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Urban Colossus: Why is New York America's Largest City?

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ABSTRACT

New York has been remarkably successful relative to any other large city outside of the sunbelt and it remains the nation's premier metropolis. What accounts for New York's rise and continuing success? The rise of New York in the early nineteenth century is the result of technological changes that moved ocean shipping from a point-to-point system to a hub and spoke system; New York's geography made it the natural hub of this system. Manufacturing then centered in New York because the hub of a transport system is, in many cases, the ideal place to transform raw materials into finished goods. This initial dominance was entrenched by New York's role as the hub for immigration. In the late 20th century, New York's survival is based almost entirely on finance and business services, which are also legacies of the port. In this period, New York's role as a hub still matters, but it is far less important than the edge that density and agglomeration give to the acquisition of knowledge.

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I. Introduction

For 200 years, New York City has been the largest city in the nation, and it continues to outperform most cities that were once its competitors. In the 1990s, the city's population grew by 9 percent and finally passed the eight million mark. New York is the only one of the 16 largest cities in the northeastern or mid-western United States with a higher population today than it had 50 years ago. New York's economy remains robust. Payroll per employee is more than \$80,000 per year in Manhattan's largest industry and almost \$200,000 per year in Manhattan's second largest industry.

All cities, even New York, go through periods of crisis and seeming rebirth, and New York certainly went through a real crisis in the 1970s. But while the dark periods for Boston, Chicago or Washington D.C. lasted for thirty or fifty years, New York's worst period lasted for less than a decade. While Boston's history is one of ongoing crises and reinvention (Glaeser, 2005), New York's history is one of almost unbroken triumph. The remarkable thing about New York is its ability to thrive despite the massive technological changes that challenged every other dense city that was built around public transportation.

What explains New York's ongoing ability to dominate America's urban landscape? In this essay, I explore the economic history of the city and argue that there are really three themes that emerge. First, New York's emergence as the nation's premier port was not the result of happenstance followed by lemming-like agglomeration. While there are limits to geographic determinism, the clear superiority of New York's port both in its initial depth, the Hudson River and its location, and then the additional superiority added by the water-borne connection to the Great Lakes ensured that this would be America's port. In this case, geography really was destiny and the significance of trade and immigration to the early republic ensured that New York would dominate.

The second lesson from New York's history is the importance of simple transportation cost and scale economies. The rise of New York's three great manufacturing industries in the 19th century, sugar refining, publishing and the garment trade, depended on New York's place at the center of a transport hub. In all three cases, manufacturing transformed products from outside of the U.S. into finished goods that would be sold within the country. Since New York was a hub and products were dispersed throughout the country and the world after entry into that hub, it made perfect sense to do the manufacturing in the city.

The tendency of people to attract more people is the central idea of urban economics, and nowhere is that more obvious than in the case of America's largest city. An initial advantage as a port then attracted manufacturing and services to cater to the mercantile firms and to take advantage of their low shipping costs. The traditional model of this phenomenon (Krugman, 1991) emphasizes that scale matters because it allows manufacturers to save on costs in supplying goods to residents of the city. But the story of New York suggests that this was less important than the advantage of producing in a central location for export elsewhere. Obviously, scale economies were also important because otherwise, there would be no incentive to centralize manufacturing

New York's growth in the early 19th century was driven by the rise of manufacturing in the city which itself depended on the city's primacy as a port. New York's growth in the late 19th century owed at least as much to its role as the entryway for immigrants into the U.S. Indeed, the basic industrial structure of New York remained remarkably consistent between 1860 and 1910 while the scale increased enormously. Immigrants stayed in New York in port for "consumption" reasons. Ethnic neighborhoods made the transition to the new world easier and New York as a city acquired over time a remarkable capacity to cater to immigrant needs. However, the immigrants also stayed because the traditional New York industries (especially the garment industry) were able to increase in scale to accommodate extra labor without a huge drop in wages.

In the middle 20th century a large number of technological changes challenged cities throughout the United States. Declining transport costs reduced the advantages of access to waterways. The air conditioner helped move citizens west and south. The automobile and the truck enabled the population to disperse from city centers to outlying areas. Almost all of America's biggest cities declined, and sometimes declined precipitously over the past 50 years in response to the shock. Table 1 shows that eight of the ten largest cities in the U.S. in 1930 have a lower population today than they did then. New York and Los Angeles are the two exceptions.

New York's remarkable survival is a result of its dominance in the fields of finance, business services and corporate management. Forty years ago, Chinitz (1961) described New York as a model of diversity in comparison with industrial Pittsburgh. New York in 2005 doesn't look nearly as diverse. 28 percent of Manhattan's payroll goes to workers in a single three-digit industry. 56 percent of Manhattan's payroll goes to workers in four three-digit industries. New York's 20th century success primarily reflects its ability to attract and retain a single industry, and its future appears related to a continuing ability to hold that industry.

The attraction of finance and business services to New York reflects the advantages of the city in facilitating face-to-face contact and the spread of information. Transportation costs for goods have declined by 95 percent over the 20th century (Glaeser and Kohlhase, 2004), but there is no comparable reduction in the cost of moving people. After all, the primary cost involved in the movement of people is the opportunity cost of time, which rises with wages. For this reason, cities, which represent the elimination of physical distance between people, still excel in delivering services. In addition, as the demand for timely information rises, the proximity which facilitates that flow of that information continues to be critical. The success of finance and business services on the island of Manhattan hinges critically on the advantage that the island has in bringing people together and speeding the flow of knowledge.

These advantages are the result of scale and density which are themselves the result of New York's unique history. The vast number of people crammed together on a narrow island is what makes Manhattan an information hub. The flow of ideas has been exacerbated by the tendency of highly skilled people and industries to locate in the city, which is natural, given that density and idea flows appear to complement one another. The most visible result of New York's strength as a conduit for information is its penchant for information-intensive industries, like finance or publishing, to locate in the city.

While New York's ability to weather past challenges has been remarkable, we cannot be certain that its future success will remain assured. New York's importance as a port is long past. Declining transport costs for moving goods indicates that the scale advantages remain important only in services. Even in this area, technological changes may reduce New York's transportation cost advantages. In the long run, New York City's success depends upon its advantage in transmitting knowledge quickly. This advantage may also be eroded by changes in information technology, but in the short run, information technology may increase the value of face-to-face interaction and make New York stronger, not weaker (Gaspar and Glaeser, 1998).

II. The Early City: 1624-1790

The traditional story of New York's origin is that in 1626, the island of Manhattan was bought by Peter Minuit from the Lenapes for "sixty guilders worth of trade goods" (Burrows and Wallace, 1999, p. 23). New Amsterdam was founded by the Dutch West India Company as a trading post oriented towards the lucrative fur trade. As Burrows and Wallace (1999, p. 23) explain, the fur trade involved two exchanges: "In the first, European traders and coastal Algonkians exchanged manufactured goods for wampum; in the second, European traders used wampum (and manufactured goods) to obtain first at Fort Orange [Albany]." Manhattan's location—a deep-water port at the heart of the Hudson—made it an ideal center for commerce, connecting Europeans, coastal native Americans who dealt in Wampum and upriver native Americans who had access to furs.

Manufacturing had a place in New York, from its inception. An essential part of the trade with the natives was the production of manufactured goods and these were cheaper to produce in New Amsterdam than to import from the Netherlands. Agglomeration in a city was natural both because of the gains from centralized commerce and also because there was substantial risk from ongoing battles with natives. A significant advantage of lower Manhattan was that because it was surrounded on three sides by water, it was easier to defend.

The Dutch colonies of New Netherlands were not solely fur trading outposts. Land was abundant and a steady stream of settlers acquired land (sometimes vast tracts of it like Rensselaerswyck) and began producing basic agricultural products like bread, corn and meat. The density of settlers was much lower than in Massachusetts, but gradually the New Amsterdam area also developed an agricultural hinterland that could both feed the traders and seamen in the city and also begin to export basic foodstuff to more colonies that exported cash crops.

In 1664, the town was conquered by the English and renamed New York. The city was conquered, but the English were only able to keep the city by giving the Dutch West India Company the more lucrative colony of Surinam. The integration of New York with the English colonies increased the potential for trading opportunities and the population of the city surged to approximately 3,000 in 1680 (Burrows and Wallace, 1999) and 5,000 in 1698 (Kantrowitz, 1995). While many Dutch merchants continued to trade with the Netherlands and the Dutch colonies, a growing group of English merchants and laborers came to the city as well.

During this period, New York's trade became primarily oriented towards the West Indies. The primary exports of the port were bread and flour, made from wheat grown in the farms of New York, Connecticut and New Jersey. This model of selling foodstuffs to the colonies which had cash crops that could be sold back in Europe had been pioneered by Bostonians in the late 1630s, but New Yorkers (and Philadelphians) had several

significant advantages over the Boston merchants. The land in New York and Pennsylvania was better than the land in Massachusetts. The Hudson and Delaware rivers were longer, bigger rivers than the Charles. Indeed, the one long river in New England, the Connecticut, suffered from heavy silt that formed a sandbar near its mouth. New York's Dutch heritage gave it an advantage over Philadelphia in dealing with the Dutch colonies in the Caribbean.

New York also offered one more striking advantage over Boston: its ethnic heterogeneity and religious tolerance. Boston's puritan heritage carried both advantages and disadvantages. The strong religious community invested in education and generally proved able to organize the city and provide basic public goods. Quaker Philadelphia may have been more tolerant than Puritan Boston but it was still fundamentally a faith-based colony. By contrast, New York was irreligious from the start, and there were fewer barriers against Jewish or Catholic immigrants. Commercial interests ensured that New York City was unusually tolerant both relative to other colonies and relative to England, itself. New York's place as a haven for America's ethnically heterogeneous immigrants made the city a magnet for immigrants from its earliest years.

Despite these advantages, the growth of New York during its first 130 years was relatively modest. Generally, New York was America's third or fourth busiest port. In tonnage, it lagged behind Boston and Charleston in the early 18th century and behind Boston and Philadelphia in the late colonial period. Boston had a stronger maritime tradition; Philadelphia had a more developed hinterland. As of 1753, Manhattan had 13,000 inhabitants making it one of the colonies bigger cities, but hardly a dominant metropolis.

The French and Indian War ended the French presence in Canada and increased the relative value of New York's access through the Hudson to the north. The Revolutionary War had an even more remarkable impact on New York City. The port was the only large city that remained in British hands throughout the war. While combat was certainly disruptive, the port's activity also expanded as it provided entry and exit for military men

and material. Perhaps just as importantly, Boston and Philadelphia's long term reputations as centers of revolution meant that New York would end up being the preferred delivery point for British goods coming into the new republic.

As of 1786, Manhattan had 23,614 residents. In the first American census, the city of New York had 33,131 residents. Over the entire 1698-1786 period, the population of Manhattan had grown by 1.8 percent annually. This increase is impressive, but ultimately far less impressive than the growth of Philadelphia over the same time period. Even though New York was larger than Philadelphia in 1790, Philadelphia was a newer city and it had been bigger than New York for many years during the 18th century. When the constitution was signed in 1789, New York was an important port, but its rise to dominance was still ahead.

III. The Rise to Dominance: 1790-1860

If the growth of New York City prior to 1790 was impressive, the growth over the seventy years after that date was nothing short of spectacular. Figure 1 shows the growth of New York City's population since 1790 and the growth of Manhattan's population since 1900. Figure 2 shows the growth of New York City and Manhattan as a share of the U.S. population. Between 1790 and 1860, New York City's population rose from 33,131 to 813,669. The annual rate of increase rose from 1.8 percent to 4.7 percent. Figure 3 shows the time path of the decadal growth rates of New York City. During every decade, except that war-torn period between 1810 and 1820, New York grew by more than 50 percent per decade. Except for the period when New York's population soared due to the incorporation of Brooklyn, it would never grow by comparable rates again.

By 1860, New York was far and away the biggest and most important city in the United States with almost 250,000 residents more than Philadelphia. Over the 140 years since that date, New York's preeminence among American cities has never been challenged.

In a sense, the key to understanding New York's tremendous success lies in understanding this seventy year period.

There are two distinct, but closely related growth processes that occurred over this time period. First, the port of New York came to completely dominate American shipping and immigration. Second, New York exploded as a manufacturing town as industries like sugar, publishing and most importantly the garment trade clustered around the port. The growth of New York City's port seems like an almost inevitable result of New York's clear geographic advantages (especially when nature was helped along by the Erie Canal). The growth of manufacturing in the city informs us about the nature of agglomeration economies and transportation costs.

Albion (1970) describes the increased use of New York City as a dumping ground for European goods. The Napoleonic wars (and the War of 1812) had severely curtailed trade between the United States and the United Kingdom. As soon as peace was declared, British merchantmen with millions of dollars of goods hastened to America to finally sell these wares. The merchantmen packed large ships and came to New York to drop their wares, which were then shipped throughout the republic. This basic pattern was to be the model for trade with Europe over the 19th and early 20th centuries.

At the end of the colonial period, Boston, not New York, was America's premier port. Between 1790 and 1820, New York came to supercede Boston and ultimately attracted a large number of Boston merchants and sailors into its harbor. From 1820 to 1860, New York completely surpassed its northern competition in terms of trade. Figure 4 shows the time path of annual imports measured in dollars between 1821 and 1860. At the start of the period, New York's exports were 13 million dollars and Boston's were 12 million dollars. By the end of the period, New York's exports were 145 million dollars and Boston's exports were 17 million dollars. As the figure shows, it was New Orleans, not Boston or Philadelphia, that rivaled New York City by the middle of the 19th century.

What changed? Why had the harbors of Boston and Philadelphia been good enough to be the leading port of the colonial era, but not enough to maintain their strength over the 19th century? There are actually two different sets of answers to this question. First, there are the technical facts that make New York a somewhat superior port. Second, there are the economic factors that translated this modest geographic superiority into complete mercantile dominance. I start with New York's geographic advantages.

A first advantage is New York's central location. While Boston is at the northern edge of the United States, New York is in the center. For ships from England and elsewhere that were trying to make a single delivery to the colonies, New York offered a better location since it would be cheaper to ship goods from New York to the southern colonies or Philadelphia than from Boston. One of the great advantages of the Constitution over the Articles of Confederation is that the Constitution greatly reduced the barriers to interstate trade. As these barriers fell, the possibility for interstate trade increased and the advantage of being located near the center of the colonies increased.

A second advantage was that New York had a large river that facilitated shipping deep into the American continent. The Charles River quickly becomes narrow and shallow and is less than 100 miles long. The Hudson is longer than 300 miles and is extremely navigable. The Erie Canal connects the Hudson to the Great Lake system, which enables goods to travel from the American heartland to Europe completely by water. In an age where water-borne transport was far cheaper than transport by land, New York's access to canals, lakes and rivers gave it a significant edge relative to most of its competitors.

Philadelphia shared some of New York's advantages of centrality and water access to the interior. Of course, Philadelphia's connection with Pittsburgh and the west used both rail and water and as such was decidedly more difficult than New York's pure water connection. Moreover, New York enjoys a third advantage which Philadelphia does not have: direct access to the ocean. The port of Philadelphia is more than 100 miles from the Atlantic whereas the port of New York is less than 20 miles from the ocean. As such, a European ship looking to save time and money would naturally be attracted to New

York. The ports along the Chesapeake Bay, such as Baltimore, also suffered from a greater distance to the ocean.

Finally, New York's port is also superb in its combination of depth, shelter and freedom from ice. New York harbor is protected from the ocean by Staten Island and the Brooklyn peninsula. It is much deeper than the harbor of Boston or Philadelphia and this became increasingly important as ship tonnage increased starting in the 1790s. Finally, New York harbor is less prone to ice than either Boston or Philadelphia. The advantage over Philadelphia occurs because despite Philadelphia's more southern locale, its location on a river means that its water freezes more readily.

These advantages were significant, but they only implied that New York would be the first among equals. The remarkable dominance that the city had over America's exports needs more explanation. Why did New York end up having five or six times the exports of Boston in 1860 and 25 times the exports of Philadelphia in the same year? This question lies at the essence of the agglomeration economies that lie behind cities.

The rise of New York City as the dominant port can be seen as an early example of a hub-and-spoke transportation network. In the earliest period of colonial history, the dominant form of transportation between the new world and the old consisted of point-to-point transport where bales of tobacco were picked up in Virginia and transported to England. But point-to-point transport was plagued with the problem that the exporting areas did not import anywhere near enough goods from England to fill the ships on their voyage to the Americas. First, the southern plantation owners generally maintained a large current account surplus which was offset either by capital accumulation or by paying debts on the purchase of land and slaves. Second, the manufactured goods that were important from the old world used much less space than the tobacco or cotton that was exported. Third, the southern plantation owners found it increasingly efficient to buy from new world producers of manufactured goods or food and avoid the lengthy Atlantic trip.

The lack of southern imports is illustrated in Figure 5, which shows imports and exports out of New York and New Orleans. Throughout the 1821-1860 period, the New York harbor imported more than it exported. This pattern reflected the general tendency of America to run a current account deficit which was offset by shipments of bullion back to the old world. Throughout the same time period, New Orleans maintained a staggering current account surplus. By 1860, New Orleans exported 107 million dollars worth of goods and imported 22 million dollars worth of goods. In a sense, this lack of balance made it somewhat amazing that New Orleans' port could thrive as an export market, despite the enormous advantage of being at the mouth of the Mississippi.

This lack of coincidence of wants was solved in the 18th century, by the early triangle trade where manufactured goods in England were brought to Africa and traded for slaves, which were in turn brought to the Caribbean and the South. The ships reloaded with plantation produce which was then brought to England. But this triangle could hardly survive the elimination of the slave trade in 1808. Moreover, the elimination of the slave trade coincided with an enormous increase in the production of cotton following Eli Whitney's invention of the cotton gin in 1794. At the same time as the South had more and more to export, importation of slaves became illegal.

The "cotton triangle" in New York City solved this problem. Cotton was shipped to New York and was transferred from coastal ships to transatlantic lines. Manufactured goods, often made in the city went south. Ships coming to New York were filled with imported goods from the old world. Ships leaving New York were filled with cotton and other basic commodities being shipped east. While the New York port of the 18th century had focused on shipping flour grown in the vicinity of the harbor, the port of the 19th century became a conduit through which a large amount of the entire colonies trade would pass.

The "cotton triangle" is just one example of New York becoming a hub connecting two spokes. Obviously, New York also connected the river, lake and canal traffic from the west with the transatlantic ships to the New World. Tobacco products from the South came to New York from Baltimore and other more southern ports. More surprisingly,

New York also served as a hub for goods from Philadelphia and even Boston. For example, Boston textile producers would often ship their wares to New York to be sold in that large entrepot to buyers from across the country. Similarly, Philadelphia shipped coal from the Pennsylvania anthracite mines up to Manhattan.

The increasing attractiveness of hub-and-spoke shipping owed much to changes in shipping technology. Two large changes occurred, which both added advantages to having a focal port. First, transatlantic ships became increasingly large over the early 19th century. For example, Albion (1970, p. 398) reports that in 1834, 1950 vessels entered into New York harbor carrying 465 thousand tons of cargo. In 1860, 3982 vessels entered into the harbor carrying 1983 thousand tons of cargo. The average tonnage per ship entering into the harbor increased from 238 tons of cargo to 498 tons of cargo over that 26 year period. The rise in ship size is particularly clear when considering the packet lines that provided regular service from New York to Liverpool. In the early 1820s, these ships typically carried between 300 and 400 tons. By 1838, 1000 tons became normal and the *Amazon* carried 1771 tons in 1854 (Albion, 1970).

These large ships provided great scale economies in that they required smaller crews per ton. Furthermore, they were generally safer and faster than their smaller predecessors. However, this large ship created an indivisibility which makes the gains from a centralized port obvious. While small ships can readily go point-to-point, dropping their small cargoes at disparate locations, larger ships needed a market that could accept its larger cargoes. This created a centralizing tendency, just as scale economies and indivisibilities do in standard models of economic geography (Krugman, 1991). This effect is exactly parallel to the tendency to use the largest planes only for travel between the biggest airports. These bigger ships also increased the advantage inherent in New York's deeper harbor. Philadelphia could readily compete in handling the shallow draft ships of the 18th century, however, the Delaware is simply not deep enough to handle regular commerce with the largest ships of the 19th century.

The second large change of the 19th century was increased specialized shipping, which was in itself a by-product of the increased use of large ships for transatlantic crossings. In a small ship world, the ships that plied the coastal trade and the ships that crossed the ocean were not all that different. However, the rise of big ships meant that it became efficient to use different ships to carry goods up and down the American coast and to carry goods across the Atlantic. Small ships are far more appropriate to pick up smaller cargoes and carry them on shallower waters. Big ships had more of a risk of running aground and could not be used to pick up the smaller cargoes being shipped to and from the disparate settlements of young republic. Instead, it increasingly made sense to use smaller ships, such as schooners, to ply the coastal trade. These ships would then bring their cargoes to New York and then be consolidated into larger cargoes carried in big ships for the transatlantic crossing.

These technological advantages were further abetted by learning-by-doing, specialized investment in port-related infrastructure and the agglomeration of manufacturing (described in the next section). There is little doubt that New York gradually acquired an unequal set of skills and institutions that supported large scale trade. Its auction houses and insurance system became the largest in the Americas. New York invested in its wharves which further enhanced its port. Indeed, the Erie Canal should be also seen as a form of port-related investment that further exacerbated its initial advantages. As trade became more intricate and as financial transactions became larger, gains to specialization increased. As such, the initial advantage that New York had because of its deep harbor and central location ultimately translated into massive dominance as a port.

The rise of the New York port is not an illustration of random accident leading to geographic concentration. New York was the best port in the United States and it should have been the largest. However, its rise does show the conditions under which an initial advantage, which might have been slight, translates into vast scale. Probably the most important reason for centralization was the mismatch between supply and demand especially in the southern colonies. This mismatch in New York's case, as in most cases, led to the advantages of a large market which eliminate the need for bilateral commodity

transactions. A secondary fact was changes in technology that create larger boats and benefit from specialization. These also created scale economies in the port. Finally, these advantages were further advanced by trade-specific infrastructure and trade-specific human capital which became increasingly important in the more complicated world of the 19th century.

The Rise of the Manufacturing City

While the rise of New York City as a port is a striking example of agglomeration economies at work, the majority of New York's burgeoning population was not involved either directly in commerce or in the maritime trades. While Boston specialized in seafaring men, New York's population increasingly engaged in manufacturing. As early as the 1820, New York had 9,523 workers in manufacturing and 3,142 people in commerce. By 1850, there were 43,340 people in manufacturing and 11,360 in commerce. New York's port may have been the catalyst for the city's rise, but New Yorkers were far more likely to be involved in producing manufactured goods than in working on the ships themselves.

Drennan and Matson (1995) include data from the census of manufacturers in various decades. The dominant industries (measured by value) are generally sugar refining, printing and publishing and the garment industry. In the 1810 economic census, sugar refining was the largest industry and it was responsible for more than one-third of the value of total manufactured products in the city. In 1870, sugar would be the second largest industry (by value) in New York City and the largest industry in Kings County (Brooklyn). Even in 1900, sugar was the second largest industry in New York City. Needless to say, sugar's dominance did not continue into the 20th century.

The sugar industry began in New York in the 18th century when Nicholas Bayard opened the first sugar refinery in the city in 1730. Several other refineries followed and in the 19th century, the Havemeyers began refining in Brooklyn. Sugar refining was, certainly

relative to the garment industry, highly capital intensive for its days. These refineries were large industrial undertakings that produced vast returns for early industrialists.

New York's dominant role in the sugar industry resulted from its trade with the West Indies which increasingly specialized in sugar production in the 1750s and 1760s. During this period, New York flour was shipped down to the Caribbean and raw sugar was one of the commodities that returned in the holds of the ships. This raw sugar would then be refined in New York and then consumed in the city, or shipped elsewhere. This pattern would continue after the Revolutionary War where New York's central role as the hub of a trading network meant that sugar passed through the city on its way both to Europe and to markets within the United States. .

But why was New York the natural place to refine sugar? In principle, sugar could have been refined in either the West Indies at the final point of consumption. In the case of some commodities, processing removes so much weight that it is generally efficient to engage in this processing at source. Indeed, even in the case of sugar, it would have been madness to ship untouched sugar cane up to New York for processing without first turning the sugar cane into raw sugar. The excess weight would have badly compromised profits, and even more importantly, unprocessed sugar cane rots quickly.

While initial processing must be done soon after the cane is cut to avoid rot and close to the sugar plantation to avoid carrying excess weight, sugar refining occurs "close to where the sugar is to be consumed" (Galloway, 1989, p.17). Galloway (1998) writes "the fundamental reason for the separation of the final stage in the manufacture of sugar – refining – from the cane fields, a separation that in the western world dates back several hundred years, lies in the fact that crystals of sugar coalesce during the human conditions of a long sea voyage, and so any imported refined sugar would have had to have been reworked if customers were to have received the top quality." Galloway also emphasizes the lack of cheap fuel for refining in the tropics and he might have also stressed the high cost of labor in the tropics that was skilled enough to run refineries.

Sugar refining occurred in North America rather than in the Caribbean because of high transport costs, but sugar refining occurred in New York rather than in small towns throughout the country because of scale economies. By the standards of early 19th century industry, sugar refining involved large infrastructure investment and significant fixed costs. Sugar refineries were among the largest factories of this early period. These scale economies meant that it was impractical to spread sugar refineries throughout the colonies in every town or village. The technology of sugar production almost dictated that sugar refining occur in a central location close to most centers of consumption, and New York City was an ideal central location.

The strength of the sugar industry in New York therefore owes everything to New York's role as a shipping hub connecting Caribbean ports both with the American hinterland and with European final consumers. There are strong enough scale economies in sugar refining that it makes sense to centralize, and centralized production is most efficient if it occurs in the port through which the sugar is passing anyway. The growth of sugar manufacturing shows a basic pattern for the growth of New York as a manufacturing center. Trade brought raw commodities through the city. In cases where manufacturing in the initial agricultural area was inefficient, but where it made sense to manufacture in a single place, then this gateway city was the natural place to create finished products.

While the sugar refining industry produced a great deal of value, it generally only included a modest number of New Yorkers. For example, in 1860, the economic census of manufacturers reports that there were 1,494 employees in sugar refining in New York City producing more than \$19 million dollars worth of products. By contrast, the garment industry employed 26,857 workers in that same year and produced \$22,320,769 worth of products. From the mid-19th century through to 1970, the garment trade had remained New York City's dominant manufacturing industry, at least in terms of total employment. In 1860, almost 30 percent of the employment in New York City manufacturing was in the garment industry. In 1900, 19 percent of New York's manufacturing employment was in that sector. In 1940 and 1967, 27 percent of manufacturing employment was in garments.

New York was generally a diversified economy, but to the extent that one industry has dominated the city for a century, it was the garment trade. The basic economics of the 19th century New York garment industry are not so different than the economics of the sugar refining industry. The essence of this industry is turning cloth into clothing. Cloth was generally produced in textile mills, either in England or later in the textile mills of New England. As was the case with sugar, cloth and silk came through Manhattan. Similarly, there was a strong economic rationale to have manufacturing centered at the port of entry.

The starting point for the textile trade was England's commercial dominance as an exporter of wool and cotton cloth. This dominance was historical, but at the end of the 18th century, early industrialization gave English producers a huge advantage in the production of textiles. This advantage, and the general importance of clothing in budgets, meant that in the first half of the nineteenth century, "textiles amounted to nearly 60 percent of England's domestic exports and about one-third of the imports of the United States" (Albion, 1970, p. 58). This trade increasingly came through New York with the city's dominance of transatlantic shipping. In 1860, more than 80 percent of the nation's textiles entered through New York. In the same year, wool, cotton and silk goods accounted for 37 percent of the imports coming into the harbor.

England was the only producer sending textiles into America through New York harbor. The city was also the entryway for silks from France and even China. As New England mills began production and competed with English producers even they found themselves shipping cloth to Manhattan to take advantage of this central market. The vast flow of cloth into Manhattan was the natural result of New York's dominance as a port and textile's dominance as an item of trade.

In the early part of the 19th century, this trade did not create a garment industry. In the 1810 economic census, New York City had significant tanneries and hatteries, but not a significant garment trade. Fifty years later, the garment industry had become the city's

largest industry. The big change occurred because of the rise of the ready-to-wear industry. In 1810, cloth was turned into clothing by tailors, seamstresses and by the end users themselves. There weren't factories for the production of clothes. When clothes were made-to-measure, there was no place for centralized production of garments. At the start of the 19th century, therefore, New York's garment industry consisted mainly of tailors catering to the local population.

Over the 19th century, there were both changes in demand and production technology that turned New York into a center of ready-to-wear clothes. On the demand side, the rising slave population of the south had a demand for extremely cheap, ready-to-wear clothing. George Opdyke began the manufacture of ready-to-wear clothing in New York in 1831, catering to the market in New Orleans. The changes in production technology included the development of the factory system and even more importantly, Elias Howe's invention of the sewing machine in 1846. Mechanization greatly decreased the costs of mass production relative to custom tailoring and furthered the rise of the ready-to-wear garment industry.

Once such an industry existed, and given that there were substantial scale economies in the production of clothes due to machinery and specialized human capital, it is hardly surprising that this industry centered in New York City. Given that the cloth came into that city, there was no reason to wait until the cloth reached its final destination before transforming it into shirts and pants. There would be few advantages of making ready-to-made clothes in disparate locations rather than in one centralized locale.

As in the case of sugar, we must ask why manufacturing didn't occur in the place where the raw material was first produced, which in this case would be England. First, while England had a long history of cloth production, it had no history of producing ready-to-make clothes. No place did in 1830. As a result, England had no natural advantage in this form of manufacturing. New York manufacturers had the advantage of better knowledge of local demand, and could therefore cater to local tastes. They had access to relatively inexpensive labor from the increasing immigrant populations. In short, there

were probably only mild advantages for centralizing ready-to-make clothing in New York rather than in London, but these small advantages were enough for this industry to be located on the American side of the Atlantic.

Another important point about the garment trade, which helps to explain its 100 year dominance in New York, is that among manufacturing industries its need for physical space and power was quite mild. Textile mills themselves were more efficient on a grand scale and in the first part of the 19th century, the mills needed water power. As a result, they were generally located away from urban areas along the banks of rivers like the Merrimack. By contrast, the garment trade involved human beings and relatively small sewing machines. In many cases, working women could contract work to be done in their own apartments. This was the ideal industry for a city where land was expensive.

Over the decades, New York developed an increasing human and physical infrastructure that supported the continuing presence of the garment trade even after the port's primacy had passed. Factories were built to cater to this trade. Singer came to New York to popularize his adaptation of the Howe sewing machine. An entire section of the city (the Garment District) became oriented towards clothing production and a network of spatially proximate suppliers catered to this industry. Perhaps even more importantly, the city's industry attracted skilled workers who created a powerful agglomerating force that trained new workers and that attracted entrepreneurs. There was an initial comparative advantage in manufacturing garments that came from New York's port, but this comparative advantage produced an agglomeration that kept the industry in the city.

The third largest manufacturing industry in the city in 1860 was printing and publishing. As late as the 1960s, publishing would be a distant second to garment manufacturing in its share of New York employment. Only in the past 30 years has publishing passed garment manufacturing to become New York's largest manufacturing industry. Still, value added per worker was generally much higher in this industry than in the garment trade. Moreover, the rise of New York publishing suggests the increasing role of New York as a city centered around the transfer of ideas.

Somewhat surprisingly, the early development of New York's publishing trade was also connected to New York's role as a port connecting America with the old world. In the early nineteenth century "the big money, however, came from pirated copies of English authors (who didn't yet have to be paid royalties because the United States government refused to as yet to recognize foreign copyrights)" (Burrows and Wallace, 1999, p. 441). As such, there was a huge advantage in this industry to being the first printer with a copy of the latest London sensation and "printers and book dealers in New York and Philadelphia competed furiously to bring out the first American editions of new English novels" (Burrows and Wallace, 1999, p. 441).

In this competitive atmosphere being at the center of the transatlantic trade offered a crucial advantage. New York printers would have been capable of receiving new novels from England more quickly and regularly than their Philadelphia competitors because of the more frequent sea traffic between New York and Liverpool. The closer connections between New York and England also ensured a steadier infusion of information about the latest books. New York's production advantages were complemented by their advantages in distributing to western consumers via the Erie Canal.

As in the case of the garment trade, this initial advantage stuck because of specialized human capital and the advantages that came from local agglomeration economies. New York attracted networks of suppliers and tradesmen who catered to the book producers. Book sellers from around the country would come to New York for book fairs to get access to the latest novels. Eventually, the combination of high costs of land and low transport costs would push the printing presses themselves off of Manhattan, but to this day, there is a strong community of publishing houses in Manhattan connecting with authors and potential customers.

While publishing English novels was one part of the early success of Manhattan publishing, the news industry was the other cornerstone of this industry. Information extremely valuable to the growing mercantile economy and most of the early papers

focused on providing this information. Scale economies in this industry also meant that New York had a disproportionate number of newspapers. As the news became entertainment, and even entertainment for the masses, scale economies and New York's large population ensured that the city would remain a center for newspaper production.

The central lesson of the rise of New York in the early 19th century is that manufacturing congregated around a port. Changes in transportation technologies turned New York into the pre-eminent port of the United States. This meant that raw inputs, including sugar, cloth and even English novels, came first into the city. The first manufacturing industries were based on these raw inputs. As scale economies rose with industrialization, production was increasingly centralized in the one place which welcomed the nation's imports of these inputs.

IV. The Immigrant City: 1860-1920

While New York City was the largest city in the country in 1860, it would continue to grow significantly over the next ninety years. Over this period, the population of the city increased from 813 thousand to 7.9 million. Much of this increase reflected the incorporation of the outer boroughs into New York City, but even Manhattan's population continued to grow until 1920. As shown in Figure 2, New York reached its peak relative to U.S. population as a whole in 1940 when 5.6 percent of the U.S. population lived in the city. Manhattan was at its largest relative to the nation in 1910 when almost three percent of the U.S. population lived in the island.

During this amazing period, the basic structure of the New York economy was remarkably static. The city remained primarily oriented towards manufacturing. In 1910, there were 873,497 employees in manufacturing, 40 percent of New York's total. Trade and transportation had slightly more than 500,000 employees and domestic service included more than 330,000 workers. The primary export industries were manufactured goods and the transportation sector. New York's port remained the biggest in the nation during this era.

Even more remarkably, the composition of manufacturing employment remained remarkably constant across industries. The garment trade declined somewhat as a share of overall employment, but it remained New York's dominant industry. Sugar refining, printing, tobacco and bread all remained big products. In the first half of the 19th century, New York's population explosion was connected with a radical restructuring of the city economy and the rise of manufacturing. In the second half of the 19th century, New York's continuing population increases continued despite the fact that the basic structure of production remained remarkably constant.

Still, there were trends that supported the growth of New York's industries, particularly the garment trade, during this period. Demand for finished clothing rose steadily as population and incomes rose in the country as a whole. Input prices dropped significantly over the 1870-1890 period. For example, the Warren and Pearson index of the wholesale cost of textiles shows a twenty percent decline relative to the Bureau of Labor Statistics Consumer Price Index during these years. As the South recovered from the Civil War, cotton particularly got cheaper and the cost per pound of raw cotton fell from 29 cents per pound in 1869 to 11 cents per pound in 1890. Wool dropped from 90 cents per pound in 1870 to less than 40 cents per pound in the mid 1890s.

Despite the continuing strengths of New York City's industries, it would be a mistake to ignore the explosion of immigration to America from Europe. Figure 6 shows the levels of immigration into the United States by decadal frequencies between 1820 and 1970. Prior to 1841, annual immigration had always been below 90,000. Except for the five years between 1849 and 1854, immigration never passed 250,000 people per year until 1865.

After the Civil War, as the figure shows, immigration began to soar. There were almost 400,000 thousand immigrants in 1870. There were 450,000 immigrants in 1880, 1890 and 1900 and between 1903 and 1914, there were almost 12 million immigrants. The overwhelming share of these immigrants entered the United States through the port of

New York City. Again, New York's dominance as a port meant that it was the center for the import of America's most important economic input: its labor force.

The rise in immigration is probably best seen as the result of declining transportation costs in transatlantic passenger travel. Just as improvements in shipping ensured that New York captured a larger share of the goods shipped into the U.S. in the early 19th century, continuing improvements in sea travel meant that New York was able to keep a hold on an increasingly large group of immigrants. These reductions in travel costs were accompanied by political problems in European countries like Russia that terrorized their Jewish citizens with Pogroms and by a continuing gap between high American wages and worse economic prospects in the poorer European countries. Accompanying these factors was the phenomenon of chain migration, where an initial group of immigrants made it socially more comfortable for later immigrants to follow.

The vast number of immigrants that stayed in New York, and that continue to settle (at least temporarily) in the city can be understood as the result of four different factors. First, transportation costs for internal transport within the U.S. were still high enough so that it was cheaper to just stay in New York. This factor would have been particularly important for immigrants from poorer countries such as Italy, Austria-Hungary and Russia, who were frequently stretched to their financial limits by the transatlantic journey itself. After making the long and costly trip across the ocean, many immigrants simply did not want to spend the time and money to travel further.

Second, New York's economy may have kept its basic structure over this time period, but it still showed a remarkable ability to increase its scale with the influx of new labor. The rising American population meant that demand for garments continued to rise and there was nothing intrinsic to the production process that limited even more production within the city. The garment industry was also special in that it relied on skills that were more prevalent among immigrants than the skills required in more advanced industries.

Third, improvements in transportation technologies for within city transport increasingly made the development out of the boroughs feasible. New York began its omnibus routes in the 1820s. Streetcars and the subway line soon followed. The introduction of the automobile was soon accompanied by the introduction of the bus. Public transportation made it possible for new immigrants to occupy the outlying boroughs and commute into the city.

Fourth, and perhaps most importantly, the city itself acquired considerable immigrant-specific social and political infrastructure that made New York (and continues to make the city) a magnet for immigration. The most important form of this infrastructure may be large communities of immigrants from specific countries. These communities allowed new immigrants to come to New York but continue to speak their own language. In these areas, suppliers provided commodities that were closer to those that the immigrants had consumed in their home countries. It was certainly easier for a Jewish orthodox immigrant to keep Kosher in the lower east side of Manhattan than in rural Minnesota.

Immigrants provided the voting base for Tammany Hall during this time period and as a result city services were oriented towards immigrant needs. This meant that judges were quick to approve naturalization and that the city machine stood ready to provide patronage and emergency supplies to new arrivals. Churches and synagogues were built to cater to the growing immigrant population. Indeed, New York had been an immigrant town long before the Civil War, so there was a long tradition of providing economic services and employment to new arrivals.

Did the flow of immigrants in the late 19th century mean that New York City's labor supply was outstripping labor demand? Long time series on wages for New York City are not available, so Figure 7 shows the time path of average wages for production workers in manufacturing for New York State and the nation as a whole. The wages in the figure are all in 2005 dollars. If New York's growth reflects primarily labor supply, we should expect wages in New York to be falling relative to wages in the nation as a

whole. If New York's growth reflects labor demand we should expect wages in New York to be increasing.

Figure 7 shows that from 1870 to 1890, manufacturing wages were rising in the U.S. as a whole and New York State wage premium increased from seven percent to thirteen percent. Labor supply may have been increasing during this period, but labor demand in both New York and the nation was increasing even faster. From 1890 to 1914, real manufacturing wages in New York State declined and the New York State wage premium fell back to only three percent. This period of declining real wages in the state corresponds with the period where immigration truly exploded. These figures suggest that during the first 25 years after the Civil War, labor demand increases outpaced labor supply, especially in New York, perhaps as a result of declining costs of inputs and rising demand in the country as a whole. Changes in transportation technology made it increasingly possible for manufacturers to locate in the city and sell their wares throughout the world. New industrial technologies and products also strengthened the local economy. New York remained innovative and this helped to ensure that rising population levels didn't push wages down precipitously.

But between 1890 and 1914, the growth of the city had more to do with the immigrant shock to labor supply than with increases in labor demand. Nonetheless, the driving force behind the rise of New York City population, and the continuing growth of the city's economy, was the steady influx of immigrants between 1890 and 1920. These immigrants came to America because of higher wages, safety and cheaper ocean travel. They stayed in New York for the same reasons that cotton and sugar were processed in the city, to save transportation costs and because New York specialized in dealing with imports.

V. The Rise of the Information City: 1920-2000

New York's immigrant boom ended with the national restriction on immigration in 1921. The quota law drove immigration down significantly and ended the pre-war explosion of

immigration into the island of Manhattan. For the first time in decades, the foreign born would represent a declining share of New York's population.

This negative shock was accompanied by a pair of technological shocks that would hurt almost all of America's larger cities. First, the rise of the automobile made cities, like New York, that had been built around older transportation technologies somewhat obsolete. Cars, at least in low density car-oriented areas, are much faster means of transportation than public transportation. The average commute by car is 23 minutes in the U.S. The average commute by public transportation is 47 minutes. New York and other cities had built at higher densities to take advantage of public transportation and to allow travelers to walk from public transport stops to their final destination. Car-based communities are built at much lower densities to allow cars to drive without congestion and to allow consumers to consume more land.

Second, the rise of the truck led to a spectacular decline in transportation costs and a decline in the need for high density work environments. Glaeser and Kohlhase (2004) estimate that the real cost of transportation declined by 95 percent over the 20th century. As such, cities like New York that were built to take advantage of transportation technologies lost this comparative advantage. Moreover, the truck doesn't require the same centralized infrastructure as the older form of shipping technology. This meant that manufacturing no longer needed to cluster around a port or a train station. Over the 20th century, manufacturing left large cities and is now generally located in medium density countries (Glaeser, 2005). Figure 8 shows a long time series of the share of national manufacturing employment that was located in New York State. Figure 9 shows the decline over manufacturing in New York City as a whole and in Manhattan after 1949.

These shocks impacted New York City just as they hit all of America's major cities. Table 1 shows the time path of population levels (after 1950) for the ten largest cities in the United States in 1930. Every city but Los Angeles lost population in the 1950s and the 1970s. Every city but New York and Los Angeles lost population in the 1960s. Every city but New York, Boston and Los Angeles lost population in the 1980s. In the

1990s, New York, Chicago, Boston and Los Angeles all managed to lose population. These figures show the generally declining period that all major cities had after the Second World War as transportation technologies made high density living in traditional manufacturing towns relatively much less attractive.

Table 1 makes it clear that the remarkable thing about New York City is not its post-war decline, but rather its success relative to other older cities. Only in the 1970s did New York lose more than one percent of its population. Even in that decade, it lost the least population of any of these cities (again except for Los Angeles). New York oriented writers often focus on the big problems of the city during the 1970s, but such a focus ignores the fact that almost every other traditional city did far worse during this period. The era of Lindsay and Beam may have had its problems, but New York was in much better shape than either Detroit or Philadelphia during the same time period.

After the Second World War, New York had many of the same problems that plagued the other large cities. Crime skyrocketed between 1960 and 1975, and the increase in crime made wider social problems more visible. Bad urban governance, which in most cases had been going on for decades, became more obvious during a period of urban decline when steadily increasing tax receipts couldn't hide waste and mismanagement. Furthermore, decaying infrastructure also made the city seem grungy.

But New York survived these problems better than its peers mainly because its economy remained more robust. While the economies of Philadelphia, Detroit and Pittsburgh never truly survived the collapse of local manufacturing, New York (like Boston) has reinvented itself over the last 80 years as a service city that has become increasingly oriented around finance and corporate management. New York continues to boom through this day primarily because of finance and business services.

Table 2a shows the distribution of employment in Manhattan in 2002. 28 percent of the payroll of the city is in a single three digit industry: security, commodity contracts and like activity. This level of concentration is higher even than the commitment of the city

to the garment trade during the height of that industry. Another 28.5 percent of total payroll is in three other industries: business, scientific and services (mostly lawyers and accountants), credit intermediation and company management. Together, these four industries account for 56.6 percent of total payroll in the isle of Manhattan. When Benjamin Chinitz (1961) compared agglomeration in New York and Pittsburgh, he emphasized the remarkably diverse nature of the New York economy. This is no longer the case. Manhattan employment is remarkably depended on finance, business management and business services.

This is not true in the outlying boroughs that are primarily in non-traded service sectors. Tables 2b and 2c show the importance of health care, for example, in the economies of Queens and Brooklyn. Both boroughs also have export sectors, such as Queens' airport industry, but these are both much smaller economic areas and are much more oriented towards providing services towards the residents of the greater New York area.

New York's move into finance and management is not really paralleled by any of the other older cities. Perhaps the closest parallel to New York is Chicago which, during the last decade, has somewhat remade itself around business services. Boston's post-1980 renaissance is completely different and should be seen as the result of small scale entrepreneurship in a number of disparate, high human capital sectors. The other large cities are still in decline and cannot be said to have found any meaningful replacement for the manufacturing firms that once employed thousands of their citizens.

The success of New York as a financial city suggests three questions. How did New York become the financial capital of the world? Why has New York's dominance managed to expand in the modern era? Will New York manage to continue to survive on the basis of its financial industries?

Unsurprisingly, the origins of New York's financial community lie in its role as a port. The financial sector on Wall Street has its origins as an organization designed around sharing risk on sea voyages. This financial community branched into government

securities in the 1790s. In the early 19th century, New York was a close rival to Philadelphia as a center for trading stocks and bonds.

Eventually, New York replaced Philadelphia for at least three reasons. New York's greater connection to England became increasingly important in the late 19th century as English capital financed American development. New York's greater size meant that there were more companies in New York which had a direct, local market for financing. Finally, the great incentive to agglomerate in finance comes from the desire for the latest information. In no other industry are the returns to knowing the latest fact greater, this meant that once New York had a slight edge, this slight edge turned into a complete preponderance as the financial community came to the city to get access to the latest information.

The rise to world dominance for New York's financial community was a 20th century phenomenon that followed the decline of New York as a port. Instead, there are two major agglomeration economies at work. First, the role of the dense city as a center for idea flows. The high value of knowledge meant that being in the city was particularly valuable. It may even be that New York's high density levels, which ended up being unattractive for most manufacturing firms, helped New York finance continue to thrive because those high density levels are particularly conducive to chance meetings, regular exchanges of new ideas and the general flow of information.

Figure 10 shows the rising share of U.S. and New York City employment in Finance, Insurance and Real Estate. The concentration of New York City in this sector is much less than the concentration of Manhattan in this sector, and the concentration of employment is much less than the concentration by payroll. Nonetheless, the city has much more of its employment in this area than the U.S. did as a whole. Furthermore, both the city and national data show that this sector is becoming increasing employment. Somewhat surprisingly, the decade in which the share of NYC employment in this sector increased the most was the 1970s. In 1970, 7.4 percent of the city's employment was in this sector and by 1980, 12 percent of employment was in this sector. This change

reflected both the increase of finance and the decline of other industries, like manufacturing. As such, it may make sense to date New York's dependence on this sector to 1980.

New York's high density levels and massive scale drove its success as a center of business services. The costs of delivering manufactured goods depends only on transportation technology, but the cost of delivering services depends both on technology and on the value of the time involved by the participants in the transaction. Because services are by definition face-to-face, during an era of rising wages, there is an increased incentive to agglomerate these activities. This simple argument can explain why New York was able to thrive at the same time its manufacturing base was fleeing. Services replaced manufacturing because of the transportation cost advantages of locating in a large, dense city.

The flow of information and the ability to buy and sell business services are the reasons why Manhattan has survived as the center of world finance. But if finance had remained at its 1940 level, this would have had no effect on the long run fortunes of New York. The city's great fortune was that at the same time that it was suffering from an exodus of the garment trade, the international financial sector boomed. Individuals saved and invested more. Improvements in communication technology and changes in regulation made it increasingly attractive for people to get involved in New York's formal economic markets. Firms had an ongoing demand for financing. The industry soared and New York was its center.

However, it is less obvious that this trend will continue. New York City is still the epicenter for the transmission of new ideas in finance, but the past 15 years has seen a remarkable growth of cutting edge financial institutions in the car-oriented edge cities surrounding the metropolis. Some of the more famous and infamous financial market participants have been located far away from Manhattan (Warren Buffett in Omaha, Peter Lynch in Boston, Michael Milken in Los Angeles). As important as face-to-face contact

appears to be, information technologies have made major inroads and the continuing economic vitality of New York City is less obvious than it was 15 years ago.

The one final point on the future of New York which is worthwhile emphasizing is that the city has recently made remarkable progress in changing itself from a relatively unattractive to a relatively attractive place to live. In 1970, real wages in New York were quite high and this was necessary to compensate workers for crime and other problems associated with the city. In 2000, real wages are much lower. Nominal wages have risen, reflecting in part the continuing vitality of the financial sector, but prices have risen even more. This rise in real wages relates to the increasing demand for New York as a consumer city. If the city is able to continue to attract financial professionals who want the excitement of New York, then it can thrive from labor supply just as it did during the period of immigration during the late 19th century.

VI. Conclusion

In Glaeser (2005), I argued that the long term success of Boston reflects a process of continual reinvention where smart entrepreneurs react to a continuing set of crises by discovering new ways to turn a profit and still live in that city. New York's history is far more continuous, more stable and more triumphant. The city's rise to dominance occurs during the early 19th century and is driven primarily by its advantages as a port. Manufacturing, immigration and even finance followed from maritime supremacy. The ultimate success of New York comes from its role as the center of the global trading network.

There are several lessons for urban and regional economics from the economic history of New York City. First, there is something to be said for geographic determinism. New York City should have had the biggest harbor and it did. But we cannot understand the full extent of New York's dominance without understanding that agglomeration economies and New York's rise to dominance as a port are connected to the increasing scale of ships and the benefits of specialization.

A second lesson of New York is that transportation costs really matter. The city's port status obviously came about in large part because of these advantages, but its role as a center for immigration and as a sugar refinery also came in large part because of costs savings that were the result of reducing transportation costs. This point may be less relevant today in the manufacturing sector, but the continuing importance of transportation costs in business services helps to explain New York's continuing strength in that area.

A third lesson is the obvious importance of what Henderson (1977) calls localization economies. Generally speaking, every industry has some form of very specific industry related needs which were met by agglomerating New York. Indeed, even the concentration of immigrants tends to suggest a benefit from very particular groups of immigrants locating near one another. These agglomeration economies helped ensure that initial transportation cost based agglomerations didn't disappear as transportation costs fell.

A fourth and final lesson is that New York's success for centuries has been connected to its edge as an idea city. Publishing centered in New York because people could read the latest books from England more quickly there. Sugar refining and the garment trade were located in New York, as opposed to the places that produced primary products, in part because of information gains from locating in New York. Finally, and most spectacularly, for almost 200 years, the success of the New York financial sector owes a great deal to the ability of New York to be a place where the latest news can be picked up quickly.

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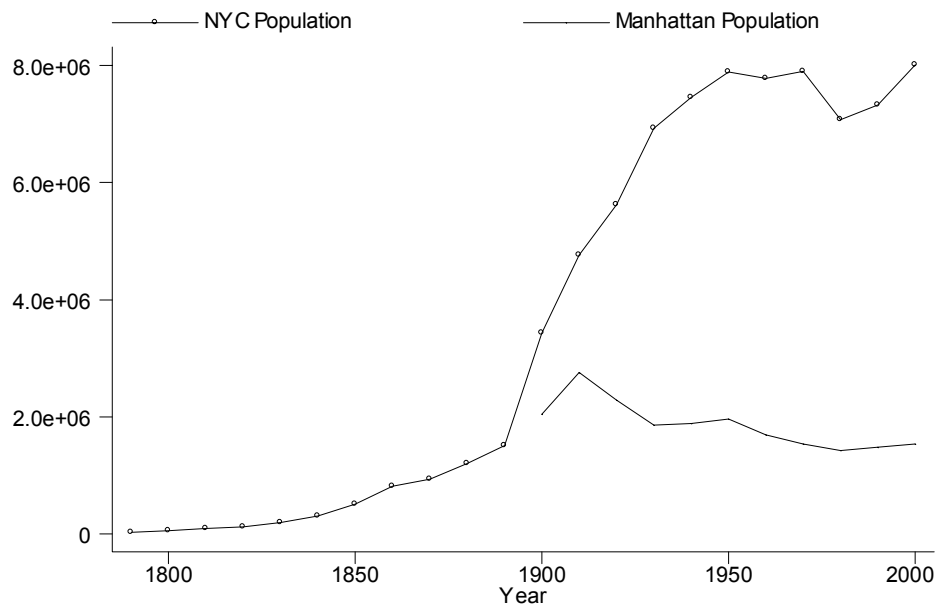


Figure 1: New York City and Manhattan Population

Source: For City Population 1790-1990: <http://www.census.gov/population/www/documentation/twps0027.html>.
For Borough Population 1900-1990: <http://www.census.gov/population/cencounts/ny190090.txt>.

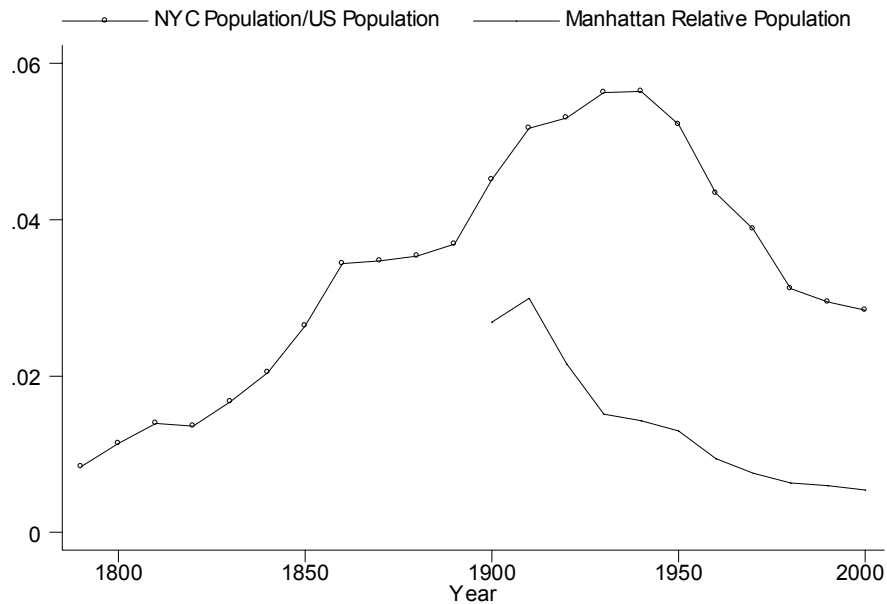


Figure 2: New York City and Manhattan Population

Source: United States Census of Population.

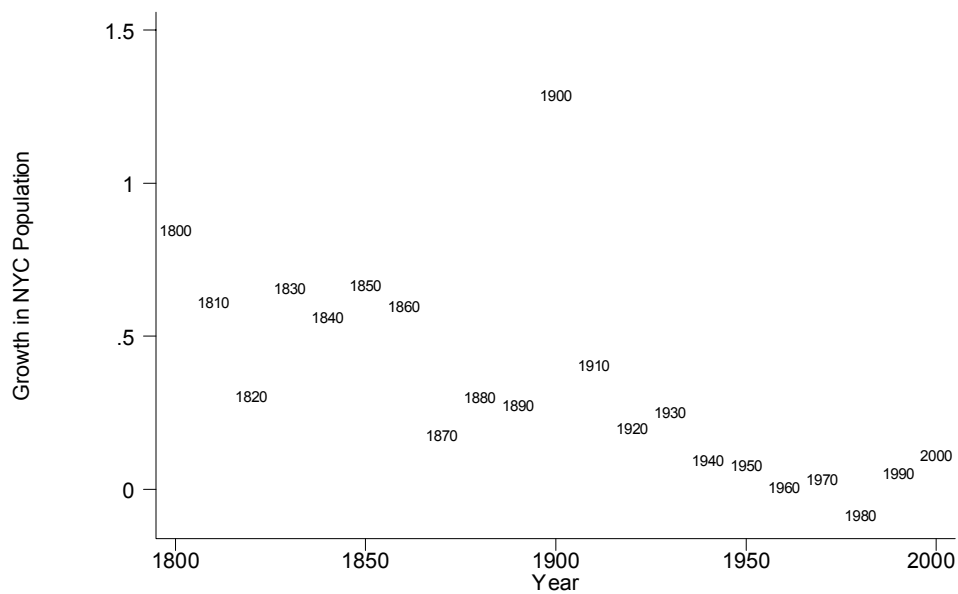


Figure 3: Growth Rates of New York City by Decade

Source: United States Census of Population

<http://www.census.gov/population/www/documentation/twps0027.html>.

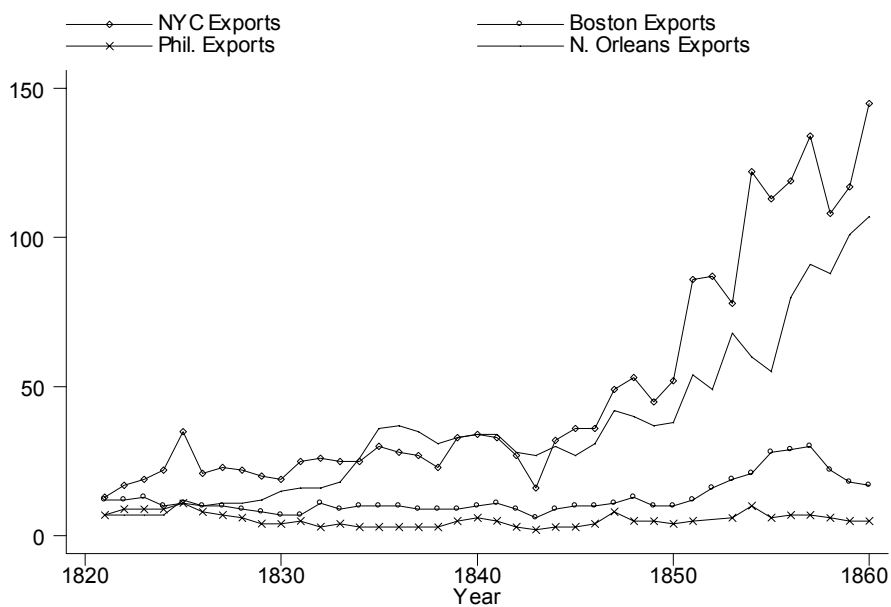


Figure 4: Exports from Principal Ports 1821-1860

Source: Historical Statistics of the United States.

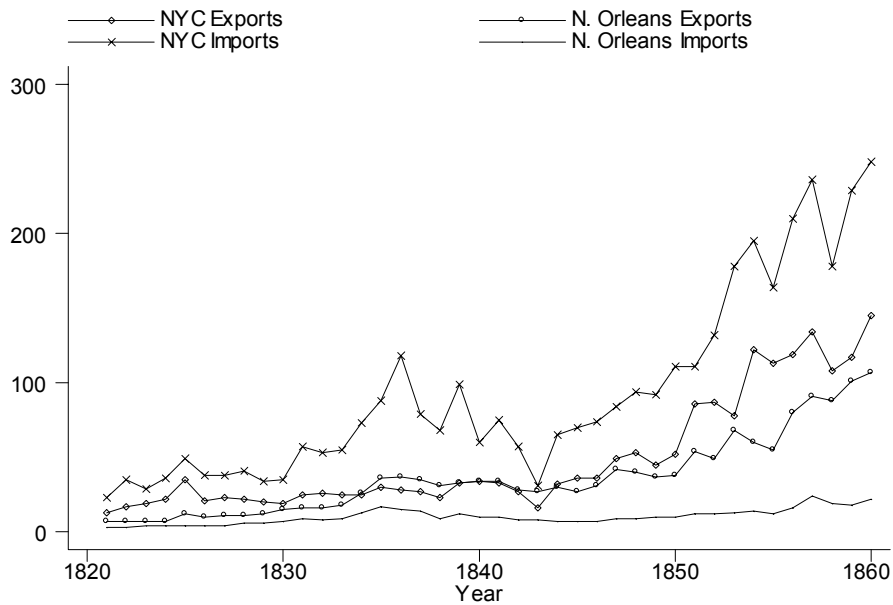


Figure 5: Exports and Imports New York and New Orleans

Source: Historical Statistics of the United States.

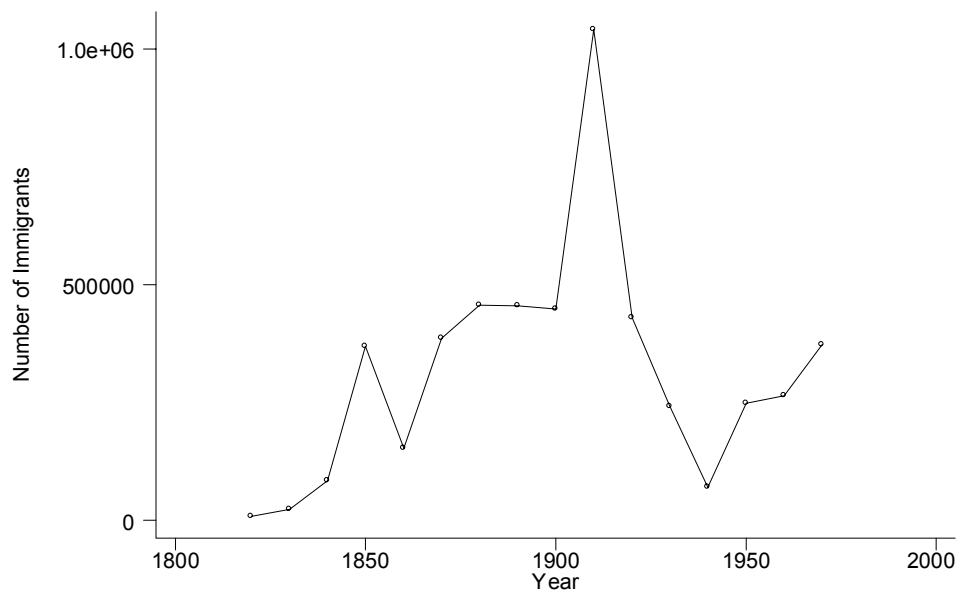


Figure 6: Immigration to the United States

Source: Historical Statistics of the United States.

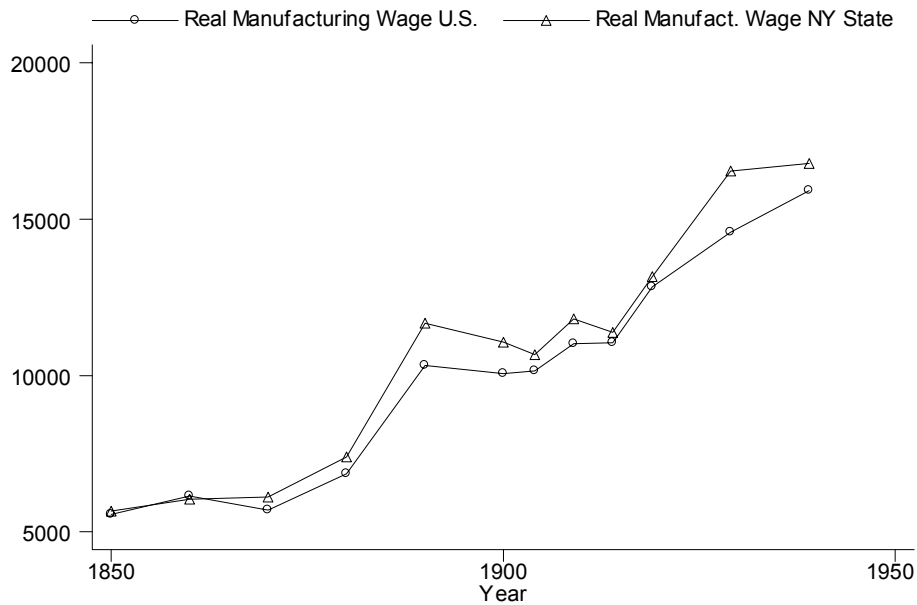


Figure 7: Manufacturing Wages in NY State and the U.S.

Source: United States Census of Population.

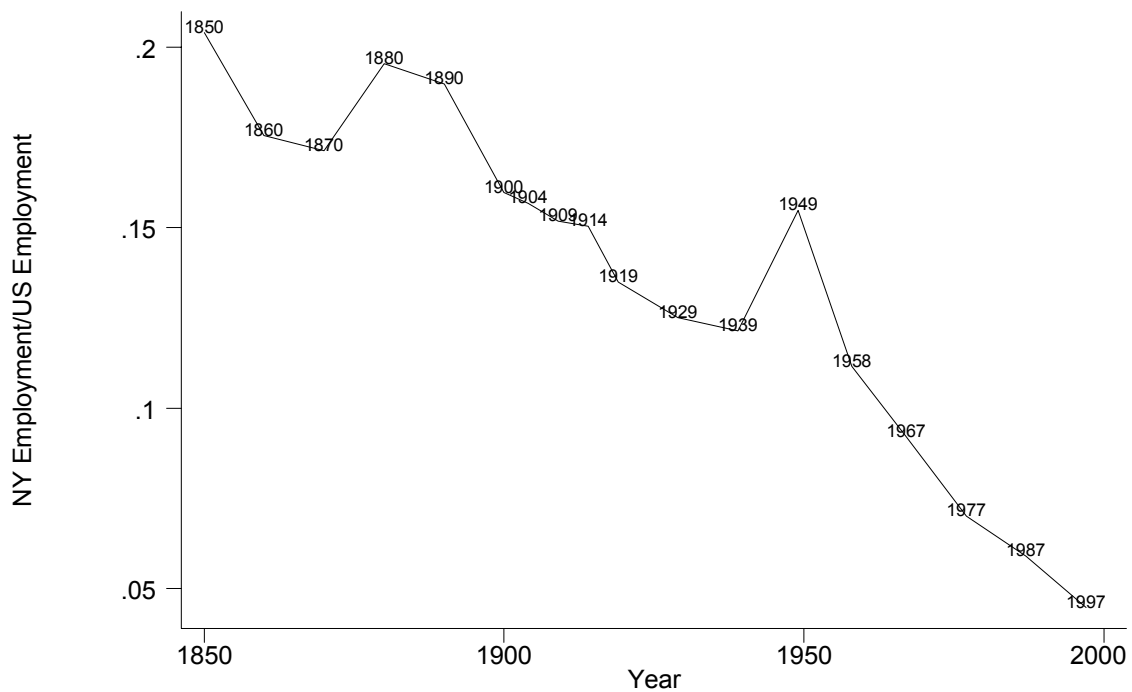


Figure 8: NY State Manufacturing Employment Relative to the U.S.

Source: United States Census of Population and United States Manufacturing Census.

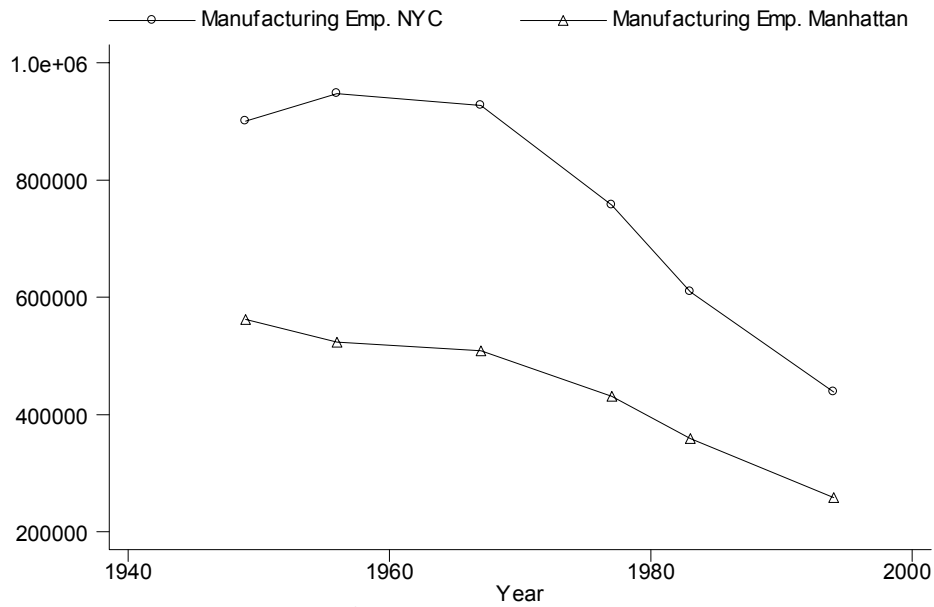


Figure 9: Manufacturing Employment over Time

Source: Statistical Abstracts of the United States, years 1949, 1956, 1967, 1977, 1983, 1994, 2000.

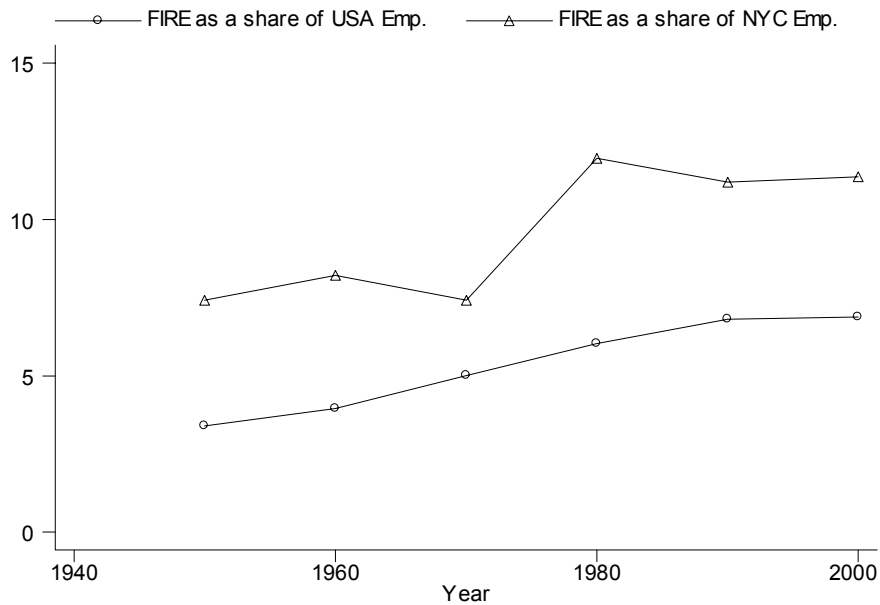


Figure 10: Finance, Insurance and Real Estate in NYC and the US

Source: United States Census of Population.

Table 1 – Growth in Top 10 Cities by 1930 Population

City name	Population		Percent growth in population				Population
	1930	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000
New York City, NY	6,930,446	-0.01	0.01	-0.10	0.04	0.09	8,008,278
Chicago, IL	3,376,438	-0.02	-0.05	-0.11	-0.07	0.04	2,896,016
Philadelphia, PA	1,950,961	-0.03	-0.03	-0.13	-0.06	-0.04	1,517,550
Detroit, MI	1,568,662	-0.10	-0.09	-0.20	-0.15	-0.07	951,270
Los Angeles, CA	1,238,048	0.26	0.14	0.05	0.17	0.06	3,694,820
Cleveland, OH	900,429	-0.04	-0.14	-0.24	-0.12	-0.05	478,403
St. Louis, MO	821,960	-0.12	-0.17	-0.27	-0.12	-0.12	348,189
Baltimore, MD	804,874	-0.01	-0.04	-0.13	-0.06	-0.12	651,154
Boston, MA	781,188	-0.13	-0.08	-0.12	0.02	0.03	589,141
Pittsburgh, PA	669,817	-0.11	-0.14	-0.17	-0.13	-0.10	334,563
United States	151,325,798	0.19	0.13	0.11	0.09	0.13	281,421,906

Note: All data comes from U.S. Census of Population.

Table 2a: Employment in Manhattan 2002

Three Digit Industry Name	Employment	Share of Total (1.99 million)	Payroll (\$1,000)	Share of Total (150 Billion)	Payroll/ Worker
Professional, Scientific and Technical Services (541)	261,157	0.131	21,389,318	0.143	81,902
Security, Commodity Contracts and like activity (523)	210,960	0.106	42,107,893	0.281	199,601
Administrative and Support Services (561)	142,796	0.072	5,521,745	0.037	38,669
Food Services and Drinking Places(722)	107,778	0.054	2,208,254	0.015	20,489
Educational Services (611)	94,945	0.048	3,764,351	0.025	39,648
Credit Intermediation and Related Activites (522)	90,105	0.045	11,191,706	0.075	124,207
Management of Companies and Enterprises (551)	84,821	0.043	10,059,521	0.067	118,597
Hospitals (622)	73,230	0.037	4,320,883	0.029	59,004
Religious, Grantmaking, Civil, Professional and like Activities (813)	67,823	0.034	2,955,000	0.020	43,569
Ambulatory Health Care Services (621)	67,399	0.034	2,660,933	0.018	39,480

Source: 2002 County Business Patterns for New York, NY.
<http://www.census.gov/epcd/cbp/map/02data/36/061.txt>

Table 2b: Employment in Brooklyn 2002

Three Digit Industry Name	Employment	Share of Total (435,948)	Payroll (\$1,000)	Share of Total (13.9 Billion)	Payroll/ Worker
Ambulatory and Health Care Services (621)	54,537	0.125	1,682,173	0.121	30,845
Hospitals (622)	45,098	0.103	2,315,354	0.166	51,341
Social Assistance (624)	21,891	0.050	498,796	0.036	22,785
Educational Services (611)	21,145	0.049	500,278	0.036	23,659
Food Services and Drinking Places (722)	18,395	0.042	261,438	0.019	14,212
Administrative and Support Services (561)	17,997	0.041	434,805	0.031	24,160
Nursing and Residential Care Facilities (623)	16,849	0.038	542,854	0.039	32,219
Special Trade Contractors (235)	14,976	0.034	613,787	0.044	40,985
Wholesale Trade, Nondurable Goods (422)	14,852	0.034	492,365	0.035	33,151
Professional, Scientific & Technical Services (541)	14,474	0.033	497,593	0.036	34,378

Source: 2002 County Business Patterns for Kings, NY
<http://www.census.gov/epcd/cbp/map/02data/36/081.txt>

Table 2c: Employment in Queens 2002

Three Digit Industry Name	Employment	Share of Total (468,585)	Payroll (\$1,000)	Share of Total (16.8 Billion)	Payroll/ Worker
Ambulatory and Health Care Services (621)	37,272	0.080	1,146,772	0.068332	30,768
Special Trade Contractors (235)	29,330	0.063	1,541,310	0.091841	52,551
Air Transportation (481)	27,502	0.059	1,448,255	0.086296	52,660
Food Services and Drinking Places (722)	26,680	0.057	401,915	0.023949	15,064
Hospitals (622)	24,729	0.053	1,288,459	0.076774	52,103
Administrative and Support Services (561)	21,818	0.047	506,225	0.030164	23,202
Nursing and Residential Care Facilities (623)	16,215	0.035	537,169	0.032008	33,128
Professional, Scientific & Technical Services (541)	14,329	0.031	477,570	0.028457	33,329
Wholesale Trade, Durable Goods (421)	13,661	0.029	601,030	0.035813	43,996
Educational Services (611)	13,513	0.029	389,995	0.023238	28,861

Source: 2002 County Business Patterns for Queens, NY.
<http://www.census.gov/epcd/cbp/map/02data/36/081.txt>