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Institutional Change: Abolishing the Guild System in the Grand Duchy of Hesse-Darmstadt

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Abstract

The present article outlines a 15-year body of research in institutional economics investigating the influence of institutions on economic growth and development processes. The study explores whether institutional changes act as a catalyst for significant economic and social developments, using the abolition of the guild system in two neighbouring states of the Confederation of the Rhine and since 1815 of the German Confederation – Hesse-Darmstadt and Hesse-Nassau – as a case study.

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1. Introduction – Long-Term Economic Development: Two Lines of Research

In this article, I take up two strands of discussion in economic research. First, the work of numerous Anglo-American economic historians examining Europe's unique development, and second, the emergence of new institutional economics exploring macroeconomic questions related to the long-term development of the economy and society.

I begin with research on economic history. In 1981, the British-Australian economic historian E. L. Jones published his book *The European Miracle: Environments, Economics, and Geopolitics in the History of Europe and Asia*, which launched a research trend exploring why capitalism and specifically the Industrial Revolution emerged in Europe rather than Asia. A considerable amount of literature on this topic has emerged, with the earliest works being by David Landes and Joel Mokyr. In 2000, Kenneth Pomeranz, one of the California School's most distinguished figures, was challenged by their perspectives and opposed the so-called "Eurocentric" views of the mentioned authors with his book *The Great Divergence* (2001). Goldstone, another influential member of this group of economic historians, summarized the school's disputing perspective:

> Instead of seeing the rise of the West as a long process of gradual advances in Europe while the rest of the world stood still, they have turned this story around. They argue that societies in

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> Asia and the Middle East were the world leaders in economics; in science and technology; and in shipping, trade and exploration until about AD 1500. At the time Europe emerged from the Middle Ages and entered its Renaissance, these scholars contend, Europe was far behind many of the advanced societies elsewhere in the world and did not catch up with and surpass the leading Asian societies until about AD 1800. The rise of the West was thus relatively recent and sudden and rested to a large degree on the achievements of other civilisations and not merely on what happened in Europe. Indeed, some of these scholars suggest that the rise of the West may have been a relatively short and perhaps temporary phenomenon (2008, viii).

The ensuing discussion centred on why the Industrial Revolution happened in England rather than in China. British economic historians, including Nicholas Crafts, Stephen Broadberry, and Robert Allen, have revised the perception of England's Industrial Revolution through quantitative research. It has been demonstrated that England's economic advancements were significantly greater than those of China. Furthermore, there were other contributing factors, such as the Baconian programme and the Enlightenment, that were crucial disparities between Europe and China.

The second area of research I wish to mention has a rich historical background. It can be traced back to the German Historical School of Political Economy, particularly the contributions of Max Weber and Werner Sombart, as well as American institutionalism. In 1971, Douglass North and Lance Davis studied the impact of institutions on economic development in their book *Institutional Change and American Economic Growth*, which became North's primary focus in the following decades. He combined economic theory with econometric methods and became a pioneer of cliometrics or New Economic History. In their book *Violence and Social Orders. A Conceptual Framework for Interpreting Recorded Human History* (2009), North, Wallis and Weingast (NNW) argue that political competition in an open-access order is more likely to encourage the production of public goods, while in limited-access orders the priority is to safeguard rents. In addition, in open-access orders, where professions, markets, and political offices are open to all individuals with suitable qualifications, those who perform well receive rewards.

In their book *Why Nations Fail*, Acemoglu and Robinson (2012) (A&R) have applied this concept, utilizing both analytical and empirical approaches to examine specific developments in economic history. They differentiate between political and economic institutions. The former oversee the allocation of authority amongst the various bodies within the country, and the process for their formation, while the latter regulates the property relationships of citizens. Following NWW, A&R classify limited access orders as "extractive institutions" and open-access orders as "inclusive institutions.".

Inclusive economic institutions protect the property rights of large parts of society, they do not allow unjustified alienation of property, and they allow all citizens to participate in economic relations in order to make a profit. Under such institutions, workers are interested in increasing labour productivity. The long-term existence of such economic institutions, A&R argue, is impossible without inclusive political institutions that allow broad sections of society to participate in the governance of the country and to make decisions that are beneficial to the majority. These institutions are the foundation of all modern liberal democracies. In the absence of such institutions, political power can be monopolized by a small section of society. Sooner or later, they will use that power to gain economic power to attack the property rights of others and thus annihilate inclusive economic institutions.

Extractive economic institutions hinder the majority of the population from receiving the complete rewards of their own activity. They restrict the benefits of economic relations to an elite, and may even seize the assets of those excluded from this group. This phenomenon is exemplified by the historical practices of slavery and serfdom, or landlordism within feudalism in Europe. Other examples of exclusive institutions with restrictive rules that limit free access are trade and craft guilds.

Within mainstream economics, NWW did not receive as much attention as did A&R, likely due to the latter's long-standing publications of numerous separate studies which they had summarized in their book *Why Nations Fail.* In these studies A&R also tested their theses with the assistance of data and the corresponding econometric procedures, aligning it with the current methodological approach of subjecting theoretical hypotheses to econometric testing. To this aim, researchers identify historical situations in which an "experimental situation" or "natural experiment" occurred. They then analyse data to determine whether the effect of the "natural experiment" is observable. Kopsidis and Bromley (2016) describe this as a "big-bang theory." The introduction of the Magna Carta, the Glorious Revolution, or the introduction of the *code civile* in the German provinces on the left bank of the Rhine after Napoleon's occupation can be seen as examples for those significant institutional innovations.

A&R have exemplified this institutional economics approach in their book using various historical examples. They give special attention to France and Great Britain, where the Glorious Revolution of 1688 is considered as a major turning point. The revolution witnessed a power shift from the monarch to the parliament. The political institutions became more inclusive, resulting in the loss of power of the aristocracy in parliament and the gain of power by bourgeois representatives. This gradual transition in economic property rights was noteworthy.

A&R view these institutional changes as fundamental in creating the conditions for the Industrial Revolution. The authors' remarks regarding European developments beyond Britain are brief. Habsburg is depicted as a contrasting example to Britain, whereas Prussia is only cited once (A&R, 2013, 351). The scant treatment of the subject gives the impression that the nations in question imported the gains of the French Revolution via the implementation of the Code Napoleon. However, this is entirely incorrect with respect to Prussia. It begs the question, why did Prussia, unlike Britain, France, or the Dutch provinces, formulate its own institutional structure? Here, too, it can be questioned to what degree geography impacted the evolution of institutions.

Unlike the British Isles, Prussia had multiple neighbours, including a menacing neighbour in Sweden. A well-regarded economic historian wrote about this, stating that:

> Sweden (…) proved to be a hostage of the East. Its significant and effective hold and sway over Prussia, Poland and Russia during the nineties between 1630 and 1720 are akin to the aftereffects of Spain's conquests in Western Europe during an earlier era (…). At the peak of its power, the Swedish cavalry celebrated victorious entries into five capitals. Moscow, Warsaw, Berlin, Dresden, and Prague each experienced a formative shock in their respective

state systems as a result of these events. This double development had a significant impact on the Austrian, Prussian, Polish, and Russian state systems" (Anderson 1979, 241–2, my translation).

Specifically, under the leadership of Wilhelm, the Great Elector of Brandenburg, a treaty was established in 1653 that required the nobility to agree to a tax for a standing army. The taxes were to be paid by the peasantry and towns, rather than the Junkers, and resulted in the institutions becoming more extractive. It resulted in Prussia gaining the reputation, as Mirabeau allegedly put it, not as a state, but as an army that maintained a state. For a lengthy period, England lacked a standing army, but it possessed a fleet that served as its defence mechanism. Despite being a commercial fleet, its ships were easily adaptable into warships. The Royal Navy contributed to England's national economy, while Prussia's military expenditures on its standing army were a significant cost factor.

Like Prussia, the Habsburg Monarchy had several neighbours and was a "multi-ethnic state" with a completely heterogeneous economic base and, ultimately, two centres of power – Vienna (*Zisleithania*) and Budapest (*Transleithania*) – which thought and acted differently on many issues. Thus, Viennese approaches to institutional innovation were mostly thwarted in Budapest. In general, it can be said that in Budapest the existing institutional rules were adhered to for a long time, the Eastern European landlordism was only cosmetically modified and thus serfdom was retained in essence, whereas in Cisleithania it was abolished. The guild system was introduced belatedly in the territories ruled by Budapest, with the result that few trades developed and were only slowly modernised and finally abolished belatedly, while Cisleithania was quicker to follow developments in the western German-speaking territories and Prussia.

The development of Switzerland leads to speculation on whether institutional development in continental Europe was truly shaped by institutional factors. Although Switzerland established democratic political institutions at an early stage, it pursued a distinct economic and institutional path that differed from its neighbouring states. In a sense, Switzerland leapfrogged over absolutism and mercantilism into industrialisation earlier than the German territories and at about the same time as Belgium. Switzerland lacks the traditional raw materials of coal and iron, with its mountains making profitable agriculture impractical. Despite the challenges, Switzerland had a varied and export-oriented trade in the 18th century, which can be considered as proto-industrial. Furthermore, the increase in Europe's population led to a surplus of labour in Switzerland. Due to Napoleon's "Continental Blockade," cheaper and superior British cotton imports were restricted. As a result, additional spinning and weaving mills emerged alongside the existing ones in St. Gallen and specifically in Zurich. These mills differed from those in England as they were powered by abundant water power, not coal-fired steam engines. Subsequently, water power was utilized to generate electricity in the late 19th century, resulting in the comparatively early electrification of the railway, among other developments. Energy has undoubtedly played an essential role throughout the industrialisation process, whether it came from coal or hydroelectric power.

In this context, I will refer to the debate among economic historians regarding the key factors that stimulated the Industrial Revolution in England. According to Mokyr

(2012), the unique manifestation of the English Enlightenment came in the form of the Baconian programme, which adopted a 'trial and error' approach to practical experimentation, particularly in the practical application of scientific and technical knowledge. Allen, however, argues that the English population's significant decline after the plague led to a scarcity of labour, thus driving the mechanisation of agriculture and production. Furthermore, the abundance of high-quality coal near Newcastle, a geographical advantage, also played a significant role. Conversely, A&R highlighted the progressively secure property rights from 1688 onwards.

This debate has been repeated in studies on the driving forces of economic growth in the German regions after the Congress of Vienna. The starting point was a paper by Acemoglu, Cantoni, Johnson and Robinson published in the *American Economic Review* (2011), in which they claim to have tested for the first time using an econometric model the thesis that the legal reforms – the *code civile* – introduced by the French occupying power in the areas on the left bank of the Rhine and in west German territories were crucial for the later industrialization processes in the German Reich. Kopsidis and Bromley (2016) refute this thesis in their article in the *Journal of Institutional Economics.* They have developed an econometric fixed-effects model to capture the neglected role of coal production that started in various regions shortly after 1840. The model provides a reliable explanation for both German industrialization and urbanization. The authors thus support the thesis that geographical factors had a significant impact and could not have been counterbalanced by institutional influences. The finding can be substantiated by the example of the Netherlands. The Netherlands had been republican since the end of the Middle Ages and had created somewhat more inclusive political institutions than the otherwise predominantly absolutist Europe. It emerged as the largest trading power in Europe and, after the last lost Anglo-Dutch War, only had to yield to the British, but remained a leading trading power with great prosperity. Nevertheless, the Netherlands was not the leading region in industrialisation because it lacked coal as a source of energy. It would have been expensive to import it. They heated with peat, used wind and water power and later industrialised with "clean" industry. The Netherlands currently has an industrial sector that generates a slightly smaller share of value added than in Germany.[1] Taken together, the dominance of the 'big bang' of institutional change proposed by A&R is not very plausible, but this is not to say that the shift towards more inclusive institutions has not had an impact on economic and social development in European countries. Following Ogilvie and Carus historical evidence shows that "(…) the importance of analysing not just each institution in isolation but also how it interacts with other components of the surrounding institutional system" (2014, 406).

The following sections of this article examine the emergence of institutions and the effects of the abolition of the guild system in two neighbouring states of the Confederation of the Rhine (*Rheinbund*), the Duchy of Hesse-Nassau and the Grand Duchy of Hesse-Darmstadt.

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1 In 2022, the share of industry in gross value added in Germany was about 24 %, while in the Netherlands it was 19 %.

2. Emergence of Institutions

What is an institution? According to Douglass North, "institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)" (1991, 97). And Avner Greif shares a similar perspective by defining a concept along these lines: "An institution is a system of social factors that conjointly generate a regularity of behavior. Each component of this system is social in being a man-made, nonphysical factor that is exogenous to each individual whose behavior it influences. Together these components motivate, enable, and guide individuals to follow one behavior among the many that are technologically feasible in social situations" (2006, 30).

Why do institutions emerge? Institutions often arise through evolutionary means, that is, they develop through interactions. Individuals learn which behavioural patterns lead to success in achieving their own goals. In turn, this brings order to everyday activities and reduces uncertainty about how others will act in similar situations. In terms of economics, institutions were established to address social and economic issues efficiently. Meanwhile, an alternative viewpoint suggests that institutions stem from socio-political struggles, particularly distributional conflicts (Acemoglu *et al.* 2005; Ogilvie and Carus 2014). Not all scholars agree with the unequivocal statement that institutions are paramount for the sustained progress within economy and society. According to Diamond (1997) and other scholars such as Sachs (2012), long-term development is either determined or at the very least influenced by geographic and climatic conditions. There is an opposing argument that institutions reflect geographical features or are shaped by them (Acemoglu *et al.* 2005), incorporating the effects of geography, topology, and climate. The discussion gave rise to the "geography versus institutions debate," which examines whether geographical or institutional factors are more crucial to long-term growth and development.

Auer (2013) has thoroughly analysed this issue employing various econometric models, leading to an anticipated outcome. Hence, it confirms A&R's thesis that geographical influences are objectively incorporated in institutions. Nonetheless, it reveals that geographical factors directly affect economic development (and growth), and institutions are not always predominant.

One noteworthy example is the emergence of guilds for craftspeople and merchants during the Middle Ages which persisted in Germany until the early 19th century, and some remnants remain to this day.[2] For instance, the *Meisterpflicht* dictates that a master craftsman qualification is mandatory for opening a craft business. As of the start of 2020, Germany now requires a master craftsman's certificate in 12 trades that previously did not necessitate it.

2 The oldest German guild was that of the Cologne duvet weavers, first mentioned in 1149. (https://www.zunft.de/Die-Geschichte-der-Zunft)

3. The Guild System

During the Middle Ages, guilds were widespread and persistent in Europe, not because they effectively solved economic issues and made everyone better off, but because they distributed resources to a powerful urban elite. This approach also provided side benefits for rulers, as seen in the case of free imperial cities such as Augsburg, Nürnberg, Frankfurt/Main, Bremen, Hamburg, and Lübeck, which paid duties to the emperor rather than to the local ruler.

As two commentators note: "This rent-seeking agreement between political authorities and economic interest-groups was explicitly acknowledged by contemporaries, as in 1736 when the ruler of the German state of Württemberg described the merchant guild that legally monopolized the national worsted textile proto-industry as 'a substantial national treasure' and extended its commercial privileges at the expense of thousands of impoverished weavers and spinners" (Ogilvie and Carus 2014, 471). On the other hand, the guild system produced beneficial externalities as journeymen travelled to different cities to hone their craft under the instruction of different masters. The Swiss clock- and watchmaking industry stands out as an exceptional case in point.

Although the members of guild system might have benefited most from the system, there existed externalities which were beneficial for the whole society. Strong efforts to train young people created high standards of craftmanship and, in addition, a high product quality assurance through guild-compliant standards. Additionally, a steady stream of excellently-trained craftsmen was also beneficial for the whole society. However, the guild system constrained the beneficial aspects of competition. By limiting the number of craftsmen, which were accepted as guild members, the output of bakers, butchers, clockmakers or of any other craft was relatively low, while product quality was high. It could be argued that quality trumped quantity. Guilds were like clubs or cartels that control their members by certain admission rules and restrict the number of admissions and therefore, they hindered commercial freedom, and particularly the development of manufacturing and later the factory system. After the French Revolution, it was not only serfdom which was under attack, but the guild system too.

The guild system was rather persistent and relatively long-lasting, not only in the south western territories of the German Confederation but also in the Kingdoms of Sachsen (1861) and Bavaria (1862), while in Prussia it was abolished already in 1813 in the course of the Stein-Hardenberg reforms. The Grand Duchy of Baden was, as far as political ideas and reforms are considered, the most liberally-oriented country. However, the guild system was not completely abolished until 1862, and thus at the same time when the Kingdom of Württemberg disestablished it. In the Grand Duchy of Hesse-Darmstadt the guild system was weakened stepwise. A major step was made after the March Revolution in 1848 where trade and business privileges were abolished. The final abolition of the guilds did not take place until 1866 after the end of the Austro-Prussian war.

The Duchy of Nassau with the capitol Wiesbaden came into being under the protection of Emperor Napoleon in 1806 as a member state of the Confederation of the Rhine and which in 1815 became one of the member states of the German Confederation.

The duchy existed for only 60 years, from 1806 to 1866. It was located between the rivers Main in the south and the Lahn in the north. The western border was the Rhine River while in the east the free city of Frankfurt and the Grand Duchy of Hesse-Darmstadt were the neighbours. Nassau abolished the guild system and introduced a free trade system in 1819, but in a law from April 1849 the freedom of trade that had existed up to that point was revoked and the guild system was reintroduced in a stricter form than it had existed before. This happened in most territories of the German speaking area after the revolution of 1848 and even in Prussia in February 1849 it was decreed that anyone who wanted to set up a craft business had to successfully complete a guild guided craft training and had to take an exam in front of a certain commission (Mohr 2001). One of the problems which emerged after abolishing the guild system was a successive and increasing scarcity of craftsmen, because without the guild masters the process of instructing and qualifying junior craftsmen ceased. Other motivations to reintroduce the guild system were material need and a loss of old age benefits. In other regions, where the guild system was abolished and not revoked, the emerging trades movement (*Handwerkerbewegung*) called for new institutional regulations whose intentions were to avoid these negative consequences of the abrogation of the guild system.

4. Abolishing the Guild System: An Experiment in Offenbach

In the Grand Duchy of Hesse-Darmstadt, located nearby to Hesse-Nassau, to the Free Imperial City of Frankfurt and the Electorate of Hesse-Kassel, the elimination of the guild system was trodden with caution. Hesse-Darmstadt was, as far as economic liberty was concerned, a conservative country within the German Federation. Unlike the Duchy of Nassau, the Grand Duchy of Hesse-Darmstadt restricted the abolition of the guild system to the city (and district) of Offenbach; during the timespan from 1818 until 1821 Offenbach gradually became a Special Economic Zone, where in 1821 the last step was fulfilled when the guild ban (*Zunftdistriktbann*) was repealed for all crafts. From that point onward, factories could be founded in Offenbach and not only the leather industry began to prosper. Remarkably, the chamber of industry and commerce of Offenbach was founded in 1821, and it was dominated relatively fast by industrial members and not by merchants like in Frankfurt am Main (Gessner 1996, 46). In the following years other important reforms of the institutional setting took place. In 1828 the Prussian-Hesse Tariff Union was implemented, foreshadowing the German Customs Union that started 1834, and tax reforms took place. However, all these reforms took place in the whole area of the Tariff Union and not only in Offenbach, but they stimulated particularly the development of Offenbach, because the larger markets fostered the industrialisation and therefore economic growth in the district and city of Offenbach.

There were two interesting research questions: First, did the change of the institutional regime in Offenbach lead to a different development in the Offenbach district in comparison to the larger parts of the Grand Duchy and second, did Offenbach develop in a comparable degree with regions of Prussia where the guild system was also suspended in the early 19th century? In a dissertation under my supervision Christian

Berker (2019) explores these two research questions. Usually, in such a comparative analysis the difference-in-difference method would be the appropriate approach to identify the treatment effects. In this case one would need two groups. One group, which was "treated" and another group that was not "treated"; in medicine it is called the "Placebo group." Sometimes, as in our case, only one entity of a group is "treated" – here, the district and city of Offenbach were "treated" by an institutional reform and in such a case the synthetic control method (Abadie 2021) should be applied. This method is used to estimate what would have happened to the district and city of Offenbach if the institutional reform had not taken place. So, the idea is to create a "synthetic Offenbach", which is compared to the "real Offenbach" after the guild system was abolished and the tax reform was implemented.

Besides the institutional reforms the regression analysis took other possible influential factors into account:

1) *Geographical Aspects.* Located at the River Main transportation of commodities by ships was to the best advantage for industry production and to get rid of the tanning agents like i. e. urine and tanbark. There was the neighbourhood to Frankfurt, which was and had been an important fairground and banking place since the Middle Ages. On the other hand Frankfurt had very conservative institutions, which were hostile towards paupers as well as to dirty crafts inside the city walls. Therefore, workers settled in the vicinity of Frankfurt, but providing labour supply for the factories in Offenbach. Because the guild system was and remained very strong in Frankfurt factories were established outside Frankfurt, making it an obvious advantage for Offenbach.
2) *Political Factors.* Both tariff unions were convenient for trading the leather goods produced in the factories of Offenbach.
3) *Religion.* Since the Reformation, Offenbach had been a protestant region with immigrants from protestant regions in France, like the Huguenots, which were high skilled workers and most welcome in the city.

The analysis shows that the institutional reforms, consisting of the abolishment of the guild system and the tax reforms had a strong positive and highly significant influence on the growth development of Offenbach. Neither the coefficients of the variable for the river nor for both tariff unions were significant. Furthermore, the analysis shows that the "real Offenbach" had a much better growth performance than the "synthetic Offenbach" (Berker 2019, 373). This result supports the view that the institutional reforms were decisive for Offenbach's formidable performance after it became a Special Economic Zone.

5. Concluding Remarks

The research of Christian Berker shows that institutions played a significant role for Offenbach's economic performance, as it is claimed by Acemoglu, Johnson and Robinson (2005). Whether a guild system is less inclusive than a capitalist labour market is another question and was neither the question of this study nor is it a question that is easy to answer. The case of Offenbach shows that the privilege to implement a factory system and not to secure property rights, but the abrogation of the constrains imposed by guilds and a large navigable river might explain the success story of Offenbach located at that time in the Grand Duchy of Hesse-Darmstadt. On the first sight a combination of institutional reforms and a convenient geographical location at a river have seem to be causal for the success of the experiment of a Special Economic Zone in Offenbach. This would also have confirmed the research results of Bromley and Kopsidis (2016) as well as those of Auer (2013). But the real development seems to be a bit trickier, because the Duchy of Nassau had temporarily suspended the guild system, and it was geographically located on the same river – only on the northern bank and not on the southern bank like Offenbach. Of course, the city of Frankfurt was more or less the same distance away for both regions.

The case of the Duchy of Nassau shows that neither the abolition of the guild system nor the geographical proximity to the river and the city of Frankfurt were sufficient conditions to promote economic development. Höchst, which is now a district of Frankfurt, was located in the Duchy of Nassau at the time period we are looking at and was famous for its porcelain production, but industrialisation in Höchst only began in 1863 (three years before Nassau was incorporated into Prussia) when three men, Meister, Lucius and Brüning, founded a company that later became known as *Farbwerke Höchst.* This example illustrates that individual institutional changes and favourable geographical factors alone were apparently not sufficient to trigger industrialisation. In the case of Offenbach, there were additional reforms, like the tax reform, which accompanied the major institutional shift.

Sometimes it is a matter of fundamental political decisions that have the effect of being a brake on certain developments. When Wiesbaden was designated as the capital of the Duchy of Nassau in 1806, the rulers of Nassau initiated the transformation of the city into a chic European spa and strove to deter any burgeoning manufacturing industry. As early as 1852, Wiesbaden described itself as a "world spa town." The government in Wiesbaden has even been relentless on several occasions when it came to licensing industrial manufacturing facilities. In 1858, for example, Heinrich Albert was refused to establish a chemical factory in Biebrich because of the "adverse influence of unhealthy vapours on the residents."[3] More plausible is that the rulers feared that malodorous vapor was not an appropriate nimbus for a spa town. Strictly speaking, the political decision of the ducal government in Wiesbaden was necessitated by geographical conditions. Thermal springs had long existed in Wiesbaden and had been utilized in Roman times. Similarly, the banks of the Rhine had also been present for an extended period. As a result, the government had to choose between the two and eventually accorded priority to the use of the thermal springs.

This comparative analysis of two neighbouring duchies highlights that major economic and social changes cannot be attributed solely to geographical or institutional factors. Political decisions also play a crucial role, as exemplified by the Duchy of Nassau, where the settlement of industry in a region close to the Rhine River was considered politically unfavourable and triggered the creation of a cross-border company.

[3] The chemical factory Albert became famous for "Albert-slag" (*Thomasmehl*), a fertilizer, which was made from phosphate slag. The factory was later a part of *Farbwerke Hoechst.*

Overall, this case study demonstrates that conducting comparative research on the factors that affect economic growth and development during times of significant upheaval can yield new insights.

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