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The Effect of Geography and Institutions on Economic Development: The Case of Lodz

One of the longest, most heated, and still unsettled debates in economics is about pinpointing the factors responsible for economic development. What are the main factors that cause some areas to prosper whereas others do not? Two distinct approaches have emerged from this debate—the geography hypothesis that holds natural resources accountable for economic performance and the institutions hypothesis that credits socio-economic conditions as the major determinants of economic progress.

Using Lodz, one of the largest cities in Poland as a case study, this research note demonstrates that progress is a function of a combination of geographical and institutional factors. The history of Lodz provides an excellent opportunity to identify the extent to which these two types of factors serve as incentives for, or hindrances to, economic development. We focus on the period from the 1820s to World War I, during which the foundations of the city's later economic performance were laid.¹

What explains the city's economic stagnation for the four first centuries of its existence and its subsequent rapid growth, the pace of which, expressed in terms of population growth, was the fastest

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1 Lodz means *boat* in the Polish language. The inhabitants of Lodz are sometimes called "boat people."

in nineteenth-century Europe? We want additionally to investigate why Łódź, rather than other towns in its vicinity, became the center of the textile industry. Our exploration enables us to suggest that neither geographical nor institutional factors, if taken separately, is a sufficient condition for long-term development, regardless of how favorable it may be. Even though we can identify a stronger influence of one factor over the other in specific moments of the city's history, both factors need to work in unison to bring about long-term economic success.

THE DEBATE ABOUT GEOGRAPHY AND INSTITUTIONS The complexities of identifying the causes of economic progress have resulted in an overwhelming diversity of theories, which are difficult to encapsulate into a rigid classification. It seems, however, that at the most basic level, the existing theories range from highlighting the role of environmental components—the geography hypothesis—to highlighting human factors—the institutions hypothesis.

The crux of the geography hypothesis is the positive relationship between access to natural resources and economic performance. The availability of certain environmental components is considered a prerequisite for economic development, whereas the lack of them is claimed to hinder or even preclude progress. The two types of resources usually indicated are endowments—the elements vital to agriculture (a favorable climate, access to water, fertility of the soil, and a diversity of flora and fauna)—and energy sources such as coal, iron, and hydrocarbons.²

According to the institutions hypothesis, however, the major factors behind economic development belong to the social environment, permitting opportunities to improve knowledge about how to use the resources at hand. Natural resources may be a gift,

2 Notable modern adherents to the geographical approach include Jeffrey Sachs, *The End of Poverty: The Economic Possibilities for Our Time* (New York, 2005); Paul Colinvaux, *The Fates of Nations: A Biological Theory of History* (New York, 1980); Jared Diamond, *Guns, Germs and Steel: The Fates of Human Societies* (New York, 1997); *idem*, *Collapse: How Societies Choose to Fail or Succeed* (New York, 2005). For studies of the economic consequences of environmental components and climate changes, see, *inter alia*, Michael McCormick et al., "Climate Change during and after the Roman Empire: Reconstructing the Past from Scientific and Historical Evidence," *Journal of Interdisciplinary History*, XLIII (2012), 169–220; Hui-wen Koo, "Weather, Harvests, and Taxes: A Chinese Revolt in Colonial Taiwan," *ibid.*, XLVI (2015), 39–59; Faisal H. Husain, "Changes in the Euphrates River: Ecology and Politics in a Rural Ottoman Periphery, 1687–1702," *ibid.*, XLVII (2016), 1–25.

but the understanding, skills, and abilities to deploy them adequately are not. The answer to the question of which elements count as economic resources depends on people's awareness of the methods available to benefit from them. The key task is to describe a social environment that enables people to do so. Hence, the indirect determinants of economic progress are the systems of rules, legal norms, values, customs, and/or beliefs that provide a framework for development. The contemporary economic literature refers to these "rules of the game in a society or, more formally, all the humanly devised constraints that shape human interaction" as *institutions*.³

One of the strongest arguments in the twenty-first century regarding the influences on development comes from the work of Daron Acemoglu and James A. Robinson, especially *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (Chicago, 2012). Their model is placed squarely at the institutional end of the spectrum of theories. In their view, economic success takes place within a political order based on inclusive institutions that permit new social groups to engage in economic activity. Acemoglu and Robinson acknowledge that geographical factors may have been important, especially during the agricultural age, but they deny that the absence of these factors can explain either the contemporary inequalities or the long-term economic stagnation that besets certain nations.⁴

Given the difficulty of untangling the complex mysteries of long-term economic development, it is hardly surprising that single-factor explanations are so rare. Nevertheless, as the theory of Acemoglu and Robinson illustrates, certain components tend to be advanced as leading sources of economic success, often setting the institutional and geographical hypotheses in opposition and embroiling economists in debates about the supremacy of one side or the other. The questions apply to cities, towns, and

3 Douglass C. North, *Institutions, Institutional Change and Economic Performance* (New York, 1990), 3. The essence of technological progress may lie in finding ways to use the gifts of nature in a more efficient manner. Before the era of the Industrial Revolution, the economic significance of coal or oil was small; the situation began to change as methods to make those resources useful as fuel were created.

4 For a critique of certain elements of Acemoglu and Robinson's approach, see Dzionek-Kozłowska and Matera, "Institutions without Culture: A Critique of Acemoglu and Robinson's Theory of Economic Development," *Lodz Economic Working Papers*, IX (Univ. of Lodz, 2016).

regions as much as they do to nations: Why do some municipal economies succeed and others fail? Can the economic prosperity and poverty of cities be the consequence solely of specific geographical patterns, or is it only a result of establishing effective economic institutions and eliminating destructive ones? Contrary to approaches that tend toward a monocausal explanation, this research note contends that long-term economic development needs both a favorable geographical and a favorable institutional context.

GEOGRAPHICAL AND INSTITUTIONAL FACTORS IN THE ECONOMIC DEVELOPMENT OF ŁÓDŹ

Łódź as a Small Rural Town (Fifteenth to Eighteenth Century)

The geographical effect on Łódź was subtle, linked to the city's specific history. The development of Łódź did not proceed gradually and steadily but by sharp leaps and bounds in which both geography and politics played a role. Surrounded by forests, and not easily accessible, Łódź remained a small settlement on the periphery of the main Polish regions—Great Poland, Mazovia, and Little Poland—for many decades. In a sense, Łódź was born twice. The first birth was in 1423, when King Władysław Jagiello granted the city its charter, and the Bishop of Włocławek established the townspeople's dues and duties. Since the city was far from the diocese, the bishops showed little enthusiasm for its growth. The second birth occurred in the 1820s, when the authorities of the Kingdom of Poland designated Łódź as a new industrial center. During this period, the city became part of various states—the Polish-Lithuanian Commonwealth until 1793, the Kingdom of Prussia from 1793 to 1807, the Duchy of Warsaw from 1807 to 1815, and the Kingdom of Poland from 1815 until World War I.

The city is situated in a region called the Łódź Upland in central Poland. Only one-fifth of the area was suitable for agriculture. The quality of the land was even worse during the pre-industrial era, when the high water levels turned it into an acidic swamp. The uneven terrain lacked drainage, liming, and fertilization. A combination of poor agricultural prospects and general inaccessibility discouraged the migration of new settlers and trade for almost four centuries.⁵

5 Stanisław Liszewski, *The Origins and Stages of Development of Industrial Łódź and the Łódź Urban Region*, in *idem* and Craig Young (eds.), *A Comparative Study of Łódź and Manchester: Geographies of European Cities in Transition* (Łódź, 1997), 12.

Like many cities elsewhere in the world, those in Lodz's vicinity evolved along rivers—both the larger rivers, such as the Warta and the Pilica, and the smaller ones, such as the Bzura, the Ner, and the Prosna—eventually becoming trade centers with urban populations. Lodz, however, was situated on a line of drainage basins near the watershed of the Vistula and the Odra rivers, the two biggest rivers in Poland. Even though nineteen rivulets and brooks that flowed into tributaries of these rivers cut through the town, their significance to Lodz's development was minor since they were non-navigable.

Nor were the institutional system and policies throughout Poland from 1400 to 1700 conducive to urban development. The growing political role of the Polish nobility (*szlachta*) beginning in the fifteenth century culminated in an institutional order that diminished the political and economic standing of the other social classes. In 1496, the elite landowners made certain that villages would retain a competitive advantage over cities by preventing farm laborers from seeking work outside rural areas. The confinement of peasants to agriculture guaranteed an inexpensive, if not entirely free, workforce for the nobility. These policies weakened the domestic demand for agricultural production, as well as for the local crafts that were crucial to urbanization. Hence, Poland's cities were significantly smaller in number and size than those in such Western European countries as the Netherlands and Britain where the conditions that encouraged cities to prosper were fostered.

During the fifteenth century, Lodz remained a small town that peaked at about 100 households and 30 craftsmen, including weavers, wheelers, ironsmiths, and shoemakers. In the seventeenth century, the town obtained permission to organize a market once a week. However, a series of wars with Russians, Tartars, Cossacks, Turks, and an especially damaging war with the Swedes, was an enormous setback for Lodz and other Polish cities. The aftermath of these conflicts was the eventual partition of Poland into Russian, Prussian, and Austrian territories in the late eighteenth century.

Two years before the collapse of the Polish state in 1793, Prussia annexed the Lodz region during the second partition of Poland. At that time, when Lodz had only 44 households and 200 inhabitants in the town, the Prussian authorities considered withdrawing its city rights and reverting it to village status.

Although it retained its rights, a new administrative map removed it from the estates of the Bishop of Włocławek. From 1796 to 1798, it devolved to the state authorities, along with all other former church estates. After the formation of the Kingdom of Poland, the property fell under the heading of so-called “government goods.”

Secularization and the easing of rules regarding ownership created foundations for Łódź to undergo an economic boost c. 1820. Between the years 1793 and 1808, the population doubled, due partly to an influx of Jewish migrants (from eleven in 1793 to fifty-eight in 1808). Another legacy of the fourteen-year Prussian rule was the emergence of German colonies around the city. The Prussian invaders made Łódź a trading center to revitalize economic activity in the region. The overarching policy of the Prussian authorities, however, aimed at the liquidation of industry in the Polish lands incorporated into the Prussian monarchy. The lands were to be converted into farmland to provide agricultural products for the western parts of the country. The area was also intended to serve as a market for industrial goods from Western Prussia.⁶

The “Take-Off” Moment in the First Half of the Nineteenth Century The economic development initiated by the Prussian regulations flourished in the new political order established at the end of the Napoleonic wars, after the Vienna Congress of 1815. The borders between the three partitioning countries shifted, and Łódź, which had earlier belonged to Prussia, became a part of the newly established Kingdom of Poland—a semi-autonomous state connected to the Russian Empire. These border shifts triggered not only political but also economic consequences, cutting traditional trade connections. As a result, the textile industry in Greater Poland and Silesia, both of which still belonged to Prussia, began to suffer. The producers there were isolated from their former customers. They could not compensate for decline in demand because of the highly competitive internal Prussian market. At that time, the textile industry in the Kingdom of Poland was not sufficiently developed to increase its capacity quickly enough to benefit from the unsatisfied demand in its market. The resultant opportunity to make profits, however, triggered a gradual influx

6 Wiesław Puś, *Żydzi w Łodzi w latach zaborów 1793–1914* (Łódź, 2003), 11; Karol Bajer, *Przemysł włókienniczy na ziemiach polskich od początku XIX w. do 1939 r.* (Łódź, 1958), 38.

of bankrupt weavers from Greater Poland and Silesia to the Kingdom of Poland.⁷

The geographical location of Lodz turned out to be an advantage. The redrawing of the borders in 1815 turned many of the central Polish cities—Wloclawek, Kalisz, Sieradz, Wielun, and Czestochowa—into border cities. Lodz’s location in the center of the Kingdom of Poland, 100 km from the nearest border on the west, became a political safety net; in this turbulent era, investments along the borders carried high risk. Another stimulus for the creation of industrial centers in the Kingdom of Poland was related to changes in its tariff policy with Prussia, on the one hand, and with Russia, on the other. In 1822, following a brief liberal period, Russia returned to a protective customs policy *vis-à-vis* both the Kingdom of Poland and Prussia. Hence, the Kingdom of Poland’s industry gained protection from Prussian traders, but it was also separated from the Russian market. Yet, Ksawery Drucki-Lubecki, Polish Minister of the Treasury, was able to negotiate a favorable customs agreement with Russia in which the tariffs on textile products made in the Kingdom of Poland were lowered to 1 to 3 percent, whereas both Prussian and Austrian textiles were still claimed at 40 to 50 percent. This policy encouraged German textile craftsmen and entrepreneurs to settle in the Kingdom of Poland.⁸

In these complicated circumstances, Lodz stumbled into another advantage over other cities in the region—its natural resources. Its clay became a stimulant for economic development in the nineteenth century, when bricks were needed to build factories. Its non-navigable streams became the basis for producing energy in the production of woolen, linen, and cotton fabrics, all the more given that the water was soft and clean. The timber in its forests helped to meet the growing demand for housing construction. Thus, in the new phase of technological progress, Lodz’s previously insignificant resources became its economic calling cards. When taken together, these

7 See Witold Kula, *Kształtowanie się kapitalizmu w Polsce* (Warszawa, 1955), 53–61; Peter Kriedte, Hans Medick, and Jurgen Schlumbohm, *Industrialization before Industrialization* (New York, 1981), 309.

8 Willian Easterly, *The Tyranny of Experts: Economists, Dictators and the Forgotten Rights of the Poor* (New York, 2013), classifies borders as a special kind of formal institution. As an example, he presents the “Aleppo disease” in development as the setting of barriers (political borders) between regions that used to thrive from interaction, making trade costly and time-consuming by severing regions from their natural trading partners. However, the border changes after 1815 had a positive influence on Lodz (231–233).

advantages set the stage for Łódź's economic development. But they neither brought rapid progress to the city nor can account for the demographic explosion that occurred in subsequent decades.⁹

The crucial institutional element responsible for the boom was the establishment of "industrial villages" in which the economic order was based on a set of highly inclusive institutions designed to invigorate industrialization in the Kingdom of Poland. When the influential representatives of the Kingdom's authorities noticed the geographical potential of Łódź, they designated the city as an industrial village.¹⁰

In 1816, Józef Zajaczek, the governor of the Kingdom, issued a policy statement entitled "Provisions for the Settlement of Useful Foreigners in the Country, such as Manufacturers, Craftsmen and Farmers." It enabled new homesteaders to receive parcels of land along with low-interest loans and assistance in procuring the materials needed for building their houses. It also exempted new arrivals from paying some of the municipal taxes and to import goods and stock duty free. Equally important, it exempted settlers and their sons from army service and gave them the right to return to their home country.¹¹

In 1821, a new clothing settlement (the so-called New City) and, between 1824 and 1828, a cotton-linen settlement (with four colonies) were officially founded under the new spatial regulations. Watermills were built on both banks of the nearby Łódka and Jasien Rivers. Soon, the area saw the construction of a mangling mill, a fulling mill, a starching mill, and a bleaching mill, all needed for cotton-fabric production. Large volumes of clean water were necessary in all these devices. Thanks to the personal intercession of province authorities, numerous craftsmen and entrepreneurs, such as Krystian Wendisch and Ludwik Geyer, who opened mechanized cotton mills

9 Hard water containing salts of magnesium and calcium caused problems at almost every stage of textile production, making it more difficult to scour, bleach, dye, print, and mercerize textiles. In economic terms, it meant an increase in the production costs. Anna Rynkowska, *Początki rozwoju kapitalistycznego miasta Łodzi (1820–1864): Źródła* (Warsaw, 1960).

10 The creation of industrial villages is the equivalent of the modern-day practice of establishing special economic zones. Sharaf Rehman and Dzionek-Kozłowska, "Tale of Two Cities: A Comparative Study of Relationship between Education and Economic Prosperity," *Łódź Economic Working Papers*, III (Univ. of Łódź, 2016), 12.

11 Rynkowska, *Działalność gospodarza władz Królestwa Polskiego na terenie Łodzi przemysłowej w latach 1821–1831* (Łódź, 1951), 21. The policy provided for long-term (twelve-year) mortgage credits with semi-annual installments at only 5% per year. Bohdan Baranowski and Jan Fijałek, *Łódź: Dzieje miasta* (Warszawa–Łódź, 1988), 224; Gryzelda Missalowa, *Studia nad powstaniem łódzkiego okręgu przemysłowego 1815–1870* (Łódź, 1964), I, 63, 76.

with steam engines and built the first steam mill in the Kingdom of Poland, established businesses in Łódź. In the same area, government factory settlements were also created in Dąbie, Gostynin, Przedecz, and Zgierz. Two other towns near Łódź—Aleksandrow and Konstantynów—with private owners did not thrive because of their private ownership, which precluded government backing.

A change from wool to cotton production, inspired by the government's counsel that cheaper cotton mills would be easier to sell, distinguished Łódź from other textile settlements in Mazowsze province (Zgierz, Tomaszów Mazowiecki, and Ozorków). The environment of Łódź was also highly suitable to cotton production, especially given the swift currents of the Łódka and the Jasien Rivers, which powered the process. Not all towns were so fortunate. In Leczyca, for example, the stream of the Bzura was too weak to sustain a properly functioning hydraulic system and not as clean and mineral-free as that in Łódź.

In the early 1830s, Łódź produced slightly more than 3 percent of the wool textiles and more than 70 percent of the cotton textiles in the region. This volume served the city well in the local market, especially given the failure of the anti-Tsarist uprising in November 1830, which resulted in severe repression, including high tariffs on cloth exported to Russia. From that point forward, Polish commodities dispatched to Russia were subject to a 3 to 16 percent duty, while Russian exports were still under the 1822 liberal regulations. Moreover, Polish products could not be transported via Russia to far eastern markets (mainly China). These regulations severely wounded the woolen industry, which exported most of its production to eastern markets. The tsar's liquidation of the Kingdom's army, a major recipient of woolen textiles, was a further hardship. These measures resulted in the collapse of textile production in nearby Ozorków, Zgierz, and Tomaszów Mazowiecki. Łódź emerged relatively unscathed, since its cheap cotton was sold mainly in the local markets of the Kingdom.¹²

Institutional Factors Affecting the Development of Łódź Before World War I The first wave of technical revolution in Łódź took place in the 1840s and 1850s. In a short time, manufacturing scaled

12 Wiesław Puś, "The Development of the City of Łódź (1820–1939)," in Antony Polonsky (ed.), *Jews in Łódź 1820–1939* (New York, 2004), 5. Production of woolen fabrics in Łódź fell by 70% between 1828 and 1832 (Missalowa, *Studia nad powstaniem*, 173–174), but cotton production rose dramatically (a tenfold increase) between 1831 and 1835. See Kula, "Przemysł włókienniczy w Królestwie Polskim (1831–1865)," *Kwartalnik Historyczny*, IV/V (1956), 190.

up from workshop to factory production. The unprecedented investment in technology facilitated exceptional productivity. Within only a single decade, the number of Geyer's local competitors grew to five large manufacturers—Traugott Grohman, Dawid Lande, Jakub Peters, Karol Moess, and the especially successful, Karol Scheibler, whose thirty mechanical looms combined cotton spinning and weaving in 1844. Scheibler's greater production capacity not only captured the local market but also ventured into other markets, becoming a threat to the smaller producers.

Another acceleration in cotton production derived from the removal of the customs border with Russia in 1851 and from the tsar's subsequent customs policies. The abolition of the customs barrier, combined with British reforms to permit the export of machinery, facilitated the industrial modernization of the entire Kingdom but especially of Lodz. Three years later, during the Crimean War, Lodz's economy received an additional boost from an extension to eastern markets when several European countries established a blockade against Russia. A new Russian tariff policy in 1877 that required all customs duties to be paid in gold (the so-called "gold tariff") also helped.

Germany responded with "retaliatory tariffs." Manufacturers in Lodz who imported cotton yarn from Bremen and Hamburg were caught in the crossfire. The most important consequence of the tariff war between Russia and Germany, however, was the slowdown of Western European textiles imported to Russia. Lodz seized the opportunity to dominate the textile trade to Russia and the Far East during late nineteenth century, exporting around 70 to 80 percent of its textile products there.

Certain other factors (albeit not decisive ones) that stimulated the development of Lodz also deserve attention. In the 1850s and 1860s, the Bank of Poland increased its volume of credits to industrialists and merchants—those from Lodz among the biggest recipients. When the enfranchisement of the peasantry in 1864 increased the demand for affordable textiles, Lodz also benefited from the flood of cheap labor from the nearby villages. Between 1875 and 1895, nearly two-thirds of the people arriving to work in Lodz came from villages. As a result, the textile industry in the Kingdom of Poland became highly concentrated in Lodz. At the end of the 1870s, 95 percent of the textile plants were located in the Lodz district; they produced nearly 90 percent of the fabric in

the Kingdom and provided 75 percent of the jobs. Three-quarters of Lodz's employees were involved in manufacturing nine out of the ten textile products produced in the Kingdom. Scheibler and Israel Poznanski owned the largest factories.¹³

Until the mid-1860s, the train station closest to Lodz was 30 km away. The prosperity of the city was strengthened considerably by a railway connection that linked the center of the city with Warsaw in 1865. Calisian Rail, launched in 1903, enabled a western connection with the rest of the Kingdom. The first electric railway line in the city was inaugurated in 1898, and tram connections between Lodz and neighboring areas began in 1907.

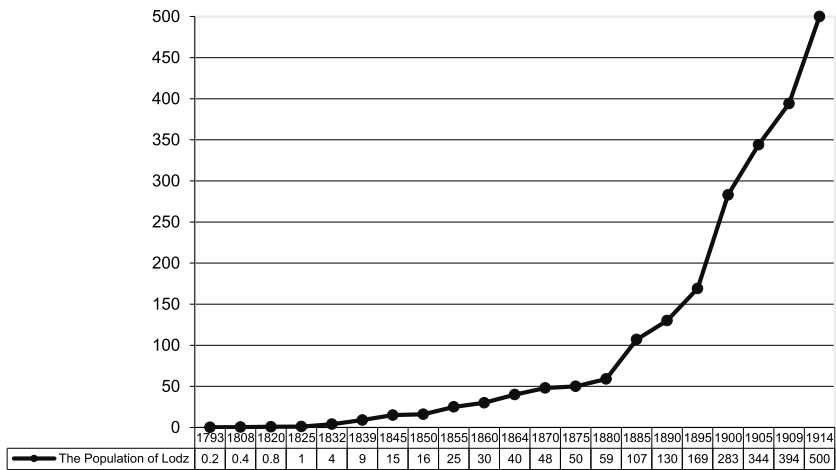
The speed of Lodz's transformations can be illustrated demographically. Between 1830 and 1837, the population (permanent and temporary) doubled to 10,000, and again to 20,000 in 1846. By 1857, the number had doubled once more to 40,000. A brief period of stagnation followed until 1865, but the city rebounded in the last decade of the nineteenth century to 200,000 inhabitants. Some statistics indicate that the population exceeded 300,000 during the 1900s. By the outbreak of World War I, more than a half-million people lived in Lodz. Within less than a century, the population had grown a thousand-fold (see Figure 1).¹⁴

The Role of Minorities in the Development of Lodz In the context of the institutional factors decisive for Lodz's long-term growth in the nineteenth century, special mention should go to Lodz's German and Jewish minorities. Jews were subject to fiscal persecution for many years in the Kingdom of Poland, forced to pay a recruitment tax, an alcoholic-beverage tax, a property-lease tax, a rental-agreement tax, a transportation tax (when traveling to Warsaw), and a kosher-meat tax, in addition to other local taxes. A policy enacted in the 1820s allowed cities to designate certain districts for Jewish populations. When Lodz imposed this regulation in 1825, only the affluent and the educated members of the Jewish community were exempt from it.

13 Andrzej Jezierski and Stanisław Maciej Zawadzki, *Dwa wieki przemysłu w Polsce: Zarys dziejów* (Warsaw, 1966), 205; Piotr Franaszek, *Poland*, in Elise van Nederveen Meerkerk, Els Hiemstra-Kuperus, and Heerma van Voss (eds.), *The Ashgate Companion to the History of Textile Workers, 1650–2000* (Aldershot, 2010), 403; Puś, *Rozwój przemysłu w Królestwie Polskim: 1870–1914* (Łódź, 1997), 75.

14 Mieczysław Bandurka, *Akta miasta Łodzi [1471] 1794–1914 [1918]*; *Przewodnik po zespole* (Warsaw, 1980), 11; Ryszard Rosin, *Łódź: Dzieje miasta* (Warsaw, 1980), 196.

Fig. 1 The Population of Lodz 1793–1914 (in Thousands)



SOURCES Filip Friedman, *Dzieje Żydów w Łodzi od początku osadnictwa Żydów do r. 1863: Stosunki ludnościowe, życie gospodarcze, stosunki społeczne* (Łódź, 1935), 32–33; Julian Janczak, *Ludność Łodzi przemysłowej 1820–1914* (Łódź, 1982), 108–109.

In 1859, the local authorities expanded Lodz's Jewish quarter. In 1862, Tsar Alexander II's decree conferring equal civil rights to all residents allowed members of the Jewish community to vote and to stand for elections to municipal and county government positions. As the Prussians had done a half-century earlier, the Russians opened its closed areas and granted everyone access to corporate trade and crafts. Subsequent laws also abolished the extra taxes and allowed Jewish people to enter new professions. Yet, even though the law changed, informal institutions were slow to respond. Certain traditional barriers to the economic development of the Jewish population remained. Administrative and civil-service positions were still off limits. Trade was restricted, as was access to the production and sale of alcoholic beverages outside Jewish settlements. Nevertheless, due to the legislative changes of the 1860s, tolerance toward the Jewish population gradually increased; inter-ethnic cooperation and the erosion of stereotypes resulted in economic progress.¹⁵

After the decree of 1862, Jewish entrepreneurs began to invest in the textile industry; Jewish capital eventually displaced German

15 Puś, *Żydzi w Łodzi*, 20.

capital. At the beginning of the twentieth century, when the textile industry accounted for more than 90 percent of Lodz's total production, Jewish businessmen owned 40 percent of the textile factories and Germans 25 percent. Jewish entrepreneurs owned 47 percent of the industry and German entrepreneurs 44 percent; other ethnic groups, including the Poles, held only 9 percent. The number of Jewish factories in the textile industry increased between 1869 and 1913 from around 40 to more than 200—from 13 percent of the total to 52 percent. During the same period, the production and employment of workers in Jewish plants increased from 16 percent to about 40 percent of Lodz's total.¹⁶

As the competition between the factory owners and financiers escalated, the incentives for lowering production costs caused the rivals to invest in the newest and most efficient machines, thus accelerating technological progress. Before the abolition of the discriminatory legislation, the Germans were the most active economic agents. When the playing field was more level, the Jewish contribution to technological change was as great or even greater than that of the Germans (not to mention the other ethnic groups).¹⁷

This research note indicates that both geographical factors and institutional changes were highly influential during the early period of Lodz's development. The first, long development phase featured institutions that were predominantly exclusive. Lodz's environment was then insufficient to spur development. Not until the nineteenth century, with its accompanying administrative and legal changes, did natural resources and institutions begin to play positive roles.

Environmental factors were necessary but not sufficient for the Lodz's development. Equally important for the city's industrial thrust was the 1820 decision to create a favorable institutional background and Rajmund Rembielinski's support for the establishment

16 Stefan Pytlas, *Łódzka burżuazja przemysłowa* (Łódź, 1994), 43–52; *idem*, *Skład narodowościowy przemysłowców łódzkich do 1914 r.*, in Puś and Liszewski (eds.), *Dzieje Żydów w Łodzi 1820–1944* (Łódź, 1991), 55–78; Puś, *Żydzi w Łodzi*, 82.

17 Richard Florida, *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life* (New York, 2012), 77; According to Puś, *Żydzi w Łodzi*, "Jewish industrialists, apart from entrepreneurs of German origin, played a decisive role in the development of the Lodz industry" (104).

Table 1 Institutional Factors (Events and Decisions) Influencing Łódź's Development

YEAR	FACTOR
1423	Grant of a charter
1796	Secularization
1815	Territorial changes as a result of the Congress of Vienna
1820–1821	Introduction of inclusive institutions to establish a clothier's settlement
1822, 1832	New customs tariffs
1824–1828	Establishment of a cotton–linen settlement
1851	Russia's abolition of its customs border with the Kingdom of Poland
1862	Acquisition of equal legal rights by the Jewish population in the Kingdom of Poland
1864	Enfranchisement of the peasantry
1865, 1903	Railway connection with Warsaw and Kalisz

of a clothier settlement, which constituted a decisive political and institutional action with significant economic consequences. The list of the vital institutional factors shaping the economic development of Łódź is presented in Table 1.¹⁸

Both geography and institutions mattered in the economic development of Łódź. Throughout the entire period before World War I, the economic achievements of Łódź depended on geographical factors. The government's decisions and the economic choices made by multi-ethnic entrepreneurs were strictly connected with the geography of the city and its access to natural resources. Yet, given the track record of poor development in the first phase of Łódź's history, the environment was obviously an insufficient stimulus for the city's growth. Only the establishment of a beneficial institutional background in the nineteenth century could create a geographical-institutional catalyst capable of sparking the dynamic progress of the city. Among the main advantages of Łódź over other towns were the diversification of its textile

18 Walt Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto* (Cambridge, 1990), 4–16. The conclusions reached in this research note parallel those of Alan Beattie, who posits that cities and nations are shaped not only by economic and geographical forces but also by choices of policymakers and the spontaneous decisions of a shifting population. Beattie, *False Economy: A Surprising Economic History of the World* (New York, 2009), 43.

industry and the perfect timing of its switch into cotton production. Another wave in the development of the city took place at the beginning in the 1860s, when a small number of inclusive economic institutions appeared (especially the lifting of the restrictions against Jewish participation in the full economic life of the city).

Our case study may be regarded as a precursor to further research into the geographical or institutional factors in the economic growth of other cities. A meaningful foundation for future comparisons requires a focus on two kinds of study: (1) an analysis of the roots of development in cities with a path similar to that of Lodz and (2) an investigation of the reasons for a lack of development in places with abundant natural resources that were engines of economic growth elsewhere during the era of the Industrial Revolution.

Cities with paths possibly similar to that of Lodz are the industrial districts of Manchester in the United Kingdom, Lille and Roubaix in France, and Chemnitz and Eberfeld in Germany. A preliminary look at the histories of those cities reveals the presence of natural resources that were promising for the creation of a strong textile industry but not, at least initially, the institutional circumstances necessary to take advantage of them. Nonetheless, the “take off” moments in the history of these cities were indeed related to institutional changes. The eradication of British trade protectionism in the cotton industry between 1690 and 1813 eventually resulted in the technological progress requisite for Manchester’s economic prosperity. The key factor in Roubaix’s success was not its grant of a textile-manufacturing privilege in the fifteenth century but its acquisition of the same right as Lille to manufacture all of the textiles made in Britain during the second half of the eighteenth century. Similarly, in the nineteenth century, the German Custom Union (the *Zollverein*) facilitated the economic growth of German cities in 1834 by affording them protection from foreign competition in the local markets through heavy tariffs and other prohibitions.¹⁹

The question of why certain places failed to develop despite favorable geographical circumstances is much more intriguing. As numerous cases indicate, the major barriers to economic development

19 For Manchester, see Prasanna Parthasarathi, *Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600–1850* (New York, 2011), 112.

seem to be institutional. For instance, Engerman and Sokoloff point out that the development of Latin American cities in the nineteenth century was suppressed by the institution of slavery. They support the hypothesis that good institutions can result in a more efficient use of existing resources enabling societies to overcome inferior geography. The history of African urban centers illustrates that access to natural resources did not always bring prosperity. Numerous areas abundant in coal and oil did not manage to reach their industrial potential. The first oil mines in Poland launched during the mid-nineteenth century did not drive development in the cities of Krosno, Jasło, and Gorlice in the district of Galicia because the Habsburg Empire's institutional arrangements were weaker than the Kingdom of Poland's.²⁰

The debate between proponents of geographical and of institutional causation is reminiscent of Marshall's famous metaphor, deployed in another context: "We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper. . . . It is true that when one blade is held still, and the cutting is effected by moving the other, we may say with careless brevity that the cutting is done by the second; but the statement is not strictly accurate, and is to be excused only so long as it claims to be merely a popular and not a strictly scientific account of what happens." In the case of Łódź, the institutional and geographical blades were equally necessary to initiate economic development. However, the blades are merely the instruments in the hands of people, who must learn to use them effectively.²¹

20 Krzysztof Broński, *Rozwój gospodarczy większych miast galicyjskich w okresie autonomii* (Kraków, 2003).

21 Alfred Marshall, *Principles of Economics* (London, 1920), book V, chapter III, paragraph 27.