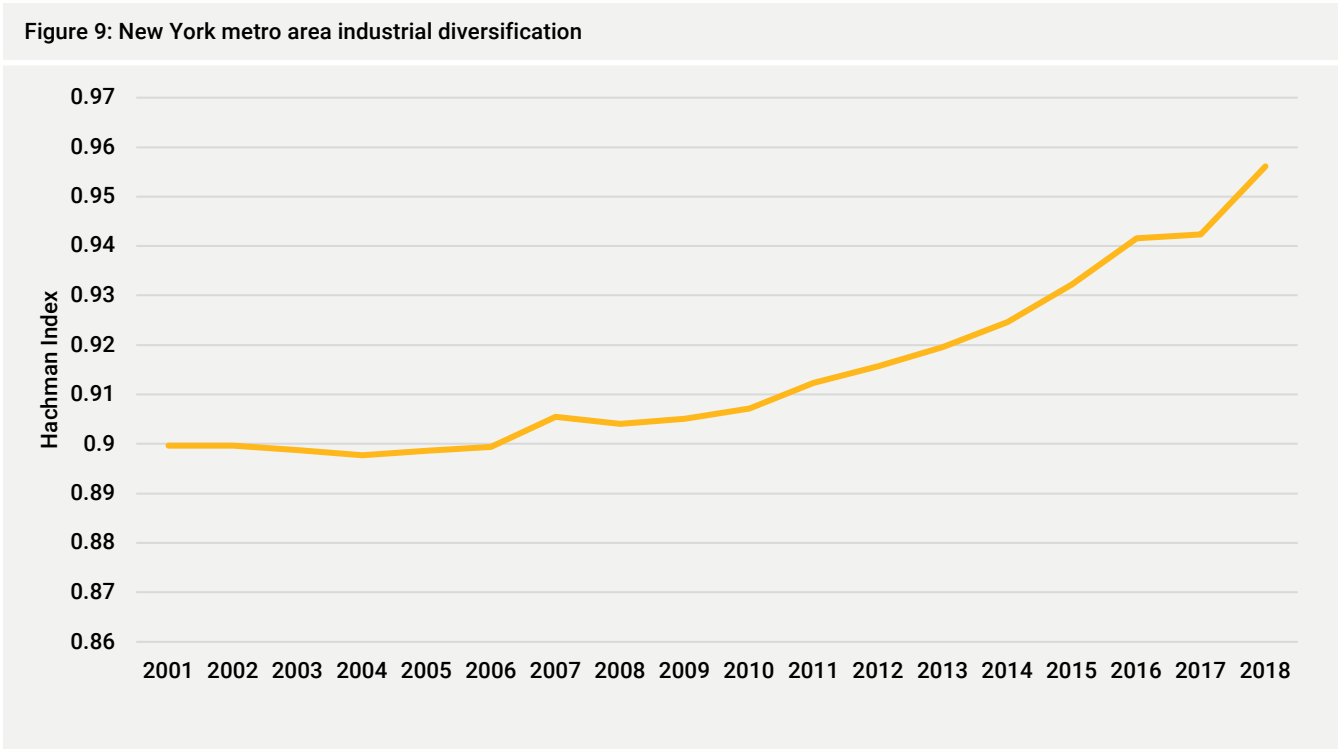
Pre-crisis, diversification in the metro area remained stagnant, with the 2008 recession becoming an inflection point. Post-crisis, New York experienced a consistent trend toward greater diversification. While the metro has become increasingly diversified, its performance remains subpar relative to other metro areas such as Chicago, LA, Denver, and Detroit. However, its relative standing has improved over time, moving from 18th to 12th among its peers over the 2001–2018 period (Figure 10).

[6] This is consistent with earlier analysis for NYC by Giachetti and Eren (2017).

Figure 10: New York diversification relative to other large metro areas

2018

HI Value

2001

HI Value
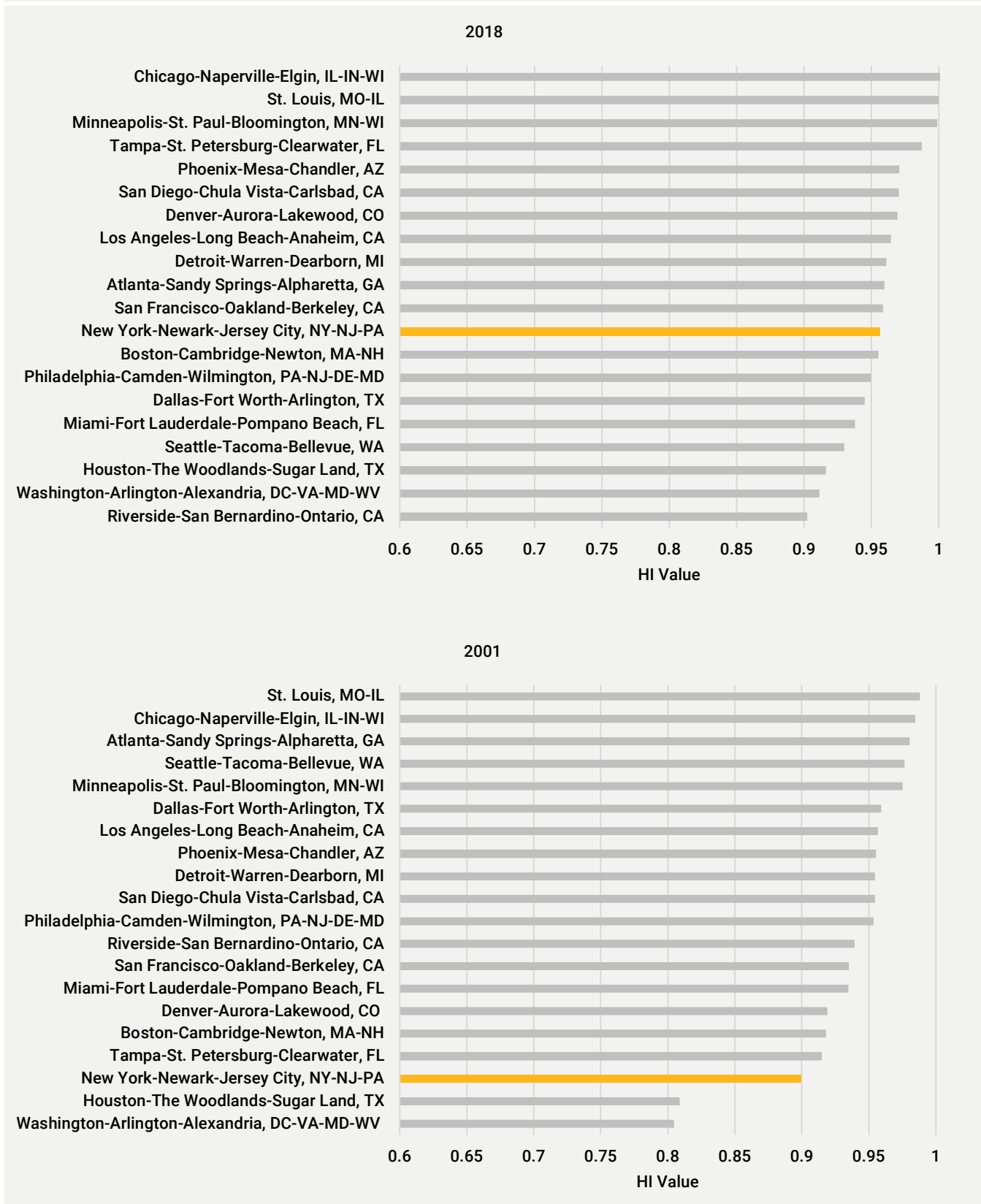
Source: Author calculations using BEA data

Diversification of NYC counties relative to other counties in NYS

Further disaggregating diversification trends down to the borough level, we calculate index values for all 62 counties in NYS, using BEA employment data from 2001 to 2018.[7] Table 2 shows results for NYC boroughs in 2001, 2010, and 2018 (the latest year for which data is available). Table A.2 in the appendix reports detailed index values for all 62 counties for the years 2001, 2005, 2010, and 2018.

Table 2: Hachman Index scores of the five NYC boroughs

Borough	2018		2010		2001	
	Rank	HI Value	Rank	HI Value	Rank	HI Value
The Bronx	4	0.954063	28	0.79563	27	0.783787
Staten Island	9	0.916968	9	0.918552	17	0.860442
Brooklyn	17	0.883571	15	0.889094	18	0.859361
Manhattan	28	0.773913	29	0.79063	29	0.775595
Queens	37	0.728724	34	0.753072	39	0.71987

Source: Author calculations using BEA and QCEW data

We find that the Bronx has made the most significant progress toward industrial diversification after the 2008 recession. In the last 10 years, the Bronx has added a number of businesses in retail, hospitality, and health care, which have contributed to a drastic improvement in industrial diversification. Similarly, Staten Island has also diversified its economy over time, improving in rank from 17th to ninth in the same period. In relative terms, the degree of diversification in Brooklyn, Manhattan, and Queens has remained roughly in the same position over the last 18 years.

Part of the shift reflects trends in NYC's key industry sector, finance and insurance, which witnessed a fall in citywide private employment share from 11 percent in 2001 to 9 percent in 2018 (in contrast, city output share fell from 28 percent in 2001 to 20 percent in 2018). Increased diversification also reflects less-represented sectors like retail trade, and accommodation and food services gaining importance over time.

Of course, the industry mix has also changed: health care and professional and business services already had an outsize weight in the city's economy, but they have also increased their shares since 2001. In recent years, health care, administrative and support services, and accommodation and food services are the top three sectors that have witnessed job growth in NYC (Figure 3), and these new job-creating sectors have a relatively large presence outside of Manhattan. In 2018, health care accounted for over 30 percent of total employment in the Bronx, Brooklyn, and Staten Island, and for over 25 percent in Queens.

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[7] The index for each county is calculated with reference to industry employment shares in NYS.

Key takeaways

In summary, we find positive trends toward increased structural strengths that have enabled the city's economy to evolve and become more resilient. Specifically, we see increased industrial diversification over time, and the Bronx has appeared as a bright spot, with remarkable progress toward diversification. Even as the city has been resilient to the 2008 shock, and has evolved structurally over time, it is important to recognize that the benefits of the last decade's recovery have been inequitable. In the next section, we analyze several demographic groups that were disproportionately impacted and are still reeling from the shock.

5. Equity Considerations: Differential Impacts of Economic Downturns

Hysteresis effects

The concept of hysteresis is closely related to the concept of resilience, and it refers to shocks that affect parts of the economy in a significant way, with the effects lasting longer than the contractionary shock itself. Previous studies have shown that recessions can produce enduring disruptions in local labor markets (Setterfield, 2010; Yagan, 2017; Hershbein and Stuart, 2020; and Irons, 2009).
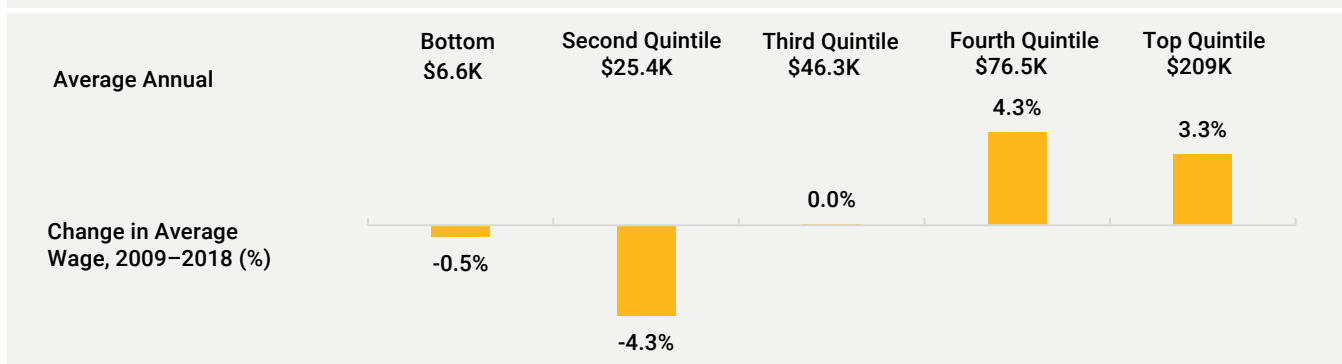
As a result of the historically high inequality in the US—and especially in NYC—income, wealth, and opportunities tend to be more concentrated at the top of the ladder. Disadvantaged groups, such as low-income earners, women, minorities, and the less educated tend to lose out on pathways to economic security in times of expansions and booms. These marginalized groups face a double whammy; when a contractionary shock strikes, those with economic security and advantages tend to be more insulated, while those with historical disadvantages tend to be more adversely impacted and negative hysteresis effects outlive the shock itself. These effects are important, because inequitable impacts of recessions across different demographic groups can, in turn, impact resilience of economies that exhibit high inequalities.

In the following sections, we analyze the varied impacts of the 2008 recession on different demographic groups, as well as their different rates of recovery from the shock.

Wage growth by income quintile

Lower-income New Yorkers experienced negative real wage growth in the decade following the Great Recession, while higher-income earners enjoyed real wage gains (Figure 11). The lowest quintile (those with 2018 average annual wage of about $6,600) experienced a 0.5 percent wage erosion in the recovery period. The second quintile, the group with average annual income of approximately $25,400, experienced the most significant wage erosion after the recession, with a negative wage growth of 4.3 percent. Real wage for the middle class (average wage of $46,300) stayed the same over this period. The fourth and top quintile have experienced positive real wage growth in the last 10 years, with 4.3 and 3.3 percent increases, respectively.

Figure 11: Wage growth by income quintile in NYC after 2008

|	Bottom $6.6K	Second Quintile $25.4K	Third Quintile $46.3K	Fourth Quintile $76.5K	Top Quintile $209K
Average Annual				4.3%	3.3%
Change in Average Wage, 2009–2018 (%)	-0.5%	-4.3%	0.0%		

Source: Author calculations using data from American Community Survey 2014–2018 and 2005–2009 5-Year Estimates

Employment rate by gender

Women's employment rate was significantly lower than men in 2008, and men lost more jobs in the immediate aftermath of the crisis (Figure 12). This is due, partly, to the fact that certain male-dominated industries (e.g., manufacturing and construction) tend to suffer more job losses during downturns compared to industries with a relatively higher share of women (e.g., health care).

The male employment rate had recovered to pre-crisis levels in 2018, while women's employment rate showed a slight increase. We explain this, again partly, by the "added worker effect"—a temporary increase in the labor supply of women in a bid to offset their partners' lost earnings during economic downturns. This was especially true after 2008 (Smith and Mattingly, 2014, and Blundell, Pistaferri and Saporta-Eksten, 2016).
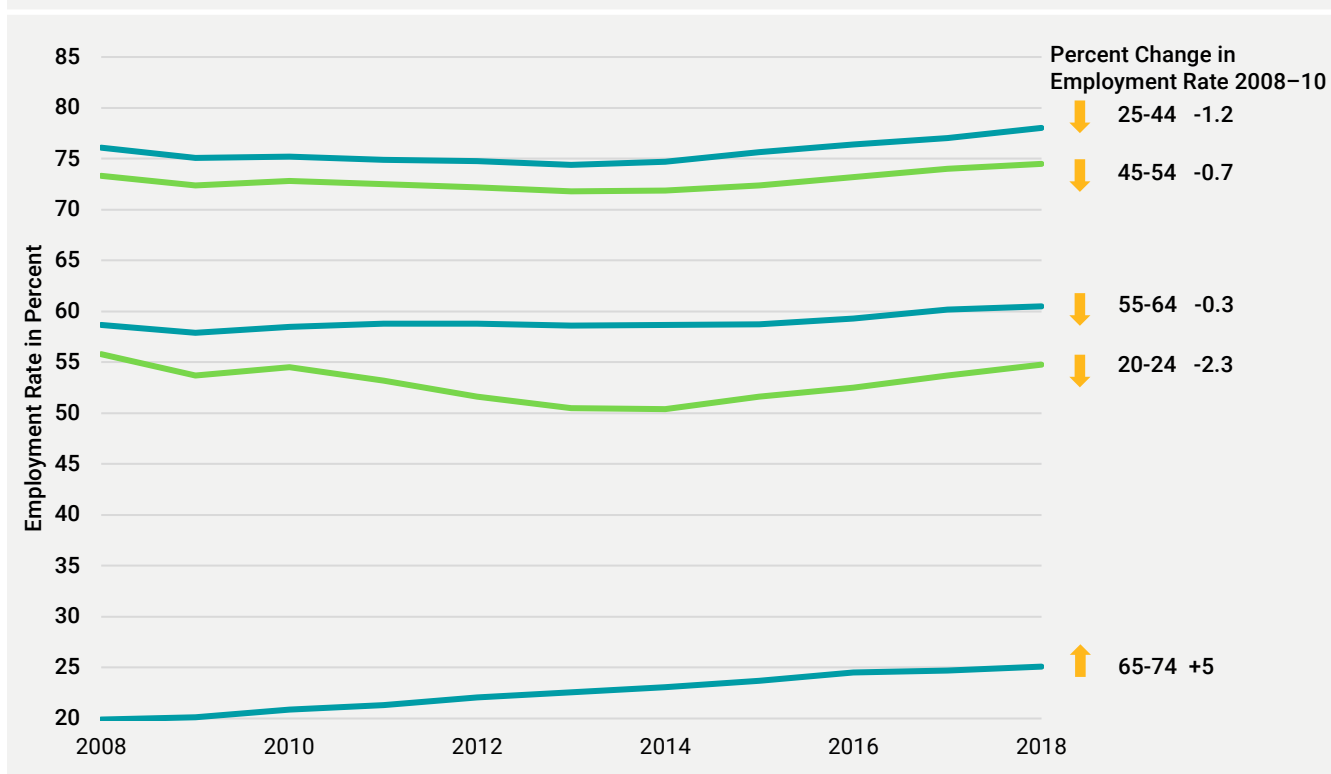
Figure 12: Employment rate by gender in NYC, 2008–18
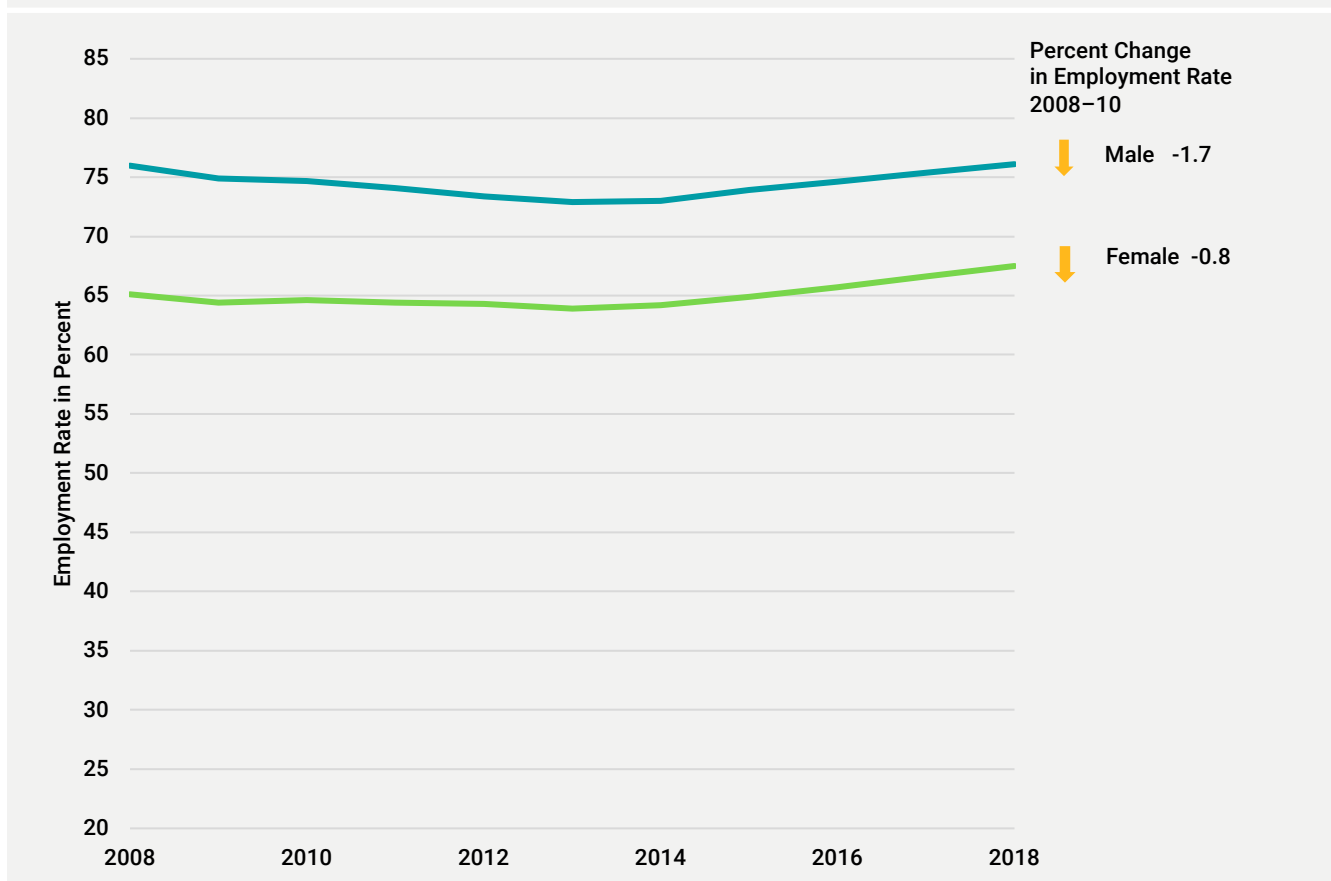
Source: Author calculations using data from American Community Survey 2014–2018 5-Year Estimates

Employment rate by age group

All except one group experienced a decline in employment rate immediately after the crisis. The 65–74 age group experienced a 5 percent increase in employment between 2008–10 and its employment rate has increased steadily since then (Figure 13). Part of the explanation for increasing labor force participation by older individuals is that they experienced a significant erosion of home values and retirement savings and were therefore incentivized to prolong their employment. The 20–24 age group suffered the greatest decline in employment over the same period and it continued to fall until 2014. Only in 2018 was the employment rate for this age group back to its pre-crisis levels.

Figure 13: Employment rate by age group in NYC, 2008–18

Percent Change in Employment Rate 2008–10

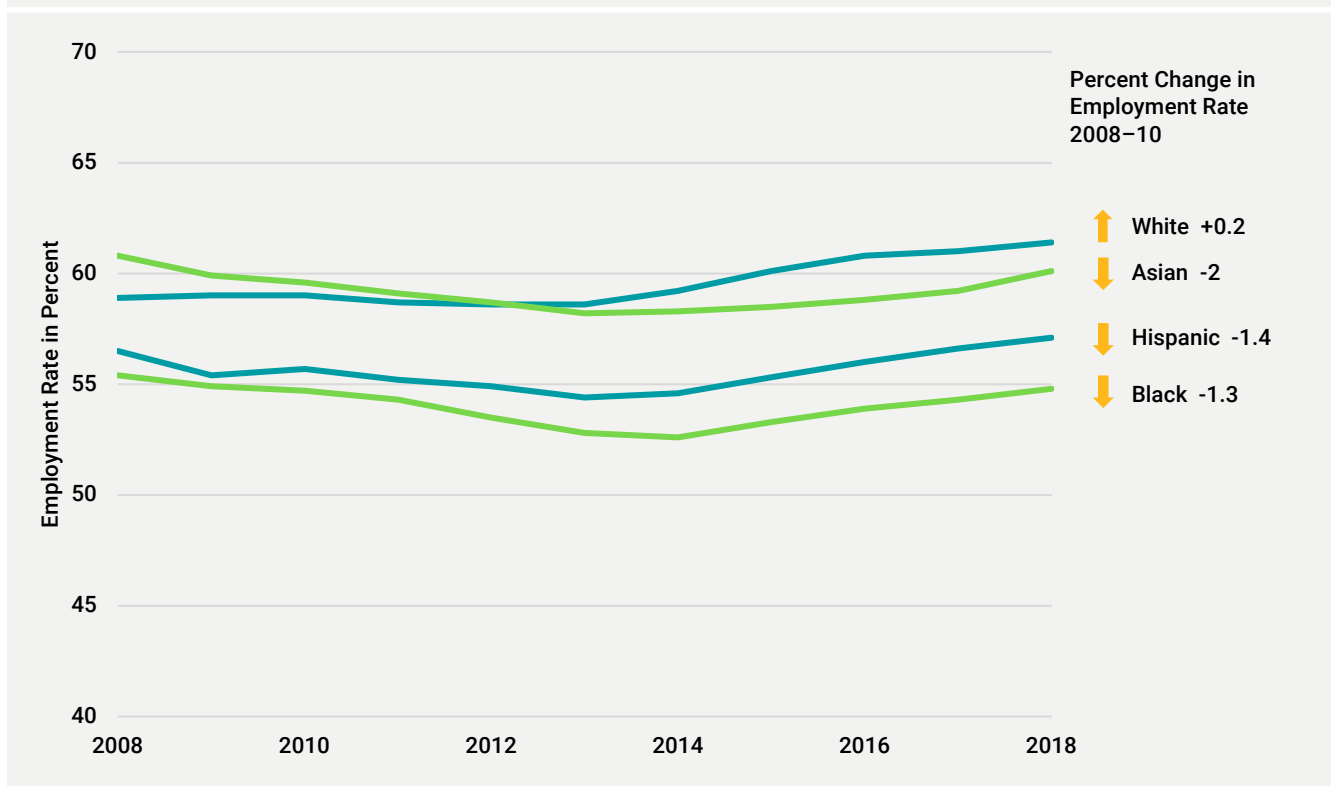|	
⬇ 25-44	-1.2
⬇ 45-54	-0.7
⬇ 55-64	-0.3
⬇ 20-24	-2.3
⬆ 65-74	+5

Source: Author calculations using data from American Community Survey 2014–2018 5-Year Estimates

Employment rate by race or ethnicity

Asian, Hispanic, and Black communities all experienced a decline in employment rate in the 2008–10 period, while White employment increased slightly (Figure 14). While employment for all other races/ethnicities had recovered or exceeded their 2008 levels, the Black employment rate was still lower than the pre-crisis peak. This is consistent with national trends: In December 2010, White unemployment stood at 8.5 percent, while that of Black and Hispanic communities stood at 15.5 and 12.9 percent respectively (US Bureau of Labor Statistics, 2020).

Minorities are more likely to feel the hysteresis effects of a downturn for a longer time. A report by the American Civil Liberties Union (2015) concludes that by 2031, White household wealth will be 31 percent below what it would have been had the recession never happened. For Black households, wealth will be 40 percent lower, leaving families about $98,000 poorer than in the counterfactual of a no-recession scenario.

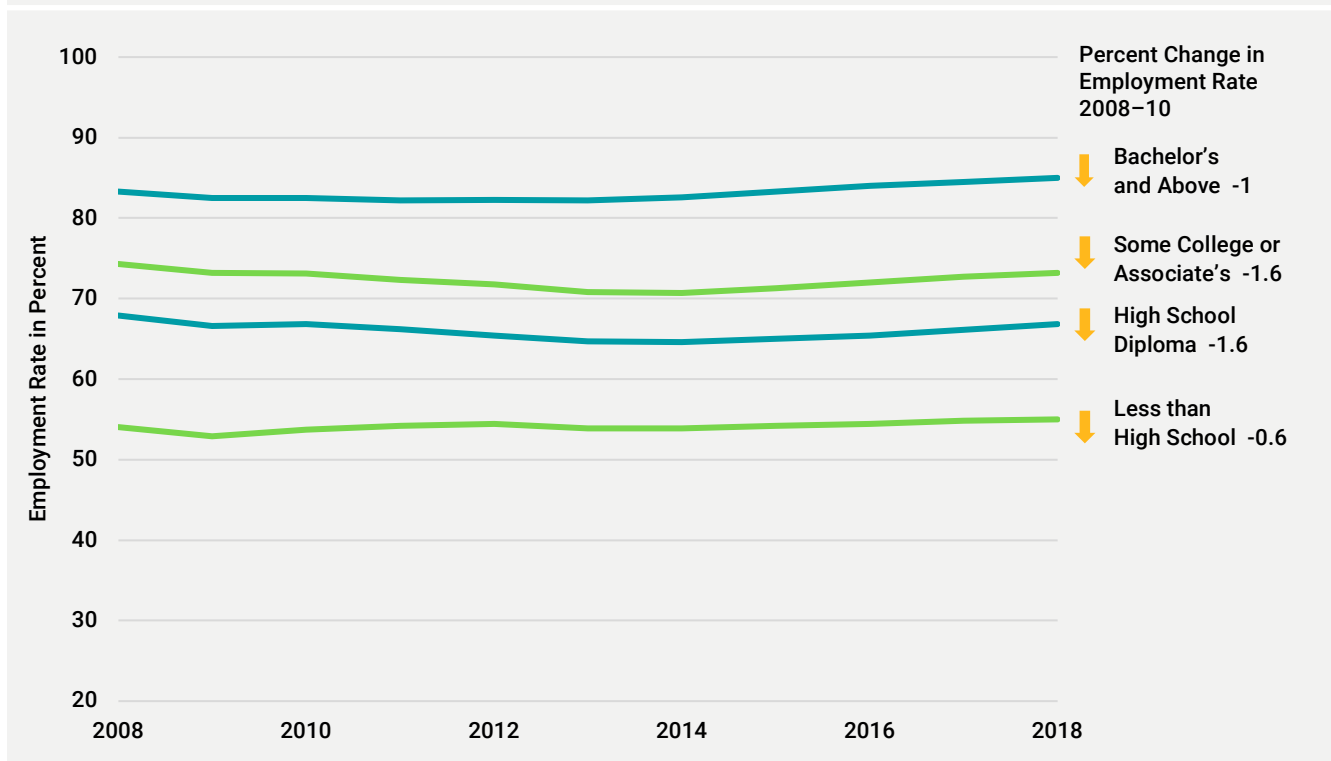**Figure 14: Employment rate by race or ethnicity in NYC, 2008–18**

Source: Author calculations using data from American Community Survey 2014–2018 5-Year Estimates

Employment rate by educational attainment

Those with lower educational attainment also had lower employment rates and generally suffered disproportionate employment impacts after 2008 (Figure 15). Those whose highest level of education was less than college, an associate's degree, or high school diploma experienced a decline in employment of about 1.6 percent. The employment rate gap between those with a bachelor's degree and those with less than a bachelor's continues to be greater than 10 percentage points.

Figure 15: Employment rate by educational attainment in NYC, 2008–18

Source: Author calculations using data from American Community Survey 2014–2018 5-Year Estimates

Overall, the Great Recession negatively impacted all demographic groups, but minorities and the aforementioned disadvantaged groups were more disproportionately impacted. Low-income earners, youth, minorities, and the less-educated experienced greater declines in employment relative to their comparators. After more than a decade, these groups are still reeling from the impacts of the recession.

6. Conclusion

The purpose of this study is to understand the dynamics of economic diversification and resilience in NYC, from a pre- and post-Great Recession perspective. The study provides evidence that over the time period considered, NYC's economy has become more diversified, resistant, and adaptable, while the recovery from the Great Recession was not equitable.

The study confirms the well-known fact that finance remains a key driver of investment and output growth in the city economy, albeit other sectors are increasingly helping to power economic growth, particularly in the four boroughs outside Manhattan. The third broad conclusion is that prior to the 2008–09 crisis, growth was concentrated in Manhattan, but in the post-recession period, the revitalization efforts of neighborhoods throughout the city, especially outside Manhattan, have contributed to strong growth. As the city witnessed increased diversification over time, the Bronx appeared as a bright spot, with remarkable progress towards industrial diversification.

Overall, this study contributes to the economic diversification and resilience literature, especially in the NYC context. The capacity to innovate is a significant contributor to economic stability, and as key actors in the city ponder what strategies can help build a more resilient and diversified economy, with greater professional and industrial variety, diversification and resilience must be on the front burner of policy considerations.

In closing, while this study fills an important gap, it does not answer all the questions. In particular, the generalizability of the results on the diversification index is limited by the HI methodology. Therefore, to the extent that this work is primarily intended as a useful guide for economic policymaking, further research is necessary to account for the different measures of economic base and general equilibrium outcomes.

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Table A.1. Hachman Index scores by MSA

MSA	2018		2015		2010		2005		2001	
	Rank	HI Value	Rank	HI Value	Rank	HI Value	Rank	HI Value	Rank	HI Value
Chicago-Naperville-Elgin, IL-IN-WI	1	1.001561	1	1.006938	3	0.983352	1	0.986874	2	0.984593
St. Louis, MO-IL	2	0.999762	2	0.99774	1	0.999798	2	0.986102	1	0.988079
Minneapolis-St. Paul-Bloomington, MN-WI	3	0.998913	5	0.97672	8	0.958915	5	0.969866	5	0.975135
Tampa-St. Petersburg-Clearwater, FL	4	0.987345	6	0.969641	6	0.967511	16	0.925357	17	0.914788
Phoenix-Mesa-Chandler, AZ	5	0.970912	7	0.968574	5	0.967924	10	0.952108	8	0.955269
San Diego-Chula Vista-Carlsbad, CA	6	0.970491	9	0.965071	10	0.950822	9	0.953355	10	0.954707
Denver-Aurora-Lakewood, CO	7	0.969433	4	0.977557	11	0.948223	12	0.943521	15	0.918989
Los Angeles-Long Beach-Anaheim, CA	8	0.96448	11	0.961152	9	0.957187	7	0.960267	7	0.956561
Detroit-Warren-Dearborn, MI	9	0.961079	3	0.997655	4	0.97506	8	0.959372	9	0.954761
Atlanta-Sandy Springs-Alpharetta, GA	10	0.959741	8	0.967603	2	0.987712	3	0.985429	3	0.980398
San Francisco-Oakland-Berkeley, CA	11	0.958583	13	0.943692	17	0.923493	14	0.934572	13	0.935018
New York-Newark-Jersey City, NY-NJ-PA	12	0.956112	17	0.932225	18	0.907219	18	0.898581	18	0.89972
Boston-Cambridge-Newton, MA-NH	13	0.954986	14	0.943571	16	0.928146	17	0.920961	16	0.918029
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	14	0.949548	10	0.965	7	0.962653	11	0.948826	11	0.953431
Dallas-Fort Worth-Arlington, TX	15	0.945232	12	0.945198	12	0.945471	6	0.961926	6	0.959181
Miami-Fort Lauderdale-Pompano Beach, FL	16	0.93788	16	0.936254	14	0.94459	13	0.938437	14	0.934867
Seattle-Tacoma-Bellevue, WA	17	0.929657	15	0.94053	13	0.945223	4	0.971072	4	0.976567
Houston-The Woodlands-Sugar Land, TX	18	0.91633	19	0.887729	19	0.837283	20	0.81777	19	0.80878
Washington-Arlington-Alexandria, DC-VA-MD-WV	19	0.911525	20	0.854143	20	0.800525	19	0.820027	20	0.80452
Riverside-San Bernardino-Ontario, CA	20	0.902539	18	0.920421	15	0.93855	15	0.931445	12	0.939351

Source: Author calculation using BEA data

Table A.2. Hachman Index scores by NYS county

NYS County	2018 Rank	2018 HI Value	2015 Rank	2015 HI Value	2010 Rank	2010 HI Value	2005 Rank	2005 HI Value	2001 Rank	2001 HI Value
Albany	1	0.981172	1	0.97908	3	0.970877	1	0.977875	1	0.980321
Westchester	2	0.962669	2	0.968138	1	0.972012	3	0.967752	4	0.961618
Nassau	3	0.957713	3	0.96017	2	0.970924	2	0.973169	2	0.970713
Bronx	4	0.954063	22	0.846086	28	0.79563	32	0.787384	27	0.783787
Rockland	5	0.948001	4	0.953272	4	0.963042	4	0.96636	3	0.965498
Onondaga	6	0.94392	5	0.950272	5	0.943263	5	0.953348	6	0.93121
Erie	7	0.919547	7	0.918583	8	0.928705	7	0.931887	7	0.931118
Suffolk	8	0.918081	6	0.92918	6	0.936905	6	0.944584	5	0.950128
Richmond	9	0.916968	9	0.912789	9	0.918552	12	0.908567	17	0.860442
Saratoga	10	0.91505	10	0.912108	7	0.930438	9	0.919507	10	0.907166
Schenectady	11	0.914119	11	0.910318	10	0.918029	8	0.92115	14	0.883119
Columbia	12	0.910068	8	0.913505	16	0.88757	16	0.889501	13	0.884495
Orange	13	0.903025	15	0.898414	11	0.909186	11	0.91644	9	0.915907
Dutchess	14	0.90181	13	0.901823	18	0.88378	17	0.883528	16	0.873198
Ulster	15	0.893244	12	0.90301	14	0.902129	13	0.903093	12	0.896956
Monroe	16	0.88817	18	0.88276	19	0.874259	19	0.857902	20	0.841807
Kings	17	0.883571	14	0.900958	15	0.889094	18	0.867159	18	0.859361
Broome	18	0.879529	19	0.873776	20	0.868297	15	0.894591	15	0.882412
Putnam	19	0.878739	16	0.886025	17	0.88613	20	0.85561	19	0.848182
Oneida	20	0.869271	17	0.885844	12	0.903374	10	0.916522	8	0.929624
Rensselaer	21	0.836244	20	0.863495	13	0.903108	14	0.898216	11	0.902943
Sullivan	22	0.825447	21	0.858426	21	0.867372	21	0.83572	23	0.811902
Otsego	23	0.825334	23	0.830663	22	0.846084	22	0.8338	21	0.826717
Warren	24	0.823293	24	0.829479	23	0.838426	25	0.816031	25	0.788385
St. Lawrence	51	0.542443	52	0.536875	51	0.618337	46	0.681679	40	0.718077
Schoharie	26	0.793343	25	0.819309	30	0.774043	39	0.735304	35	0.747651
Jefferson	27	0.78906	29	0.782382	25	0.800997	26	0.815936	24	0.796516
New York	28	0.773913	28	0.785407	29	0.79063	31	0.787528	29	0.775595
Cayuga	29	0.770819	30	0.770492	24	0.814997	23	0.82754	22	0.82569
Ontario	30	0.766785	26	0.791008	27	0.797067	27	0.795841	26	0.784877
Cortland	31	0.754695	37	0.738426	32	0.763675	24	0.820496	31	0.767619
Niagara	32	0.742119	32	0.7491	31	0.771991	37	0.745386	42	0.711827
Fulton	33	0.741196	33	0.743265	36	0.751748	33	0.779833	32	0.764671
Clinton	34	0.739688	35	0.742133	35	0.751971	38	0.735488	38	0.734437
Madison	35	0.73576	31	0.766479	26	0.799715	30	0.788458	33	0.763948
Steuben	36	0.73113	34	0.743123	38	0.742407	36	0.748969	34	0.753009
Queens	37	0.728724	36	0.739413	34	0.753072	35	0.76402	39	0.71987
Livingston	38	0.728457	40	0.717892	39	0.733261	40	0.71579	37	0.737047
Chemung	39	0.727312	39	0.720788	42	0.696446	28	0.790807	28	0.776409
Franklin	40	0.710221	38	0.73803	41	0.716497	44	0.694355	51	0.656513

Essex	41	0.702118	42	0.692719	45	0.668793	52	0.643814	53	0.614841
Genesee	42	0.68912	41	0.717368	37	0.75158	29	0.789331	30	0.775529
Cattaraugus	43	0.664033	44	0.656096	43	0.694166	42	0.712466	43	0.711575
Herkimer	44	0.659181	43	0.669096	40	0.721114	41	0.712627	44	0.709207
Montgomery	45	0.617376	45	0.638389	44	0.679358	48	0.671523	41	0.713452
Chautauqua	46	0.61582	47	0.629843	46	0.657122	45	0.68859	48	0.682243
Schuyler	47	0.613351	48	0.625725	52	0.581658	43	0.70379	46	0.687059
Wyoming	48	0.590083	49	0.597285	50	0.621382	51	0.653723	49	0.681943
Yates	49	0.57448	46	0.633316	47	0.651242	49	0.668388	47	0.68384
Washington	50	0.554438	50	0.558226	49	0.621546	50	0.663186	54	0.6052
Seneca	51	0.542443	52	0.536875	51	0.618337	46	0.681679	40	0.718077
Allegany	52	0.529251	51	0.539217	53	0.576231	54	0.625063	52	0.640199
Greene	53	0.516127	53	0.533383	56	0.5192	59	0.451554	59	0.421192
Wayne	54	0.509727	56	0.504479	55	0.558411	55	0.606088	55	0.591023
Tioga	55	0.50019	54	0.512633	59	0.454225	57	0.460854	56	0.511417
Oswego	56	0.500106	55	0.509766	57	0.492097	56	0.483678	57	0.481026
Hamilton	57	0.484089	59	0.434813	58	0.455353	60	0.390595	60	0.377797
Chenango	58	0.416477	57	0.462423	48	0.624564	47	0.675791	45	0.687605
Tompkins	59	0.398392	61	0.399657	61	0.371061	61	0.357774	62	0.286374
Orleans	60	0.374963	58	0.452781	54	0.560417	53	0.631855	50	0.664199
Delaware	61	0.360467	60	0.403325	60	0.446035	58	0.460387	58	0.473082
Lewis	62	0.315226	62	0.322755	62	0.328838	62	0.352546	61	0.303527

Source: Author calculation using BEA and QCEW data

About NYCEDC

NYCEDC is a mission-driven, nonprofit organization that creates shared prosperity across New York City. Our projects and initiatives are about serving New Yorkers. We are working with and for communities through every step of the economic development process—bringing emerging industries to the five boroughs; creating the spaces and facilities they need to thrive and create jobs; giving New Yorkers the tools and training to succeed in those jobs; and investing in the public infrastructure and neighborhood development projects that make this city a great place to live, work, and do business. Ultimately, we strive to create a sustainable and resilient future, with shared prosperity and opportunity for all New Yorkers.

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The Economic Research & Policy (ERP) group performs industry and economic research to provide insights into key policy issues, conducts economic analysis of New York City projects, and tracks economic trends for policymakers and the public as a whole. ERP also supports NYCEDC in the evaluation of projects by setting up tools to assess, measure, and report on ideation and results. The team advances high-impact thought leadership on inclusive and innovation-driven economic development.

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