

## Growth

### THE DEATH AND LIFE OF CITIES

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AMERICA'S CITIES are remarkably dynamic. Some cities, both today and in the past, expand dramatically in a short period of time. Chicago's population expanded by 270 percent in the 1850s, and Las Vegas grew by 85 percent in the 1990s. Urban decline is slower, but population losses can also be striking. Saint Louis lost 12 percent of its population in the 1990s, and 59 percent of its population between 1950 and 2000. In this chapter, I will discuss the major factors that cause urban growth and decline, both historically and today.

First, in "The Demand for and Supply of City Space," I review the economic theory that allows us to make sense of urban growth and decline. The economic approach to urban growth starts with the view that urban change is driven by the choices of individuals who choose either to live in a place or not. Individual choices are driven by location-specific factors like income, amenities, and housing supply. Places become more attractive when the income and amenities rise, and when the costs of supplying housing services decline.

But income, amenities, and housing prices reflect the function of labor demand, the housing market, and government policy. High incomes reflect a greater willingness to pay for workers to be in a given locale, which must itself reflect higher productivity in that place. High local productivity reflects proximity to natural resources, especially waterways, and agglomeration economies, where productivity rises with the size or composition of a city. One example of such agglomeration economies are idea spillovers, where people are better at inventing new ideas if they are surrounded by a stock of smart people.

Housing prices reflect the combination of housing supply and demand. If housing is abundant, as in the case of Saint Louis and other declining cities, then prices are cheap. If the housing supply is restricted, as it is today in coastal California and an increasing array of other cities, then prices will be high. At any given point in time, the population of a city seems almost proportionate to the stock of housing

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in a city, and this means that a fixed housing supply will tend to mean a relatively fixed population. Indeed, the slow and steady population losses in places like Saint Louis can be attributed to the durable nature of the housing stock in that city (Glaeser and Gyourko 2005).

Some amenities are natural, like California's temperate climate, while others are constructed, like good schools and low crime. In some cases, growth itself can erode amenities by slowing commutes and crowding public services. Since there is every reason to believe that amenities are normal goods, meaning that people are willing to pay for more of them as incomes increase, we should expect to see amenities becoming an increasingly powerful force in city growth as Americans become richer (Graves 1980).

Urban productivity and amenities are particularly sensitive to changes in transportation technology. Since cities ultimately exist to provide proximity either to other people or fixed attributes of cities, we should expect changes in transport technology to have a strong impact on the demand for that proximity. Historically, cities grew because people wanted access to the great transport cost advantages created by access to waterways. In the twentieth century, the car remade urban America. We generally think that falls in transportation and communication costs tend to reduce the demand for urban proximity, but as I discuss in "The Rise of the Skilled City," there is some reason to believe that declining transportation and communication costs can also increase the demand for closeness by raising the returns to producing new ideas.

After providing an overview of urban theory, I turn to "America's Urban Origins," briefly surveying the growth of cities in the nineteenth century. In almost every case, the exact location of the urban area was determined by waterways, some of which were natural and others of which were humanly produced. Industry clustered around ports and rail yards to reduce shipping costs and exploit scale economies. Even in the nineteenth century, however, the concentration that formed for mundane reasons, like saving costs in butchering and shipping hogs, then came to facilitate the flow of new ideas and abet innovation.

In "Declining Transport Costs," I turn to the great trends in urban change between 1900 and 1975, where many of the older cities of the Northeast and Midwest began to decline even as the newer cities of the Sun Belt grew enormously. Urban growth during this epoch is best seen as reflecting changes in transportation technology. The general decline in the costs of moving goods eroded the erstwhile advantages of midwestern cities built around transport hubs, and allowed people to move to new areas with better climates, like California. The rise of the automobile led people and firms to move from city centers to suburbs. People also moved from cities that were built around walking and public

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transportation to newer areas, like Los Angeles, that could be built around the car.

"The Rise of the Skilled City" and "The Rise of the Consumer City" review the three most important urban growth phenomena over the past thirty years. Following this, "The Consumer City and the Skilled City" focuses on the increasing connection between skills and urban success. High levels of human capital, measured by the share of the population with college degrees in 1970, strongly predict income, population, and housing price growth since that time period. The connection with income is particularly strong, which tells us that the skills-growth connection is working primarily through an increasing link between urban productivity and proximity to skilled people. The relationship between skills and population growth is especially important in explaining the success of older cities in the Northeast and Midwest.

While the connection between skills and city growth is quite clear, its root cause is less obvious. One hypothesis is that the same reductions in transport and communications technology that led manufacturing to leave Detroit also increased the returns to innovation. If skilled cities have a comparative advantage in producing new ideas, then we would expect an increasing ability to export new ideas worldwide to increase the demand to live and work in skilled metropolitan areas. The rise of the skilled city suggests that local policymakers looking to improve their city's fortunes should make sure that their policies are oriented toward retaining and attracting the people at the top of the skill distribution.

In "The Rise of the Consumer City," I discuss the rise of cities that specialize in delivering high levels of consumer amenities. To a certain extent, this trend simply reflects a continuation of the growth of Californian cities described in "Declining Transportation Costs." The continuing decline in transport costs means that people have become freer to locate in places where they want to live instead of places where firms have a transport-cost related advantage in production. Nevertheless, there are also some dramatic changes between the first three decades of the twentieth century and the last thirty years.

Most notable of those changes has been the ability of some older urban areas to become more attractive places to live. Reductions in crime have meant that places like downtown areas in New York and Chicago have become nicer places to live. Big cities have an innate comparative advantage in providing amenities with high fixed costs like art museums and symphonies. The large scale of the urban market also improves the choices involved in consumption activities such as eating out and dating. While it would have been quite surprising in 1975 to find people who wanted to live downtown and work in the suburbs, that location pattern has become increasingly common.

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The conclusion emphasizes the primary policy point of this chapter. People and firms are astonishingly mobile, and this severely limits the policy choices available to local governments. Attempts at redistribution can be counterproductive because high-income people just flee. The reality of constant urban change should be omnipresent in the thinking of local leaders who are making policy decisions for their communities.

### The Demand for and Supply of City Space

The economic approach to city growth begins with the choices made by individuals about whether or not to live in a particular place. These choices are thought to be driven by the economic returns to living in a particular place (i.e., local wages), the noneconomic returns to living in a particular locale (generally called amenities), and the financial costs of living somewhere (i.e., housing prices). Rising population is usually attributed to increases in income or amenities, or decreases in housing costs.

The particular workhorse of the urban growth literature is the spatial equilibrium assumption, which plays the same central role in urban economics that the no-arbitrage equilibrium assumption plays in financial economics. This assumption essentially implies that people receive the same level of welfare in all of the different cities across the United States. It is not meant to be taken literally but rather is a convenient approximation that serves as a useful guide for empirical work. The spatial equilibrium assumption can create somewhat counterintuitive predictions, like the implication that if a place has a high real wage (i.e., income divided by the cost of living), then it must have low amenities. If high real incomes were not offset by low amenities, as the economic reasoning goes, then people would flock to the high real wage area and bid up housing prices.

The idea that urban growth reflects individual choices, which are themselves based on wages, housing costs, and amenities, does not provide us with a deep explanation of why cities succeed, since at least wages and housing costs are market outcomes, not innate characteristics of a place. Wages reflect the intersection of labor supply and demand in a given area, and if we are to understand why wages are high in some places and low in others, then we must understand why there are differences in labor demand across space. Why are firms willing to pay more for workers in New York than they are in Houston?

Differences in wage levels across space are thought to reflect differences in productivity. Indeed, in most neoclassic models of labor markets, wages are a direct reflection of labor productivity. Therefore, to

understand the growth of a city that is driven by rising incomes, we must understand why productivity is increasing in that city. To understand why wages are higher in big cities than in less dense areas, we must understand why firms are more productive in big cities.

The urban economics literature argues that firms are more productive in cities because of the value of physical proximity either to other people and firms in that city, or productive features of that place. Historically, access to the port of New York increased the productivity of manufacturing firms locating in Manhattan. Today, Wall Street firms are more productive because of access to each other and the business service firms that cater to them. Another way of thinking about this is that urban proximity is valuable because it reduces transport costs for goods, people, and ideas.

The theoretical literature on urban productivity often starts with transport costs for goods—it is cheaper to buy inputs if they are being produced nearby. This creates a natural tendency for producers to cluster near one another to avoid the costs of shipping over long distances. The advantages of proximate production create an agglomeration economy, where each new firm raises the productivity of the existing firm and increases the incentives for yet another firm to come to the city. A virtuous circle can develop where an initial cluster of firms attracts more firms that want to buy or sell to these first firms, and then the new firms attract even more employment.

While reducing the transport costs for goods was once a critical element of urban success, over the twentieth century the price of moving goods declined enormously. The cost of moving people over short distances did not see the same decline, because lost time is the main component of the costs of moving people. Cities today serve to reduce the costs of connecting people, especially in the business service sector. Since many of these services involve face-to-face contact, the urban edge in eliminating distance still matters. The basic logic of the agglomeration of business services in San Francisco and Chicago follows the same logic behind the agglomeration of traditional goods producers. Firms that use business services locate in the city to have access to service providers, and the firms that provide services locate in the city to have access to their customers. The gains from eliminating transport costs continue to drive urban productivity, but now the relevant transport costs involve getting a lawyer to their client instead of getting a sewing machine to a garment factory.

The benefits that firms get from reducing the transport costs of their suppliers and customers can often be seen directly in the bottom line, but cities also increase access to new ideas, and these benefits are harder to quantify. New ideas always build on old ideas, and creativity almost

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never comes from a person working in splendid isolation. Instead, the process of generating knowledge generally involves constantly learning from others. By bringing people together, cities have historically fostered the production of new ideas. Silicon Valley today may be the famous example of a geographic locale where idea producers cluster together and consistently learn from one another (Saxenian 1994). This phenomenon is not new. The invention of Renaissance art in fifteenth-century Florence and skyscrapers in nineteenth-century Chicago were collaborative efforts, where individual innovators learned from their physically proximate competitors and created a chain of innovation.

The idea-producing function of cities used to be an interesting side product of people living close to one another to eliminate transport costs for goods. Today, idea production is increasingly the primary function of the most successful U.S. cities. The density of downtown New York originally served so that manufacturers could have ready access to each other and the harbor. Now that density serves to facilitate the flow of knowledge in the financial services industry—a sector where there are tremendous returns for having the best information.

It is possible, of course, that eventually improvements in information technology will make even this function of cities obsolete. But over the past thirty years, the decrease in transportation and communication costs has probably helped the idea-producing cities rather than hurt them. As the world has become flatter, the ability to export new ideas has grown and the returns to innovation have increased as well. As the returns to innovation increase, the returns to locating in urban places that specialize in innovation also increase. As the world has become flatter, the returns to becoming the smartest person in the world increase, and you can only become the smartest person by being close to other smart people. Improvements in transport and communication can therefore both increase and decrease the returns to locating in a dense area.

The demand for living in a city reflects both the economic returns from locating in that city as well as the nonmarket costs and benefits of that place. These nonmarket or quality-of-life attributes that help form demand for a particular place include weather, safety, schools, and traffic congestion. Weather is the most immutable urban amenity, but the demand for different types of weather can often change significantly. Air-conditioning, for example, made southern summers far more bearable. Higher incomes may have increased people's willingness to further economic returns in pursuit of a pleasant climate.

Most other amenities are formed by the interplay of government, private individuals, and density itself. For instance, historically disease was a great urban disamenity. Clustering people together may have

made it easier to get goods from suppliers to customers, but it also made it easier for bacteria to spread across populations. The life expectancy in premodern London was substantially lower than in rural England due to the easy spread of infectious diseases in dense areas (Wrigley and Schofield 1983). Density also meant that water supplies were frequently polluted with human waste. Over the course of the nineteenth century, U.S. civic leaders gradually reduced the health costs of living in big cities by delivering clean water. This was a massive undertaking, requiring vast public expenditures (Cutler and Miller 2006).

If disease was the great scourge of premodern cities, crime has been a more common modern problem. Again, the connection between crime and cities is a natural product of density. If we are close enough for me to sell to you, then we are close enough for me to rob you. The urban tendency to attract poor people also contributes to the crime-cities connection, so poverty and crime are correlated (Glaeser and Sacerdote 1999). Again, the level of disamenity reflects the combination of government policy and private action. Since 1980, robust public policy responses have mitigated the extent of the urban crime problem.

Offsetting the urban disamenities of disease and crime are the urban amenities that are made possible by the large numbers in a city. Market size makes it possible to pay fixed costs for museums, theaters, and restaurants. New York City supports a remarkable number of entertainment venues, including art and natural history museums, theaters, and operas, that would be utterly infeasible in a smaller place. Many of these entertainment venues are luxury goods, in the sense that they cater to the rich, but as the nation as a whole gets richer, we would expect the demand for these particularly urban entertainments to increase.

A related urban advantage comes from the fact that large markets facilitate specialization. As Adam Smith wrote (1776, 24), "The division of labor is limited by the extent of the market." This effect is important in making cities more productive; in a big city, business service providers, like lawyers, are better able to reap the benefits of specialization. But urban specialization is also crucial on the consumption side. The diversity of urban restaurants is a classic example of Smith's dictum. Any large city will have a wide range of potential eating options; a small town will not. The ability of a large market to sustain diversity is true throughout the retail and consumer service sector, and this provides another attraction to places like New York.

Density is also valuable in cases where people want access to each other for social reasons. Cities have always been particularly attractive to young, single people because density means that there are other young, single people nearby. Cities essentially serve as marriage mar-

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kets. A related fact is that two-earner families may find it easier for both adults to get good jobs in a big city than in a less dense area (Costa and Kahn 2003).

A final quality-of-life issue is commute modes and traffic. Today, more than 115 million Americans drive to work, and less than 10 million take public transportation or walk. For the drivers, the key issue is traffic congestion, which has risen dramatically in many metropolitan areas. One response to traffic in the urban core has been the decentralization of employment, which has tended to mean that people commute long distances from a suburban home to a suburban job, but that these commutes occur at high speeds. Another response to traffic is to use public transportation. Public transportation is a large transit mode in only a handful of the largest cities, like New York, but it plays a disproportionately large role in bringing poorer Americans to work. Indeed, one reason why poor people live disproportionately in central cities is that in those places, they can survive without a car for each adult (Glaeser, Kahn, and Rappaport 2007).

If demand for cities is fueled by economic productivity and amenities, the supply of city space is a reflection of housing availability. Figure 2.1 shows the almost perfect relationship between growth in population and growth in housing units across U.S. cities between 1980 and 2000. If homes are not being built, then the city will find it quite hard to grow. The housing supply itself is the product of both natural factors and government action, and when the supply is limited, for whatever reason, then urban growth will also be limited.

Most obviously, the housing supply reflects the availability of land. Cities in the middle of a flat plain will find it easier to build than cities on an island. The waterways that were so valuable for New York and Boston have also made it more difficult to build. In the nineteenth century, New York handled its need for space by building up, which is also possible but more expensive than just building out. Boston actually created more usable land by the massive engineering project of filling in its Back Bay. Today, the newer cities of the Sun Belt, like Houston, Atlanta, and Las Vegas, are unencumbered by water barriers and find it easier to just continue building out.

The growth of these cities also reflects their pro-growth regulatory environments. The more limited growth in coastal California since 1970 represents an increasingly restrictive regulatory environment (Glaeser, Gyourko, and Saks 2005). Starting in the 1960s, neighborhood groups and environmental activists have been increasingly able to raise hurdles for new development. Environmental impact reviews and large minimum lot sizes make it harder to build. In New York, development has

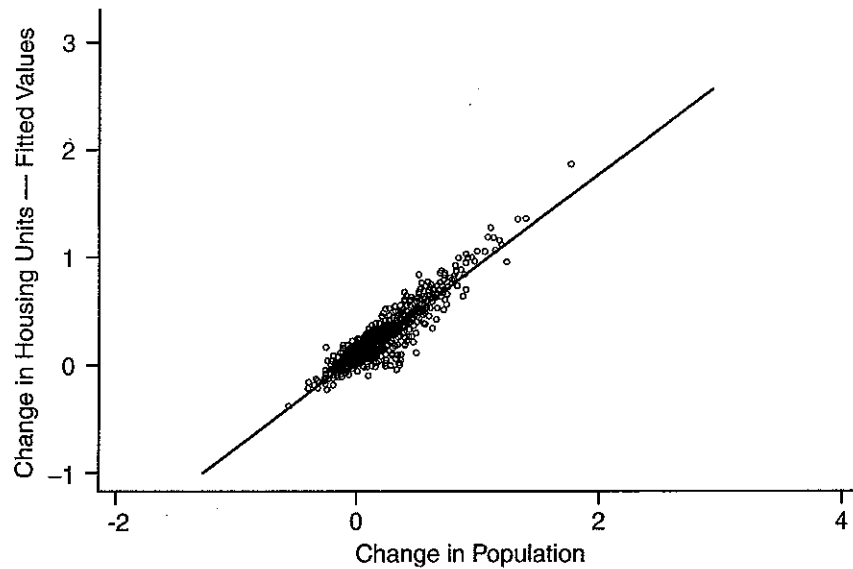


Fig. 2.1 Changes in Housing Units and Population, 1980-2000

also gotten more difficult, but it is the Landmarks Preservation Commission that is often the most effective tool of blocking taller building in well-to-do neighborhoods.

The housing supply doesn't just reflect the ability to build; it also represents the historical stock of past construction. Some cities, like Saint Louis, Detroit, and Philadelphia, have an abundant supply of homes because they once were more desirable than they are today. In these places, housing prices frequently can be lower than the cost of new construction because of the abundant supply. As a result, new construction will be rare, and we should expect increases in economic productivity or improvements in amenities to show up first in rising housing prices rather than larger population levels. Indeed, we should not expect the populations of such cities to start growing again until prices have risen above construction costs. The supply of homes is just one reason why the past matters, and for that reason I now turn to the periods of growth of America's older cities.

### America's Urban Origins: Boston, New York, and Chicago

The American colonies began as distant outposts of Europe, and a connection to the Old World was critical. For this reason, American cities grew around transport hubs, and throughout most of history, the cheapest way to move goods long distances has been by boat. As a result, the twenty largest cities in the United States in 1900 were all on wa-

terways. Eight were on the Atlantic, generally where rivers hit the sea. Three were on the Mississippi, three were on the Ohio, and three were on Lake Erie. Two were on Lake Michigan, and one was on the Pacific.

The oldest two of these cities were Boston and New York, which were founded in 1630 and 1624, respectively. In both cases, waterways were essential. Both Boston and New York have exceptional natural harbors and rivers that cut into the hinterlands. Those rivers made it possible to trade with inland natives and later colonial settlers. The Dutch East India Company originally surveyed New York, and even by 1624 Dutch fur traders had settlers on the tip of Manhattan. Its residents, from the beginning, were looking to make money. This did not make New York unique; almost every colonial incursion into the Americas was driven to a large degree by a desire for wealth.

In fact, the colonists coming to Massachusetts were one of the only examples of settlers who were driven primarily by nonpecuniary reasons. John Winthrop, Boston's first mayor, came from a prosperous English family. He came to Boston not because it seemed to have easy opportunities for amassing wealth but because he believed in a religious ideal that could only be realized far away from the English authorities. In a sense, Boston was America's first "consumer city," whose early growth was based on the desire for a different lifestyle, not economic productivity.

Since Boston was founded for religious rather than commercial purposes, it lacked a natural export industry. All cities must have something to export, because at the very least they need to be able to buy food produced in the hinterlands. Boston's problem was much more severe because its residents needed to buy manufactured goods, like guns and books, produced in the Old World. Yet Boston had little to export back to England that was valuable enough to cover the high costs of shipping. Since the climate of New England was pretty similar to that of England, Massachusetts didn't produce a lot of exotic products—like sugar or tobacco—that would have been hard to make back in the old country. The city essentially started out with a massive current account deficit that needed to be solved.

In the 1630s, Boston operated as a sort of colonial-era Ponzi scheme, where early settlers sold basic goods to later settlers who brought assets with them from England. Those assets were then used to pay for imported manufactured goods. This system could not last, and when the English Civil War cut off the flow of new immigrants to Massachusetts, Boston experienced an economic crisis. This crisis would be the first of many that Boston would have to face over the next 370 years, as the city's residents had to deal with the fact that it had no innate source of wealth.

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Bostonians responded to this challenge by inventiveness rather than exit, and this illustrates the enormous urban strength that comes from possessing smart people who actually want to stay in the city. Many of the initial attempts to find a new export good were unsuccessful. Winthrop had tried to set the city up as a fur center, but competition for this commodity was extremely fierce. John Winthrop Jr. started an unsuccessful saltworks near Ipswich, Massachusetts (Bremer 2003, 332), and the Saugus Iron Works in 1646. While these efforts weren't complete failures, they weren't raging successes either. Instead, Boston's economic future was created by other entrepreneurs like George Story, Samuel Maverick, and John Winthrop's other sons, Stephen and Samuel—who established the source of Boston's financial well-being: trade in basic commodities with Spain, the West Indies, and the American South.

The new economic model was that Boston would export wood, fish, and meat to the Caribbean and southern colonies that could grow sugar and tobacco that were valuable enough to export across the Atlantic. The plantations of the Caribbean and the South could grow tropical commodities that were scarce and valued in the Old World. It made sense for them to specialize in those valuable goods, and for New England to produce basic foodstuffs. The income that Bostonians gained from selling south would provide them with enough gold to buy English goods.

While this model was ingenious and made Boston the largest city in the colonies for the rest of the seventeenth century, by 1740 Philadelphia surpassed Boston in population. By 1790, New York would pass Philadelphia. In their early years, these cities mimicked Boston's trade pattern by selling grain and other commodities to the southern colonies. The problem for Boston was that both New York and Philadelphia had an innate advantage at the trade that Bostonians pioneered. New York and Philadelphia are further south than Boston, and hence closer to the southern markets. In addition, both cities have a more fertile agricultural inland. Finally, both New York and Philadelphia have access to a better river network than Boston, thereby giving them better access to their hinterlands. Their success brought a fifty-year decline in Boston's fortunes from 1740 to 1790.

Boston did surge again in a second reinvention at the start of the nineteenth century. Boston's growth during this era was mercantile. As ships grew bigger and as Boston was freed from English trade restrictions, Bostonian clipper ships took increasingly long journeys connecting America with South Africa, Oregon, and China. New England whalers plied the waters of the Pacific Ocean. While Boston continued to have a less central port than New York, that disadvantage became relatively less significant as journeys got longer. Boston's one great advan-

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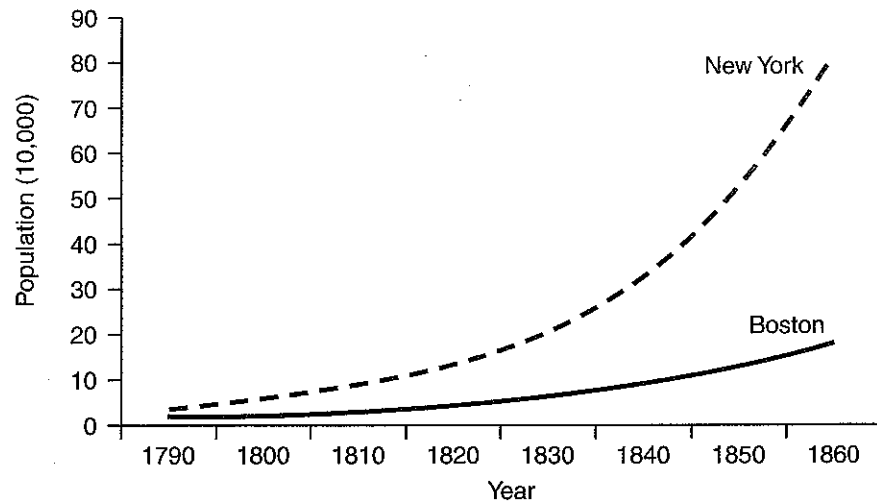


Fig. 2.2 Population Growth of New York City and Boston, 1790–1860

tage was a great stock of mercantile and sailing knowledge. Today, globalization has increased the returns to human capital, and the same thing happened in the nineteenth century. As the maritime networks became more global, Boston's superior sailors and merchants were able to use their human capital to reap higher returns. The importance of Boston's sail-specific human capital is directly demonstrated by the fact that the rise of steamships in the 1840s meant the end of the city's maritime empire and the need for a new reinvention.

Boston's success in the early nineteenth century should not blind us to the fact that New York was far more successful over the same time period. Figure 2.2 shows the population growth of both cities between 1790 and 1860. Even in the eighteenth century, it was clear that New York was the best harbor in the colonies. New York is more centrally located than Boston, and it has much more direct access to the sea than Philadelphia or Baltimore. Its harbor has less ice than the other northern ports, and its deep water gives it a major edge over Philadelphia. Finally, the Hudson is a deep river that runs 315 miles into upstate New York.

Even in the eighteenth century, New York was America's most important port, but technological changes in the nineteenth century greatly magnified its dominance over all of its rivals. In 1821, New York's exports were \$13 million and Boston's exports were \$12 million. By 1860, Boston's exports were \$17 million and New York's exports were \$145 million.

The great increase in the size of boats meant that shippers increasingly moved from a point-to-point shipping system to a hub-and-spoke one. In the eighteenth century, when three-hundred-ton vessels were

the norm, smaller ships directly connected the different colonial ports with the Old World. In the nineteenth century, as ships increased to ten times that size, it made increasing sense to use fast, large clippers, like the Black Ball Express, to connect England with one port in the United States and then transfer goods to smaller coastal vessels for delivery to the different harbors. The switch to hub-and-spoke shipping was surely going to dramatically increase the importance of whatever port became the hub, and New York City, because of its geographic advantages, was the natural hub for the cross-Atlantic trade.

New York's increasing dominance as a port then attracted its major nineteenth-century industries: sugar refining, the garment trade, and book publishing. In 1850, New York was an industrial town with 43,340 people in manufacturing and 11,360 in commerce. These industries agglomerated in New York because of its port. Sugar refining, for example, was a direct outgrowth of New York's trade with the Caribbean. Sugar couldn't be refined at the initial point of production, because the sugar crystals would coalesce during a long, hot sea voyage and needed to be refined once again. But the large fixed costs involved in setting up a refinery meant that it made sense to refine sugar in a central place, and what place could be better than America's largest port. The garment trade as well grew in New York because of the city's role as a center for trade in both European textiles and southern cotton. Even book publishing owed its Manhattan locale to the enormous value associated with being the first American publisher to pirate British novels. Since New York was the dominant port, its publishers could get the books first.

The time path of New York's population shows that the Erie Canal, completed in 1825, did not make the city. The canal was certainly helpful, but New York was growing just as quickly before 1825 as it was after that date. Yet the canal was crucial for the cities of upstate New York, like Buffalo, Syracuse, and Rochester, that grew up along its path. The canal was also one of the two human-made waterways that enabled the growth of Chicago, as it connected the Hudson to the Great Lakes. The Illinois and Michigan Canal connected the Great Lakes to the Mississippi River system. With those two canals, the United States had a water network that cut through the continent running from New Orleans to New York. It was inevitable that great cities would form along that network and no inland city would be larger than Chicago, which occupied a key geographic spot along the network.

Chicago sits on the spot where the Illinois and Michigan Canal connects the Mississippi River to the Great Lakes. It is a natural place for cargo on canal loading boats to be transferred to lake traveling ships. This human-made geographic advantage would then be supplemented

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by a rail network that linked Chicago with the rich midwestern hinterland. The city would become the natural place for processing the exports of that hinterland and producing manufactured goods to be used by the farmers of the Midwest. At the end of the nineteenth century, Chicago's two largest industries were stockyards and clothes manufacturing.

The vast scale of Chicago's stockyards reflected the enormous productivity of corn production in Iowa and Illinois. Pigs are corn with feet. Since pork that is fed on corn can be slaughtered and salted to make ham, bacon, and sausage, pigs represent a cost-effective way of getting the calories in corn to consumers' tables. In the early nineteenth century, U.S. corn production was centered in Kentucky and southern Ohio, and as a result Cincinnati was America's Porkopolis. Corn production, however, was vastly more efficient in Iowa than in Kentucky. In 1889, Iowa's yield per acre was forty-one bushels, Illinois's yield was thirty-seven bushels per acre, and Kentucky's yield per acre was less than twenty-seven bushels. As Iowa and Illinois became more accessible by water and rail, corn growing shifted to the modern corn belt. Chicago then became the natural metropolis to butcher live hogs for shipment east.

Chicago brought food out of the Midwest, but it also supplied the Midwest. Cyrus McCormick invented the mechanical reaper in Virginia, and then moved to Chicago so he could be closer to midwestern farmers. Sears and Roebuck was another Chicago firm that thrived on its ability to sell to surrounding midwestern farmers. The clothing trade in Chicago was producing garments for Americans who were working the land.

As in the case of New York and Boston, the agglomeration of Chicago formed to reduce transport costs, but then turned into a hub of innovation. Gustavus Swift made it far more economical to ship dressed beef east by building refrigerated rail cars. The key idea was to put the ice on the top so it would drip down, instead of on the bottom. Late nineteenth-century Chicago also produced America's first skyscrapers. A cluster of innovators in building, including William Le Baron Jenney, Daniel Burnham, and Louis Sullivan, came together in this dense city and developed a new way of building together. The architects were not inventors working in splendid isolation. Chicago's density meant that they consistently had access to each other's ideas, which they regularly stole and improved.

The U.S. urban landscape in 1900 had cities spread throughout the hinterlands on all of our major waterways. This urban pattern was driven by the high costs of transportation and the desire to produce goods close to the agricultural market, which was tied to the soil. The cities were dense and getting denser, as the elevator and the skyscraper

made it increasingly possible to build up. While public transportation allowed cities to build out, streetcars and subways still required walking to and from the station, so housing was still tightly clustered. Transportation innovation in the twentieth century would change that pattern dramatically.

### **Declining Transport Costs: The Rise of Los Angeles and the Decline of Detroit**

When the twentieth century began, urban visionaries saw a future of vertical cities whose streets would be darkened by immense skyscrapers. Many of the great architects of this period tried desperately to find ways to humanize the great cities of the future. Le Corbusier thought that he could accommodate a natural human need for greenery by erecting sixty-story buildings that would be surrounded by gardens and connected by subways.

But twentieth-century Americans didn't accommodate a desire for foliage by living in vast skyscrapers surrounded by greenery. Instead, they came to live in vast suburban communities, where they got everywhere by car. Americans also moved in vast numbers to warmer locales. Lower-density Los Angeles, not tall New York, would be the great urban winner of this time period. About 90 percent of Manhattan households are in buildings with more than ten units, but only one-quarter of Los Angeles lives in such large buildings. Its growth, based on sun and sprawl, would be accompanied by a tremendous depopulation of the traditional cities of the Northeast and Midwest.

Los Angeles is in many ways the opposite of both New York and Chicago. Those older cities had their locations dictated by waterways. Easy access to the ocean, long rivers, and great lakes meant that building great cities in New York and Chicago made great economic sense. By contrast, little about the location of Los Angeles seems geographically determined. Southern California lies at the edge of the country, perched on the western seaboard, and Los Angeles didn't even start out with a port. The city wasn't a natural place to produce anything; it was just a beautiful spot with a great climate.

Los Angeles did eventually develop great export industries, like aerospace and entertainment, but the early pioneers in these industries often came to California for consumption reasons. D. W. Griffith, for example, moved to Los Angeles both because of the prospect of year-round movie production and because he had never really taken to northern weather. Donald Douglas, whose DC (Douglas Commercial) planes would become a bulwark of California aviation, left Cleveland

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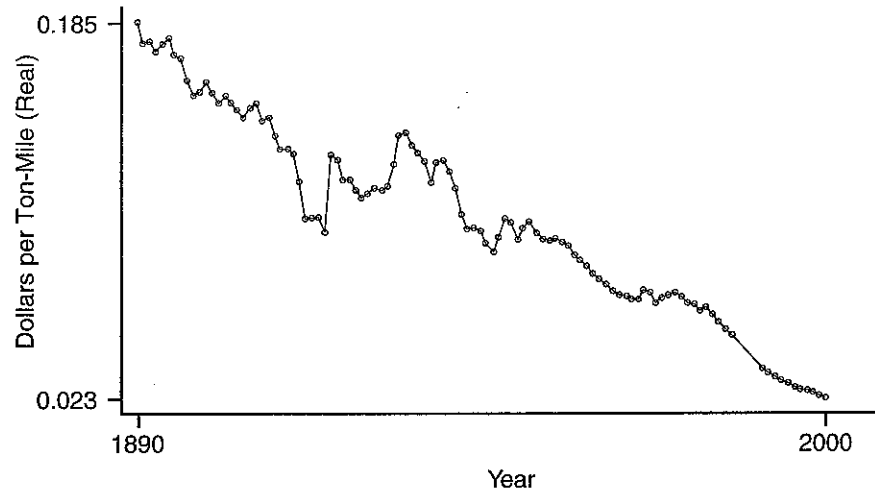


Fig. 2.3 Real Costs of Railroad Transportation over Time, 1890–2000. Source: Historical Statistics of the United States, 1994, Bureau of Transportation Statistics Annual Reports, 1994 and 2002 (originally appeared in Glaeser, Edward L., and Janet E. Kohlhase, "Cities, Regions and the Decline of Transport Costs." *Papers in Regional Science* 83, no. 1 [2004]: 197–228).

in 1920 to return to Los Angeles because his family preferred warmer weather. In successful cities, the agglomeration of smart people ends up producing new ideas, and this certainly happened in both movie and airplane production in Los Angeles. The big difference, however, between Los Angeles and Chicago or New York was that the initial force driving the agglomeration had more to do with quality-of-life issues than with transport-based productivity advantages.

The rise of consumer cities far from the great lakes was only made possible by a radical reduction in transport costs over the twentieth century. In 1850, access to Los Angeles was so difficult that no climatic advantages could have made it into a great city. By 1950, Los Angeles was distant yet accessible, and a great city had formed as the three thousand miles that separate the East and West coasts had become less important. Figure 2.3 shows the declining cost of moving a ton a mile by rail over the last one hundred years (Glaeser and Kohlhase 2004). This 90 percent decline in transport costs in some ways understates the full extent of the death of distance, because it doesn't include the introduction of new modes of transport like airplanes, trucks, and cars.

The internal combustion engine is the great force of urban change in the twentieth century. The older forms of transportation required large infrastructure, such as ports and rail yards, and cities were generally built around that infrastructure. Since older forms of transportation

necessitated walking, cities were dense. Cars both require and permit the consumption of vast amounts of space. Cities built around cars must look totally different than those built around walking and public transportation. To make full use of the automobile and its tremendous speed advantages, people needed to move from the older cities to new places, like Los Angeles, that could be developed around the car.

Somewhat ironically, the mass-produced car is itself the product of the dense urban environments that it did so much to destroy. Detroit in 1900 bore a distinct resemblance to Silicon Valley in the 1960s. It was a hotbed of small entrepreneurs, many of whom were trying to improve the performance and production of cars. Detroit had two industries that came together to produce cars: engine production and maintenance, which was oriented toward Great Lakes shipping, and carriage production, which was based on abundant Michigan lumber. Henry Ford came out of the engine side of Detroit; he did his early work at Detroit Dry Dock. Billy Durant of General Motors came out of the carriage production business. Detroit initially had an abundance of small producers who could supply inputs to innovators. This extremely dense environment of smart people who could learn from one another and abundant suppliers who let an innovator start was perfect for experimentation.

Once Ford got his basic production process working, however, he quickly started to suburbanize manufacturing. Ford's massive River Rouge plant was a wholly integrated facility built outside the city. As Ford's need to innovate declined and his ability to supply his own industry increased, he chose abundant suburban land over access to other innovators and small-scale suppliers.

The Ford move to River Rouge was a sign of the great exodus of urban manufacturing that would be a central trend of twentieth-century urban change. Again, changing transportation technology was critical. In 1900, proximity to rail yards or the harbor was essential for industrial producers; by the mid-twentieth century, trucks made it possible to leave the city, and locate where land and labor was cheaper. In city after city, manufacturing decentralized to the point that few U.S. cities have much significant manufacturing left.

Indeed, over the late twentieth century, initial specialization in manufacturing was a robust predictor of urban decline. Figure 2.4 depicts the correlation between the change in the logarithm of population between 1950 and 1980, and the initial specialization of the city in manufacturing. This graph is shown at the city level and includes only places with more than one hundred thousand people in 1950. I am showing cities, rather than metropolitan areas, to emphasize the importance of the suburbanization of manufacturing. The figure reveals a -54 percent correlation. As a city had 10 percent more manufacturing in 1950, it lost 18 percent more of its population between 1950 and 1980.

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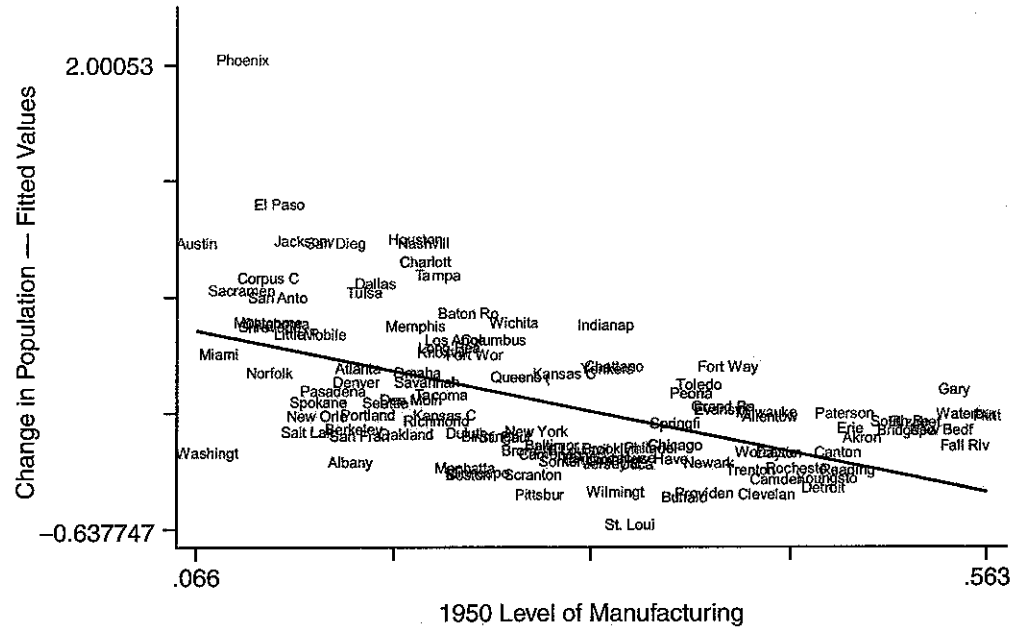


Fig. 2.4 Population Change on Initial Specialization in Manufacturing, 1950–1980

The decline of manufacturing cities is a part of the broader decline of almost all of America’s older cities in the second half of the twentieth century. Table 2.1 shows the ten largest cities in the United States in 1950, and their population in 2000. Eight of the ten cities lost people over the fifty-year period, and many of them declined massively. Only New York and Los Angeles gained people, and New York’s growth was less than 10 percent. Detroit lost almost 49 percent of its population, and Cleveland lost almost 48 percent of its population.

The decline of older, colder cities built around public transportation and the rise of the lower-density places in the Sun Belt is certainly the major urban transformation of the late twentieth century. Yet it is not the only major change that occurred. In the next three sections, I will discuss what are, in my view, the three major themes of urban change over the last thirty years: the rise of the skilled city, the rise of the consumer city, and the increasing importance of housing supply to urban growth and decline.

**The Rise of the Skilled City since 1970**

In 1975, every major city in the Northeast and Midwest looked troubled. New York and Boston appeared quite similar to Cleveland and Detroit. All of these cities had once thrived as centers of manufacturing, and in all of these places the exodus of manufacturing created economic

TABLE 2.1  
Ten Largest U.S. Cities by Population, 1950 and 2000

Ranking	City	Population	
		1980	2000
1	New York City	7,891,957	8,008,278
2	Chicago	3,620,952	2,896,016
3	Philadelphia	2,071,605	1,517,550
4	Los Angeles	1,970,358	6,694,820
5	Detroit	1,849,568	951,270
6	Baltimore	949,708	651,154
7	Cleveland	914,808	478,403
8	Saint Louis	856,796	348,189
9	Washington, DC	802,178	572,059
10	Boston	801,444	589,141

Sources: [Http://www.census.gov/population/www/documentation/twps0027.html](http://www.census.gov/population/www/documentation/twps0027.html), Population of the 100 Largest Urban Places: 1950; <http://www.census.gov/population/documentation/twps0027/tab18.txt>; American Fact Finder at <http://factfinder.census.gov/>.

decline and social distress. Crime rates were uniformly high, and fiscal crises were ubiquitous. The demand for housing in these places was so low that in most of the cities, the majority of homes were priced below the costs of new construction in 2001 (Glaeser and Gyourko 2001).

Over the past thirty years, the fortunes of Rust Belt cities have diverged dramatically. Some places, like New York and Boston, have seen incomes and housing prices increase dramatically. Even population levels in their central cities have increased. Other areas, such as Cleveland and Detroit, have seen a continuing spiral of poverty and decline. In 1975, an observer could think that the United States was separated into a declining Rust Belt and a booming Sun Belt. But since 1975, the diversity within the older cities has been as striking as the gap between the Rust Belt and the Sun Belt.

On a statistical level, the most powerful variable that explains the heterogeneity in Rust Belt success since 1980 is the skill level of the city. Measures of human capital, like the share of the adult population with college degrees in 1980, can explain a significant amount of the heterogeneity in population, income, and housing price growth in colder areas since 1980. I use the college degree measure, but other proxies for

Population
2000
8,008,278
2,896,016
1,517,550
6,694,820
951,270
651,154
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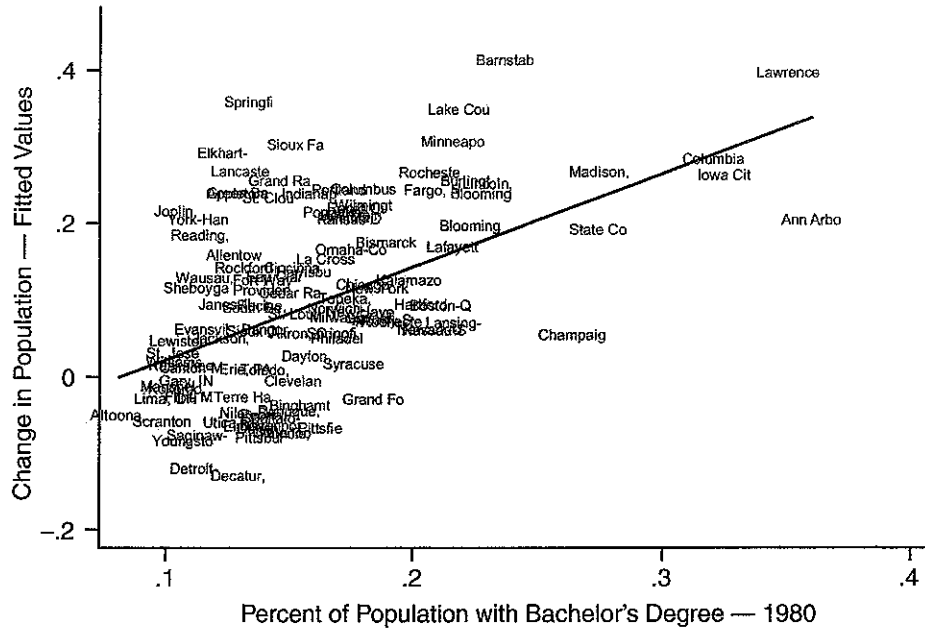


Fig. 2.5 Population Growth and Percent of Bachelor's Degrees, 1980–2000

skills, including measures that date from before World War II, have similar effects on growth (Glaeser and Saiz 2003). To show these correlations, I limit the sample to metropolitan areas in the Northeast and Midwest.

Figure 2.5 shows the 24 percent correlation between population growth between 1980 and 2000, and the share of the population with college degrees in 1980 in this sample. A 10 percent increase in the college-educated share is associated with roughly a 12 percent increase in population growth. Figure 2.6 shows the 64 percent correlation between median family income growth between 1980 and 2000, and the initial share of the population with college degrees. A 10 percent increase in the college-educated share is associated with roughly a 12 percent increase in income growth. Figure 2.7 depicts the 41 percent correlation between the Office of Federal Housing Enterprise Oversight repeat sales indexes change from 1980 to 2000, and the initial share of the population with college degrees. In this case, a 10 percent increase in the college-educated share is associated with a 2.2 percent increase in housing prices.

Tables 2.2 and 2.3 show these results in a regression setting. Table 2.2 gives results for metropolitan areas; table 2.3 provides results for cities. Regression (1) of both tables shows the relationship between population growth between 1980 and 2000, and the initial log of population, the logarithm of initial population density, median January temperature, and



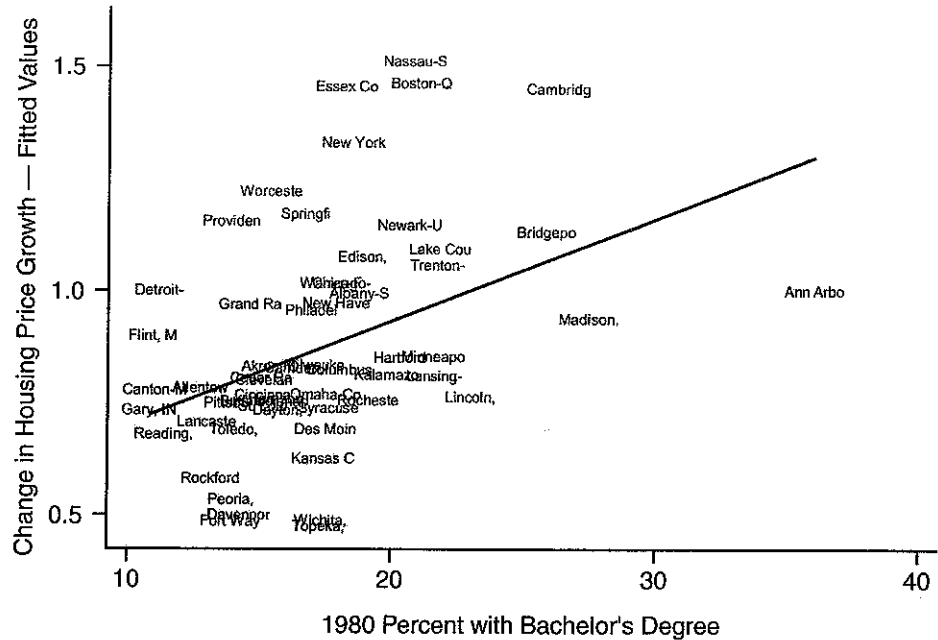


Fig. 2.7 Housing Price Growth and Percent of Bachelor's Degrees, 1980–2000

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lege education share is a particularly powerful predictor of income growth. The effect is much stronger at the metropolitan-area level than at the city level. To a certain extent, this reflects the widely known rising returns to skill in the U.S. economy, but the connection between location-specific education and income growth persists even when we control for individual human capital measures (Glaeser and Saiz 2003).

In the 1970s, many of the highest-paid regions in the country were unionized, manufacturing places that weren't particularly well skilled. As figure 2.8 shows, the correlation between area-level incomes and area-level human capital is now quite tight. In this figure, our area income measures are estimated metropolitan area effects estimated in an individual-level wage regression containing only men between the ages of twenty-five and fifty-five, where we hold individual education and experience constant.

Regression (5) illustrates that the effect of human capital on income growth gets slightly stronger when we restrict our sample to the Northeast, Midwest, and South. In the Metropolitan Statistical Area (MSA) sample, the coefficient rises slightly when I restrict the sample to exclude the West. In the city sample, the coefficient rises slightly when I exclude the West. Regression (6) restricts the sample to cities in the West, and the effect of human capital on income growth is actually larger than it is for the entire United States. While skills don't predict population growth in the West, they certainly predict income growth.

TABLE 2.2  
Population, Income, and Housing Value Growth at the MSA Level

	Change in population, 1980-2000				Change in income, 1980-2000			Change in housing value, 1980-2000		
	All Cities (1)	East, Central, and South Cities (2)	West Cities (3)	All Cities (4)	East, Central, and South Cities (5)	West West Cities (6)	All Cities (7)	East, Central, and South Cities (8)	West Cities (9)	
Log of population, 1980	0.073 (0.016)**	0.052 (0.019)**	0.088 (0.053)	-0.031 (0.011)**	-0.012 (0.013)	-0.066 (0.024)**	-0.019 (0.018)	-0.025 (0.022)	-0.093 (0.044)*	
Log of population density, 1980	-0.086 (0.013)**	-0.062 (0.017)**	-0.074 (0.037)	0.037 (0.009)**	0.009 (0.012)	0.060 (0.017)**	0.073 (0.014)**	0.085 (0.020)**	0.100 (0.031)**	
Median January temperature	0.008 (0.001)**	0.008 (0.001)**	0.004 (0.003)	0.001 (0.000)	0.000 (0.001)	0.005 (0.001)**	0.001 (0.001)	0.000 (0.001)	0.007 (0.003)**	
% of population with a BA or higher, 1980	1.296 (0.201)**	1.436 (0.213)**	-0.048 (0.619)	1.078 (0.129)**	1.182 (0.146)**	1.200 (0.279)**	0.419 (0.216)	0.041 (0.246)	1.769 (0.509)**	
Constant	-0.508 (0.130)**	-0.466 (0.138)**	-0.350 (0.419)	0.247 (0.084)**	0.230 (0.095)*	0.302 (0.189)	-0.311 (0.140)*	-0.254 (0.159)	-0.024 (0.344)	
Observations	255	207	48	255	207	48	255	207	48	
R-squared	0.45	0.43	0.17	0.26	0.25	0.54	0.20	0.17	0.48	

Standard errors in parentheses  
\* significant at 5%; \*\* significant at 1%

Observations	255	207	48	255	207	48	255	207	48
R-squared	0.45	0.43	0.17	0.26	0.25	0.54	0.20	0.17	0.48

Standard errors in parentheses  
 \* significant at 5%; \*\* significant at 1%

**TABLE 2.3**  
 Population, Income, and Housing Value Growth at the City Level

	Change in population, 1980-2000			Change in income, 1980-2000			Change in housing value, 1980-2000		
	All Cities (1)	East, Central, and South Cities (2)	West Cities (3)	All Cities (4)	East, Central, and South Cities (5)	West Cities (6)	All Cities (7)	East, Central, and South Cities (8)	West Cities (9)
Log of population, 1980	-0.016 (0.0010)	-0.022 (0.011)*	0.000 (0.021)	-0.022 (0.006)	-0.001 (0.007)	-0.002 (0.011)	-0.020 (0.009)*	-0.025 (0.010)*	-0.016 (0.020)
Log of population density, 1980	-0.094 (0.011)**	-0.085 (0.012)**	-0.178 (0.027)**	0.023 (0.007)**	0.020 (0.007)**	0.009 (0.014)	-0.131 (0.010)**	-0.116 (0.011)**	-0.210 (0.025)**
Median January temperature	0.007 (0.001)**	0.006 (0.001)**	0.001 (0.002)	0.002 (0.000)**	0.001 (0.000)**	0.003 (0.001)**	0.004 (0.001)**	0.004 (0.001)**	-0.001 (0.001)
% of population with a BA or higher, 1980	0.386 (0.081)**	0.636 (0.082)**	-0.729 (0.160)**	0.335 (0.044)**	0.214 (0.051)**	0.558 (0.086)**	0.519 (0.072)**	0.702 (0.074)**	-0.225 (0.151)
Constant	0.787 (0.132)**	0.729 (0.139)**	1.914 (0.288)**	-0.183 (0.076)*	-0.127 (0.087)	-0.110 (0.155)	1.247 (0.117)**	1.128 (0.126)**	2.301 (0.272)**
Observations	921	653	253	903	652	251	921	653	253
R-squared	0.22	0.26	0.21	0.11	0.04	0.17	0.27	0.34	0.27

Standard errors in parentheses  
 \* significant at 5%; \*\* significant at 1%

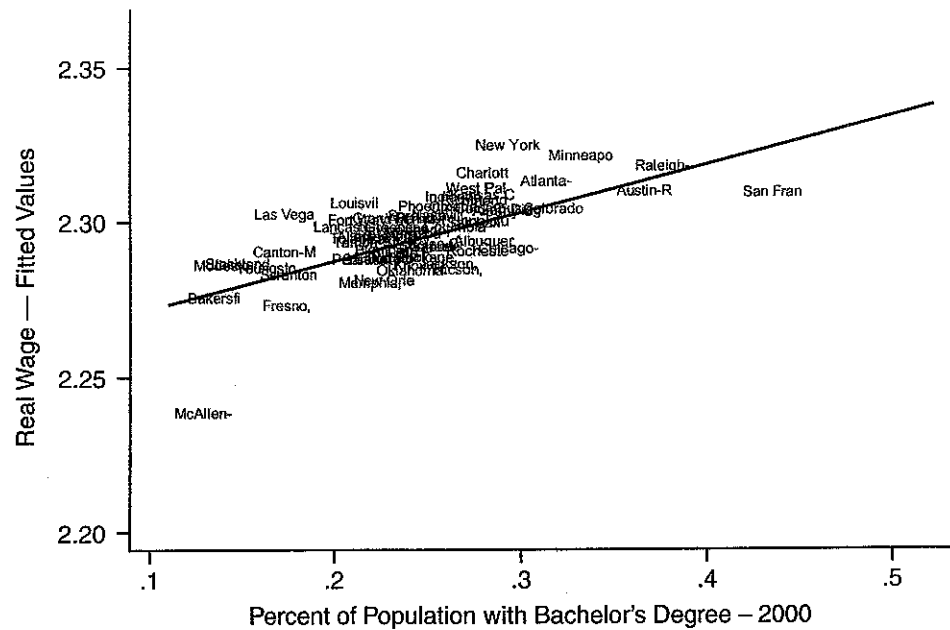


Fig. 2.8 Area-Level Incomes on Area-Level Human Capital

Housing price growth is a third measure of urban success, as the price of housing can be seen as the willingness of people to pay to live in a particular place. In regression (7), (8), and (9), we look at the correlates of housing price growth. Regression (7) shows that the connection between housing prices and skills is robustly positive for both metropolitan areas and cities. This rise in housing prices, though, does not offset the rise in incomes enough to create a decline in real incomes in more skilled cities (Glaeser and Saiz 2003). Since housing represents about 30 percent of expenditure, as a general rule a coefficient in a housing regression must be  $10/3$  times the coefficient in an income regression for real incomes to fall. At the metropolitan-area level, the coefficient on the skill variable is lower in the housing price change regression than it is in the income change regression. In the city-level regression, the coefficient on the skill variable is higher in the housing price change regression, but not by enough to suggest that real incomes actually declined.

Regressions (8) and (9) depict regional patterns that look quite different at the city- and metropolitan-area level. At the city level, the effect of human capital is greater outside the West. In the metropolitan-area level, the effect of human capital is actually greatest in the West. Much of this difference reflects the fact that the West has seen huge appreciation in prices in many places that were initially low skilled, but were in highly productive metropolitan areas.

Why is there such a robust correlation between skills and city success? Can our theories of the connection between skills and urban suc-



cess explain the empirical patterns across regions? At a broad level, the tendency of skills to predict population growth might reflect a connection between skills and improvements in productivity, quality, or even the housing supply. Economic theory, however, tells us that if skill levels were driving population growth by boosting housing supply, then we should see declining housing prices in highly skilled areas, and that is obviously false. Moreover, there is no particular reason to think that skill levels should be related to more expansions of the housing stock, and every reason to think that more skilled people have been more effective in restricting new construction.

Yet there are good reasons to think that the rise of skilled places might reflect improvements in the quality of life. Skilled places do have less crime and richer tax rolls. Perhaps people are more willing to pay to have their children go to school with the children of better-educated parents. Still, economic theory gives us a good test to see if the connection between skills and growth represents an increased willingness to pay to have skilled neighbors. If the rise of skilled cities represented quality-of-life improvements, then we should expect to see real wages declining in skilled cities or equivalent, which would require that the rise in housing prices in these areas is a lot stronger than the rise in incomes.

A spatial equilibrium requires that high levels of quality of life be offset by low real wages. If this weren't the case, then people would start bidding up housing prices in places that offered both high real wages and a good quality of life. This logic suggests that places with an improving quality of life should have declining real wages as housing price increases outstrip nominal income increases. But research by both myself and Albert Saiz (2003) and Jesse M. Shapiro (2005) investigates the connection between area-level skills and the rise in real wages, and finds that real wages are rising, not falling, in places with high initial skill levels. Housing prices are rising, but they are not rising by enough to offset the rise in incomes, so it seems as if the rise in skilled cities is not ultimately about amenity levels.

Instead, the rise of the skilled city reflects an increasing connection between city-level productivity and skills. Since firms have the opportunity to leave high-wage areas, we tend to interpret rising wages in an area as evidence that the productivity of that area is rising, and wages in skilled areas have risen dramatically. The increasing connection between skills and incomes may reflect the highly innovative economies of skilled cities, or it may reflect the fact that working around skilled people is a good way to acquire skills. The wage and income data cannot distinguish between these hypotheses, but they do strongly suggest that skilled cities have become increasingly productive relative to unskilled ones, and this is the reason why colder cities like Boston and Minneapolis have thrived, while Cleveland and Detroit have not.

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One variant on this hypothesis is that skills are especially crucial for the task of urban reinvention. According to this view, the differences between the cities of the East and the West suggest that skills are more important for the task of reconfiguring erstwhile manufacturing cities that were hit hard by improvements in transportation technology (Glaeser and Saiz 2003). This view follows a long tradition in economics that suggests that skills are particularly valuable during times of change—a view associated with the work of T. W. Schultz and Finis Welch.

There is, however, another explanation for why there are such regional differences: the housing supply. According to this perspective, highly skilled western cities restricted growth and low-skilled cities in that region did not, because skilled homeowners are more effective in blocking new projects than people with less education. Certainly, the leadership in the antigrowth movements in California came from the upper reaches of the educational universe, including the wife of Clark Kerr, the leader of the University of California system. Since the other regions of the country had much less growth overall, educated opponents of new construction had less scope to impact increases in the housing stock in the West. This view argues that skills increased productivity everywhere, but they didn't increase population growth in the West because of the association between skills and limits on new construction.

The evidence on income and housing price changes, at least at the metropolitan-area level, seems to support the notion that skills have impacted productivity everywhere. This tends to favor the housing supply interpretation of the lack of connection between education and population growth in the South. Still, this evidence is suggestive rather than conclusive, and there is little doubt that skills have been a key predictor of economic success in colder cities. Skilled places certainly have been more successful in reinventing themselves.

The statistical evidence is corroborated by a more fine-grained analysis of the economic revitalizations of New York and Boston. New York's economic success has become increasingly tied to its enormous strength in financial services. Today, roughly 40 percent of Manhattan's payroll is in the financial service sector. The rise of New York City finance post-1970 is a tribute to the ability of dense agglomerations of smart people to innovate. Just as in Detroit in 1900, each innovation creates the possibility for more new ideas along with a virtuous cycle of new ideas and productivity improvements.

In the 1960s, the groundwork was being laid for New York's finance-based resurgence. There was an increasing transfer of ideas about measuring and evaluating risk that moved from academia to practitioners. Highlights of this process included the use of the mean-variance frontier,

ially crucial for differences between cities are more important in determining cities that are more innovative (Glaeser and Rosenthal 2003). Economics that suggest a change—a shift in the

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the capital asset pricing model, and the Black-Scholes options pricing formula. An increasingly quantitative body of financial professionals was able to look for situations where extra return made it sensible to move beyond the most blue chip of securities.

The increasing ability to evaluate risk made it possible for Michael Milken to sell high-yield debt (aka junk bonds) to investors who decided that the returns on these assets were high enough to offset the risks. The ability to sell high-yield debt made the takeover boom of the 1980s possible, because leveraged buyout specialists, like Henry Kravis, were able to borrow enough to buy large companies. This takeover boom was able to realize large returns by taking control of companies away from underperforming management. In the late 1980s, mortgage-backed securities emerged as a vast market, and the strength of this market again built on the ability to assess risk well. Modern hedge funds are essentially just the latest incarnation of the ongoing improvements in the ability to assess the mispricing of assets. Idea built on idea, as people in older, denser areas learned from each other and created an innovation engine.

The success of New York City finance was mirrored in other cities such as Boston and Minneapolis as well as regions like Silicon Valley, where skilled people worked close to one another and borrowed each other's innovations. In nineteenth-century Chicago and New York, the idea-producing capacity of cities was an interesting offshoot of the major urban business of producing manufactured goods, and then shipping them by rail and water. In the twenty-first century, idea production appears to have become the major business of many metropolitan areas, and skilled workers seem to be the most important element in the production of ideas.

One possible hypothesis is that the same decline in transportation costs that hurt Detroit saved New York. My work with Giacomo Ponzetto (2007) presents a model where the death of distance has two separate effects on urban economies. First, manufacturing firms leave urban areas to use the cheaper land and labor available elsewhere. Second, the increasingly global marketplace means that the returns to innovation have increased. In the 1950s, most good ideas would have been used primarily in regional or at most national markets. Good ideas today can be exported easily throughout the globe. Since urban density speeds the flow of new ideas, an increase in the value of innovation naturally strengthens those cities that specialize in innovation.

One way of thinking about the role of declining transport costs on innovation is that in an increasingly flat world, the returns to being the smartest person on the planet increase dramatically. But you can only become the smartest person on the planet by working around other

smart people, and this increases the returns to locating in centers of intellectual agglomeration like Wall Street or Silicon Valley. As long as face-to-face contact delivers some edge, no matter how small, in the acquisition of knowledge, then increasing returns to knowledge will also increase the returns to the face-to-face contact that is provided by urban proximity.

One piece of evidence supporting the importance of this force is the increasing tendency of skilled people to live around other skilled people (Berry and Glaeser 2005). Figure 2.9 shows the relationship between the growth of the share of the adult population with college degrees between 1980 and 2000, and the initial share of the adult population with college degrees. As the share of the population with college degrees in 1980 increased by 10 percent, the share of the population with college degrees in 2000 increased by 3.3 percent. If having the best new ideas has become increasingly valuable, and if new ideas are produced by agglomerations of skilled people, then we shouldn't be surprised to see that skilled people are increasingly choosing to work near one another.

Of course, the tendency of skilled people to go to skilled cities is not the only factor in urban population growth over the last fifteen years. As David Card's chapter in the volume emphasizes, the population growth of many larger cities is tied closer to increasing numbers of immigrants coming to urban areas. Cities have had a long-standing comparative advantage in being a port of entry for immigrants. Ethnic enclaves and the ability to get by without multiple cars continue to make dense cities attractive for immigrants. The economic attraction of immigrants to cities like New York and Chicago also depends on the overall economic health of those cities, which itself depends on the idea-producing, skill-intensive sectors.

The rising importance of skills to urban success provides a key policy implication for local leaders hoping to generate income and population growth. Attracting and retaining skilled people is a critical task for local governments. Large-scale local redistribution that taxes the rich and firms will have the unfortunate side effect of pushing the skilled out of the city. The mobility of the skilled profoundly limits the ability of city governments to tax their richer workers.

There is some debate about how to attract the skilled. Some authors have advocated cultural policies that support the arts and funky downtowns. I am more convinced that skilled people respond to good schools, low crime rates, and general improvements in the quality of life. Such policies are likely to be beneficial, even if they don't attract the skilled. The impact that they might have on attracting smart people is just an extra reason to fight to improve local school districts or make private schooling options more feasible.





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TABLE 2.4  
U.S. MSA with Highest and Lowest Estimated Amenity Values

<i>Highest</i>	<i>Lowest</i>
Honolulu	Stamford, CT
Santa Cruz, CA	Norwalk, CT
Santa Barbara–Santa Maria–Lompoc	Anchorage
Salinas–Seaside–Monterey, CA	Rochester, MN
Los Angeles–Long Beach	Detroit
San Francisco	Midland, TX
San Jose, CA	Trenton, NJ
Santa Rosa–Petaluma, CA	Minneapolis–Saint Paul
Oxnard–Ventura, CA	Nassau–Suffolk, NY
San Diego	Bloomington–Normal, IL

*Note:* Estimated amenity value measured as residual from an OLS regression of log median house value on log median income in 1990.

*Source:* Originally appeared in Glaeser, Kolko, and Saiz (2001).

search I did with Jed Kolko and Saiz (2001), I regress the logarithm of housing prices on the logarithm of median family income at the metropolitan-area level in 1980. The raw coefficient is 1.04, so that a 1 log point increase in income is associated with a 1.04 log point increase in housing prices. The residual from this regression, which is essentially high housing prices unexplained by income, provides an index of the level of consumption amenities in a particular place.

To check the validity of this approach, table 2.4 shows the top and bottom ten metropolitan areas ranked by this consumption index. We generally think of urban amenities as including much more than the weather. Good museums, low electricity prices, and short commutes are all pleasant urban attributes that should push the consumption index up by either raising housing prices or depressing wages. Yet the top ten cities on the list are either in California or Hawaii. This list certainly suggests that California's temperate climate seems to be enormously valued by the market. Weather appears less critical in explaining the bottom ten cities on the list, some of which are cold (Rochester, Minnesota, and Anchorage) and one of which is hot (Midland, Texas). To my eyes, these lists seem to correspond generally with a reasonable view of what places have high and low amenities.

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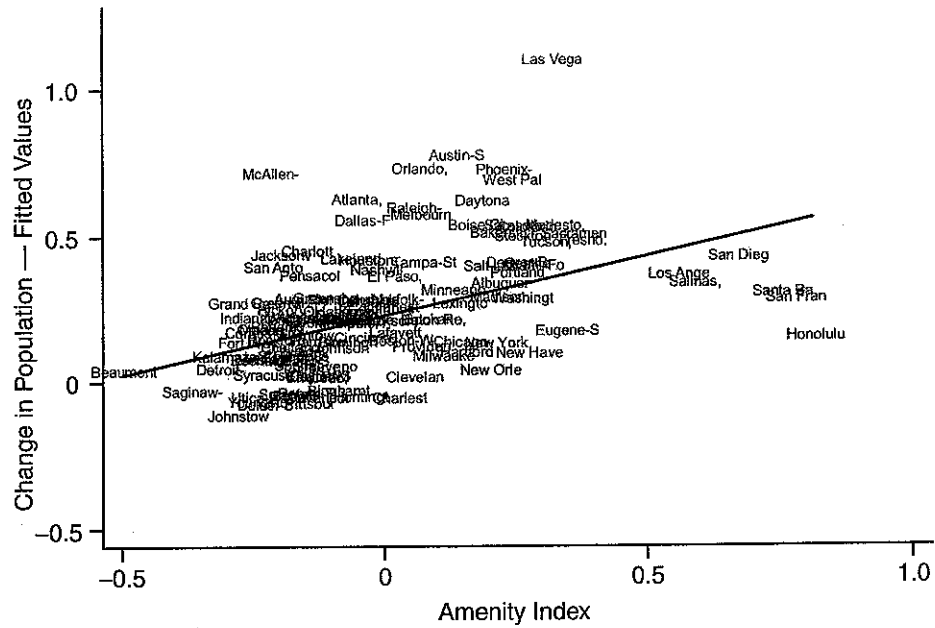


Fig. 2.11 Population Growth on Amenity Index, 1980–2000

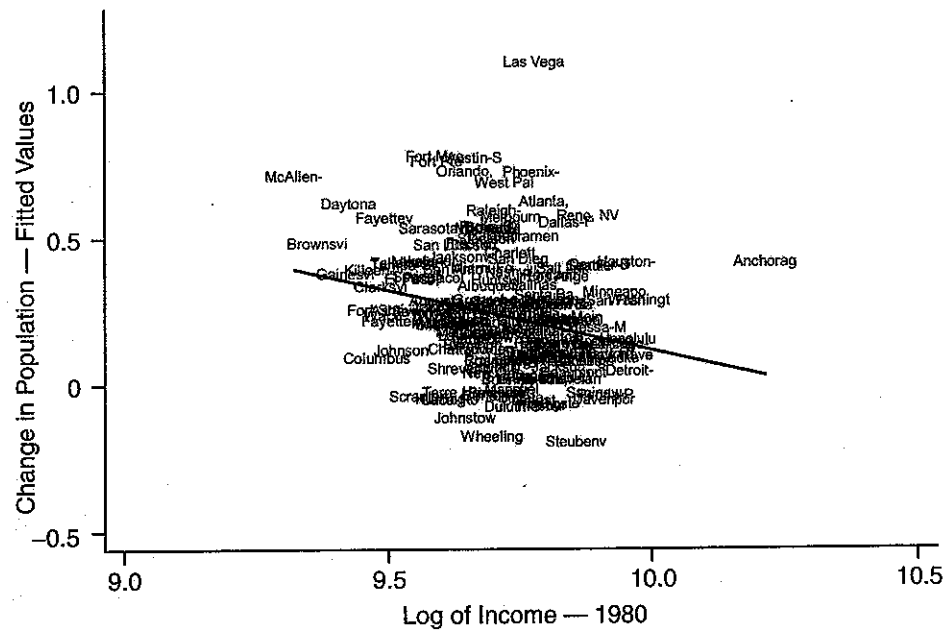


Fig. 2.12 Population Growth on 1980 Log Income, 1980–2000

Figure 2.11 shows the correlation between this amenity index and population growth between 1980 and 2000. A 1 standard deviation increase in the amenity index is associated with a 0.403 log point increase in population growth over this time period. People appear to be mov-

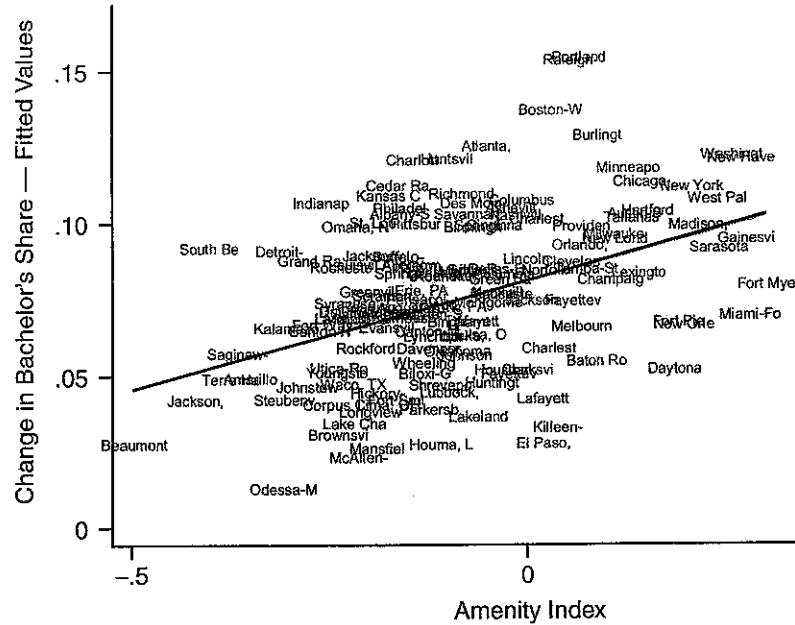
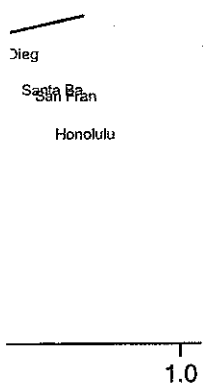


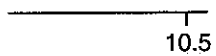
Fig. 2.13 Growth in Educated Adults Correlated with City Amenities, 1980–2000

ing toward high-amenity places. Figure 2.12 illustrates the correlation between the logarithm of income in 1980 and population growth over the next twenty years. Income is a plausible proxy for productivity, so a comparison of the two figures shows that amenity levels have been a stronger predictor than productivity of urban growth over the last twenty years.

One particularly important fact is that high-amenity places have seen their skill levels increase. Figure 2.13 shows the correlation between changes in the share of the population with college degrees and the amenity index for all U.S. regions except the West, as the rise of the immigrant population in the West makes this relationship quite different from the rest of the country. Places that seem to be more pleasant have increasingly attracted high-skilled people who are able to pay more to enjoy those amenities. It seems as if there has been increasing sorting across space between high-earnings individuals and highly attractive areas.

The connection between skill upgrading and consumer amenities suggests a crucial link between the consumer city and the skilled city. It is quite possible that improving consumer amenities may be the best way for a city to attract more skilled workers. As such, the right public policy question might not be whether to work for a consumer or skilled city but rather how to use a consumer city to create a skilled one.

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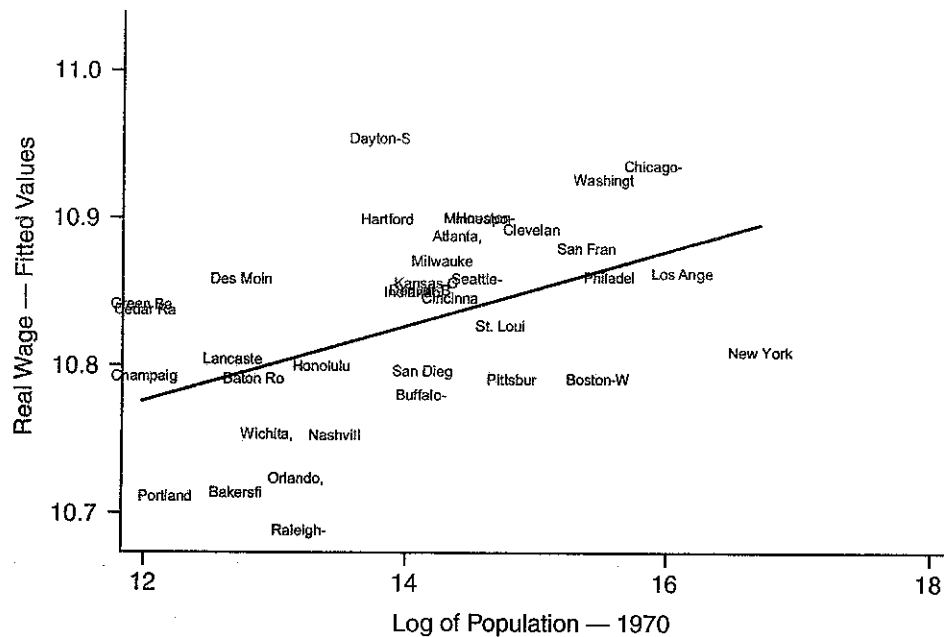


Fig. 2.14 Real Wages Correlated with City Population, 1970

### *Improving Amenity Levels in Large Cities*

In 1970, the older, colder cities in the United States were not only facing economic distress but were also places that most people found unpleasant to live. Vast quantities of middle- and upper-income Americans had fled the old downtowns for suburban areas. Yet over the past thirty years, many of these cities have become more pleasant and have attracted people who want the unique amenities of dense, urban areas.

The rising amenity levels in big cities can be seen in real wage patterns. Since the Rosen-Roback framework tells us that people must be paid high real wages to compensate for low consumer amenities, I will look at real wage levels across cities to infer amenity levels. Figure 2.14 shows the correlation between real wages and the logarithm of city population in 1970. The real wage numbers were calculated using median family income from the U.S. Census and the American Chamber of Commerce local price level.

Figure 2.15 repeats figure 2.14 using year 2000 data. In 1970, big cities paid big real wage premiums, which economics tells us implies that these places had low levels of amenities. Thirty years later, there is no longer a real wage premium associated with living in a big city. Once firms needed to pay people a big real wage premium to locate in New York City. Today, workers no longer require such an incentive.

The improvement in the amenities of big cities is also seen in com-



ties. Thirty years later, there is an increasing crop of people with the resources to pay for expensive sky-rise apartments and private schools to be able to enjoy the consumption benefits of density.

The second major force in resurrecting urban downtowns has been a significant reduction in the amount of crime. City streets lose their luster when they are unsafe, as they were in the 1970s. Since that decade, in city after city, crime levels have fallen dramatically because of large-scale incarceration, improvements in policing, and possibly abortion (Donohue and Levitt 2001). Safer streets have made it easier for people to enjoy living downtown. Public spaces, no matter how beautiful, have little value if they are unsafe.

The rising importance of consumer amenities, and the ability of some downtowns to become attractive consumer cities, should lead local leaders to think that quality-of-life issues are a major ingredient in urban success. Indeed, it is quite reasonable to think that the best economic development strategy is to provide the amenities that will attract smart people and then get out of their way. Yet it is also worth remembering that there have only been a few older cities that have been able to thrive in this manner. For most Americans, good consumer cities mean car based living on large lots at the edges of metropolitan areas. This may mean that it will be quite hard for many metropolitan areas to thrive using the consumer city strategy.

There is a third, equally crucial post-1970 trend: housing supply has become an increasingly important element in urban growth and decline. It is impossible to understand why Houston and Atlanta are growing so much more quickly than coastal California without understanding the differences in land-use regulations between these areas. Given that the chapter by Joseph Gyourko in this volume addresses housing-related issues, though, I will not discuss them here.

### **The Consumer City and the Skilled City**

In this penultimate section, I will look at the policy implications that come from the rise of both the skilled and the consumer city. While both trends are clear in the data, it is less clear how local leaders can respond to those trends. The skill base of a population is enormously sticky: it isn't easy for a mayor to snap their fingers and turn a low-skill city, like Cleveland, into a high-skill one, such as Boston. It is even more difficult to improve the local weather. Nonetheless, these two trends do give us some guide to government policy.

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three key components to supporting the growth of skills. Perhaps most obviously, the education system is crucial. Good schools both create more educated graduates and attract more educated parents who want their children to have better schools. The problem with this advice is that fixing schools is a difficult problem, especially if more money doesn't translate automatically into higher school quality.

In many cases, changing the structure of the school system is at least as important as spending more on schools. One great advantage of big cities is that their size abets competition, which increases productivity and spurs innovation. Yet our public schools are usually organized as one big citywide monopoly, which eliminates any of that urban edge. Surely it makes sense to follow the path that some big cities have taken toward allowing more competition across schools and more parental choice within school districts. Charter schools also seem to hold some promise. It also appears sensible to be friendly toward private and parochial schools, which can provide high-quality schooling for some education-oriented parents, who are so important to attract to urban areas.

A second element of attracting skilled people is to avoid redistributive policies that target the rich and drive them away. The skilled population is extremely mobile and when they are punitively taxed, then they will flee. City governments have increasingly recognized that they do not have captive populations, and there has been a decline in the tendency to try to run a local welfare state. While it is hard to attract the skilled, it is awfully easy to repel them, and city governments at the least need to consistently ask whether their policies are stopping skilled people from coming to their city.

The final element in being pro-skill is to improve consumer amenities. As I noted in the last section, skilled people have flocked to high-amenity cities. The increasingly wealthy residents of some older downtowns reflect, in part, declining crime levels and an increased willingness to pay for the high level of consumer amenities that can only be provided in a big urban area. Furthermore, since cities are dense, they can offer short commutes, which are particularly valuable to skilled people with a high value of time.

What are the policies that can produce a consumer city? Certainly the most significant job of the city is safety. Crime was the great destroyer of urban amenities in the 1960s and 1970s. Keeping police strong and effective is a critical ingredient in maintaining a consumer city.

There are other forms of public infrastructure that can also help to create the consumer. Some of the urban renewal projects, like Boston's Faneuil Hall or New York's South Street Seaport, have created successful playgrounds for both tourists and local residents. If the costs of these

projects are kept in check, and if they are well targeted toward the desired audience, then they can be part of a successful consumer city strategy.

Improvements in regulation are another essential ingredient in fostering consumer cities. In too many places, restrictions on land use make it difficult to develop exciting neighborhoods. Traditional barriers to combining workplaces and residences are often out of date and make it hard to reconfigure cities for a new reality where workplaces are shining glass towers rather than smoke-belching factories. Entertainment entrepreneurs don't need subsidies but they do need the freedom to innovate.

A final ingredient in successful consumer cities is transportation policy. People need to be able to speedily access entertainment venues if the city is to be fully enjoyed. Innovative policies, like congestion charges, offer one way to make sure that city streets are used more efficiently.

### Conclusion

Urban change has been a major feature of American life for the last 375 years. Cities boomed in the eighteenth and nineteenth centuries to take advantage of waterways, and allow the wealth of the new world to be brought to the markets of the East Coast and the world in general. In the twentieth century, declining transportation costs made those cities seem obsolete. The car and truck ushered in a new era of booming Sun Belt cities built around the automobile.

Over the last thirty years, three new trends have arisen that challenge the view that sun always means success and cold always implies failure. First, the older cities that had a substantial stock of well-educated workers have managed to reinvent themselves as centers for idea-oriented industries, like finance and technology. As ideas get more valuable in an increasingly global economy, the returns for producing new ideas have risen, and proximity to smart people helps in producing ideas. Second, some of the older cities are now succeeding as places of consumption as well as production. Rising incomes and declining crime levels have meant that a select group of people are willing to pay for the attractions of older downtowns. Third, within the Sun Belt there has been a schism between the more temperate areas that have restricted construction and the places with hotter summers that have encouraged building. Both income and housing prices have risen strikingly as a result in those temperate areas, while population growth has been greatest in areas with hot summers.

There are two general policy lessons that follow from all of this urban change. At the local level, leaders must respect the mobility of their

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populations. They cannot set policies in the expectation that their firms or wealthy residents are fixed. This puts a strong brake on the ability of localities to redistribute income. They should set policies recognizing that they have the ability to attract potential entrepreneurs. This means that basic urban governance that improves the quality of life for urban residents becomes important as a way of attracting smart people who will then lead the economy.

At the national level, the strength of the forces that move cities suggests the futility of place-based policies meant to resurrect declining areas. Certainly, the urban renewal programs of the 1950s and 1960s have at best a mixed record. The obligation of the government is to people, not places. In many cases, people are best served by leaving areas that have passed their period of economic prominence. Economic efficiency would seem to be best served by a free market where people can choose where to live without the national government trying to intervene.

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