

# **Industrial Clusters in the Russian Empire 1860 - 1913**

Nooa Nykänen

University of Jyväskylä

Department of History and Ethnology

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Tiivistelmä – Abstract <p>This thesis outlines the development and structure of industrial clusters in the Russian economy during the early period of industrialization, starting after the emancipation of serfs and finishing in the outbreak of the World War I. The aim of the study is to apply modern cluster theories which are based on Michael Porter's works in 1990s, into a historical context and thus seek out key factors that influenced the industrial concentration of chartered corporations in the Russian Empire. This has been done by studying the RUSCORP database, compiled by Thomas C. Owen in the 1980s, which contains information about 4543 corporation and their entries between the years 1700 and 1913 and the existing research literature to qualitatively seek out attributes that affected the industrial growth in Russian Empire. As an outcome, it is concluded in the study that the private corporations prospered in strongly concentrated centres that by structure had similar features as modern clusters, but were not entirely based on the same factors which have been used to explain modern cluster emergence. Additional factors, such as state investments, changing industrial infrastructure and the influence of foreign investments are also shown to have contributed to the development of Russian clusters.</p>	
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## TABLE OF CONTENTS

List of tables and figures.....	iii
1 Introduction.....	1
2 Review of research literature and conceptual definitions.....	5
2.1 Key concepts.....	5
2.1.1 Cluster as an economic concept.....	5
2.1.2 Russian corporation.....	10
2.1.3 Russian Empire.....	10
2.1.4 Capitalism and market economy.....	11
2.2 Interpretations of Russian economic history.....	13
3 Methodology.....	17
3.1 Primary sources.....	17
3.2 Analysis of clusters in the study.....	19
3.3 Limitations of the study.....	20
4 Development of industrial clusters in Russia 1860 - 1913.....	22
4.1 Background of industrial development.....	22
4.2 Early period of industrialization 1860 - 1880.....	24
4.3 Industrial growth 1880 - 1900.....	31
4.4 The pre-war period, 1900 - 1913.....	39
4.5 Overview.....	44
5 The role of clusters in Tsarist industrial development.....	48
5.1 Geography of Russian economy in 1860 - 1913.....	48
5.2 Institutions and entrepreneurial networking.....	49
5.3 Competition.....	52
5.4 Skilled labour force and management.....	54
5.5 Innovations.....	58
5.6 Industrial life cycles, spinoffs and corporate survival.....	60
5.7 Cluster life cycles.....	64
6 Conclusions.....	66
Sources.....	69
Appendix.....	77

## LIST OF TABLES AND FIGURES

Table 1. Chartered corporations and corporation headquarters in Russian Empire 1860 - 1913...	22
Figure 1. Industrial centers and railways in 1875.....	27
Figure 2. New corporations in Moscow & St. Petersburg 1860 - 1880.....	28
Table 2. New corporations and main functions in major regions 1860 - 1880.....	30
Table 3. New corporations in 15 largest industrial centers 1880 – 1900.....	37
Table 4. Average annual volume of railroad shipments in the major commodity groups.....	40
Figure 3. New corporations per annum 1900 - 1913.....	42
Table 5. Development of wholesale and retail trade sector.....	43
Table 6. New corporations in 15 largest industrial centers 1900 – 1913 .....	44
Table 7. Chartered corporations and granted privileges in Russian Empire.....	59
Table 8. Existing corporations in 1914 sorted by entry years in cluster-specific industries (percentage share of all entries in the industry).....	62
Table 9. Existing corporations in 1914 compared with entries in major clusters (existing corporations/chartered corporations).....	63
Table 10. Major clusters in Russian Empire and their clustering.....	67

## 1. INTRODUCTION

This thesis aims to outline the development and nature of industrial clusters in the economy of Tsarist Russia in the years 1860 - 1913, the era of industrialization and massive societal transition. In an Empire like 19<sup>th</sup> century Russia, geography inevitably plays a special role in the formation of economic activity and after the demise of feudal serf-system in 1860s forces of industrial development started to shape the structure of Russian economy by regionally unequal industrial growth. Highly concentrated industrial regions formed the core of Russian industrial development not only in terms of total production but also as centres of knowledge, skilled labour force and financial investments. Within modern economics, these features have been essential components in cluster economics which, since the initial post-Marshallian discovery of industrial districts<sup>1</sup> and further popularized by the cluster theory of Michael Porter in 1990s<sup>2</sup>, has gained wide popularity in scholarly circles and been promoted as key concepts in geographical economics as well as possible policy-making tool in search of increased economic productivity.<sup>3</sup> In recent years, the interest in cluster policies has increased also in the economic discussion inside the Russian Federation.<sup>4</sup>

While the cluster research has gained firm foothold in the research of modern economics, clusters have been rarely implemented as the focal point of interest in economic history.<sup>5</sup> Although the industrial districts as subjects of historical examination enjoyed widening popularity in the 1990s<sup>6</sup>, the developments in the fields of regional economics and social sciences have outpaced comprehensive historical research on the subject.<sup>7</sup> In Porter's original structuration of clusters many of the causal aspects and preconditions that were addressed to a cluster seemingly derived from assumptions on the nature of geographical economic concentrations in modern era (such as the effect of knowledge, labour inputs, competition and technology) without further implicating the underlying factors formed by long-term development. Furthermore, Porter's cluster theory assumed global environment as background for economic performance in the form of clusters.<sup>8</sup> A vast supplementary research has emerged subsequently on clusters, further expanding the understanding

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1 Brusco 1982; Zeitlin 2007, 219.

2 Porter 1991; Porter 1998.

3 Jääskeläinen 2001, 79 - 111, 213 - 235.

4 Kut'in 2003; Shalmina 2008; Bojcov & Kostjaev 2009; Korchagina & Rakieva 2009; Nekrasov 2009; Évstratov 2011; Strel'cov & Artamonova 2014.

5 e.g. Lamberg & Ojala 2006; Zeitlin 2007, 221; Boschma & Ledder 2010, 192; e.g. Ojala et al. 2012, 345 - 363.

6 Chandler 1992; Sabel & Zeitlin 1997; Scranton 1997; Capecchi 1997; Popp & Wilson 2007.

7 Zeitlin 2007, 221.

8 Porter 1998, 77.

of the role of clusters in modern economies.<sup>9</sup> Though not implicitly recognized by Porter, these features are not unchangeable and universal, but subject to transformation and varying conceptualization during the course of historical development. Even if the cluster concept could be utilized nowadays as relevant tool for depicting economic organization, no conclusive theories have emerged to definitively assess how cluster concept performs in different times and what societal, institutional and economic preconditions are elementary for Porterian functioning of cluster dynamics.

This study seeks to examine the cluster set-up over a longer historical period in order to assess the factors of cluster emergence and formation in specific historical environment, which experienced major economic reorganizations during a period of massive societal transition and foundation of several branches of industry, many of them highly concentrated in space. By studying the primary data on 1) emergence of firms in various industries and their geographical concentration in a developing industrial society and 2) examining the results in light of diverse research literature on the industrialization of Russia, this study attempts to pinpoint the elementary factors of industrial concentration and economic clusters in Russian Empire – a geographically vast, but economically backward country. Finally, by reflecting the existing theoretical cluster literature on the preliminary results of Russian clusters found from the primary data as well as historical studies, some key methodological issues on testing the cluster concepts in historical setting are sought to be discussed in the conclusions of this study.

The decision to use late Tsarist Russia as the environment of historical study in this thesis provides a rather deviating context for the cluster examination from its original setting in industrial districts of Western countries in modern era. Furthermore, the economic history of Imperial Russia has not been widely subject to reinterpretations using modern frameworks and models of theoretical economics.<sup>10</sup> The half a century of industrial development between the years of Emancipation in 1860s till the dawn of First World War reformed the society and economy of the Russian Empire. While it has been widely discussed and contested whether the change from a backward and underdeveloped country to one of the economic giants of the world actually meant that Russia experienced full-scale industrialization<sup>11</sup>, it certainly took major steps towards a modern economy, driven by transitive forces of industrial growth and corporate capitalism. The abolition of serfdom

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<sup>9</sup> More detailed citations on cluster research and discussion on clusters can be found in chapter 2.1.1.

<sup>10</sup> See chapter 2.2 on research literature in the field.

<sup>11</sup> Gershenkron 1962.

in 1860s, the industrial boom experienced in 1890s and the urbanization, highlighted by the rise of the merchant groups and factory-based industrial centres, such as St. Petersburg and Moscow were all ground-breaking challenges upon the Tsarist state system and its' economy. The eventual path of development into revolutionary movements of 1905 and 1917 as well as industrial policies of the Tsarist government's ministry of finance imply that the socioeconomic aspect of Russia's development had grown relatively in importance since 1860s.<sup>12</sup> This path of development was not universally welcome among contemporary observers and the industrial policy and developing capitalist structures provoked reactions in politics, especially among slavophile and conservative circles.<sup>13</sup> While the industrialization and the construction of railways offered new opportunities for economic activity, there were also considerable reforms in banking and financial sector, which all contributed to the growth of Russian capitalism and entrepreneurship and the latter half of 19th century witnessed emergence thousands of new Russian corporations. The growth of the corporate capitalism diversified also the geographic picture of the Russian economy, as the development was spatially strongly concentrated within the Empire. Major industrial centres attracted workforce from more scarcely populated areas and the countryside, further accumulating economic, social and political power into prosperous regions. Not only did the population experience the effects of clustered industrial activity, but also the industrial actors themselves along with these centres soon became leading areas of economic growth, centres of business culture and pacemakers of capitalist development. Eventually, the state's inability to deal with the economic and political issues accumulated during these fifty years of industrialization escalating to the downfall of the feudal Tsarist state and eventual collapse in the two revolutions of 1917 and thus the establishment of Soviet state.

This thesis approaches the topic by using quantitative data from RUSCORP database, containing information about Russian corporations during the Tsarist period, as primary source material.

Therefore, the viewpoint of the study is narrowed to highlight and discuss cluster formation and its relevant factors in the light of RUSCORP data, complemented with secondary literary sources covering the industrial period of the Tsarist Russia. No comprehensive works on solely clusters and industrial centres in Tsarist Russia in English have been available in the research process, which mounts certain difficulties in cohesively measuring the relative importance of various factors that shaped the development of industrial clusters in Tsarist society. Furthermore, the decision to narrow the viewpoint of this study to the data available in RUSCORP database was an early necessity in

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12 Spulber 2003, 149, 152.

13 Von Laue 1953, 444 - 445.

order to scope the study to a reasonable level and on the other hand prevent the viewpoint from being exhausted under immoderate vastness of the subject. These limitations have on one hand helped to build a solid foundation in pointing out the significance of clusters in Imperial Russia, but on the other left the functioning of many parallel factors and phenomena in cluster dynamics unexplored to the extent they would deserve. The research subject has proved its fruitfulness during the process and further possibilities of combining fields of research in Russian economic history and regional economics has been discussed in the conclusive chapter.

The main content on this thesis is divided into three core chapters. Firstly, the somewhat controversial concept of *cluster* is discussed in chapter 2 for the purposes of this study alongside few other conceptual definitions. A short preview on the relevant literature from the both supportive fields, cluster economics and Russian economic history, are also presented. The chapter 3 contains a more detailed preview on the RUSCORP, the primary source database in this study and methodological outlines of the study analysis. In chapter 4, the historical background of Russian industrialization and development of industrial concentration of firms during 1860 - 1913 are examined on the basis of research literature and primary data sources on company emergences. The line of analysis continues in the chapter 5, in which the modern conceptualizations of cluster emergence and development are combined with the results of chapter 4, highlighting the key issues in more comprehensive understanding of clusters in the late Tsarist Russia. Although the limited size of the study sets certain constraints to an attempt to pinpoint and thoroughly examine all the relevant attributes that contributed to the formation and operation of Russian industrial centres, the main factors of a functioning cluster in the context of Russian economic geography, according to both modern theories and findings from the primary and literary historical sources, are sought to be amassed. Finally, in the conclusive chapter the results of the study as well as further thoughts on the mechanics of cluster research in historical study case are presented.



## **2. REVIEW OF RESEARCH LITERATURE AND CONCEPTUAL DEFINITIONS**

### **2.1 Key concepts**

In order to avoid confusion and further position this study into its' theoretical framework, some definitive attention should be paid to the key concepts around the theme. Especially in the case of 19th century Russia, several modern definitions of economic vocabulary may differ drastically in their meaning and moreover, it is a matter of debate, whether some concepts actually existed during the research period.

#### **2.1.1 Cluster as an economic concept**

Since 1990s the concept of cluster has appeared ever more frequently in the theoretical analyses in the fields of competition and regional studies as well as geographical economics. Michael Porter's well-known definition of a cluster as a geographic concentration of interconnected companies in a particular field has been widely used as a concept for the research of modern economies, but rarely implemented or analysed in historical studies.<sup>14</sup> Clusters have been considered as centres of economic activity and pivotal elements of economic growth in general, which also promote the overall performance of the economy through agglomeration externalities, such as spinoffs, knowledge spillovers, supplier-chain specialization and labour force utilization.<sup>15</sup> Regional and linked industries and institutions as well as proximity of rival firms have also tendency to invigorate local competition by constant comparison and monitoring and often clusters are seen as centres of unusual competitive success.<sup>16</sup>

The idea of cluster as a central research topic has been thought to enrich the understanding of company development and the key structures that determine its' prosperity. Also it is believed to shed light on the internal and external networks of companies and evaluate their effectiveness, contributing to several aspects of cluster's economic fertility, such as the accumulation of innovations within a cluster, which further may lead to spinoffs that fortify cluster's rate of productiveness and eventually form new companies.<sup>17</sup> The process of knowledge creation inside a cluster has been seen to locally increase the level of knowledge-based specialization as passive

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14 Porter 1998, 78; Fornahl & Menzel 2010, 2.

15 Fornahl & Menzel 2010, 1.

16 Porter 1998, 78 - 79.

17 Klepper 2005, 1291.

“buzzing” knowledge alongside informal communication channels.<sup>18</sup>

The cluster concept, however, hasn't been universally accepted and controversies in the utilization of Porter's cluster proposition as a policy tool have sparked voices of criticism. It has been claimed that Porter's cluster concept, coined as an allegedly advantageous and competitive form of industrial organization, has been accepted widely because of its tempting way of putting together the framework of geographical concentration and competitiveness in an economic formation, which, according to Porter, leads into increased productiveness. Despite its central role in policy-making and business strategies<sup>19</sup>, however, Porter's cluster definition has remained vague and inaccurate enough to include in itself excessively wide variety of industrial formations in different cultural, institutional and societal environments, meaning that finding a rigid geographical and organizational definition of cluster is not possible.<sup>20</sup> This makes it difficult to comprehensively accept Porter's theories of industry scale dynamics and spatial benefits of clusters, although they are taken as core elements of clusterization.<sup>21</sup> Porter also struggles to map convincingly the differences in plausible development paths between successful and non-successful clusters.<sup>22</sup> Traditional views of economic geographers, which Porter largely ignores, have been more diffusive in pinpointing the key elements of agglomeration and localization benefits for industrial concentration in space.<sup>23</sup>

In the same way as the field of cluster theories remain loose in their definition, so do the theories concerning the emergence of a cluster. As this study uses vastly quantitative data on emerging companies, which illustrates the growth of clusters, it is necessary to take a brief view on the modern understanding of cluster emergence. It has been widely noted that the same factors, which define clusters emergence do not necessarily ensure its' future functionality.<sup>24</sup> Dick Fornahl and Max-Peter Menzel define the cluster emergence as a transition between these two stages, both appearing in popular concepts, such as 'window of locational opportunity' approach<sup>25</sup>, core-periphery model<sup>26</sup> or stochastic approaches<sup>27</sup>. Firstly, the cluster emergence starts from the point in which the evolving companies and institutions reach the numerical 'critical' mass. This is often

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18 Bathelt, Malmberg & Maskell 2004, 31; Storper & Venables 2004.

19 e.g. Jääskeläinen 2001.

20 Martin & Sunley 2001, 47.

21 Porter 1998, 80.

22 Martin & Sunley 2001, 24.

23 See Becattini 1990; Martin & Sunley 2001, 9 – 11

24 Breshanan et al. 2001, 842 - 846.

25 Boschma & van der Knaap 1999.

26 Krugman 1991.

27 Arthur 1994.

accompanied with the existence of high market potential and necessary maturity of political and organizational framework.<sup>28</sup> Secondly, after this stage agglomeration processes begin to maintain cluster's endogenous dynamics, making the clusterization process as a whole largely independent rather than manoeuvrable.<sup>29</sup> In its similar vague fashion resembling Porter's way of defining clusters, this definition says little about the local factors of production or forms of economic activity in question, which demonstrates the complexity of cluster evolution process and the difficulty of identifying and analysing all the factors of importance. An earlier study by Breshanan and Gambarella on ICT cluster formation also argues that successfully emerged clusters cannot be used directly to theorize earlier development of universal preconditions for cluster emergence, which is defined through the growth of entrepreneurial start-ups.<sup>30</sup> This has been evident in the United States, where numerous attempts to copy the success of Silicon Valley ICT cluster have failed to establish a state of functioning cluster.<sup>31</sup> Instead the presupposition is that only by examining the deep similarities which appear in different cluster environment the early preconditions and necessities can be reasonably studied.<sup>32</sup>

Alongside with the cluster emergence theories, an important question that surrounds the cluster theme in this study is, whether the emerging clusters consist of new firms and industries or already existing ones that may have diversified their production and organization to become a part of cluster or shape its' existing structure. Study results from the United States automobile industry suggests that diversifying firms often have logistical and organizational advantages over new entrant firms which can lead to their dominance in an industry. Mostly, in cases when new firms did manage to reach a dominant state in the industry, it was based on the expertise of the founders usually pre-trained within the industry or cluster and spinoffs.<sup>33</sup> This seems to apply especially to developing new industries, which are still in a state of transformation due to the amount of new ground-breaking innovations, such as automobiles themselves in the early 20th century.<sup>34</sup> The role of spinoffs leading to formation of new companies from parent firms is exceptionally important, as often new spinoff-firms establish themselves on the same region, therefore strengthening existing or emerging cluster.<sup>35</sup> If the amount of spinoffs and local firms is high, then more dynamic are the

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28 Ojala et. al 2012, 359.

29 Fornahl & Menzel 2010, 2 - 3.

30 Breshanan & Gambarella 2004, 2.

31 Breshanan & Gambarella 2004, 3; 2005, 114.

32 Breshanan & Gambarella 2004, 2.

33 Klepper 2002, 646 – 647, 661 – 662.

34 Klepper 2002, 663 – 664.

35 Boschma & Ledder 2010, 194.

benefits of agglomeration, which further ties the development of an industry to a certain location. Boschma and Ledder stress the importance of both spinoffs and agglomeration effects, but note that they often occur on the different stages of an industry cycle and therefore their influence on firm emergence and survival rates has to be disentangled in order to conclude their separate importance.<sup>36</sup>

There exists some relevant literature on cluster development in the past, which may serve this research setup for illustrative purposes. Study on the banking sector in the Netherlands 1850 - 1993 by Boschma and Ledder<sup>37</sup> offers some perspectives on the evaluation of cluster formation and spinoff dynamics in historical case based on the firm entries and exits data, as well as information about the experience of the founders. They conclude that the significant regional concentration of banks in Amsterdam has its roots on the spinoff dynamics in the first place and during the later stage benefits from the cluster participation concerned mainly experienced spinoff firms. Although the Window of Locational Opportunity was fairly open in country's banking sector, it soon closed due to the regional dominance of Amsterdam.<sup>38</sup> The development and re-emergence of the Antwerp diamond district after the World War II, illustrated by Henn and Laureys<sup>39</sup> points out the importance of key business persons in the evolution of regional clusters. Also the re-emergence after the war was possible due to wide spread expectations that the local centralization would reoccur, implicating that a strong basis of regional business culture and local policy support was able to endure the ruptures caused by war.<sup>40</sup> Another regional cluster formed by media industry in Leipzig largely benefited from political support, but was not built on it. Rather, the emergence of electronic and new media firms after the unification of Germany in 1990s could be viewed as re-embedding, whilst also showing that the traditional location factor analysis is no longer sufficient explanation for modern cluster emergence.<sup>41</sup> Econometric study on global fashion industries by Wenting & Frenken<sup>42</sup> reviewed the yearly entry rates in several fashion clusters from the viewpoint of organizational ecology, concluding that due to the nature of luxury fashion goods marketing and insensitivity to transport costs, the clusters formed locally, though competed globally.<sup>43</sup>

While clusters are essential part of modern economies and business structures, a cluster-based

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36 Boschma & Ledder 2010, 194 - 195.

37 Boschma & Ledder 2010.

38 Boschma & Ledder 2010, 212 - 213.

39 Henn & Laureys 2010.

40 Henn & Laureys 2010, 89 - 90.

41 Bathelt 2002, 605.

42 Wenting & Frenken 2011.

43 Wenting & Frenken 2011, 1044.

analysis in historical perspective differs from its' modern implementation. Firstly, *cluster* is largely an anachronistic concept created by modern day scholars to describe modern economies. Although the underlying business structures, geographical concentration of economic actors, interconnections between them, knowledge and labour pools and spinoffs (to mention but a few), have undoubtedly existed in historical clusters as well, their role in economic development may not have been fully realized by the contemporaries. Basic definitive structures of Porter's modern cluster theory were outlined as features of economic geography already in the classic work *Principles of Economics* (1890) by Alfred Marshall. He recognized the importance of 'industrial districts' in the overall growth of the economy and saw three externalities, availability of skilled labour, growth of supporting trades and specialization of different firms in different stages of production, as the key elements of "district's" success. Once these elements were effectively launched under way, he theorizes, the development would continue cumulatively and gear towards greater complexities.<sup>44</sup>

Secondly, various environments, societies and economies during the history have each had their own kind of impact on clusters, which has also shaped cluster forms and methods of their adaptation. This further arouses the question, whether clusters can be applicably defined in historical studies, as a definition of cluster, such as Porter's, hardly grasps all the necessary and prerequisite elements of historical cluster structures. Also, it is debatable, to which degree the modern cluster strategies were applicable in given historical circumstances or were there distinctive and environment-specific strategies in historical clusters.<sup>45</sup>

For the purposes of this study, the conceptual elasticity of a cluster grants the opportunity to test its applicability in specific historical context, as there seems to be no excessively rigid preconditions in classifying certain industrial centres as clusters. On the other hand however, this decreases the validity of any generalizations concluded from the study in case. Still, if supposed that the features of the modern cluster theory derive more or less from the traditional setups of economic geography, the elements of cluster emergence and composition in a historical case should present fertile comparisons and findings enriching the research of contemporary economic atmosphere. Nevertheless, given the danger of getting lost in the conceptual maze of cluster definitions, the overviewing chapter 4 concentrates more on the Marshallian type of industrial districts and in the chapter 5 the results of the data-analysis are discussed further in terms of modern cluster dynamics.

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44 Marshall 1890; Martin & Sunley 2001, 6; Zeitlin 2007, 222.

45 Martin & Sunley 2001, 49; Zeitlin 2007, 223.

### 2.1.2 Russian corporation

*Corporation* as one of the key units of industrial organization derives by definition from the RUSCORP database<sup>46</sup>, which consists of privately founded, corporations chartered<sup>47</sup> under the Russian law by the imperial government in St. Petersburg. The decision to stick with the corporation form that matches RUSCORP definition does exclude various state-officiated enterprises and economically significant rural industries and forms of small-scale business, but enables the examination of distinctively classified and unambiguous form of business organization that can be credibly applied for statistical comparisons. In the pre-emancipation period, several forms of factory production from the state-controlled Ural enterprises, established during the rule of Peter the Great, to the rural manufacturing entities and noble estate factory plants in the Age of Catherine were founded and coexisted alongside private enterprises, but the lack of relevant material of their temporal and organizational development as well as the rising role of the private enterprises after 1860s has contributed to the minority of their role in this study.<sup>48</sup> Also the foreign corporations that operated in Russia, and are present in the study to a small extent, differ from the Russian corporations by structure, aims and organization due to their legislation in their native countries.

### 2.1.3 Russian Empire

It is worth noting that the Russian Empire was not an unchanging entity during the 19<sup>th</sup> century, but an imperial power that annexed several territories in Central Asia and included more or less autonomous regions, such as Grand Duchy of Finland and Kingdom of Poland. Due to the large dependence on the RUSCORP data, it was logical to adopt the geographic concept of Russia that was used in the compiling of the database. Thus according to the enforcement of corporate charter legislation, the autonomous Kingdom of Poland is included in the study, whilst the autonomous Grand Duchy of Finland is not, as the corporations operating there received their charters from the

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46 More specific examination of the RUSCORP database and chartered corporations can be found in the following chapter.

47 On the history of corporate charter laws in Russia, see Owen 2002a.

48 Illustrating examples of the difficulties in categorizing industrial firms can be found frequently in the various statistics appearing in the research literature. Figures presented by Hromov on the amount of factories indicate a rise from 5400 factories in 1830 to 15400 factories in 1860, which does not correlate with the RUSCORP amount of 217 new corporations between those years. In the *Cambridge Economic History of Europe vol. VII*, Olga Crisp cites the figures of A.V. Pogozhev that calculated 14464 existing industrial firms in 1903 which differs quite starkly from RUSCORP's amount of 4539 firm chartered firms between 1700 and 1913. Furthermore, Crisp doubts that Pogozhev's figures did not emphasize fully the small-scale firms and factories, which constituted less than 50% of the factories and mines recorded by the Ministry of Finance in 1903. Hromov 1950, 27; Crisp 1978, 344, 347.

Finnish Diet.<sup>49</sup> The territorial annexations are included in RUSCORP statistics and this study, although their influence is marginal, as no major industrial regions were amongst new territories.<sup>50</sup> To avoid misunderstandings though, the classification of several sub-regions and regional entities that have been used in tables and figures are explained in the appendix.

#### **2.1.4 Capitalism and market economy**

The concepts of *capitalism* and *market economy* have often aroused a debate around their specification in Russian context. Of the main actors that normally are considered pivotal in a capitalist system, Russia had but a few that were comparable with contemporary European economies at the threshold of 20th century. Nevertheless, in the contemporary discussion during the wave of industrialization in the 1890s, the Russian word *kapitalizm* was used (instead of *industrializatsiya*) to describe ongoing transformation of Russian economy.<sup>51</sup> In political terms, Russian Empire was an autocratic state-controlled feudal system, which allowed notable privileges to the upper social groups, such as gentry and bureaucracy. The lower level of population in hierarchy consisted mainly of peasants and workers within the agricultural sector. Even though Russian industry obtained its' workforce from countryside, the movement between these occupations was relatively low and the urbanization movement never altered the pattern of dominant share of population following a traditional rural way of life. Also, as Alexander Gershenkron has argued, the dominant role of Russian state in replacing market functions and serving as entrepreneurial force, rather than private markets, meant that the economic system and industrial policies were too far governmentally dictated to be called market economy.<sup>52</sup> According to Paul Gregory though, the macroeconomic evidence on resource-allocation and price level settings by market forces indicates that through strong ties to the world economy Russia can be considered a market economy, though it reached the path of modern economic growth slower than comparable European countries. He points out that even in the sphere of agricultural economy, the massive grain exports developed along with the railroad construction and peasant mobility despite emancipation provisions show that the traits of a market economy, rather than feudal one, had started to develop in Russia. Also, the large amount of foreign investments and the railroad financing through well-developed stock market were signs of structural market dependence on the

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49 Owen 2002b, 19.

50 These include the khanate of Khiva (annexed in 1873) and the emirate of Bukhara (annexed in 1868), which were operational locations for 2 corporations in 1860 - 1913.

51 Hromov 1950; Von Laue 1954, 12.

52 Gershenkron 1947; 1962, 152-54; Gregory 1994, 82.

world economy.<sup>53</sup>

In the perspective of contemporaries, the opinions about the nature of Russian capitalism were divided in the way which Peter Gatrell has described in three categories: as liberal, populist (*narodnik*) and marxist-leninist interpretations.<sup>54</sup> From Lenin's point of view in the late 1890s, the Tsarist economic system was a “dual economy“, composed of traditional agricultural economic networks and on the other hand, of handicraft and modern factory industry. He too emphasized the “unique” features of traditional economic customs beside elements of advanced capitalism structures.<sup>55</sup> Along the same narrative lines, Soviet scholar Peter Lyashchenko has concluded that the transition from serfdom to industrial production after the Emancipation Act in 1861 gradually found Russian capitalist industry, which soon overtook feudal, manorial handicraft establishments and thus emerged as large-scale capitalist industry.<sup>56</sup> In the eyes of 19<sup>th</sup> century *narodniki*, the advocates of peasant commune order as a base of Russian society, capitalism (i.e. industrialization) was essentially an alien force for Russian life, which was irreconcilable with the peasant commune system and, due to lack of necessary social, economic and political prerequisites in Russia, was to be opposed before it would bring Russia to ruin.<sup>57</sup> *Nardniki* views were fiercely critical of governmental policy of rapid industrialization, led by Minister of Finance Sergej Witte, a devout advocate of Friedrich List and idea of economic nationalism. Economically the aims of Witte and governmental politicians were liberal in Gatrellian sense, while politically they represented Russian autocratic tradition. For Witte, and thus Tsarist government, capitalism was a necessity in order to strengthen Russian political and military position, despite its heavy costs to peasantry and agricultural producers.<sup>58</sup> In recent scholarship, Thomas Owen has specified the leading economic ideology of 19<sup>th</sup> century Russian merchants and commercial-industrial elite as so-called “slavophile capitalism”, which was based on three components that made Russian capitalism, according to their view, unique in comparison to the European model: benevolence toward workers, distrust of foreign capitalism and economic activity as a patriotic mission.<sup>59</sup> The mythical image of merchants and capitalists as benefactors of the serfs and factory workers<sup>60</sup> was a stout part of slavophile ideology, which saw the agricultural workers and the peasant commune as the basic pillars of traditional Russian way of life. The glorification of a common worker/peasant was profound in many concepts

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53 Gregory 1994, 82-84.

54 Gatrell 1986, 1 - 28.

55 Lenin 1899, 7, 19 - 20.

56 Lyashchenko 1970, 476.

57 Von Laue 1954, 17, 21 - 22.

58 Von Laue 1951, 177, 182.

59 Owen 2005, 80.

60 Commonly used term of owning classes as "work-givers" (*rabotodateli*) was a key concept in this ideology.



of the 19th century movements in Russia, for example *narodniki* and socialist groups. The second theme, economic xenophobia had long roots in Russian history, dating back to the 16th century and often associated with the conservative and patriotic Orthodox Church, which stood firm by the side of the state.<sup>61</sup> During the 19th century European and American private enterprises and free trade aroused fear as hostile foreign influence upon the Russian worldview and in mid-nineteenth century these suspicions were targeted not only at Western European capitalists and entrepreneurs, but also those belonging by nationality to non-Russian subjects of the Empire, such as Poles and Jews. These two slavophile thoughts were merged in the leading merchants' idea of economic action and industrial growth as the only method of saving Russia from defeat against European competition. For slavophile thinkers, the existing tsarist policy of protecting agricultural exports with tariffs and depending on foreign imports of machinery and manufactured goods was wasteful, as Russia needed to develop their own heavy industry to promote its self-sufficiency and raise the standard of living with increased productivity.<sup>62</sup>

## 2.2 Interpretations of Russian economic history

In post-Soviet Russia, the history of Tsarist economic performance has been largely interpreted in terms of commanding role of the state system, which by enforcing rapid industrialization policies enabled the rise of powerful capitalist entrepreneurs.<sup>63</sup> The regional concentration of industries was seen as a byproduct of the state policies that accelerated towards the 20<sup>th</sup> century due to the industrial syndicates, cartels and monopolies.<sup>64</sup>

During the 20<sup>th</sup> century, the history of Tsarist economic performance was largely interpreted through Marxist perspectives in Soviet Union and therefore often left in secondary role in the scholarly works in the Anglo-American countries.<sup>65</sup> In the Soviet literature, the comprehensive study of Peter Lyashchenko<sup>66</sup> on the history of Russian national economy has long retained its status as one of the most valuable contribution with its vast sources of data material. Lyashchenko's study has been generally accepted among Western scholars as well, even though some lines of its analysis and conclusions follow the outlines of Lenin's classic work<sup>67</sup> on the development of

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61 Blackwell 1983, 383.

62 Gatrell 1986, 11; Owen 2005, 81.

63 Bobovic 1995; Timoshina 1999; Samohin 2001.

64 Samohin 2001, 120 - 121.

65 Owen 2005, 258.

66 Lyashchenko 1970.

67 Lenin 1899.

capitalism in Russia. Also the works of Petr Hromov, Boris Anan'ich, Iosif Gindin, Vladimir Laverychev and Leonid Shepelev have attracted some attention in Western interpretations.<sup>68</sup> The Soviet interpretations strongly underlined monopolies as a crucial factor in Tsarist economy.<sup>69</sup> Soviet interpretation also emphasized the role of industrial concentration, seeing it as negative phenomenon which intensified economic gap between different social groups.<sup>70</sup> This concentration was defined mostly as the increase of large enterprises and the level of workers per plant, not the concentration of enterprises themselves in certain areas.<sup>71</sup> Beside the state's unsuccessful agrarian policies, intensifying in the early 1900s and the structural weakness of feudal legislative system, the concentration and economic inequality between workers and factory-owners were seen as defining reasons behind the collapse of Tsarist state and the revolutions of 1917.<sup>72</sup>

In the Western countries, the field of historical studies on the Tsarist economic development has received a handful of meticulous works. The process of industrialization has aroused wide spectrum of studies, theories and debates, especially so after the Bolshevik revolution set the industrial development in Russia into a divergent path compared to the development in Western Europe. Allegedly, the most widespread, though debated, interpretations has been presented by Alexander Gershenkron in his chapter in *Cambridge Economic History* on agrarian politics and industrialization after the emancipation of serfs in 1861<sup>73</sup> as well as his noteworthy essay "Economic Backwardness in historical perspective"<sup>74</sup> which stressed the costs of societal underdevelopment and neglect of agricultural organization in the failure of the industrial policies of Tsarist regime. Numerous works implementing and criticizing Gershenkron's thesis have further deepened the understanding of Russian industrial development before the Bolshevik revolution. Macro-level analyses of Peter Gatrell<sup>75</sup>, Roger Portal<sup>76</sup>, Dietrich Geyer<sup>77</sup>, William Blackwell<sup>78</sup> and Olga Crisp<sup>79</sup> have been important general contributions in the field. Especially the role of foreign involvement through financing, entrepreneurship and technologies in shaping the industrial framework in Russian Empire and state policy has been well emphasized by both Crisp and Gatrell,

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68 Gindin 1927; 1960; 1968; Hromov 1950; Laverychev 1974; Shepelev 1981; Anan'ich 1988; 2006.

69 Lenin 1899; Hromov 1950, 4 - 5.. Lyashchenko 1970, 410 - 412, 674 - 677.

70 Hromov 1950, 296.

71 Hromov 1950, 300.

72 Hromov 1950, 419 - 423; Lyashchenko 1970, 780 - 781.

73 Gershenkron 1965.

74 Gershenkron 1962.

75 Gatrell 1982; 1986.

76 Portal 1965.

77 Geyer 1975.

78 Blackwell 1968.

79 Crisp 1976; 1978.

while Blackwell has pictured stoutly the earlier trends in development of Russian economy. Somewhat more statistical approaches by Arcadius Kahan<sup>80</sup> and Paul Gregory<sup>81</sup> have utilized much of the available archival data in evaluating the quantitative side of Russian industrial growth. Gregory's work on Tsarist national economy in 1990s also brought the theme of 19<sup>th</sup> century development into the discussion of modern Russian economy lit up by the collapse of the Soviet Union. A more recent monograph addition by Nicolas Spulber<sup>82</sup> continued to broaden the view of Russian economy with transitional theme from Tsarist period to the Soviet era and beyond.

Numerous, and partly simultaneous works in business history and appeared in the early 1980s to complement the social history of entrepreneurs and merchants. Frank Rieber's vast study<sup>83</sup> on merchants in Imperial Russia provided a valuable insight into development of coexistence of social groups, while the analyses of Michael Kaser<sup>84</sup>, Thomas Owen<sup>85</sup> and Jo Ann Ruckman<sup>86</sup> on business elites, corporate capitalism and Moscow-based entrepreneurs have been widely applicable in developing the idea of Russian clusters. An article compilation from numerous European scholars has also widened the picture of entrepreneurs belonging to ethnic minority groups.<sup>87</sup> Largely in consensus, these interpretations highlighted the role of active Russian entrepreneurs in largest cities (especially in St. Petersburg and Moscow), who formed a new domestic group of industrial proponents, still often hampered by the static institutions, conservative ideologies and bureaucratic obstacles. Owen and Rieber nevertheless stressed the overall underdevelopment of Russian corporate system and the major role of foreign entrepreneurship in Russian industrialization.

Owen's works in 1991 & 1995 on corporate capitalism in Russia along with the publication of the RUSCORP database freshly aroused the long-standing, though little actually covered topic of geographical segmentation of Tsarist industries. Even though the construction of railroads, often awarded as the most fundamental innovation brought on by the industrialization in general, and its effects in connecting the logistical network between sparsely situated industrial centres in Russia have been widely considered as key issue by scholars of Tsarist economy, the actual research on the underlying causes of geographical concentration of industries have been largely left outside critical questioning. Furthermore, the research on industrial development during the late Tsarist period has generally neglected the regional aspect of varying development paths that shaped the formation and

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80 Kahan 1978; 1989.

81 Gregory 1994; 2004.

82 Spulber 2003.

83 Rieber 1982.

84 Kaser 1978.

85 Owen 1981; 1995; 2002a; 2005. 2002a here is a reprint of the original book published in 1991.

86 Ruckman 1984.

87 Dahlmann & Schiede 1998.

operations of each industrial district, which often were thousands of kilometres severed from each other. Few existing studies on geographical economy of Tsarist Russia include James Bater's work on the industrial structure of St. Petersburg<sup>88</sup> and few edited article compilations on Russian historical geography exist alongside<sup>89</sup>. Also industry-specific studies by Ian Blanchard<sup>90</sup> on Ural metal works and J.P. McKay<sup>91</sup> on Baku oil industry have implemented the geographical viewpoint on the economy of Russian Empire, but still, the overall lack of comprehensive studies in Tsarist geographical economy prevails and translated historical works on the industrialization of Kingdom of Poland and Ukrainian territory are scarcely found<sup>92</sup>.

Despite the occasional fragmentation of works in Tsarist economic history, an attempt to pinpoint definitive cluster factors has relied largely on the aforementioned historical literature beside the primary data from the RUSCORP. In many ways, the gaps in utilized research literature have not allowed an equally comprehensive analysis of every region and cluster which has caused in stronger emphasize and more detailed examination of certain regions, Moscow and St. Petersburg as obvious examples. Whilst minor imbalances might appear on the part of historical accounts, the general picture of economic development of regions in this study complements and corresponds with the macro-level progression of Tsarist economy during the 19<sup>th</sup> century.

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88 Bater 1976.

89 Bater 1983; Hamm 1986.

90 Blanchard 2000.

91 McKay 1984.

92 Poplawska & Muthesius 1986; McCaffray 1987; 1988; Magocsi 2010.

### 3. METHODOLOGY

#### 3.1 Primary sources

While modern industrial clusters have been researched with various approaches and source materials, the choice for primary materials in a historical study is not easily determined. In the case of Tsarist Russia, the task of collecting plausible, reliable, and compact set of data for industrial cluster research already narrows the approach in numerous ways. Various flaws exist in Tsarist archival material and missing data for key variables limit the field of research and thus the examination of several factors in cluster emergence and development.<sup>93</sup> To gain an insight into the emergence and development of clusters of private corporations, several minimum preconditions on quantitative data are elementary, such as comparative records of foundation of corporations, information on their functional structure and geographical location as well as some indication of their size and survival over time. Considering these necessities, a decision was made to select the RUSCORP database as the main source of archival material in this study, for it enabled the study of most of these preconditions in compact and consistent form.

The RUSCORP database constitutes a body of machine-readable information about 4543 for-profit corporations found in the Russian Empire<sup>94</sup> between the years 1700 - 1914. The database was created as a research project led by Thomas C. Owen and the first version published by the Inter-University Consortium for Political and Social Research (Ann-Arbor, Michigan) in 1989. The information in this database was compiled mostly from the tsarist government archives and from the imperial census of 1897.<sup>95</sup> Notable amount of data is tracked from the imperial charters, which legalized the creation of a company and through which the identification of each company has been possible. The database in itself is divided into 6 file types, which have been utilized to various extents in this study. These file types include datasets on corporation charters (File A), characteristics of corporations (File B), characteristics of founders (File C), corporation existence (File D)<sup>96</sup>, corporate managers (File E)<sup>97</sup> and foreign corporations in existence in 1914 (File F).<sup>98</sup>

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93 Kahan 1989, 199 - 200.

94 Excluding the Grand Duchy of Finland, as Finnish officials had the privilege of chartering corporations in their region.

95 Owen 2002b, 2; Full list of bibliographical sources of RUSCORP presented in Owen 1993, 39 - 40.

96 The data on corporate existence is drawn from surviving corporate directories available only from the years (1847, 1869, 1874, 1892, 1905 and 1914).

97 Available only from the years 1905 and 1914.

98 Owen 2002b, 1 - 14.

The primary datasets used in this study are File A and B, which contains the ‘core’ data on corporations that came to existence between the years 1700 - 1913 in Russian Empire. Special attention has been paid to the fields, which contain information about firms’ entry dates, industrial functions and geographical areas of activity. Also, to an extent, fields containing information about the amount and share of corporate capital have been used, although much of the analysis of financial factors has been left outside the scope of this study. File D serves as an additional source, but unfortunately for the purposes of this study the data is available from only occasional years during the whole 19<sup>th</sup> century period. Also, crucial data variables, such as function, location and headquarters codes, are lacking completely for the years 1869 and 1874 and partially for 1892, so that the decision was made to exclude a continuing comparative analysis based on corporate existence data.<sup>99</sup> The data on existing corporations from the most complete year 1914 has been used for survival analysis in chapter 5.

The contents of the RUSCORP database also largely determined the temporal extent of this thesis. Periodical and continuous corporation data amount increased substantially after 1860s which coincided with another turning point in Russian industrialization, the emancipation of serfs. Sufficiently coherent picture of clusters did not form until the early period of industrialization between 1860s and 1880s and on the other end, the outbreak of the World War I severely disrupted the economic development and corporate activity. Also the further years after 1913 are missing from the documentation in RUSCORP.

As a limitation in the compiling of RUSCORP, the data on foreign corporations operating in Russian Empire is excluded from the data file A and B, and therefore appears on the study only in minor role despite the importance of foreign enterprises in Russian industrialization. Secondly, the database does not contain info about firms, which in Russia were called partnerships (*torgovye doma*) and were not chartered in their incorporate form. The amount of these firms was counted in thousands and had their economic value, but mostly their inconsistently documented creation, merging and dissolution made them difficult to include in the database.<sup>100</sup> Thirdly, numerous companies were excluded from the database because of their lack of profit motive for stockholders in their activity. As the two Russian most common words for company, *obschestvo* and

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<sup>99</sup> The compiler of the database notes also occasions, where corporations that were chartered in 1870s (and not rechartered during their existence) are not mentioned among the existing firms in 1892, but reappear in 1914 listings. In some of these cases, companies have been filled with reference to other sources (such as Shepelev 1977). Owen 2002b, 35 - 37.

<sup>100</sup> Owen 2002b, 20.

*tovarishchestvo* have also connotations to “society“ and “association“, there were some “chartered corporations“ that in reality had little to do in terms of capitalist development.<sup>101</sup>

### **3.2 Analysis of clusters in the study**

Unlike cluster analyses in the field of economics which have often depended on quantitative sources<sup>102</sup>, a historical study has to rely also on qualitative sources if the temporal atmosphere is to be comprehensively understood. This is especially true in the case of Tsarist Russia, where many important aspects of development might be left without prominence or too easily subjected to neglect or omission in mere quantitative form. The same applies to the development of Russian clusters. Another factor which prompted the inclusion of qualitative analysis was the period of industrialization which is generally not presupposed in the Porterian cluster model. Furthermore, instead of studying a single cluster through a period of emergence and transition, the decision to study all the major clusters of the Russian economy forced the observation of different stages of industrialization in different regions. During the half a century period of study some regions started their cluster development from scratch while others had already established a favorable environment for further growth. In order to demonstrate the regional differences in backgrounds and paths of development in each cluster while still uphold the Imperial framework of industrialization, the chapter 4 broadly outlines the three periodical stages of Russian industrialization while at the same time examines the development of major industrial districts while bringing along the statistical data from RUSCORP into the analysis of growth. Explanatory factors for growth figures are provided from secondary literature rather than through use of quantitative methods.

While the RUSCORP database contains valuable information on the development of Russian corporate clusters, but the data itself does not create a comprehensive picture on clusters as such. The information about the corporate emergence dates and data on locations and functions certainly points the researcher to the potential clusters, but a further inspection is needed to separate actual cluster structures from groups of local corporations, which don't meet the attributes of the cluster concept. This poses challenges especially in the case of Moscow and St. Petersburg, where even several simultaneously chartered corporations operating within the same business sector might not have co-operative links due to the multiple independent and operational market areas in a relatively

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101 Owen 2002b, 21 - 22.

102 Kenney & Von Burg 1999; Klepper 2007; Buenstorf & Klepper 2009; Boschma & Ledder 2010; Wenting & Frenken 2011.

large city.<sup>103</sup> Some features of cluster benefits can still, though, be attributed to the large centres even within non-clustered, but fertile industries. These include factors, such as market development, better availability of skilled and experienced labour force through geographical attraction and local competition.<sup>104</sup>

The chapter 5 consists of further examination of Russian industrial districts by several cluster defining attributes. Such attributes, which could be distinguished from several sources alongside RUSCORP, include the availability of skilled labour and personnel, the impact of institutions, spinoffs, technological knowledge, industrial organization and role of innovations. These attributes are all linked to the modern implementation of cluster formation. However, to credibly pinpoint the major factors behind emergence and development of Tsarist clusters, additional attributes of logistics and foreign influence are also examined. Following the idea of inverse relationship of concept's intension (defining attributes) and extension (concepts which the attributes fit into)<sup>105</sup> in examining the Russian clusters, the goal is to seek out which attributes did play a role in formation of Tsarist clusters and do these attributes match those which have been used to define clusters in modern economics. Even though the available sources are not fully sufficient for comprehensive analysis on part of some the clusters, the results should provide intriguing viewpoints and grounding for further hypotheses on both, the role of industrial clusters in Russian Empire and the credibility of cluster concept in explaining economic concentration in historical perspective.

### **3.3 Limitations of the study**

The chosen macro-level approach of this study narrows some features of analysis of clusters outside the examination of cluster formation and life cycles. An attempt to pinpoint comprehensively the cluster formation factors in each region would require a multitude of articles and a long-term access to local archives. Additionally in this study, several possible primary sources, such as contemporary newspapers, descriptive cartographical materials and local archives, were excluded due to the limited scope of this thesis, although some supplementing information might have clarified the elements of periodical cluster development. Further research on the topic would essentially profit from their inclusion.

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103 For example, the relatively numerous chemical factories occupied a prominent place in industrial structure of St. Petersburg, but did actually situate apart from each other and thus were agglomerated less than the average industries. Bator 1976, 103 - 104.

104 Porter 1998, 81.

105 Sartori 1970; Mahoney 2004, 94.



For the purposes of studying cluster emergence and life cycles in Russia, the primary source data in RUSCORP offers sufficient amount of data for this study approach. Many elements of a more specific research approach on areal details however, fall unavoidably outside the resources of RUSCORP data. Relatively little additional information has been possible to conclude from RUSCORP entries on differences of corporate culture in various regions throughout Russian Empire. The data on company emergences itself cannot be used as such to determine vertical or horizontal supply-chain connections between corporations if more accurate information about their intra-city locations is not available. This point is visible in the relative absence of supply-chain and inter-corporative network analysis, both factors which are highly relevant in the clustering theory. While it has been possible to amass some general notes on these elements from the secondary literature, a more detailed examination on these aspects would also deserve further attention in possible regional-level studies on the subject.

In addition, the regional cluster examination in this study largely ignores the development of single corporations. Although some examples in Tsarist economy showcase the role of large corporate entities, such as Putilov and Obuhov metal factories in St. Petersburg or the Nobel Brothers oil company in Baku, measurement of single corporations relative to the quantitative firm entries in RUSCORP would have created difficulties in evaluating and comparing different clusters in a balanced and unambiguous way. Further obstacle to this measurement was due to the unreliability of Tsarist-era standard accounting practices<sup>106</sup>, which led to the decision to minimize the use of capital variables that are presented in RUSCORP.<sup>107</sup> Also an important factor that affects cluster formation, but is largely ranged outside this study is corporate merging. Although it forms an important element in business organization and the concentration of Russian enterprises, the data in RUSCORP database does not contain sufficient information on merging corporations.<sup>108</sup> Soviet interpretations considered corporate merging as an essential feature of monopolies in iron working and textile industry which simultaneously both increased the amount of large factories and combined several stages of production under the same company.<sup>109</sup> This merging process was especially fast during the economic crisis in 1900 - 1903 and thus was interpreted so that the most powerful industrialists actually advantaged from the economic recession which heavily fell on the shoulders of workers.<sup>110</sup>

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106 Owen 1995, 7.

107 Owen 1995 presents some quantitative analyses relying on these variables.

108 Owen 2002b, 38.

109 Hromov 1950, 305 - 306

110 Hromov 1950, 307 - 309, 311.

## 4 THE DEVELOPMENT OF INDUSTRIAL CENTRES IN RUSSIA 1860 - 1913

### 4.1 Background of industrial development

From geographical perspective, industrial and entrepreneurial activity in late Tsarist Russia was highly centralized. In the same way as the administrative power of the state was mainly concentrated in the two capitals of the Empire, St. Petersburg and Moscow, the share of corporation headquarters was exceedingly high in these two cities. In the table 1 is presented the regional distribution of corporations in Russia between 1860 and 1913 and the share of corporation headquarters relative to the amount of corporations in each area. According to the statistics, more than a half of all corporations were administrated from the capitals, while they themselves experienced almost one third of all corporate emergences.

Table 1. Chartered corporations and corporation headquarters in Russian Empire 1860 - 1913<sup>111</sup>

REGION	Corporations	%	Headquarters	%	HQ/CORP.-rate
Ukraine	863	20%	762	18%	88%
Western Russia	712	17%	337	8%	47%
St. Petersburg	649	15%	1298	30%	200%
Moscow	606	14%	884	21%	146%
Poland & Belarus	504	12%	491	11%	97%
Baltic Region	257	6%	213	5%	83%
Central Asia	202	5%	98	2%	50%
Caucasus	153	4%	70	2%	43%
Siberia & Far East	92	2%	29	1%	32%
Not-classified	245	6%	101	2%	42%
<b>TOTAL</b>	<b>4283</b>	<b>100%</b>	<b>4283</b>	<b>100%</b>	

Source: *RUSCORP*

The table data indicates that the corporate capitalism developed further in the European part of Russia, while more remote eastern regions experienced rather low level of entrepreneurial growth and stayed mostly underdeveloped peripheral colonies. Lack of numerous economic assets (administrative environments, access to finances, railroads and other transport routes etc.) in the Far Eastern and Central Asian regions discouraged the settlement of remote headquarters partly contributing to higher percentages of HQ/CORP.-rates in western areas and in overall it can be

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<sup>111</sup> Detailed region classifications found in the Appendix.

noted that corporate capitalism was limited to only small areas in the western part of Russia and therefore modernities of industrial development rarely reached peripheries. Central and western areas of the Empire were also crucial in the formation of Russian business environment during the 19<sup>th</sup> century and therefore highly influential in the spread of competitive and sophisticated industrial culture.<sup>112</sup>

Another distinctive feature of the development of private entrepreneurship in Russia is that until the year 1860, only 259 chartered corporations had been in existence since 1704 and the reign of Peter the Great. Out of these 259 corporations, only 42 new were established before 1830s, so that the amount of 217 new corporations between 1830s and the year 1860 suggests that the transition towards private entrepreneurship was already starting, albeit slowly, before the Emancipation.<sup>113</sup> Of the major branches of industry that would form the core of Russian enterprises later in the 19th century, textiles and metallurgical companies accounted for about one fifth (8 corporations), while the others were mainly wholesale and trading companies (7), fishing & hunting firms (9) or insurance companies (6).

From the 1830s onwards, the amount of chartered corporations rose with 69 companies chartered between 1830-40, 35 in 1840s and 113 in 1850s. Waterway transportation (42 companies), textile production (44) and insurance agencies (21) were among the top business emergents during these decades, although especially among insurance companies the average lifespan was relatively low.<sup>114</sup> Despite the gradual introduction of railroads in 1840 - 50s transportation firms emerged mainly within maritime and steamship business, mostly in Baltic Sea region (inc. St. Petersburg) and river areas. Textile industry was located predominantly in St. Petersburg and in Moscow, the latter which was more of an administrative center for regional industries than production zone of its own.<sup>115</sup> Some insurance firms emerged to support maritime travel and also offered fire insurances in the capitals.

Despite the low number of corporate enterprises, it has been argued, however, that the early period of industrialization in Russia could be dated already to 1830s, especially if production among the rural proto-industrialization and *kustar* are considered as early signs of industrial growth.<sup>116</sup> In this

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112 Porter 1998, 80.

113 RUSCORP.

114 RUSCORP; Owen 1995, 19.

115 RUSCORP.

116 Proto-industrial manufacturing establishments and *kustar* industry did not have corporate charters and are excluded

sense, if proto-industrialization is plainly understood as conversion from the production of household items to market production of these same utilities and materials<sup>117</sup>, the Russian form of rural industry, *kustar*, was a common way among peasantry of applying proto-industrial methods in order to implement their agricultural income. Similar forms of proto-industrial manufacturing had developed also in the Western European countries from the 15<sup>th</sup> century onward, although in the 19<sup>th</sup> century their role in the economy had largely diminished due to the more rapid industrialization compared to the Russian Empire.<sup>118</sup> *Kustar* or cottage industry was a non-factory manufacturing sector within Russia, which consisted of small-scale craftsmanship production of goods for various needs of peasant market and trading, such as construction materials (timber, tar, bricks, ropes etc.), textiles (silks, lace, cotton cloth), furnishing utensils and woodwork goods required in the daily life of agriculture. In Russian Empire, *kustar* industry was common occupation among the rural and agricultural workers and their products were often in the supply-chain for local factories, which also meant that the cottage industry was affected by booms and recessions during the 19th century. In pre-emancipation times, *kustar* industries were often encouraged by estates controlled by the local nobility, who sought to increase the amount of collectable dues by assigning artisans and workmen to manufacturing occupations.<sup>119</sup> The industrial growth experienced during the latter half of 19<sup>th</sup> century generally deteriorated the position of *kustar* industry, but there were notable exceptions usually depending on the efficiency of mechanization in cutting costs and producing better quality goods able to compete with factory production. For example in toy industry the machine-powered factories couldn't replace existing *kustar* production, while in tar-distilling and charcoal production the introduction of capitalist enterprises caused a swift collapse of existing *kustar* handicraft.<sup>120</sup> Although it has been difficult to accurately measure the production output levels of cottage industry, some estimates indicate that the amount of workers within the sphere of *kustar* industry was from 4 to 10 million in in 1880s and remained around 4 to 5 million (around 65% of total industrial employment) till the beginning of twentieth century.<sup>121</sup> As an example, around half of the cotton weavers in Moscow in the years 1898 – 1900 were *kustari*, working in small weaving houses

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from the RUSCORP database.

117 Rudolph 1985, 49.

118 Clarkson 2003, 103. Jan De Vries has argued that in Western Europe both the supply and demand of market commodities of the households increased preparing way to the industrialization (see De Vries 1994, 255 - 256).

Whether the changes of demand and supply pattern within *kustar* industry in Russian Empire had a role in the development of the peasant market towards industrial production is an interesting question, although the calculation of its influence may prove difficult due to the inconsistent documentation and falls outside the scope of this study. Nicolas Spulber notes that Lenin regards the *kustar* industry as a developing phase of capitalist organization which also raises interest on the role of *kustar* compared to De Vries's interpretation. Spulber 2003, 94.

119 Lyashchenko 1970, 480.

120 Lyashchenko 1970, 484 - 485.

121 Gatrell 1986, 154 - 155; Spulber 2003, 92.

and another half were employed in factories.<sup>122</sup>

Before the age of private enterprises in post-Emancipation era, the state controlled factories formed the core of Russian industry.<sup>123</sup> During the 18<sup>th</sup> century, gentry entrepreneurs had also complementing products for domestic market, such as luxurious textiles and paper products, which were also exported to annexed territories in Crimea, Georgia and Caucasus. Demand for textile products aroused largely from military orders, but also the increasing population stimulated the production of cheap fabrics.<sup>124</sup> Some early trends of the Russian industrialization before 1860 can be viewed by examining the history of state-owned Ural mining industry. Established during the era of Peter the Great, Ural region superseded Tula as the center of metal-processing and metallurgy during the 18<sup>th</sup> century and already in 1767 76 out of 120 Russia's state-controlled metal producing factories located in the Urals.<sup>125</sup> The factories were administrated by nobility or sometimes foreign managers and operated by serf labour. Also their production rate depended on the needs of the state and raw material exports, which discouraged innovative efforts and restricted the scale of products. By the mid-19<sup>th</sup> century, rising production, transport and labour costs as well as lack of adaptation of new technologies led to the emergence of Ukrainian metallurgy and consequential decline in Ural region. The long period of stagnation became evident during the early period of the railroad era, when the Ural metal supply proved unprepared and incapable to meet the demand of various rolling stock products.<sup>126</sup> Only from the 1880s on did the Ural mining area rise back encouraged by favourable tariff policy and increase in productivity.<sup>127</sup>

## 4.2 Early period of industrialization 1860 - 1880

The age of railroad construction in Russia started with accelerated pace during the decades following the lost Crimean War (1853 - 1856). The state had acknowledged the need for industrial development as a necessity to uphold military power in the aftermath of war and the construction of a nation-wide railway network was set as the main economic goal of the Empire.<sup>128</sup> Not only had the railroad construction its military function, for it simultaneously integrated economic markets

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122 Suzuki 1993, 45.

123 Shalmina 2008, 82.

124 Gatrell 1986, 145 - 146.

125 Lyashchenko 1970, 303; The numerical data on factories and plants may alter due to inaccuracies in definition, which sometimes fail to separate small-scale *kustar* ironworks from factories as well as state enterprises of private ones. Another figure of 84 factories in the mid-18th century is also mentioned by Lyashchenko.

126 Blackwell 1983, 418; Gatrell 1986, 145 - 146; Kahan 1989, 19.

127 Kahan 1989, 20 - 22.

128 Spulber 2003, 3 - 4.

and eventually provided access to far-away regions in Siberia and Central Asia. The first major boom in railway building started in 1865 and lasted to 1878 during which the total track length increased from 3800 to 22400 kilometres.<sup>129</sup> At the same time the “railway mania” of 1870s stimulated growth in other industrial sectors, such as mining and machinery, which were also promoted financially by the state to decrease the dependency on imported materials. From the early 1860s till 1880s Russia had only few sources of domestic rail and rolling stock products or technological skills required for their production, so the state had to rely on imported goods from Europe and relax its restrictive taxation and tariff policies.<sup>130</sup> Foreign investors contributed significantly to the financing of railroads, tempted by state guaranteed bonds, issued by Russian government.<sup>131</sup>

While the railway building boosted economic growth and increased the pressure for reforming economic institutions, it also generated demand for new branches of domestic industry. Urals metal producers had held a major share in the supply of iron products in 1850s, but were unable to meet the demands of railway construction until 1880s and concentrated more on non-rail metal products, whose main customers were within *kustari*. Ferrous metal imports from Western European countries, such as Sweden and England, remained in significant role in railway construction until the end of Russo-Turkish War in 1879, when the Russian ministry of finance, forced by the international market crisis and problems in Russia's solvency, issued stricter tariff policy on imported rails and metal products.<sup>132</sup>

The role of the state in shaping of post-Emancipation industry was preponderant, but its basic goals and aims through the reforms were largely of political and military nature. Geographical realities of Empire's size and long unguarded borders mixed with decentralized and poor agrarian population posed major challenges for the state, which saw industrialization primarily as a way to strengthen its external political power and to overcome domestic problems caused by social and economic backwardness.<sup>133</sup> In many ways, the accelerated railway construction illustrated the links between state and domestic production and on the other hand overall process of industrialization. Railways required new forms of capital influx, which were found from the foreign investments and balanced through increased grain exportations. At the same time, state attempted to invigorate domestic

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129 Gatrell 1986, 150; Kahan 1989, 30.

130 Gatrell 1986, 150 - 151; Blanchard 2000, 107; Spulber 2003, 126.

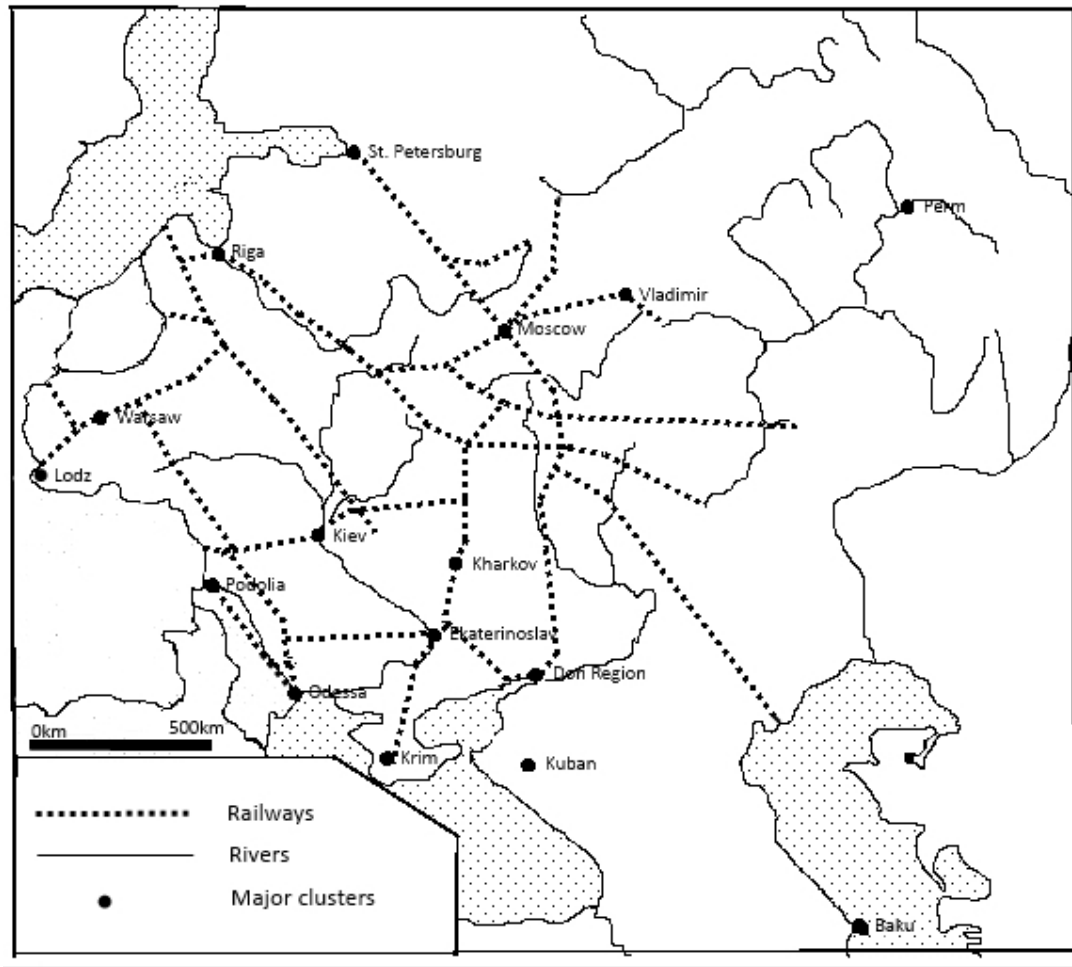
131 Kahan 1989, 29.

132 Blanchard 2000, 108 - 114.

133 Blackwell 1983, 377 - 378.

industries with protective tariff policy and support certain new industries essential to railway constructions. Eventually, the challenges in reforming domestic industry led to a dependence on foreign credit, which further increased the pressure of making the ends meet through increased taxation and grain exports.<sup>134</sup>

Figure 1. Industrial centers and railways in 1875.<sup>135</sup>



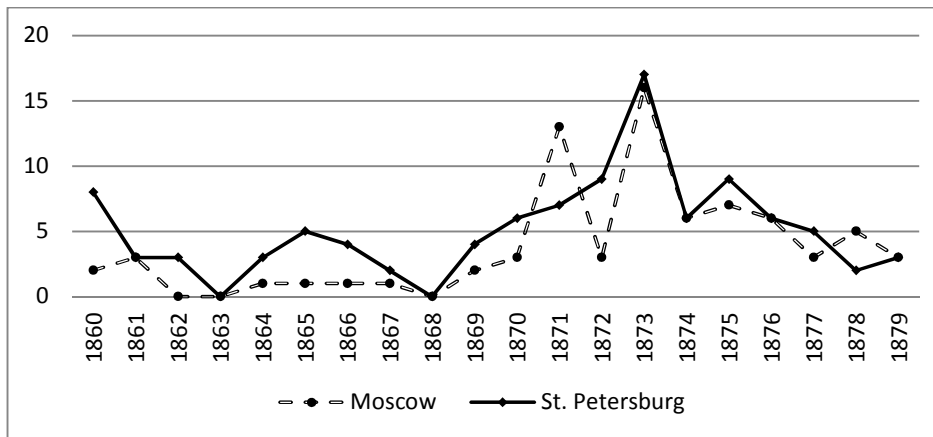
Despite the emergence of new markets and extensions of railway connections into new regions (see Figure 1), the decades between 1860 and 1880 saw little change in the leading economic and corporate role of the two capitals, Moscow and St. Petersburg. As well as being most populated cities, the amount of new corporations in both areas was more than twice (76 in Moscow, 102 in St. Petersburg) compared to the third biggest corporate region (Podolia with 37 chartered

134 Blanchard 2000, 113 - 114; Spulber 2003, 57.

135 Adapted from White 1975, 3.

corporations).<sup>136</sup> The early 1870s, coinciding with the railway construction boom, saw a large influx of companies in the capitals, which nevertheless waned towards the end of the decade (Figure 2). The decline of emergence wave after the peak years indicates however that the economic influence of railroad system was not instantly cumulative, but prone to the economic cycles.

Figure 2. New corporations in Moscow & St. Petersburg 1860 - 1880



Source: RUSCORP

The functional structure of the corporations in capitals gives an insight to Russian urban environment during early industrialization. Essentially the most important business sectors in both St. Petersburg and Moscow were food industry, financial sector (banks and insurance companies) and textiles. In Moscow, these sectors amounted as much as 70% of the chartered corporations, while the respective figure in St. Petersburg was 42%.<sup>137</sup> In Moscow, the emergence of six large banks between 1866 and 1871, such as Moscow Merchant Bank, Moscow Industrial Bank and Moscow Commercial Loan Bank could not have been possible without state's involvement and support, which arose largely on the need for credit for railroad constructions.<sup>138</sup> Also various storage, loan and credit agencies appeared in the early 1870s, which provided additional support for financing new industrial enterprises. However, the rise of the banking sector in terms of concentrating and distributing capital was significant and the overall current accounts in banks increased from 350 million rubles in 1861 to 2753 million rubles in 1873.<sup>139</sup> Food industry consisted mostly of small-scale brewing and sugar companies with average entry capital of less than

136 RUSCORP.

137 RUSCORP.

138 RUSCORP; Owen 1995 32 - 33.

139 Lyashchenko 1970, 491.



1000 rubles.<sup>140</sup> In the context of later in 19<sup>th</sup> century development, the emergence of these corporations did not drastically alter the traditional non-chartered forms of food supplying and trading in the city, but nevertheless was a starting sign of a more organized business structure within the frame of food industry. However, within textile industry the share of company entries, which was 39% of all corporations in Moscow, suggests that the impact of industrialization had started to change the business environment in the city. Textile enterprises required a large amount of factory workers, which could be obtained only from the countryside with the movement restrictions eased by the Emancipation act.<sup>141</sup> This accelerated the urbanization of the city and along with the rising land costs, Moscow started to grow both in population and in size. Textile industry in Moscow wasn't as stressful for the urban city center as it could have been, for many of the factories headquartered in Moscow were established in the outskirts of city or in the nearby regions.<sup>142</sup> Another factor, which partly limited chaotic urbanisation was the existing internal passport system, through which the residence permits of workers in cities could be controlled by the authorities.<sup>143</sup> This, undoubtedly, had an impact also on the level of expertise of the workforce, as the mobility in and out of factory employment rolls could be high. Textile industry of the early industrial era was also vulnerable to breaks in the supply of raw material until the development of railways. It can be seen from the Figure 2 that the early 1860s the textile industry went through a period of recession, largely because of the Civil War in the United States, from where most of the raw cotton was imported.<sup>144</sup> By the end of the year 1880, however, with development of the import routes the amount of raw cotton imports had risen to 82,000 tons annually from the average figures of approx. 40,000 tons in 1855 - 1860 (18,000 tons during the American Civil War).<sup>145</sup>

In St. Petersburg, the corporate development during 1860 - 1880 did not follow on identical lines as in Moscow, although the early industrialization brought along many similar phenomena. The functional division of the chartered corporations was more diverse, which indicated more versatility in commercial possibilities.<sup>146</sup> In addition to the aforementioned industries, which consisted 43% of 106 corporations and in 1867 accounted about 50% of the employed workforce (approx. 17000

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140 RUSCORP.

141 Before the reforms of 1860s, several manorial textile factories were operating in the countryside, utilizing serf labour and relying on labour-oriented practices and manual production. The emancipation of serfs and movement towards hired workers forced the decline of these forms of industry, as they were unable to compete with the private corporations with more mechanized production methods. Lyashchenko 1970, 477.

142 Bater 1983, 291.

143 Bater 1983, 281.

144 Spring 1975, 56; Ahonen 2005, 358 - 359.

145 Kahan 1989, 17.

146 RUSCORP.

workers), more than 5 firms were established in chemical industry, paper and lumber industry, transportation, stone, glass and clay industry and construction industry.<sup>147</sup> Also the metal industry, which would prove to be the leading growth sector in Russian industrialization, was starting to develop in St. Petersburg, with 29% of the workforce employed in 1867 and the notable Putilov metal enterprise being found in 1868 (chartered in 1872).<sup>148</sup>

St. Petersburg's naval and political location was a basic element of the capital and had its' profound impact on the economic structure of the city, which made it the most industrialized city in the 19<sup>th</sup> century.<sup>149</sup> It served not only as a waypoint of the foreign trade and import, but also attracted entrepreneurship and industrial workforce and a central region for states' financial support.<sup>150</sup> Already a leading center in shipbuilding, armaments and transportation services, the decades between 1860 and 1880 saw an increased emergence in multitude of branches of industry, which shaped the commercial structure of the capital.

Table 2. New corporations and main functions in major regions 1860 - 1880 <sup>151</sup>

<b>REGION</b>	<b>Major sector</b>	<b>Share of local HQs</b>	<b>Corporations</b>
Warsaw	9 (food industry)	100 %	20
Kiev	21 (food industry)	91 %	33
Riga & Livland	6 (textiles)	90 %	20
Kharkov	9 (food industry)	75 %	16
Odessa	5 (finance)	90 %	20
Podolia	32 (food industry)	68 %	37

*Source: RUSCORP*

Some areas of corporate activity can be found outside the two capitals, although their significance in absolute terms was far from the level of Moscow and St. Petersburg. What was also noticeable in these centres, was that usually the major growth industries were in distinctively leading role in the corporate emergence statistics. As noted in table 2, only in Riga and Odessa, both important regional centers of trade, the largest industry sector was less dominant and the corporate functions more divided. In the south-eastern regions, the beet sugar industry held a major role in the share of new companies, especially in Kiev and Podolia.

147 Bater 1976, 93; RUSCORP.

148 Bater 1976, 93; RUSCORP; Grant 1999, 24.

149 Ahonen 2005, 48.

150 Owen 1995, 39.

151 A more detailed definition of region and function variables can be found in the Appendix.

Many of these were regional centers in the western non-Russian part of the Empire, such as Kiev, Riga and Warsaw, and thus influenced by the industrial performances and economic traditions in European countries. Each of these regions had close contacts to Western Europe and particularly to Germany, from where entrepreneurial knowledge, innovations and skilled workforce spread across the border in to these industrial centers. Also foreign capital available from the European countries played a significant role in the formation of Empire's western economic centres.<sup>152</sup> The strong regional features of economy are reflected in the amount of Moscow/St. Petersburg-headquartered corporations which was insignificant, approximately 1-2 companies per region.<sup>153</sup> As seen in the table 2, local headquarters were a predominant feature of new corporations in all of the centres, which shows evident vitality of regional entrepreneurship. The new methods of transportation certainly had their effect on the grown amount of companies in these regions. By the year 1875 the railroads had been extended to all major entrepreneurial centers and with the exception of Warsaw and Kharkov, all of the centers were also connected to the main canal and waterway network of the western part of the Empire.<sup>154</sup>

Regional preconditions for skilled workforce, instrumental to industrial development, varied widely in different areas of the Empire. After the Crimean War, it became evident that the rural system of Russian Empire had to reform. On one hand, the spread of liberal values among highest ranks of society reaching Russia from the Europe continued to affect the autocratic system and demand legislative reforms, but on the other because of the increased need to develop traditional and feudal social structures in order to develop country's economic and military sectors.<sup>155</sup> The emancipation of serfs in 1861 freed the peasants from under the ownership of gentry or state farms and eased the residence restrictions, which enabled movement of peasants in and out of provinces and seeking professions in the urban centres. In the countryside, however, it actually strengthened the existing communal order as the peasantry had to deal with the land redemptions and redistributions, brought on by the reform.<sup>156</sup> Due to traditional social hierarchy, many of the peasants who went to work in factories in cities were nevertheless economically and culturally tied to their rural communes. Even after a lengthy period of living and working in urban environment, migrant peasants and their families were to return to their villages due to the ties to village commune and restrictive passport

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152 Blackwell 1983, 379.

153 RUSCORP.

154 White 1975, 3.

155 Spulber 2003, 13.

156 Suzuki 1993, 42.

system.<sup>157</sup> For the peasants engaged in industrial trades, Emancipation Act projected a tendency to move from *kustar* occupations to factory work, contributing to the entrepreneurial performance with the spread of industrial skills.<sup>158</sup>

From the educational perspective, the emancipation had a positive impact among the lower grades of the society. This was especially visible in the increased rate of elementary education, mostly organized through rural school system, which was largely underdeveloped and neglected during the pre-emancipation period. The higher educational institutions and the amount of trained specialists still, however, lagged far behind the needs of industrialization and partly the government's attempts to block social advancement through education were hindering the development of higher education.<sup>159</sup>

Between 1860 and 1880 Russian economy experienced a transitional trend of mixed state of economic growth. While largely still relying on fixed production forms and networks of the pre-emancipation economy, numerous factors of industrial growth had started to shape economic structures, such as mobility of workforce, adaptation of new methods of production, new spatially diverse market areas and demand for previously little-utilized raw materials. To summarize the development of centralization during the years 1860 - 1880, it does seem that the emergence of corporations, especially during the latter decade signalled a starting period for regional groups of firms in several areas. In western parts of Russia, growing food industry, mainly in the form of beet sugar refining gathered industrial actors to certain geographic locations fortifying the accumulation of industry-specific knowledge and resources as well as shaping the local industrial atmosphere. Illustratively the first noticeable industry that developed forms of an industrial cluster was one based in agriculture and food production and thus closely tied to traditional occupation in Russian Empire. In addition, the fact that beet sugar industry was predominantly located in countryside rather than urban settlements suggests that the regional capitalism in Russia was not only an urban phenomenon but also one developing alongside traditional professions. This was the case in Kiev, where most of the 18 sugar firms located in the southern sections of the region, although often administrated from the city.<sup>160</sup> Spatial proximity was also general trend in St. Petersburg's clusters, where in food and tobacco industry especially small firms tended to agglomerate and the evidence from the year 1867 suggests that nearly all firms with 90 or less employees situated within 3

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157 Burds 1991, 79 - 81.

158 Rudolph 1985, 53.

159 Kahan 1989, 168 - 178.

160 RUSCORP.

kilometre distance from their nearest neighbour.<sup>161</sup> Another theme that commonly repeated in cluster development until 1880 was the quick temporal emergence in times of enhanced industrial conditions, one of which was the extension of railway network from Moscow-Kursk-line to Kiev in 1870.<sup>162</sup> For example, in Podolia 23 out of 32 sugar firms were found between the 2-year period 1873 - 1875, which points to the theory of cluster emergence through creation of local external business opportunities, highlighted in the modern cluster emergence theories.<sup>163</sup>

In Moscow, the emergence of 28 textile firms were certainly a compact cluster if compared to the textile industry entries in the entire Empire, 74 in total. Being the city with strongest business traditions and location favourable in terms of market areas and skilled labour force, it is no wonder that Moscow happened to be the first region for appearance of new industrial sector. To phrase it in another terms, however, it can be noted that only in Moscow did the environmental and economic requirements enabled the rise of textile industry, developing steadily during 1870s to a cluster of multiple chartered companies.<sup>164</sup> Therefore, while remaining cautious on the question whether the state of textile industry marked new level on Moscow's industrialization, the era of clustering industrial firms in capital had certainly started.

#### **4.3 Industrial growth 1880 - 1900**

The last two decades of the 19th century saw fundamental changes in the patterns of economic growth and industrialization all over Russian Empire. In many ways led by the governmental aims for development of internal transportation network, stabilization for currency and balance over import/export policies and stimulation and protection of new industries, Russia experienced major changes in its' economic structures, which on one hand raised new industrial branches, but on the other had significant costs for Tsarist system and society.<sup>165</sup> Also the economic importance of foreign relations grew massively during the late 19th century. From the state's point of view, availability of foreign capital was essential in railroad construction, which peaked in the 1890s. Although railroads and internal transportation were primarily military goal for the government, they were invaluable aid for industrial development.<sup>166</sup>

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161 Bater 1976, 102 - 103.

162 Hamm 1986, 86.

163 RUSCORP.

164 RUSCORP.

165 Kahan 1967, 460.

166 Kahan 1967, 466; Symons & White 1975, xix.

Another way to raise capital to support industrialization was agricultural taxation. In the last decades of the 19<sup>th</sup> century, the high taxation on agriculture and rural population and risen consumer prices due to the protective tariff policy laid majority of the burden of industrialization on the lower levels of the society.<sup>167</sup> Major share of the severe taxation on agricultural population originated from the times of the Emancipation Act, when overvaluation of peasants' land ownings relative to their net production capability led to a longstanding poverty of peasants and slow accumulation of private capital, and thus slowdown in the development of domestic market demand. Peasants' attempts to acquire more land to meet their tax obligations led to increase in land prices, which further deteriorated the situation.<sup>168</sup> By the 1880s, the relation between market prices of land and the redemption prices had changed however and it seems that the disadvantages of earlier land prices for peasantry had diminished and the rise in agricultural productivity was able to compensate the tax burden and thus increase private savings.<sup>169</sup>

The state interests and economic policy in 1880s to 1900s channelled largely through three influential Ministers of Finance: Nikolai Bunge (1882 - 1886), Ivan Vyshnegradskyj (1887 - 1893) and Sergej Witte (1893 - 1903). For the Russian entrepreneurs, the Ministry of Finance and its' activity was an important factor, which constituted the forms of state versus private ownership rights and through its investments and legislation supported or complicated business. Bunge, Vyshnegradskyj and Witte all saw the promotion of industrialization as one of their main goals during the time at the office, by both subsidizing essential industry sectors (often aligning with military interests) and trying to secure the financial needs for development of industry. During the reign of Bunge, the Ministry's policy towards entrepreneurship was non-interferential in terms of labour rights question, while at same time Ministry faced pressure to make the ends meet in the state budget, as Bunge's effort to ease peasantry's tax burden without further loan commitments.<sup>170</sup> After the resignation of Bunge due to fierce opposition of the entrepreneurs towards new labour code in 1886, Vyshnegradskyj stepped up in the position and was able to eliminate the budget deficit by the year 1890 through harsh measures in securing massive trade surplus by grain exports, although that drove the peasantry into an extremely tight situation and even famine in 1891 - 1892. Vyshnegradskyj's approach to state economics was shaped by conservative and nationalist views, stressing Russia's independence from European capitalism and leading role of the state in industrial policies. He also launched the effort to stabilize ruble by increasing gold reserves, which built

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167 Gerschenkron 1962, 17; Kahan 1967, 477; Spulber 2003, 60 - 61.

168 Gregory 1994, 52.

169 Gregory 1994, 53 - 54.

170 Gatrell 1986, 218, 224.

ground for later monetary reform in 1894 - 1897.<sup>171</sup>

As one of the most debated Russian statesman of the late 19<sup>th</sup> century due to his intensive industrial policies, Sergej Witte has been largely credited for the massive economic growth (approx. 4.7% annually in total product in 1892 - 1901, 5.5% annually in industry in 1887 - 1897<sup>172</sup>) and rapid development of railroad network and individual entrepreneurship during his time in the office.<sup>173</sup> In principles, Witte's policies followed mostly in the steps of Vyshnegradskyj, carrying on with the monetary reform and a shift to gold standard in 1894, both outlined by his predecessor. Unlike Vyshnegradskyj, however, Witte based his fiscal policy on the development of heavy industry, not the exports and growth of productivity within agricultural sector, which was in disarray after the famine in 1891.<sup>174</sup> He also pursued the existing tariff policies made by Alexander III in 1891 and further tightened taxation system in order to finance the rapid industrialization.<sup>175</sup> Witte sought to modernize and expand the transportation network as well as encourage entrepreneurship by subsidies and state support. This applied even for the Jewish entrepreneurs, who were excluded from the otherwise neglected discrimination campaigns against Jewish population. Also in the factory labour issues, Witte took side of the entrepreneur, making the factory inspectors agents on the side of factory employers' rather than the workforces'.<sup>176</sup> By the year 1903 however, Witte's severe industrialization program had reached its' limits and the disastrous situation of peasantry combined with governmental opposition forced his resignation.

Witte's heavy industrialization program aroused wide debate in contemporary political discussion. Witte himself argued that intense state investments in heavy industry, railroads and mining, largely neglected sector in economy relative to its nearly unlimited resources, were the key to success instead of agricultural growth. This evoked criticism from contemporaries who, while impressed by the pace of railroad constructions, claimed that forced economic policies were too severe and culturally harmful for Russian society, especially if agriculture as the main base of state economy was treated as secondary objective.<sup>177</sup> Witte was determined that the nationalist goals of Tsarist politics and the rise of Russia up to Western standards economically and militarily could be only

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171 Gatrell 1986, 226; Spulber 2003, 60.

172 Gregory 1994, 24, 30.

173 Timoshina 1999, 156.

174 Von Laue 1951, 179 - 180.

175 Von Laue 1953, 426.

176 Spulber 2003, 60.

177 Von Laue 1951, 180.

reached if Russia realized its industrial potential.<sup>178</sup> In 1900, the State Comptroller General Lobko verbalized in his report to Tsar the prevailing public opinions that the so-called “Witte system” was responsible and had deepened the ongoing economic crisis, blaming the artificially created and excessive industrial growth as an outright culprit for deteriorated welfare of Russian population as well as claiming the equilibrium between industry and domestic market unsustainable.<sup>179</sup> Also the increased dependence on foreign credit supply and indebtedness was blamed on Witte’s politics.

The question whether Witte’s line of finance policy was a success remains debatable among scholars of Russian economic history. Peter Lyashchenko largely credited the steep increase in government debt to Witte’s policy and albeit recognizing the high rate of economic growth, saw rapid industrialization in backward institutional framework retarding the economic development further towards “imperialistic” form.<sup>180</sup> Theodore Von Laue saw Witte’s attempted policies as a gamble with high cost and high rewards. At the time, no clear answer could be found on which was the right path for Russia to develop and industrialize. On the evidence of corporate development (see table 3 on new corporations 1880 - 1900), Witte’s reign in office was beneficial in both structural and numerical terms, as diversified capitalist economy was accompanied with emergence of new industrial centers. From another perspective, though, Witte’s legacy in 1901 included major industrial disorders, severe agrarian crisis and fiercely critical political opposition.<sup>181</sup>

For Russian corporations, a mere comparison in company emergence figures gives a quite straightforward illustration of the industrial growth volume in the last decades of 19<sup>th</sup> century. The total amount of new corporations compared to the earlier decades 1860 – 1880 increased almost three-fold (from 608 in 1860 – 1880 to 1501 in 1880 – 1900) bringing along numerous new industries and economic centres.<sup>182</sup> In the table 3 is presented similar statistics (as in the previous subchapter) of the firm entries in main areas of industrial activity as well as growth percentages compared to the earlier two decades. Picture of strong geographically centralized economy with dominating two capitals remained, with 2/3 of the new corporations located in 15 largest regions/industrial centres. The share of Moscow- and St. Petersburg-based corporations decreased slightly, but still accounted approximately one third of the total.

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178 Von Laue 1951, 181.

179 Von Laue 1953, 442.

180 Lyashchenko 1970, 554 - 556, 563 - 565.

181 Spulber 2003, 61.

182 RUSCORP.



Table 3. New corporations in 15 largest industrial centers 1880 – 1900

Region	Major sector	Share of local HQs	Corporations	Growth index (1860 - 1880=1.0)
Moscow	74 (textiles)	98%	221	2.9
St. Petersburg	28 (textiles)	98%	184	1.8
Warsaw	18 (metal industry)	93%	86	4.3
Lodz/Piotrkow	38 (textiles)	74%	76	25.3
Kiev	42 (food industry)	97%	70	2.1
Riga & Livland	10 (textiles)	97%	61	3.1
Odessa	18 (food industry)	91%	56	2.7
Ekaterinoslav	14 (mining)	48%	48	4.0
Vladimir	35 (textiles)	52%	42	4.2
Baku	27 (petro-coal industry)	51%	39	13.0
Kharkov	12 (food industry)	79%	29	2.4
Don Region	6 (food industry)	68%	28	2.2
Courland	4 (food industry)	50%	18	3.6
Podolia	18 (food industry)	61%	18	0.5
Reval & Estland	4 (paper, lumber, timber)	65%	17	2.1
		75%	993	

Source: RUSCORP

Even among the top 15, few main centres can be recognized by the high percentage of local headquarters. Those with the amount of more than 90% in the share of locally administrated corporations were quite evidently independent in economical and entrepreneurial terms from the other centres, despite their geographical location. Two basic variables that commonly explain the share of local administration are spatial proximity to another larger centre and industrial composition of corporation functions. Especially in industries, which operated within raw material production, the sheer need for large amount of capital was often deciding reason for central administration and periphery location of actual operations. If proportioned to the growth rate, however, the correlation between low share of local headquarters and high growth percentage seems plausible, especially in the case of Baku, Ekaterinoslav and Lodz. This suggests that in many new industrial regions the first phase of corporation emergence was firmly mono-industrial and almost colonial in terms of central administration. Among these industries, there were signs of foreign direct investments, in the sense that Wilkins has defined the activity of multinational enterprises in 19<sup>th</sup> century<sup>183</sup>, but in addition to these, the fact that Moscow and St. Petersburg had such a key

183 Wilkins 1998; 2009.

position in peripheral industrialization would imply that similar features of existed in administrative relations between Russian headquarters and peripheries.

The example of the petroleum region in Baku showcases how industrial emergence required a push from the central administration to launch into actual corporative development. Although the vast oil resources of the Baku region had been explored already in the 18<sup>th</sup> century, the Russian government did no effort to systematize the extraction of petroleum until 1872 and during the first half of the century the lease system extraction assigned to local peasantry produced very modest output.<sup>184</sup> Active entrepreneurial influence in the 1860s and the abolishment of leasing system, meaning that property rights to oil resources could be freely bidden, improved the industrial performance and for a while Baku region was perhaps the most liberal in terms of capitalist freedom.<sup>185</sup> After the construction of railways to Black Sea ports in 1880s and 1890s alongside with influx of foreign capital and business operators (such as influential Nobel family from Sweden, which gained almost monopoly status in 1880s) and the plan of building Central Asian oil pipelines that promised increased exports did the amount of corporations rise, making Baku one of the most active clusters in Russian economy towards the end of 19<sup>th</sup> century.<sup>186</sup> Although the growth of Baku and its corporations was evident both numerically and in absolute terms, some critical acclaims have been presented on the state's beneficial role on the industrial performance of Baku in the closing decades of the century.<sup>187</sup> Importance of the construction project of Transcaspian crude oil and kerosene pipelines was recognized as early as 1883, but because of the bureaucratic delays and controversies in funding, taxation and ownership issues it took until 1903 that the actual pipelines started to operate.<sup>188</sup> Still, especially in the last years of the century the city of Baku was booming, with 29 new corporations, many of the oil refining companies, chartered during the years 1897, 1898 and 1899.<sup>189</sup>

In Lodz, the ground for the thriving textile industry was laid in 1820s, during the authoritarian reign of Francis Xavier Drucki-Lubecki, Minister of Finance. State initiatives in establishing and financing industry launched prosperous textile industry in Lodz region, which was able to attract skilled labour force from Germany and sell its' products in Russian markets under beneficial

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184 Lyashchenko 1970, 627.

185 McKay 1984, 609.

186 Blackwell 1983, 411 - 412.

187 McKay 1984, 622 - 623.

188 McKay 1984 622; Eventually the pipeline project ended up in devastating economic failure, as the revolution of 1905 destroyed much of the infrastructure, forcing a decline in the industrial output of the Baku oilfields.

189 RUSCORP.

protectionist tariff policy. The rise of population from 800 to 18 000 during 1820 - 40 in Lodz city reflects just how rapidly the urban industrialization hit the town. After the 1830 rebellion, textile industry fell into the hands of private entrepreneurs and the change in Imperial tariff policy led to a decline by 1850s, but after the Emancipation and construction of railways, the textile industry continued to grow.<sup>190</sup>

The region of Vladimir was another example of mono-industrial entity, which was formed around textile industry that held long traditions in both *kustar* and factory enterprises.<sup>191</sup> Being part of the central industrial region alongside Moscow and nearby provinces, Vladimir's growth during the 19<sup>th</sup> century was connected to the overall development of textile manufacturing in Russia. Already in 1860 - 1880 7 textile firms were chartered in Vladimir which accounted 10% of all textile corporations in the Empire (third most after St. Petersburg and Moscow). A five-fold increase in 1880 - 1900 (see table 3) further strengthened Vladimir's position in textile markets, although the emergence of Lodz textile enterprises meant that Vladimir remained third in the amount of new firms, slightly surpassing St. Petersburg.<sup>192</sup>

In Moscow, the textile cluster formed during the early period enlarged and maintained its role in national scale. Little less than one third of all new textile corporations in 1880 - 1900 were chartered in Moscow, consisting also one third of all corporations in the city.<sup>193</sup> Unlike in St. Petersburg, where emerging firms from several branches of industry diversified industrial composition, in Moscow the industry with second highest amount of new firms (food sector) had only 18 new entrants during this period. Metalworking industry that gradually started to compete in size and workforce in 1890s with textiles due to government owned factories had only 7 chartered entrant firms.<sup>194</sup>

Powered by foreign investments and governmental loans (also in the form of private, but "government-guaranteed" loans), the transportation system experienced a period of development so extensive from 1880s onwards that it actually changed market patterns in Russia.<sup>195</sup> In addition to the increase in navigable waterway traffic, railroads tied for the first time the distant regions of the

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190 Blackwell 1983, 390 - 393.

191 Gatrell 1986, 147.

192 RUSCORP.

193 RUSCORP.

194 Bater 1983, 285.

195 White 1975, 14 - 19.

Empire together and also stimulated new market areas in Persia and Far East countries.<sup>196</sup>

Especially during the last decade of 19<sup>th</sup> century, large construction projects, such as Trans-Siberian and Transcaspian railway-lines extended Russian railroads more than 25 000 kilometres, which accounted for 36% of the entire network in 1913.<sup>197</sup> Railroad building and products represented some 25 to 30% of the total net investments at that time, which was comparable to investment shares in Germany, where rapid constructions had allowed country to get a foothold of the front-line industrial performers in Europe. Development of the transportation system also generated incremental demand for domestic heavy industry and forestry production, former which had started to rise in importance in Tsarist economy. For instance, the volume of domestic output in steel and iron products for railways doubled between 1895 and 1899.<sup>198</sup>

Table 4. Average annual volume of railroad shipments in the major commodity groups

Commodity group	Quantity (million kgs)		Share		Corporations chartered		
	1876 - 1878	1898 - 1902	% in 1876 - 1878	% in 1898 - 1902	1860 - 1880	1880 - 1900	Increase %
Petroleum products	104.8	3880.4	0,7 %	6,5 %	7	50	714 %
Coal	1479.1	10468.5	9,2 %	17,0 %	14	22	157 %
Iron and steel, (inc. rails)	389.8	2004.9	2,4 %	3,4 %	80	173	216 %
Lumber	1110.6	4316.1	6,9 %	7,2 %	10	42	420 %
Sugar	353.8	1046.7	2,2 %	1,8 %	81	130	160 %
Cotton & Wool	186.7	496.3	1,1 %	0.8%	81	232	286 %
Eight cereal grains	5108.9	10155.6	31,9 %	16,9 %	XXX	XXX	XXX
All goods of low-speed freight	16019.6	59770.6	100 %	100 %	XXX	XXX	XXX

(Source: Lyashchenko 1970, 535; RUSCORP.)<sup>199</sup>

Not only did the length of railway network increase, but also the rate of freight traffic on the rails.

Between the years 1880 and 1898 the total track length in Russia grew from 23000 to 36000

196 Gatrell 1986, 175 - 176.

197 Kahan 1989, 30.

198 Lyashchenko 1970, 533; Gatrell 1986, 152 - 153.

199 The data on "Quantity" and "Share"-columns is presented as three/four-year annual averages. Weight units have been recalculated to kilograms from poods, as they were originally presented in Lyashchenko's figures. RUSCORP classifications in *Corporations chartered* column are explained in Appendix.

kilometres (156% of 1880 figure) while the total volume of annually freighted goods increased from 44 million tons to 106 million tons (240% of 1880 figure) and thus totalling a rise from 1913 tons to 2944 tons per kilometre.<sup>200</sup> The annual volume of railroad shipments in major commodity groups in the years between 1876 - 1878 and 1898 - 1902 is presented in the table 4. The shares of major commodities reflect not only the market demand and total production rate, but also the suitability of a commodity for railway freighting. Production of raw materials, such as grain, lumber and coal, was the most obvious branch of industry that benefited from extended rail connections and as can be seen from the freight quantity of petroleum, sometimes functioning railways were a necessity for large-scale production. Especially transportation of lumber and wood products and grain experienced massive reorganisations because of the railways. Earlier freight connections by waterways and the old dirt road system gave way to railroad shipments, which on the one hand inspired those industries and regions within the new framework, but on the other hindered or even caused outright decline on those, which relied on or supported on traditional transportation links. For example the steamship industry, which was reformed and grew apace in 1860s, was underdog in freight competition after the introduction of steam locomotives and though it experienced limited growth during the late 19<sup>th</sup> century, its' functions was limited to only the most important river regions outside freeze-up period. The competitive disadvantage of river transportation was not only based on transport costs, but also to the fact that the state decided to invest in railroad construction rather than canal-building, which remained stagnant during the 19<sup>th</sup> century.<sup>201</sup>

While in 1860 - 1880 the development of corporate capitalism led only to a formation of several new clusters, the “golden era” of Tsarist industrialization saw numerous groups of firm entries in different geographical regions. Also the branches of industry within which corporates were found in large numbers differed from the earlier period. Interestingly, the emergence of the most striking examples, Baku and Lodz, can be attributed to different explanations. Utilization of Baku’s oil fields was classic example of previously unused peripheral depots of profitable raw materials becoming a part of corporate economy, while in Lodz the upsurge of a textile cluster was made possible by new industrial technologies combined with increased market opportunities (along with the abolishment of export tariff to Russia) and the availability of capital.<sup>202</sup>

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200 Lyashchenko 1970, 514.

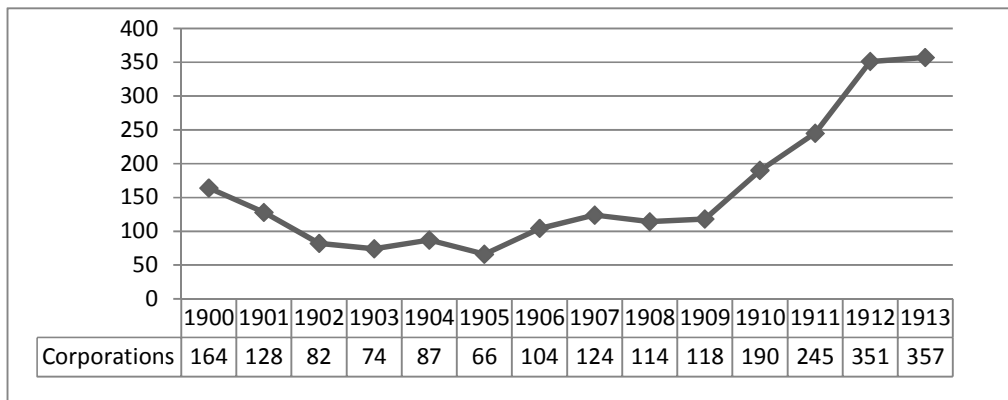
201 French 1983, 452, 477 - 479; Kahan 1989, 32.

202 Blackwell 1983, 393.

There were areas, however, where the new stage of industrialization did not increase the firm entry numbers. For example in Podolia, the existing major concentration of beet sugar industry did not experience relative growth anymore, albeit in Kiev the food industry retained its high share of new corporation and the amount of new companies more than doubled (see table 3). This was not a sign of decline in itself, as many of the beet sugar enterprises tended to concentrate on few business conductors.<sup>203</sup>

#### 4.4 The pre-war period, 1900 - 1913

Figure 3. New corporations per annum 1900 - 1913



Source: RUSCORP

A period of economic recession hindered corporative growth after the turn of the century, but in the last pre-war years the tide had turned and the annual rate of new corporations grew into figures previously seen only briefly at the end of the boom of 1890s. The civil unrest in the first decade of the 20<sup>th</sup> century also had a major impact on the amount of new corporations, which partly illuminates how political and economic expectations indicate the level of firm emergence. Despite periods of sustained corporate growth, 2204 new firms were chartered during the 13-year period outnumbering clearly the 1501 founded in 1880 - 1900.<sup>204</sup> To put these figures in perspective – as many firms were chartered in 1907 - 1913 as in the decades of most rapid industrialization 1880 - 1900 and the figures for each of the last four years of examination surpassed the total amount of new corporations founded between the reign of Peter the Great and the emancipation of serfs in 1700 - 1860. In gross factory production, the increase between 1908 - 1913 was around 50%, with especially mining, metallurgy and engineering sectors forming major share of factory output, about

<sup>203</sup> Hamm 1986, 85.

<sup>204</sup> RUSCORP.

two-fifths.<sup>205</sup>

Table 5. Development of wholesale and retail trade sector

Period	New Corporations
1860 - 1880	3
1880 - 1900	60
1900 - 1913	189

Source: RUSCORP

The new industrial society of the 20<sup>th</sup> century had also new requirements and demands for corporate production, which was seen in the rise of wholesale and retail trade corporations (see table 5). Not surprisingly, a major share of the trade companies operated in largest cities, while in more remote areas traditional trade fairs were preferred.<sup>206</sup> Of all of the wholesale and retail trade firms founded in 1900 - 1913, 44% located in either Moscow or St. Petersburg, while the cities' share of all corporations was around 30%.<sup>207</sup> Rise in the amount of private capital and purchasing power especially in urban settlements diversified the scale of products and patterns of movement of goods between producers and consumers, although it never became substitute for state demands.<sup>208</sup> Also the standard of living, illuminated by the growth of literacy and education levels within lower class population, increased respectively, increasing the demand of domestic market.<sup>209</sup>

Some drawbacks did nevertheless shape the development at the turn of the century. The European monetary crisis of 1899 - 1900 affected also Russian industrial economy, revealing illustratively how dependent it had become of foreign market fluctuations. Especially vulnerable to interruptions in capital influx were the heavy industry sectors that spearheaded economic boom, such as petroleum production and metallurgy.<sup>210</sup> Despite the hindrance of credit, the firm entry rate in these sectors turned downwards only in 1901, but remained low (3 to 7% per annum of total sector entries

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205 Gatrell 1982, 100.

206 Rieber 1982, 74 -75; Gohstand 1983, 329 - 333; Timoshina 1999, 151. Bathelt & Schuldt (2005) have suggested that in contemporary economies, the international trade fairs act as temporary clusters that provide similar advantages, such as spread of information on competitors, knowledge on innovations and 'buzz' through the various business operations taking place both formally and informally, for attending companies and market operators. The depictions on the large trade fairs in Russia Empire by Gohstand provide sights of similar advantages in knowledge creation, information and supply-chain specialization. Taking into account the widely different market setup in communication and information channels, the fairs can be considered a significant form of cluster advantage for several small-scale industries that weren't capable of forming clusters through concentrations of companies.

207 RUSCORP.

208 Gatrell 1982, 110.

209 Kahan 1989, 27; Gregory 1994, 83.

210 Lyashchenko 1970, 648.

1900 - 1913) until 1910.<sup>211</sup> In both metal and petroleum industry, a number of firms also ceased their operations during the time of the crisis. However, the light industry was able to compensate some losses caused by the monetary shock because of the good harvests that strengthened the purchasing power of the peasantry.<sup>212</sup> According to the estimates by Lyashchenko, some 3000 enterprises were forced to shut down in the crisis years 1900 - 1903.<sup>213</sup>

Table 6. New corporations in 15 largest industrial centers 1900 – 1913

Region	Major sector	Share of local HQs %	Corporations	Growth index ["1880 - 1900"=1.0]
St. Petersburg	Finance, Insurance, Real Estate (44)	99 %	362	3.0
Moscow	Textiles (81)	97 %	306	2.1
Warsaw	Chemicals (13)	100 %	109	1.9
Lodz/Piotrkow	Textiles (21)	75 %	72	1.5
Baku	Petroleum (41)	58 %	69	2.7
Don Region	Mining (31)	55 %	65	3.6
Odessa	Finance, Insurance, Real Estate (9)	92 %	62	1.7
Ekaterinoslav	Mining (20)	42 %	61	2.0
Kiev	Food Industry (21)	95 %	59	1.3
Krim	Food Industry (14)	67 %	51	6.0
Kharkov	Wholesale & Retail Trade (10)	82 %	39	2.1
Riga & Livland	Textiles (6)	88 %	33	0.8
Kuban	Petroleum (6)	47 %	32	9.8
Saratov	Food Industry (7)	85 %	27	5.2
Vladimir	Textiles (17)	58 %	26	1.0

Source: RUSCORP

From the year 1908 on, the economic situation of industry recovered from the crisis and led by state-supported armament industry the upcoming years pushed the performance level back to growth rates experienced in 1890s. Total annual armament expenditures of the state on defence rose by more than one and a half from 608 million rubles in 1908 to 959 million in 1913 (approx. 7% per annum) forming about one quarter of all state investments.<sup>214</sup> Especially heavy industry enterprises

211 RUSCORP.

212 Lyashchenko 1970, 653 - 654.

213 Lyashchenko, 1970, 655.

214 Gatrell 1982, 104 - 105.



that were able to fill the armament orders gained significant boost to their prosperity. Around half of all firm entries in metal products sector were recorded in 1910 - 1913 and existing operators, such as Putilov factory in St. Petersburg expanded their scale of industrial output.<sup>215</sup>

Geographically, the beginning of the 20<sup>th</sup> century brought on relatively few changes in Russian economy, as seen in the table 6. Already established capital centers maintained their high share of headquarters among emerging firms, although Kiev and Riga did not have proportionally as many new entrants as before. 'Colonial' heavy industry and petroleum regions continued their fast growth while slowly diversifying their economic structure out of mono-industrial patterns. An important factor in their prosperity was the paternal subsidy-system of the state, which continued to ease the success of militarily important sectors of industry. Approximately 30% of total net investments of the state were devoted to industry in 1909 - 1913, surpassing the agricultural investments in absolute terms.<sup>216</sup>

In Ukraine, the heavy industry investments contributed to multiple firm entries in the emergence of eastern mining region that comprised large growing centers, such as Donbass, Ekaterinoslav and Kharkov, which profited also of European capital from France and Belgium.<sup>217</sup> Despite strong foreign contacts in corporate financing, Ukrainian capitalism involved largely native entrepreneurs and Jewish merchants, who had already established business networks there in place.<sup>218</sup>

The expansive growth of the industry of St. Petersburg was also apparent by the increase in population and workforce. Especially after 1908, the pace of urbanisation accelerated and in the year 1913 around 30,000 new industrial jobs brought the total number of employment up to 218,000 workers, highlighting the role of large-scale factories and corporate enterprises in the city.<sup>219</sup> Biggest employers, metal (35%) and textile industry (18%), naturally accounted for major share of the total value of production, but also the chemical industry was significantly productive (19%) relative to its share of total employment (8,5%).<sup>220</sup> St. Petersburg offered also best possibilities for corporate capitalism in an urban center. Of the 362 new corporations chartered in 1900 - 1913 only a couple were such large establishment in terms of starting capita, but by median level they were

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215 RUSCORP; Gatrell 1982, 106 - 107.

216 Gatrell 1986, 192.

217 Blackwell 1983, 405.

218 Magocsi 2010, 347.

219 Bater 1976, 220.

220 Bater 1976, 223.

generally better off than in the other parts of the Empire.<sup>221</sup> The urban environment also enabled these firms to divide into numerous prospering branches of industry. Largest emergence sectors, finances/insurance/real estate, transportation, textiles, food industry and whole- & retail trade, all five had more than 25 corporations chartered. By contrast, in Moscow only textiles (81) and whole- & retail trade (51) produced more than 25 new firms.<sup>222</sup> The share of textile industry was highest in terms of employment (36% of city's total), but only third in the number of establishments (20%) after paper and printing industry (22%) and metalworking (27%).<sup>223</sup>

Only a several 'new' corporate centers appeared during the late period and none which would have transformed the existing patterns of trade and industrialization as a whole. In Saratov, the emergence of flour and lumber companies administrated mainly from Tsaritsyn and Saratov itself contributed to city's development especially in the early 1910s whereas in Crimea tobacco industry and various health resort and hotel firms were established. Kuban was an example of a center where the business environment profited from the increased demand for petroleum products.<sup>224</sup>

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221 RUSCORP.

222 RUSCORP.

223 Bater 1983, 285; Bater's use of the concept *establishment* derives from the study of D.P. Kandaurov's "Fabrichno-Zavodskiye Predpriyatiya Rossiiskoy Imperii (Isklyuchaya Finlyandiyu)" (1914) and undoubtedly differs from the corporation data presented in RUSCORP, so that the figures in itself are not reliably subject to comparisons.

224 RUSCORP.

## 4.5 Overview

As it has been shown through the periodical examination, Russian corporate emergence took place primarily in key locations, where existing or developing political and economic environment offered both factor endowments, such as skilled workforce and raw material supplies (through transport network or outright in the place) and channels for output utilization (markets and export routes). In line with the model of corporate and industrial clustering, this emergence took often distinctively its form around certain branches of industry in certain locations at certain period of time. A conclusive point, further examined in the following chapter, is that similar organizational forms and preconditions of industrial clusters were put in place in several regions in Russian Empire as have been pinpointed within modern economic clusters, more detailed in the methodological discussion in the chapter 2. Especially striking cases of mass firm entries in Lodz and Baku in 1880 - 1900 suggest that the preconditions for cluster emergence may have been even further present than in other contemporary economies. That is, of course, not to conclude anything of their further performance as cluster entities or effective industrial centers, but to note in general that during the post-Emancipation period there were opportunities for emergence of clusters, for the first time in the history of Russian industrialization, and that these opportunities were exploited through the participation of both corporate actors and the state.

At the end of 1913, the level of industrial centralization in the Russian Empire was very high and the capitalist development through the years had taken its path along the lines of geographical concentration and regional clusterization of industries. Mono-industrial structures were dominant in several major cities, in term of both firm numbers and total value of production, and these were more than often results of cluster traits in networking, ownership relations and financial arrangements than pure competition. These features of urban, regional and geographical economics are discussed in the next chapter.

## **5 THE ROLE OF CLUSTERS IN TSARIST INDUSTRIAL DEVELOPMENT**

The previous chapter discussed the development of regions, which constituted the economic and corporate core of Russian Empire in the decades preceding the World War I. This chapter goes more in detail into the links and networks between those regions as well as tries to make sense on the development and structure of clusters within them. Several key factors such as supply chain links, spinoffs, cluster emergency preconditions and industrial culture are to be discussed in the light of the data that RUSCORP provides. In conclusion, the theoretical debate on cluster economics, outlined in chapter 2, is linked with the results of findings in Tsarist clusters.

### **5.1 Geography of Russian economy in 1860 - 1913**

Although the two capitals, St. Petersburg and Moscow, dominated Tsarist economic geography in terms of emerging corporations the qualitative modernization did not always follow numerical growth of private business enterprises. In the late tsarist period, "western" ethnic groups (Poles, Jews, German) and mostly non-Russian economic centres of the Empire were predominantly among those, which industrialized most rapidly. Out of the 15 largest industrial centres (see table 6, chapter 4) in 1900 - 1913, only Saratov and Vladimir situated in the central ethnic Russian area alongside capital cities, while the same list included 9 Polish, Baltic or Ukrainian industrial centres. Some of these centres were traditional seaports and thus junctions of Russia's foreign trade. Nevertheless, albeit the locally beneficial effects of foreign shipments, foreign trade did not play very significant role in the economy of Russian Empire.<sup>225</sup>

While the question whether capitalism in Russian Empire derived culturally from the Russian merchant tradition more than from the European influences has been widely debated, it certainly seems that the Western centres benefited from their proximity of European industrial and entrepreneurial culture and, in effect, formed the most technologically modern regions in Tsarist Empire.<sup>226</sup> This phenomenon is also present in the background analysis of the most influential merchants of the era. St. Petersburg and Moscow had their own merchant elites that controlled the entrepreneurial environment in capitals through administrative and business networks. Moscow especially was considered by the contemporaries as "heart" of Russian business because of its' deep

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<sup>225</sup> Ahonen 2005, 46.

<sup>226</sup> Rieber 1982, 34 - 35; Blackwell 1983, 379.

roots as a centre of trade and transportation.<sup>227</sup> In Moscow the merchants also had better chances for political participation to influence the decision-making in economic issues. For provincial ethnically Russian merchants St. Petersburg represented more of a strange, bureaucratic and European business environment than Moscow, which had been an important market area for centuries.<sup>228</sup> Separated from this “all-Russian *kupechestvo*”<sup>229</sup> were the more western-minded merchant groups of St. Petersburg, Baltic industrialists, textile manufacturers of Lodz and sugar producers in Southern Russia that had dealings with Moscow, but culturally derived their entrepreneurial models from European tradition.<sup>230</sup>

## 5.2 Institutions and entrepreneurial networking

The regionally varying institutional advantages constitute a pivotal factor in Porter’s theory of cluster policies.<sup>231</sup> The role of the Tsarist state was a determining external force in the development of industrial clusters, but majority of its impact was restricted to financial support rather than the development of public utilities and institutions. The state investments, mostly pipelined through the Ministry of Finance, had a crucial influence in the way they balanced the industrialization between different regions and branches and supported the construction of logistic network. The railroads were essentially the most important public utility for clusters. However, there were also additional institutional forces behind the realization of railroad projects and industrial policies. During the 19<sup>th</sup> century, the state’s imperialist aims and new territorial conquests made the army an essential institution in the Empire and one, whose interests were often prioritized in economic decision-making.<sup>232</sup> During his time as Minister of Finance, Witte was complaining that the military had had too much influence in the planning of railway routes at the cost of industries.<sup>233</sup> Although towards the end of the 19<sup>th</sup> century the possibilities of railroad network had reached practically all cluster regions in Western Russia, the emergence of several clusters could have been boosted even more with earlier railway connections and, on the other hand, those regions which held politically important role as administrative centres gained an early advantage in transports. It is doubtful however if the impact of early railroad connections can be considered a major driving force in

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227 Ruckman 1984, 3.

228 Ruckman 1984, 3, 5.

229 As in the case of concept *corporation*, the meaning of Russian word for merchant, *kupets* or *meschsanin* (pl. *kupechestvo*, *meschsanstvo*), and their linguistic differences from English word merchant would take their own separate chapter to discuss. Even inside Russian Empire, the word “merchant” had different cultural connotations depending on the region and status in social hierarchy (See Owen 1995, 54; Rieber 1982, 13.). Here, it suffices to note that the meaning of words is similar enough for the purposes of this study.

230 Ruckman 1984, 3; Henriksson 1986, 78 - 82; Corrsin 1986, 132 - 133.

231 Porter 1998, 83.

232 Kahan 1989, 29.

233 Von Laue 1951, 187.

cluster emergence, for there were regions especially in the Central Industrial Region where the firm concentration remained very modest despite the advantage of early railway linkage.<sup>234</sup>

The peripheral nature of Russian Empire affected severely the formation of business connections and gave the urban clusters clear advantage due to stronger and more complex networks of information, skills and credit, which all were very often in connection with the institutional framework.<sup>235</sup> In several clusters the co-operation between the industrialists themselves in entrepreneurial interest groups proved often useful in organizing public life from the basis of common value and social background. Such entrepreneurial groups and associations were founded in three cluster regions: Moscow, St. Petersburg and southern Ukraine.<sup>236</sup> In addition to these, there existed several commercial exchange committees in large cities, which were founded by the government in the early 18<sup>th</sup> century.<sup>237</sup>

In 1897 the leading entrepreneurial figures, dissatisfied with the influencing possibilities of the Russian Technical Society, formed the Society for the Assistance, Improvement and Development of Factory Industry (later The St. Petersburg Society of Factory and Mill Owners) which despite its name was used mostly as a tool for enforcing common interests in political participation. Among their major goals was the controlling of labour legislation, which had become increasingly topical due to the organized worker movements and strikes. St. Petersburg entrepreneurial group was also heavily involved in the Russian Technical Society, which was found in 1866 to promote spread of technical information and develop technical expertise.<sup>238</sup> State-led reforms on educational system contributed also to the development of industrial knowledge and especially the reforms of 1860s had a profound effect on the increase of educational level in the fields of engineering and polytechnics.<sup>239</sup>

Mining operators in Don Region formed the Association of Southern Coal and Steel Producers in 1874 to tackle the challenges in labour force utilization and politics, such as the formation of tariff policies, at both state and local level.<sup>240</sup> The Association brought together entrepreneurs, who advocated economic modernization and sought to maintain control over industrial capital and

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234 RUSCORP.

235 Hamm 1986, 2; Owen 2005, 202.

236 Rieber 1982, 134 - 135.

237 Rieber 1982, 21.

238 Rieber 1982, 252; Aer 1995, 83.

239 Rieber 1982, 223; Aer 1995, 36 - 37.

240 McCaffray 1987; McCaffray 1988.

administration without dominant foreign influence. There were foreign industrialists among the Association members, but the majority of seats remained always in control of the ethnically Great Russian entrepreneurs. The co-operation between foreigners still benefited both parties, as foreign owners could utilize Russian managers in their own business environment and, on the other hand, Russian members had the chance to adopt foreign strategies without allowing limitless foreign takeover of the industry.<sup>241</sup> After the turn of the century, industrial depression and tightening relations between workers and industrialists aroused complications in the work of the Association, especially over the role of the foreign entrepreneurs and managers in Ukrainian metal industry. While the Association had been able to influence political questions and bureaucracy, the burden societal issues of the rapid industrialization ultimately impeded the realization of liberal goals and values of economic development that Association was originally found.<sup>242</sup>

The most active entrepreneurs in Russian Empire founded several corporations, which by function and location varied widely, often demonstrating mobile ability to shift from cluster to cluster. Throughout the period from Emancipation to the World War I, their operations were headquartered in major industrial centres, concentrating in St. Petersburg towards the last decades of Tsarist era.<sup>243</sup> This was especially the case with entrepreneurs who had a rank in the bureaucratic system of the Tsarist state. Introduction of vast investment projects after the Crimean War, existing power networks inside the state bureaucracy as well as favourable status in obtaining state grants and subsidies – all of these features contributed to the success of modern businessmen with bureaucratic and military titles.<sup>244</sup> Throughout the Tsarist period, merchants and entrepreneurs that either belonged to the higher social grades or attained hereditary ennoblement, had a considerable advantage over the common merchantry due to exemption from taxation and property legislations.<sup>245</sup> Another key theme that characterized efficient entrepreneurs was the capability of utilizing European standards of business practises and commercial knowledge. This was a trait that benefited both members of bureaucracy as well as ethnically and socially marginal groups, such as Jews, Germans and Old Believers.<sup>246</sup> Third factor that worked clearly as an advantage for entrepreneurs was the education in engineering. Inside Russia, trained engineers were still in short supply still in the 1880s, although the multitude of tasks in organizing enterprises required a

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241 McCaffray 1988, 464, 466 - 467.

242 McCaffray 1988, 482.

243 Owen 1995, 184 - 185.

244 Rieber 1982, 37.

245 Rieber 1982, 13 - 15, 38.

246 Owen 1995, 63 - 64.

mixture of technical, managerial and business skills embodied in engineering occupation.<sup>247</sup>

Entrepreneurs with a background in commercial, industrial or financial professions were a major group in RUSCORP statistics with 43% share of all corporate founders.<sup>248</sup>

### 5.3 Competition

The regional composition of industrial activity formed the base context for competition among producers. From traditional perspective in competitive environment, driven mainly by input costs, firms located in beneficial regions could obtain comparative advantages. In modern view, further competitive advantages can be sought out through inputs in productiveness, inspired by continual process of innovations. These factors are seen to be combined in clusters.<sup>249</sup> In Russian Empire, the competition between private entrepreneurs included further aspects due to the historical and societal background. This was the case especially before the Emancipation when, the privileged status of entrepreneurs coming from the higher social grades granted them more favourable preconditions to lead a successful enterprise, as often the bureaucratic and financial connections were greatly beneficial in establishing a prosperous company.<sup>250</sup> Linked to this, several ethnic groups faced discrimination through legislative acts, which hindered their economic possibilities, often through prohibition of land ownership. As a reaction to this, however, many of these groups, such as Jews and Old Believers, were able to counter the prejudicial attitudes and restrictions by forming close-knit collectives, which proved an advantage in entrepreneurial networking, towards which they tended to drift without agricultural income.<sup>251</sup> The concentration of sugar production in Kiev to the hands of wealthy Jewish merchants was a case in point example of an ethnic group managing the situation.<sup>252</sup>

Geographical vastness of the Empire resulted in competition and corporate markets being essentially limited to a local area, with possible exceptions in the largest cities. Another important factor that shaped the forms of competitive nature of corporations was the regionally varied pattern of demand. Already showcased in the development of wholesale and retail trade companies in chapter 4, different regions had varied levels of aggregate demand, which had clear causal effects on the importance of local competition. If excluded the agricultural consumption and industries that were specialized in exports, the main customer for Russian products in all major industries was the

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247 Rieber 1982, 222.

248 RUSCORP.

249 Porter 1998, 78.

250 Rieber 1982, 40 - 45.

251 Blackwell 1968, 236 - 237; Aer 1995, 63.

252 Blackwell 1968, 233.



state. Paul Gregory has calculated that the overall share of governmental consumption of the national net product rose from 8% in the years 1885 - 1889 to 10% in 1909 - 1913, which was substantially higher than in contemporary European countries.<sup>253</sup> The priority of governmental orders for industrial products is illustrated by the state's role in scheduling and organizing the construction of railroad network and by the level of economic growth in the times of increased financial support for industrial production, as well-documented in the Witte era and before the World War I.<sup>254</sup> Porter's views on cluster competition exclude the demand born from the governmental level, and thus distorting conditions of perfect competition, in formation of cluster advantages. In the case of Russian Empire, this factor clearly contributed to the performance of companies and clusters favouring the development of governmentally essential industries.

In the last decades of the 19<sup>th</sup> century, some branches of industry developed towards monopolies due to the increased concentration and larger enterprises. The first recorded monopoly appeared in 1882, formed by union of 5 steel rail manufacturers and several others followed in different subsections of railway construction in 1880s.<sup>255</sup> Governmentally aided syndicate formation in sugar-refining industry in 1887 had a major regulating effect on the production and especially in the years of depression 1900 - 1903, the aims were set towards monopolistic control of industries.<sup>256</sup> Large syndicates were formed in metal industry in 1902 and in coal mining in 1906. All of these syndicates either consisted of foreign corporations or were highly dependent on foreign capital, which also defined them as 'foreign' by nature in the eyes of Russians. Despite their attempts to further reach control of domestic and export markets, the syndicates never advanced to full-blooded monopolies from the state of sale agencies, due to various conflicting interests of entrepreneurs.<sup>257</sup> Some efforts towards monopoly status were also made by individual international business conductors. The attempts of the Nobel family in setting up monopoly in oil business united many of the lesser firms in seeking protection from the state.<sup>258</sup> Also the aspiration to extend the transport network to be able to compete in foreign markets increased co-operation among other oil producers. The impact of the Nobel Brothers was nevertheless strong enough to eliminate the participation of local firms in the Association of Baku Oil Producers thus ensuring semi-monopolistic profits and privileged political power in the region.<sup>259</sup>

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253 Gregory 1994, 32 - 33.

254 Gatrell 1982.

255 Timoshina 1999, 154.

256 Lyashchenko 1970, 675 - 676; Gatrell 1986, 177 - 181.

257 Lyashchenko 1970, 677, 681, 685.

258 McKay 1984, 608.

259 Rieber 1982, 250.

Various examples from different parts of the Empire suggest that the foreign entrepreneurs and merchants had almost universal advantage over their Russian compatriots in competitive markets. Whilst the partition of foreigners was modest until the reforms in 1860s and 1870s, already in the beginning of the 19<sup>th</sup> century, the foreign trade had posed a severe threat upon urban merchants in St. Petersburg, who had to depend on state support to avoid being ousted from the market.<sup>260</sup> In provincial regions in the south and west administration even encouraged the economic impact brought on by foreign merchants.<sup>261</sup> Over the course of late Tsarist period, the foreign corporations were capable of adapting fully developed corporate strategies and organizations in Russian context, which was only beginning to develop its accordant business culture. To counter the early disadvantages in lack of networking externalities, such as local knowledge and connections, the foreign entrepreneurs widely put Russian managers in charge of their enterprises, especially after the level of Russian engineering had started to increase in 1880s.<sup>262</sup> In general, the main potential supporter of domestic entrepreneurship, the state, was always inclined to pursue economic goals of political and military nature which bended the competitive advantage towards more adaptable foreign firms both domestically and in cluster regions. Illustratively, the regions with more than 10 foreign corporations operating in 1914 were Ekaterinoslav, Don Region, Lodz, Warsaw, Moscow, St. Petersburg, Baku, Kuban and Odessa – the very same clusters, which spearhead the firm entries on the table 6 in the chapter 4.<sup>263</sup>

#### **5.4 Skilled labour force and management**

The specific societal and economic environment that highlighted the industrialization of Russia during the 19<sup>th</sup> century shaped also the forms of organization within industrial clusters and individual enterprises. The level of urban/rural atmosphere which, unlike the contemporary development in Western Europe and North America, was not always closely tied in Russian Empire, but had a profound influence in the cluster structures.<sup>264</sup> The location of an industrial district did not determine merely its transportation possibilities, but more essentially it defined its linkages to traditional Russian economy in the countryside as well as access to streams of modern technological skills, innovations and knowledge. Thus, from the theoretical implications of cluster development, the specialization of innovative expertise and labour force utilization were the two

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260 Rieber 1982, 22.

261 Rieber 1982, 54.

262 Rieber 1982, 226.

263 RUSCORP.

264 Crisp 1976, 14; Blackwell 1983, 384.

key issues that were largely shaped as a result of the aforementioned level of urban influence.<sup>265</sup>

Corporations in Moscow and St. Petersburg, the sites of largest and industrial factories by size in Russia, relied both on the benefits of urban environment in economic organization. In the mid-19<sup>th</sup> century, the amount of factory workers in Moscow was 39,000 – twice as high as in St. Petersburg.<sup>266</sup> Most of these were occupied in the expanding textile industry. By the year 1890, St. Petersburg had surpassed Moscow in the amount of workers – 73,000 to Moscow's 72,000 – mostly due to the increase in metal production and factory size.<sup>267</sup> Figures provided by Bater on the average number of workers per factory indicate that the plant-size was generally higher in St. Petersburg than in Moscow. Notable differences appear in textile and metalworking factories, where St. Petersburg had 274 workers per factory in textiles and 511 in metalworking, while Moscow's figures were 113 and 270 respectively.<sup>268</sup> High amount of workers in factory indicates the requirements of a factory for its productive organization. Especially considering that in 1913 the largest metalworking plants in capitals employed as much as 2,900 in Moscow and 13,000 in St. Petersburg (the Putilov factory), the sophistication of industrial organization in a single enterprise reached its peak in these establishments. Partly, the large amount of workers per plant was caused by the concentration of financial control at the top level and persistence of continuing labour-intensive practises and technologies, but also the tendency to stay autarkic rather than interdependent on large supplier network. Nevertheless, an important issue for corporate clusters in Russia was the lack of specialized and supportive small-scale firms all over the Empire – a feature of industrial organization favouring self-sufficient enterprises.<sup>269</sup> In St. Petersburg, this further increased the concentration of finish-product industries in large enterprises due to the economies of scale.<sup>270</sup>

In several of the most active clusters, the access to raw materials was the major factor in defining the location of emergence and functioning of corporations. Case in point examples of the importance of location can be noted in Ukrainian rural beet sugar industry, in peripheral mining districts in the Urals and in petroleum clusters of Baku and Kuban (see Tables 2, 3 and 6 in chapter

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265 The estimated figures of urban population in the 1897 census should be read with caution, because several industrial centres that had urban features, such as Yuzovka and Izhevsk, were not considered as cities. Timoshina 1999, 149.

266 Bater 1983, 283.

267 Bater 1983, 284.

268 Bater 1983, 285 - 286. Here again, Bater uses the establishment and factory figures provided by Kandaurov (1914), which aren't to be compared rigidly with the RUSCORP data.

269 Bater 1983, 288.

270 Rieber 1982, 245 - 246.

4). In these regions, the strategies for utilizing skilled labour force were, however, different and dependable on both industrial traditions and the skill demands of the work itself. As a rule, these regions relied on a transitional mass of semi-industrialized peasants and *kustar* workers as their basic labour pool.<sup>271</sup> In Western Ukraine, the workers hired for the purposes of beet sugar industry consisted of rural peasants, who could be exploited for beet sugar cultivation due to their experience on agricultural work. Also, the existing state policy that, despite the Emancipation Act in 1861, sought to attach the rural population to their localities supported the rural Ukrainian industrialization with fixed labour pool with sufficient industry-specific skills.<sup>272</sup> Also the possibility for workers to resume living within their traditional rural setting prevented many harmful influences that encumbered the life of urban workers, such as disintegration of social framework, alienation from traditional peasant commune and congestive packing in unhealthy suburbs.

The labour-oriented textile factories in Moscow and in the nearby provinces and also in St. Petersburg, acquired a large share of their workforce from among the peasantry and *kustar* textile producers.<sup>273</sup> As seen above, the demand for textile workers reached such proportions in these regions that the able workers had to be attracted outside urban entities. The statistics on issued internal passports give an insight into the scale of social mobility between villages and factories in industrial regions.<sup>274</sup> The impact of the mobility on the rural settlements was massive. According to Burds' figures, the amount of the rural migrants could reach as high as 50% in some villages, which also arouse worries among the state officials monitoring the states' tax income from the agriculture.<sup>275</sup> Often illiterate migrating workers not only shaped the worker culture in the factories, but also affected the knowledge and skill level of an average worker. In textile industry, the workers' frequent moving from factory to factory spread working customs, skills and information, although on the other hand the same applied with the conflict and protest culture that increased from the late 1880s onwards.<sup>276</sup>

In the Urals, the source of labour force had come traditionally from factory serfs, who were moved over to the place during earlier centuries. Peripheral location with few usable travel connections wasn't ideal for attracting masses of peasant workers, but due to gentry's ownership of serfs the

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271 Blackwell 1968, 108.

272 Blackwell 1983, 384.

273 Bradley 1986, 17.

274 Burds 1991, 56 - 57.

275 Burds 1991, 57 - 58.

276 Brower 1982, 418 - 420.

workforce question had never really bothered Ural metal factories. Also, workers' roots in the serfdom era meant that occupation in metal working was often hereditary so that the industry-specific knowledge also stayed within families – a trait that affected not only methods of metal working, but also the company-/factory-level atmosphere. The Emancipation in 1860s, liberating the serfs from the ownership of factory owners, actually brought the iron industry to decline.<sup>277</sup> Whether the state of industrial development in the Urals after 150 years of operations had reached maturity or backward decline during the stagnant years of 1860 - 1880 has been a matter of debate. Soviet interpretation saw the old feudal routines and technologies as stagnating factor for the industrialization of Ural enterprises, where the production of iron did decline during the early 19<sup>th</sup> century.<sup>278</sup> However, subsequent Western studies on the subject have pointed out that the sophistication of industry in Ural region had accumulated to a high level due to long-lasting traditions and the modest levels of output and market share were mainly caused by the stresses of geographical location and the primitive means of transportation, a problem that the railroads could solve as late as 1890s.<sup>279</sup> The RUSCORP data also suggests that the private capitalist companies in the Urals were not completely tied to the backward feudal industry and had connections to the European models of management in metal industry. The 8 existing mining and iron works corporations in the regions of Orenburg and Perm in 1905 were led by 35 recorded managers, from who only one third were ethnically Russian. There were also 7 French and Germans, alongside few Greeks, Jews and Italians.<sup>280</sup>

In Baku, the dominant role of modern petroleum industry in the district placed also a large responsibility of the workers' skill level to the shoulders of management. After the emergence of large-scale oil industry in Baku, invigorated by the efforts of the Swedish Nobel Brothers Company (chartered in 1879), the regional labour pool widened along with the introduction of western technologies. The fact that Nobel Company was by far the most successful enterprise of the region highlights the role of foreign management in light of the management figures in 1905. Of the 156 recorded managers in 40 different firms, some 67% were ethnically Russian or Armenian, while the share of Europeans (Germans, Swedes, French, Italians) was as low as 13%.<sup>281</sup>

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277 Aer 1995, 55.

278 Lyashchenko 1970, 532.

279 Blackwell 1983, 418 - 419.

280 RUSCORP.

281 RUSCORP.

## 5.5 Innovations

Perspectives on the role of innovations in new industries cannot be straightforwardly implemented in clusters of Russian Empire in modern sense, because of the uneven technological development between average Western European country and Russia. For instance, innovations that shaped the industrial and corporate growth in Russia were almost entirely imported from the West rather than developed in local conditions. This is apparent from the evident lack of exported technology to Europe and the prosperity of foreign entrepreneurs in Russian industrialization.

Anneli Aer's study on the development of patent system of Imperial Russia gives some indications on the overall level of innovations within Russian industries. The Russian privilege legislation concerning patent rights was established in 1820s and updated in 1833 as an attempt by the government to promote the growth of new branches of industry.<sup>282</sup> Although already in 1860s the patent and privilege system aroused some concerns about the monopolistic possibilities, the amount of issued patents remained low. The number of 657 patents granted in Russia during the 1860 - 1870 shades in comparison with the patent figures from industrializing Western countries, such as United Kingdom (24090 granted patents), Belgium (19646 patents) or USA (90636 patents).<sup>283</sup> Partly explanatory factors for the low figures of patents include the bureaucratic system, which complicated applying procedures, and the cost of privilege applications. The relatively low success rate of patent applications, less than 50% by overall average, probably had also an adverse effect.<sup>284</sup> Nevertheless the share of foreigners among those, who were granted patents, was so high, approximately 80% during the period of industrialization in 1880 - 1907, that the quality of domestic technological innovativeness cannot be held in very high esteem.<sup>285</sup> Similar note can be drawn if the privilege figures are examined in the light of corporation entries. While both the amount of new corporations and privileges rose substantially during the late Tsarist era, the share of privileges per corporation did not increase much. The few available statistics contributed by Aer (see table 7) seem to suggest that although the last years of the 19<sup>th</sup> century had a positive effect on the patent system, the role of innovativeness can hardly be considered as a stout factor in the development of corporations and clusters.<sup>286</sup>

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282 Aer 1995, 3.

283 Aer 1995, 69.

284 Aer 1995, 72 - 73, 107 - 108, 185.

285 Aer 1995, 129, 187.

286 Aer's figures exclude the years 1907 - 1913. as well as any geographic data on the distribution of privileges within the Empire. Therefore a more cluster specific examination on the causalities between privileges and industrial performance cannot be concluded.

Unfortunately, Aer’s study does not outline the regional division of granted privileges, which would be essential in determining whether the cluster dynamics had a positive effect on the level of innovations. It would seem that due to the foreign investments as well as imports of machinery, managerial skills and technology into Russia, the modern implications in theory of Window of Location Opportunity, noting that emerging new industries have to invest in their own research and accretion of industry-specific skills as well as accumulate their own capital due to the lack of established sources of capital and skills, did not apply in cluster development of Russia.<sup>287</sup> In almost every regional cluster, Lodz, Baku, Podolia and Vladimir to name but a few, the main force behind the steep increase in firm entry levels was the introduction of Western industrial technologies and imported (or state-sponsored) capital in backward local conditions, which otherwise had favourable preconditions for industry-specific growth.<sup>288</sup> This can be seen as an illustration of the lame innovativeness in Russian economic culture – why spend effort in developing own industry-specific research, when modern technological and innovative imports from Europe are enough to ensure industrial success? Keeping in mind that in general the attitude towards industrial development which threatened to replace traditional culture was suspicious, the relative innovative disinterest may not appear that surprising.

Table 7. Chartered corporations and granted privileges in Russian Empire<sup>289</sup>

	Granted privileges	Privileges per annum	Chartered corporations	Corporations per annum	Privileges per corporation
1860 - 65	352	59	62	10	5.68
1866 - 70	305	61	88	18	3.47
1871 - 75	435	87	331	66	1.31
1876 - 80	706	141	127	25	5.56
1881 - 85	928	186	202	40	4.59
1894 - 98	2308	462	634	127	3.64
1899 - 1903	7014	1403	779	156	9.00
1904 - 1906	2961	987	257	86	11.52

Source: RUSCORP; Aer 1995, 69, 107, 184.

<sup>287</sup> Boschma & Ledder 2010, 193.

<sup>288</sup> Blackwell 1983, 392 - 393, 406 - 407; McKay 1984, 606 - 607; Kahan 1989, 17.

<sup>289</sup> The average processing time for a privilege between application and granting was around 2 years under the old statute until 1896, which should be taken into account in studying the table data. Aer 1995, 184.

Aer's work on the adaptation of the patent system into the Russian industrial culture is drawn into the same conclusion – apart from few minorities, Russian entrepreneurs did not really understand the role of innovativeness in industrial development and sometimes even saw it as a threat to the existing culture.<sup>290</sup> The significant role of foreign managers in the most successful industrial clusters, as seen before, indicates that often the same pattern applied in the sphere of structural and organizational innovations.<sup>291</sup> Further case studies would prove useful for a deeper understanding on the connection between the level of geographical concentration and innovations in Russian context.

### **5.6 Industrial life cycles, spinoffs and corporate survival**

The elements of cluster emergence that have been possible to pinpoint in Russian context are not unfortunately as easily linked to the examination of cluster dynamics during their life cycle. While RUSCORP statistics provide the data on vitality of clusters by listing new corporate entries, the actual periods of decline (through exits) are harder to date. In addition the remark made by Fornahl & Menzel that “theories explaining the dynamics of functioning clusters tell little about their evolution” is quite reversed here – the data on the evolution of clusters does not really signify the meaningful factors in the performance of clusters.<sup>292</sup>

Some estimations on the level of life cycles, outperforming and modernity of industrial corporations, can be made with the corporate survival data of RUSCORP as has been done in the table 8, which presents the entry dates of the corporations in most-clustered industries that still existed in the best covered (in terms of data variables) year 1914. Table data shows how the survival rates reflect industry-specific challenges in the late Tsarist era. It is elementary here to observe the varying length of time in table periodicals, for which comparative survival percentages have been added to supplement absolute survival figures. Also, the survival rate will naturally rise higher in the last periodicals, because the corporations are still going through their early cycles. Generally though, worth noticing is the exceptionally poor performance of finance (including banks) sector, which even during the last period could maintain less than half of all firm entries. Recurrent depression periods and lack of managerial skills, combined with state's arbitrary controlling over the development of banks caused the institutional weakness of Russian finance sector, which also hindered the overall availability of domestic credit and investments in Russian

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290 Aer 1995, 115 - 117.

291 RUSCORP.

292 Fornahl & Menzel 2010, 2.



Empire.<sup>293</sup> In largest industries, textiles and food products, the survival level seems to follow along same track with the exception of entry decade 1880 - 1889, which can be attributed to the rise of corporate textile clusters in Vladimir and Lodz (see table 3 in chapter 4). Technologically dependent mining and metal industry had relatively modest survival rates during the early period, while in petroleum-coal industry the strongest corporations were chartered either in early or late period. Many of these figures don't sit particularly well on Klepper's theories on industry spinoffs, according to which the early entrants are likely to outperform newcomers due to the lower entry barriers in the early phase and hazard rate in the early phase and weaker selection process.<sup>294</sup> Numerically, it doesn't seem that the early entrants had better survival rates than latecomers of the early 20<sup>th</sup> century in any major industry.<sup>295</sup>

One possible explanation for this phenomenon is the major role of foreign entrepreneurship and management in Russian enterprises, which can be seen as case-specific distorting factors that were not included in Klepper's model of spinoff-dynamics. For example in metal and mining industry as well as in chemical production, the increasing role of Western technologies and knowledge reverse the pattern suggested by Klepper. Further analysis on the performance of clusters in comparison to the major industries can be drawn from the table 9, where the survival rates of major clusters is calculated in similar method as has been done in table 8.

Overall, the clusters do seem to satisfy the theoretical presupposition that the survival rate in clusters exceeds the general level, but intriguingly this is not the case in Don Region metal & mining cluster or in St. Petersburg textile cluster. While in theory this might imply some sort of decline in cluster development towards homogeneity, the more probable reason here is that the overall emergence rate of these industries derived from other emerging clusters to such a high degree that, especially in Don Region, the lower emergence percentage did not imply decline as such but more because of creative destruction brought on by the influence of foreign competition. However, if the industries themselves fitted within Klepper's theory to rather varying degrees in table 8, the clusters here seem to highlight even further the deep geographical variations in industrial performance.

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293 Owen 1995, 33 - 34.

294 Klepper 2007; Boschma & Ledder 2010, 202 - 203.

295 That is not to say anything about the capital-based performance of the surviving firms. Large prospering firms, such as Nobel's petroleum enterprise may have had both influential role in firm survivals (1880 - 1889) due to the establishment of industrial framework and on the other hand discouraging (1890 - 1907) effect due to their monopolistic aims. In the limits of this study it is not, however, possible to fully analyze the effect of this phenomenon throughout the Russian Empire.

Table 8. Existing corporations in 1914 sorted by entry years in cluster-specific industries  
(percentage share of all entries in the industry)

Industry	1800 - 1860	1860 - 1880	1880 - 1889	1890 - 1899	1900 - 1907	1908 - 1913	Average year of emergence	Total
Food industry	5 (29%)	67 (51%)	27 (42%)	100 (51%)	59 (54%)	129 (74%)	1897	387 (56%)
Textiles	17 (35%)	38 (51%)	65 (65%)	89 (55%)	41 (49%)	98 (73%)	1894	348 (58%)
Mining & Metal industry	1 (14%)	8 (21%)	12 (35%)	61 (45%)	58 (54%)	88 (68%)	1902	228 (50%)
Wholesale & Retail Trade	0 (9)	2 (66%)	7 (70%)	28 (56%)	43 (72%)	99 (77%)	1905	179 (69%)
Finance, Insurance & Real Estate	7 (26%)	41 (41%)	6 (20%)	13 (31%)	6 (17%)	45 (44%)	1890	118 (35%)
Chemicals	1 (17%)	4 (20%)	7 (54%)	30 (45%)	20 (42%)	34 (52%)	1901	96 (44%)
Petro-coal industry	0 (1)	2 (50%)	9 (69%)	8 (24%)	10 (26%)	24 (50%)	1901	53 (38%)

Source: RUSCORP

On the basis of previously illustrated differences in the economic, social and geographical background of the main industrial regions, it seems plausible to conclude that locational and environmental attributes played a more important role in firm outperforming and survival than the generalized spinoff-dynamics. This is not to say that spinoff-related growth was non-existent, as for example in Ekaterinoslav mining & metal industry and Moscow textile industry the rate of survival remained high and even rose after the turn of the century. Baku and Don Region were further examples, where the average year of emergence among survived firms was timed in the 20<sup>th</sup> century and only in Podolia food industry and St. Petersburg textiles could the average be scheduled in the early period in context of the industrialization in Russian Empire. In these regions, there are two underlying factors contributing to this development: on one hand the concentration effect that caused merging and larger firm sizes, thus retaining the growth of absolute industrial output and on the other the failure to upgrade regions' industrial basis to offset variety-destroying processes.<sup>296</sup>

<sup>296</sup> Boschma 2004, 1010.

Table 9. Existing cluster-specific corporations in 1914 compared with cluster-specific entries in major clusters (existing corporations/chartered corporations)<sup>297</sup>

Industry	1800 - 1859	1860 - 1879	1880 - 1889	1890 - 1899	1900 - 1907	1908 - 1913	Average year of emergence	Total
Moscow textiles	2/10	21/27	21/30	18/40	17/23	36/46	1895	115/176 (65%)
Kiev food industry	0	14/21	4/7	24/35	3/9	8/12	1892	53/84 (63%)
Ekaterinoslav metal & mining	0/0	4/7	2/3	9/19	10/17	12/13	1900	37/59 (63%)
Podolia food industry	0	23/32	2/6	6/12	2/4	4/5	1883	37/59 (63%)
Lodz textiles	0/0	<b>1/0</b>	6/6	18/32	3/11	8/10	1898	36/59 (61%)
Don Region metal & mining	0/0	0/3	0/4	<b>4/3</b>	3/9	14/24	1907	21/43 (49%)
Baku petro- coal industry	0	1/2	<b>6/4</b>	6/23	6/23	8/18	1900	27/70 (39%)
St. Petersburg textiles	9/22	4/10	4/14	7/14	2/10	7/15	1881	33/85 (39%)

Source: RUSCORP

The factory-size analysis of St. Petersburg textiles as discussed before seems to imply that the former factor was strongly enough present to maintain the vitality of textile industry, but possibly at the cost of various cluster agglomeration benefits, which emerge in more competitive regional market. Nevertheless, St. Petersburg as a largely industrialized and diversified region was probably able to endure more homogeneity within a particular branch of industry, because supplementary industries were also capable of providing innovations and knowledge from their similar

<sup>297</sup> Few statistical anomalies in RUSCORP database cause the minor inconsistencies in the table data. The survival data from 1914 (File D) is not explicitly comparable to the corporation charters (Files A & B) due to different archival sources from which they are gathered. Therefore, some corporations may appear in charters in different operational locations and functions as they do in the existence data of 1914. In the table, the three bolded examples highlight this phenomenon, which may cause small-scale alterations in the data in tables 9 and 10. The bolded examples here are caused by changes in firm function after original chartering (1 company in Baku) and the change of primary operational location mentioned in the original charter (1 company in Baku, 1 company in Lodz and 1 company in Don Region). Further inconsistencies, although possible, were not found in compiling of the table.

technological space. One has to bear in mind also that the growth of industrial centres themselves, a sign of agglomeration economics, likely influenced spinoffs among other corporate functions. In Podolia, the long-lasting depression in new cluster entries was combined with the competition from Kiev, which was located just few hundred kilometres to the North-East. The mono-industrial structure of the region caused the cluster to drift towards the path where, in terms of Fornahl & Menzel, too little heterogeneity and diversity for new ideas stalled the development of both sugar cluster and the supplementary corporations in the region.<sup>298</sup>

### **5.7 Cluster life cycles**

According to Fornahl & Menzel, the precondition requirements for cluster stage development that conclude the emergence phase and begin the phase as operating cluster contain either company amount reaching “critical mass” and thus growth rates exceeding the rates in non-clustered companies or when the potential clusters’ ability to act as industrial focal point vanishes.<sup>299</sup> Though the RUSCORP data or other Tsarist documents do not provide possibility to comprehensively confirm the first condition due to the unreliable account practises<sup>300</sup>, the latter is also rather difficult to imply in Russian conditions because of the lacking survival rates from other periods. As the tables on the development of corporate emergence have showed, no significant decline in emergence rates (and confirmed with lack of firms in 1914 survival data) has been visible in any of the clusters presented in tables 2, 3 and 6 in chapter 4. The table 9 which illustrates the number of emerged “top-industry” corporations in clusters compared with all “top-industry” entries, indicates some difficulties in determining the appearance of “critical mass”. In Kiev, Podolia and Moscow, a large amount of prosperous (that survived till 1914) corporations seem to have emerged in 1860 - 1879, but the declining emergence rate of Podolia after 1880s and decades of slow emergence in Kiev in 1880s and 1900s imply that the influx of corporations in 1860 - 1879 should not be exaggerated. Podolia, with its dropping emergence rate remains the only cluster that could possibly be applied the status of transient focal point, but the fact that the region still had 37 sugar companies in 1914 (a major figure by Russian standards) does not indicate much of a decline in operations.

Although the outbreak of the World War I and the 1917 Bolshevik Revolution prevented the further natural development of Russian clusters, the examination of table 9 implies that measured by corporate entries, majority of clusters had at minimum attained the initial stage of emergence and

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298 Fornahl & Menzel 2010, 8, 16.

299 Fornahl & Menzel 2010, 29 - 30.

300 Owen 1995, 7.

already enjoyed agglomeration benefits through proximate location in similar technological space. Both the percentage of surviving corporations and the emergence rate were growing rapidly despite occasional setbacks caused by political unrests and economic depressions (see Figure 3 in chapter 4).

## 6 CONCLUSIONS

Due to the exceptional historical setting in this study for which modern cluster theories were never intended to implement, it would be too much of a simplification to conclude much of the overall vitality and sophistication of cluster forms in Russia, as some might even claim them the opposite due to the backward industrial practises and comparisons with contemporary European industries. Nevertheless, the findings suggest that although never competitive in international scale, the survival rate of clusters and their relative benefits inside the Russian Empire made them still capable assets in regional economic development and ones which in state-supported conditions could spearhead the industrialization under Tsarist regime. The geographical concentration of Russian industrialization was not just concentration of private enterprises in regions, but also the concentration of industrial technology and knowledge. After the corporations started to emerge into the core of the Russian economy in the 1870s, the regional variances grew alongside further dividing the gap between agricultural and industrial districts. The largest contrast was between the two capitals, Moscow and St. Petersburg which accounted for approximately one half of all corporate entries, and the rest of the Empire. Within industrial regions, various networks started to develop aiming to influence local policies with entrepreneurial interests. Above all this, the government sought to institutionally support the emergence of Russian industry and thus corporations. These factors listed here all have a part in the modern interpretation of a cluster, yet the pattern of emergence in Imperial Russia does not implicitly rely on the reasons compiled in the cluster studies which have been used in supportive role in this study.

By studying the corporate entries from RUSCORP and supplementary research literature, the major clusters have been possible to identify along with the most prominent reasons behind their emergence. These findings have been compiled in the table 10. Reflecting on the explanations that are offered in cluster literature for emergence, such as knowledge accumulation, labour supply and spinoffs, it is quite striking that only Lodz appears to have emerged as industrial cluster without the benefit of either natural resources or urban environment, although the latter quickly emerged along with the concentrated textile industry. Moreover, the role of foreign technology was very prominent in the emergence and growth of Russian clusters. As the tables 2, 3 and 6 suggest, the only three clusters without significant foreign influence in technology, Odessa, Kiev and Podolia, remained in a secondary role in terms of industrial production (Kiev ranked 5<sup>th</sup> in the table 3 and 9<sup>th</sup> in the table 6, Odessa being 7<sup>th</sup> in both respectively) or even experienced a declining entry rate (Podolia, see table 9). Returning to the modern definitions that contribute to the cluster emergence,

Russian industries did include several noteworthy attributes. Evidently important factors include here the role of (foreign) technology, knowledge and skilled labour (in the form of management), supportive institutions (state investments, railroads, banks). The development of the patent amounts indicates, however, that the role of innovations and spinoffs was not as important in Russian Empire as it is thought in modern economies. A partial explanation for this was the presence of superior foreign technology which discouraged production inventiveness, but also institutional features, such as the weakness of patent legislation and perhaps to some extent the cultural suspicions towards modern technology.

Table 10. Major clusters in Russian Empire and their clustering

<b>Cluster</b>	<b>Major industry</b>	<b>Emergence period</b>	<b>Explanations behind clustering</b>
Baku	Oil, petroleum	1880s	Natural resources, foreign technology, increased transport possibilities
St. Petersburg	Several (textiles, metal industry, etc.)	Pre-1860s	Capital status, urban environment, foreign technology, available capital sources, governmental presence, seaport, increased transport possibilities
Moscow	Several (textiles etc.)	Pre-1860s	Capital status, urban environment, foreign technology, available capital sources, governmental presence, traditional market centre, established merchant networks
Lodz	Textiles	1870s	Foreign technology, foreign management, entrepreneurial traditions, foreign investments, skilled labour
Warsaw	Several (chemicals, metal industry, food industry)	Pre-1860s	Networks to European industrialization, foreign technology, capital status, urban environment, skilled labour, increased transport possibilities
Don Region	Mining	1880s	Natural resources, foreign entrepreneurship, foreign technology, entrepreneurial networking, foreign investments, state investments, increased transport possibilities, seaport
Kiev	Food industry (sugar)	1860s	Skilled labour supply, urban environment, natural resources (fertile soil)
Odessa	Several (food industry, finance etc.)	Pre-1860s	Seaport, urban environment, traditional market centre
Ekaterinoslav	Mining	1870s	Natural resources, foreign technology, increased transport possibilities
Podolia	Food industry	1860s	Natural resources (fertile soil), entrepreneurial networks

While the conceptual testing of modern cluster model in Tsarist economy might seem somewhat unorthodox way of examining 19<sup>th</sup> century industrial structures, the results indicate that the historical sources present a valuable environment that may help cluster theorists to evaluate more accurately the impact of the factors that are thought functionally essential in clusters. The necessity of cluster attributes is dependent on the environment in predicting the cluster outcome. This point is also illuminated if one tries to apply theoretic economic suppositions, such as perfect competition, non-regulated markets or equal access to information, in modelling the economy of the Russian Empire. Thus accordingly, the results of this study should not be too eagerly generalized to imply the attributes that are or are not important in modern cluster emergence. More detailed approaches are necessary to conclusively measure the importance of each attribute in formation of clusters. Such qualitative measuring and detailed comparison of attributes would certainly provide a more accurate picture of clusters in the case of Russian Empire as well.

Another theme demanding further attention is the fate of the clusters after the collapse of the Tsarist state. The Bolshevik rule meant rapid decline for the private corporatism, but even during the Soviet era the major industrial districts of the 19<sup>th</sup> century remained active. This arouses the question, whether the cluster dynamics also contributed to the Soviet era performance of these regions and what was the effect of the different economic policy on clusters. Furthermore, how did this effect impact on the attributes compiled in the table 10 that had shaped the formation and performance of clusters? Theoretically, it would seem plausible that the transition of the economic environment would influence the cluster attributes and therefore also the outcomes. A corresponding study on the Soviet clusters, especially the ones that emerged during 20<sup>th</sup> century, might further contribute to the understanding of cluster functioning in Russia and in economies experiencing massive societal transitions.



## SOURCES

### I Primary Sources

Owen, Thomas C. RUSCORP: A Database of Corporations in the Russian Empire, 1700 - 1914 [Computer file]. 3rd release. Baton Rouge, LA: Thomas C. Owen [producer], 1992. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 1993. <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/9142> cited 24.04.2015.

### II Literature

Aer, Anneli (1995), *Patents in Imperial Russia: A History of the Russian Institution of Invention Privileges Under the Old Regime*. Helsinki: Suomalainen tiedeakatemia.

Ahonen, Kalevi (2005). *From Sugar Triangle to Cotton Triangle: Trade and Shipping between America and Baltic Russia, 1783 - 1860*. Jyväskylä: University of Jyväskylä Printing House.

Anan'ich, Boris (2006), *Bankirskie Doma v Rossii, 1860 - 1914 gg.: Ocherski Istorii Chastnogo Predprinimatel'stva*. Moscow: Gosspen. (1<sup>st</sup> edn. 1991).

Anan'ich, Boris (1988), 'The Russian Private Banking Houses 1870 - 1914', *The Journal of Economic History*, Vol.48, No. 2, 401 - 407.

Arthur, W. B. (1994), *Increasing Returns and Path Dependence in the Economy*. Michigan (US): University of Michigan Press.

Bater, James H. (1976), *St. Petersburg: Industrialization and Change*. London: Edward Arnold.

Bater, James H. (1983), 'The Industrialization of Moscow and St. Petersburg'. In Bater, French (ed.), *Studies in Russian Historical Geography Volume 2*. London: Academic Press. 279 - 301.

Bathelt, Harald (2002), 'The Re-Emergence of a Media Industry Cluster In Leipzig'. *European Planning Studies*, Vol. 10, No.5, 583 - 611.

Bathelt, H., Malmberg, A., & Maskell, P. (2004), 'Clusters and Knowledge: Local Buzz, Global Pipelines and the Process of Knowledge Creation'. *Progress in Human Geography* Vol. 28 No. 1, 31 - 56.

Bathelt, Harald & Schuldt, Nina (2008), 'Between Luminaires and Meat Grinders: International Trade Fairs as Temporary Clusters'. *Regional Studies*, Vol. 42, No. 6, 853 - 868.

Becattini, G. (1990), 'The Marshallian Industrial District as a Socio-Economic Notion'. In Pyke, F., et. al. (eds.), *Industrial Districts and Inter-Firm Co-Operation in Italy*, Geneva: International Institute for Labour Studies, 37 - 55.

Blackwell, William L. (1968), *Beginnings of Russian Industrialization, 1800-1860*. Princeton: Princeton University Press.

- Blanchard, Ian (2000), 'Russian Railway Construction and the Urals Charcoal Iron and Steel Industry, 1851-1914'. *The Economic History Review*, Vol. 53, No. 1, 107 - 126.
- Bobovic, I.M. (1995), *Èkonomicheskaja Istorija Rossii 1861 - 1914 Gody - Uchebnoe Posobie*. St. Petersburg: Izd-vo SPBUÈF.
- Bojcov, A.S. & Kostjaev, A.I. (2009), 'K Voprosu o Teorii Klasterov i Klasternom Podhode'. *Èkonomika Sel'skhozjajstvennyh i Pererabatyvajushchih Predpriyatij*, Vol. 10, 25 - 32.
- Boschma, R. & van der Knaap, G.A.(1999), 'New High-Tech Industries and Windows of Locational Opportunity: The Role of Labour Markets and Knowledge Institutions During the Industrial Era'. *Geografiska Annaler: Series B, Human Geography* Vol. 81, No. 2., 73 - 89.
- Boschma, R., & Ledder, F. (2010), 'The Evolution of the Banking Cluster of Amsterdam 1850-1993: A Survival Analysis'. In Fornahl, Henn & Menzel (eds), *Emerging Clusters. Theoretical, Empirical and Political Perspective on the Initial Stage of Cluster Evolution*. Cheltenham: Edward Elgar Publishing, 191 - 213.
- Bradley, Joseph (1986), 'Moscow: From Big Village to Metropolis'. In Hamm, M. F. (ed.), *The City in Late Imperial Russia*. Indiana: Indiana University Press, 9 - 42.
- Bresnahan, T. & Gambardella, A. (2004), *Building High-Tech Clusters, Silicon Valley and Beyond*. Cambridge: Cambridge University Press.
- Bresnahan, T., Gambardella, A., & Saxenian, A. (2001), '“Old Economy” Inputs for “New Economy” Outcomes: Cluster Formation in the New Silicon Valleys'. *Industrial and Corporate Change* Vol. 10 No. 4, 835 - 860.
- Brower, Daniel R. (1982), 'Labor Violence in Russia in the Late Nineteenth Century'. *Slavic Review* Vol. 41, No. 3, 417 - 431. (JSTOR, JYU)
- Brusco, Sebastian (1982), 'The Emilian Model: Productive Decentralisation and Social Integration'. *Cambridge Journal of Economics* Vol. 6, No. 2, 167 - 184. (JSTOR, JYU)
- Buenstorf, G. & Klepper, S. (2009), 'Heritage and Agglomeration: The Akron Tyre Cluster Revisited'. *The Economic Journal* Vol. 119, No. 537, 705 - 733.
- Burds, Jeffrey (1991), 'The Social Control of Peasant Labor in Russia: The Response of Village Communities to Labor Migration in the Central Industrial Region, 1861–1905'. In Kingston-Mann & Mixter (eds.), *Peasant Economy, Culture, and Politics of European Russia, 1800 - 1921*, 52 - 100.
- Capecchi, V. (1997), 'In Search of Flexibility: The Bologna Metalworking Industry, 1900–1992'. In Sabel & Zeitlin (eds.), *Worlds of Possibilities: Flexibility and Mass Production in Western Industrialization*, Cambridge: Cambridge University Press, 381- 418.
- Chandler, Alfred (1992), 'Organizational Capabilities and the Economic History of the Industrial Enterprise'. *The Journal of Economic Perspectives*, Vol. 6, No. 3, 79 - 100.

- Clarkson, L.A. (2003), 'Domestic Industry'. In Mokyr (ed.), *The Oxford Encyclopedia of Economic History Volume 2*. New York: Oxford University Press, 98 - 103.
- Corrsin, Stephen (1986), 'Warsaw: Poles and Jews in a Conquered City'. In Hamm, M. F. (ed.), *The City in Late Imperial Russia*. Indiana: Indiana University Press, 123 - 176.
- Crisp, Olga (1976), *Studies in the Russian Economy Before 1914*. Plymouth: The Macmillan Press.
- Crisp, Olga (1978), 'Labour and Industrialization in Russia'. In Mathias & Postan (eds.) *The Cambridge Economic History of Europe, Vol. 7, Pt. 2*, 308 - 330.
- Dahlmann, Dittmar & Schiede, Carmen (eds.) (1998), *Das Einzige Land in Europa, das Eine Grosse Zukunft vor sich hat: Deutsche Unternehmen und Unternehmer im Russischen Reich im 19. und Frühen 20. Jahrhunderts*. Essen, Klartext.
- De Vries, Jan (1994), 'The Industrial Revolution and the Industrious Revolution'. *The Journal of Economic History*, Vol. 54, No. 2, 249 - 270.
- Évstratov, A.V. (2011), 'Regional'naja Specifika Formirovaniya Farmaceuticheskikh Klasterov v Sovremennoj Rossii'. *Izvestija Volgogradskogo Gosudarstvennogo Tehnicheskogo Universiteta*, Vol. 4, No. 11, 210 - 215.
- Fornahl, D., Henn, S., & Menzel, M. (2010), *Emerging Clusters: Theoretical, Empirical and Political Perspectives on the Initial Stage of Cluster Evolution*. Cheltenham: Edward Elgar Publishing.
- French, R.A. (1983), 'Canals in Pre-Revolutionary Russia'. In Bate & French (eds.), *Studies in Russian Historical Geography Volume 2*. London: Academic Press, 451 - 481.
- Gatrell, Peter (1982), 'Industrial Expansion in Tsarist Russia, 1908–14'. *The Economic History Review* Vol. 35 No.1, 99 - 110.
- Gatrell, Peter (1986), *The Tsarist Economy, 1850-1917*. London: B.T. Batsford Ltd.
- Gerschenkron, Alexander (1947), 'The Rate of Industrial Growth in Russia Since 1885'. *The Journal of Economic History* Vol. 7 No. 1, 144 - 174.
- Gerschenkron, Alexander (1962), *Economic Backwardness in Historical Perspective: A Book of Essays*. Cambridge: MA Belknap Press.
- Gerschenkron, Alexander (1965), 'Agrarian Policies and Industrialization: Russia 1861–1917'. In Postan & Habakkuk (eds.), *The Cambridge Economic History of Europe, Vol. 6, Pt. 2*. Cambridge: Cambridge University Press, 706 - 800.
- Geyer, Dietrich (ed.) (1975), *Wirtschaft und Gesellschaft im Vorrevolutionären Russland*. Köln: Kiepenhauer & Witsch.
- Gindin, J.F. (1927), *Banki i Promyshlennost' v Rossii do 1917 g.: K Voprosu o Finansovom Kapitale v Rossii*. Moscow: Promizdat.

- Gindin, J.F. (1960), *Gosudarstvennyj Bank i Ekonomicheskaja Politika Carskogo Pravitel'stva*. Moscow: Gosfinizdat.
- Gindin, J.F. (1968), *Pravitel'stvennaja Podderzhka Ural'skih Magnatov vo Vtoroj Polovine XIX-nachale XX v.. Istoricheskie Zapiski Vol. 82, 120 - 162*.
- Gohstand, R (1983), 'The Geography of Trade in Nineteenth-Century Russia'. In Bater, French (ed.), *Studies in Russian Historical Geography Volume 2*. London: Academic Press. 329 - 376.
- Grant, J. A. (1999), *Big Business in Russia: The Putilov Company in Late Imperial Russia, 1868–1917*. Pittsburgh: University of Pittsburgh Press.
- Gregory, Paul (1994), *Before Command: An Economic History of Russia from Emancipation to the First Five-Year Plan*. New Jersey: Princeton University Press.
- Gregory, Paul (2004), *Russian National Income, 1885-1913*. Cambridge: Cambridge University Press.
- Hamm, M.F. (1986), 'Continuity and Change in Late Imperial Kiev'. In Hamm, M. F. (ed.), *The City in Late Imperial Russia*. Indiana: Indiana University Press, 79 - 122.
- Hamm, M. F. (1986), *The City in Late Imperial Russia*. Indiana: Indiana University Press.
- Henn, S., & Laureys, E. (2010), 'Bridging Ruptures: The Re-Emergence of the Antwerp Diamond District After World War II and the Role of Strategic Action'. In Fornahl, Henn & Menzel (eds.), *Emerging Clusters: Theoretical, Empirical and Political Perspectives in the Initial Stage of Cluster Evolution*. Cheltenham: Edward Elgar, 74 - 96.
- Henriksson, Anders (1986), 'Riga: Growth, Conflict, and the Limitations of Good Government, 1859 - 1914'. In Hamm, M. F. (ed.), *The City in Late Imperial Russia*. Indiana: Indiana University Press, 177 - 208.
- Hromov, P.A. (1950), *Ékonomicheskoe Razvitie Rossii v XIX - XX Veka*. Moscow: Gospolitizdat.
- Jääskeläinen, Jari (2001), *Klusteri tieteen ja politiikan välissä*. Helsinki: Taloustieto Oy.
- Kahan, Arcadius (1978), 'Capital Formation During the Period of Early Industrialization in Russia, 1890-1913'. In Mathias & Postan (eds.) *The Cambridge Economic History of Europe, Vol. 7, Pt. 2*. Cambridge: Cambridge University Press, 265 - 307.
- Kahan, A. (1989), *Russian Economic History: The Nineteenth Century*. Chicago: University of Chicago Press.
- Kaser, M. C. (1978), 'Russian Entrepreneurship'. In Mathias & Postan (eds.) *The Cambridge Economic History of Europe, Vol. 7, Pt. 2*, 416 - 493.
- Kenney, M., & Von Burg, U. (1999), 'Technology, Entrepreneurship and Path Dependence: Industrial Clustering in Silicon Valley and Route 128'. *Industrial and Corporate Change, Vol. 8, No. 1*, 67 - 103.

- Klepper, Steven (2002), 'The Capabilities of New Firms and the Evolution of the US Automobile Industry'. *Industrial and Corporate Change*, Vol. 11, No. 4, 645 - 666.
- Klepper, S., & Sleeper, S. (2005), 'Entry by Spinoffs'. *Management Science*, Vol. 51, No. 8, 1291 - 1306.
- Klepper, Steven (2007), 'Disagreements, Spinoffs, and the Evolution of Detroit as the Capital of the US Automobile Industry'. *Management Science*, Vol. 53, No. 4, 616 - 631.
- Korchagina, N.A. & Rakieva, O.B. (2009), 'Ocenka Urovnja Razvitija i Soderzhanija Klasternoj Politiki v Rossijskih Regionah'. *Trudy Vol'nogo Ékonomičeskogo Obščestva Rossii*, Vol. 115, No. 4, 176 - 208.
- Krugman, P. R. (1991), *Geography and Trade*. Massachusetts: MIT Press.
- Kut'in, V.N. (2003), 'Territorial'naja Ékonomičeskaja Klasterizacija (Klassifikacija) Regionov Rossii: Social'no-Geoékonomičeskij Aspekt'. *Bezopasnost' Evrazii*, Vol. 1, 525 - 539.
- Lamberg, Juha-Antti & Ojala, Jari (2006), 'Co-Evolution of Institutions and Strategies. Finnish Pulp and Paper Industry 1918 - 1995'. *Nordiske Organisasjonsstudier*, Vol. 7, No. 3 - 4, 53 - 86.
- Laverychev, V. Ja. (1974), *Krupnaja Buržuazija v Poreformennoj Rossii: 1861 - 1900*. Moscow: Mysl'.
- Lenin, V. I. (1954), 'Kapitalismin kehitys Venäjällä' 4th edition. In V.I. Leninin teokset, osa 3. Petroskoi: Karjalais-Suomalaisen SNT:n valtion kustannusliike (1<sup>st</sup> edn., 1899).
- Lyashchenko, Peter (1970), *History of the National Economy of Russia to the 1917 Revolution*. New York: The Macmillan Company. 1<sup>st</sup> edn. in 1949.
- Magocsi, P. R. (2010), *A History of Ukraine: The Land and Its Peoples*. Toronto: University of Toronto Press.
- Mahoney, James (2004), 'Comparative-Historical Methodology'. *Annual Review of Sociology*, Vol. 30, 81 - 101.
- Marshall, Alfred (1922), *Principles of Political Economy*, 8<sup>th</sup> edition. London: Macmillan Press (1<sup>st</sup> edn., 1890).
- Martin, R., & Sunley, P. (2003), 'Deconstructing Clusters: Chaotic Concept or Policy Panacea?'. *Journal of Economic Geography*, Vol. 3, No. 1, 5 - 35.
- McCaffray, S. P. (1987), 'Origins of Labor Policy in the Russian Coal and Steel Industry, 1874-1900'. *The Journal of Economic History*, Vol. 47 No. 4, 951 - 965.
- McCaffray, S. P. (1988), 'The Association of Southern Coal and Steel Producers and the Problems of Industrial Progress in Tsarist Russia'. *Slavic Review*, Vol. 47, No. 3, 464 - 482.

- McKay, J. P. (1984), 'Baku Oil and Transcaucasian Pipelines, 1883 - 1891: A Study in Tsarist Economic Policy'. *Slavic Review*, Vol 43, No. 4, 604 - 623.
- Nekrasov, R.V. (2009), 'Opyt Razvitija Klasterov v Samarskoj Oblasti'. *Ékonomika Sel'skoho zjajstvennyh i Pererabatyvajushchih Predpriyatij*, Vol. 6, 28 - 31.
- Ojala, Jari, Voutilainen, Miikka & Lamberg, Juha-Antti (2012), 'The Evolution of the Global Paper Industry: Concluding Remarks'. In Lamberg, Ojala, Peltoniemi & Särkkä (eds.) *The Evolution of Global Paper Industry 1800 - 2050; A Comparative Analysis*. World Forests Vol. 17, Dordrecht: Springer, 345 - 363.
- Owen, T. C. (1981), *Capitalism and Politics in Russia: A Social History of the Moscow Merchants, 1855 - 1905*. New York: Cambridge University Press.
- Owen, T. C. (1995), *Russian Corporate Capitalism from Peter the Great to Perestroika*. New York: Oxford University Press.
- Owen, T. C. (2002a), *The Corporation Under Russian Law, 1800 - 1917: A Study in Tsarist Economic Policy*. Cambridge University Press.
- Owen, T.C. (2002b), *RUSCORP: A Database of Corporations in the Russian Empire 1700 - 1914, Codebook*. ICPSR Release: Ann Arbor, Michigan. [http://www.icpsr.umich.edu/cgi-bin/file?comp=none&study=9142&ds=0&file\\_id=744537&path=ICPSR](http://www.icpsr.umich.edu/cgi-bin/file?comp=none&study=9142&ds=0&file_id=744537&path=ICPSR) cited 28.04.2015.
- Owen, T. C. (2005), *Dilemmas of Russian Capitalism: Fedor Chizhov and Corporate Enterprise in the Railroad Age*. Massachusetts: Harvard University Press.
- Poplawska, I., & Muthesius, S. (1986), 'Poland's Manchester: 19th-Century Industrial and Domestic Architecture in Lodz'. *Journal of the Society of Architectural Historians*, Vol. 45, No.2, 148 - 160.
- Popp, A. & Wilson, J. (2007), 'Life Cycles, Contingency, and Agency: Growth, Development, and Change in English Industrial Districts and Clusters'. *Environment and Planning*, Vol. 39, No. 12, 2975 - 2992.
- Portal, Roger (1966), 'The Industrialization of Russia'. In Postan & Habakkuk (eds.), *The Cambridge Economic History of Europe*, Vol. 6, Pt. 2, 801 - 872.
- Porter, M. (1991), *Kansakuntien kilpailuetu*. Keuruu: Otava.
- Porter, M. E. (1998), 'Clusters and the New Economics of Competition'. *Harvard Business Review*, Vol. 76, No. 6, 77 - 90.
- Rieber, Alfred J. (1982), *Merchants and Entrepreneurs in Imperial Russia*. North Carolina: University of North Carolina Press.
- Ruckman, J. A. (1984), *The Moscow Business Elite: A Social and Cultural Portrait of Two Generations, 1840 - 1905*. Illinois: Northern Illinois University Press.

- Rudolph, R. L. (1985), 'Agricultural Structure and Proto-Industrialization in Russia: Economic Development with Unfree Labor'. *The Journal of Economic History*, Vol. 45, No. 1, 47 - 69.
- Sabel, C. & Zeitlin, J. (1985), 'Historical Alternatives to Mass Production: Politics, Markets and Technology in Nineteenth-Century Industrialization. Past and Present, Vol. 108, 133 - 176.
- Samohin, Ju. M. (2001), *Ékonomicheskaja Istorija Rossii - Uchebnoe Posobie*. Moscow: GU VSHÈ.
- Sartori, Giuseppe (1970), 'Concept Misformation in Comparative Politics'. *American Political Science Review*, Vol. 64, No.4, 1033 - 1053.
- Scranton, Peter (1997), *Endless Novelty. Specialty, Production and American Industrialization, 1865 - 1925*. New Jersey: Princeton University Press.
- Shalmina, G.G. (2008), 'Territorial'nye Klastery Rossii (Istorija, Problemy, Reshenija)'. *Vestnik Tomskogo Gosudarstvennogo Universiteta Ékonomika*, Vol. 1, 82 - 92.
- Shepelev, Leonid (1977), *Otmennyye Istoriej: Chiny, Zvanija i Tituly v Rossiiskoi Imperii*. Leningrad: Nauka.
- Shepelev, Leonid (1981), *Carizm I Burzhuzazija vo Vtoroj Polovine XIX Veka: Problemy Torgovo-Promyshlennoj Politiki*. Leningrad: Nauka.
- Spring, Derek (1975), 'Railways and Economic Development of Turkestan Before 1917'. In Symons & White (eds.), *Russian Transport: An Historical And Geographic Survey*. London: G. Bell & Sons Ltd.
- Spulber, Nicolas (2003), *Russia's Economic Transition From Late Tsarism to the New Millenium*. Cambridge: Cambridge University Press.
- Storper, M. & Venables, A. J. (2004), 'Buzz: Face-to-Face Contact and the Urban Economy'. *Journal of Economic Geography*, Vol. 4, No. 4, 351 - 370.
- Strel'cov, D.I. & Artamonova, Ju. S. (2014), 'Osobennosti formirovanija territorial'no-otraslevyh strojindustrii'. *Sovremennye Problemy Nauki I Obrazovanija*, Vol. 2, 1 - 8.
- Suzuki, Takeo (1993), 'The Peasant Commune in the Development of Capitalism in Russia: From a Study of the Communes in Moscow Province After the Reforms of 1860s'. *Waseda Economic Papers*, No. 32, 41 - 49.
- Symons & White (1975), *Russian Transport: An Historical And Geographic Survey*. London: G. Bell & Sons Ltd.
- Timoshina, T.M. (1999), *Ékonomicheskaja Istorija Rossii - Uchebnoe Posobie*. Moscow: Filin'.
- Von Laue, T. H. (1951), 'The Industrialization of Russia in the Writings of Sergej Witte'. *American Slavic and East European Review*, Vol. 10, No. 3, 177 - 190.

- Von Laue, T. H. (1953), 'The High Cost and the Gamble of the Witte System: A Chapter in the Industrialization of Russia'. *The Journal of Economic History*, Vol. 13, No.4, 425 - 448.
- Von Laue, T. H. (1954), 'A Secret Memorandum of Sergei Witte on the Industrialization of Imperial Russia'. *The Journal of Modern History*, Vol. 26, No. 1, 60 - 74.
- Wenting, R. & Frenken, K. (2011), 'Firm Entry and Institutional Lock-In: An Organizational Ecology Analysis of the Global Fashion Design Industry'. *Industrial and Corporate Change*, Vol. 20, No.4, 1031 - 1048.
- White, C.M. (1975), 'The Impact of Russian Railway Construction for Grain in the 1860s and 1870s', In Symons & White (eds.), *Russian Transport: An Historical And Geographic Survey*. London: G. Bell & Sons Ltd.
- Wilkins, Mira (1998), 'Multinational Enterprises and Economic Change'. *Australian Economic History Review*, Vol. 38, no. 2, 103 - 134.
- Wilkins, Mira (2009), 'The History of the Multinational Enterprise'. In Rugman, A.M (ed.), *The Oxford Handbook of International Business*, New York: Oxford University Press, 3 - 39.
- Zeitlin, Jonathan (2007), 'Industrial Districts and Regional Clusters'. In Jones & Zeitlin (eds.), *The Oxford Handbook of Business History*. New York: Oxford University Press, 219 - 243.

### **III Internet sources**

- US Standard Industrial Classification 1987,  
[http://www.secinfo.com/\\$/SEC/SIC.asp?Start=#Standards](http://www.secinfo.com/$/SEC/SIC.asp?Start=#Standards) cited 24.04.2015



## APPENDIX

### I Appendix A. – RUSCORP-database location codes

The RUSCORP-database (Files A, B, D, F) uses the same system of location codes as the report of the 1897 imperial Russian census, in which each province has own numerical code from 01 to 89. Few additional codes have been added by the compiler Thomas C. Owen. In this study, regions have been classified using the first two-digits of each code (for example “St. Petersburg” includes all firms that have location code from 3700 to 3799).

The four-digit codes that appear in the RUSCORP database are stated in the database codebook<sup>301</sup>.

### II Appendix B – Specifications for tables and figures

The regions used in the tables derive from the four-digit codes presented in Appendix A. In the RUSCORP data the used variables for table 1 have been LOC1-code which indicates the primary operational location of the corporation and HQ-code which indicates the location of corporation’s administrative headquarters. The tables have been compiled as follows:

#### Table 1

##### Poland & Belarus

- Plock(57xx), Warsaw (51xx), Lodz & Piotrkow (56xx), Kielce (53xx), Lublin (55xx), Radom (58xx), Vitebsk (05xx), Belostok & Grodno (11xx), Kalisz (52xx), Minsk (22xx), Mogilev & Gorki (23xx), Siedlce (60xx), Lomza (54xx), Suwalki (59xx), Nieman (9206), Vistula (9207), West(17xx, 04xx, 11xx, 22xx, 23xx, 05xx, 40xx), Kingdom of Poland (51x-60xx, 9206-07)

##### Ukraine

- Kiev (16xx), Odessa (47xx), Ekaterinoslav, Rostov na Don, Kharkov, Simferopol, Vinnitsa & Podolia, Volynia, Poltava, Chernigov, Bessarabia, Dnepr, South

##### Western Russia

- Voronezh, Vladimir, Perm, Nizhnyj Novgorod, Saratov, Kursk, Tver, Kostroma, Yaroslav, Novgorod, Tula, Orenburg, Ryazan, Samara, Tambow, Archangel, Orel, Kazan, Viatka, Kaluga, White Sea, Smolensk, Olonetsk, Simbirsk, Ladoga, Penza, Pskov, Ufa, Vologda, Arctic Sea, Barents, Chud & Pskov, Don & Donets, Volga, North Dvina & Pechora, Central, Volga-Ural, North, Finland

##### Baltic Region

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301 Owen 2002b, 68 - 87.

- Riga & Livland, Baltic Sea, Courland, Reval & Estland, Vilna, Kovno, Western Dvina, Baltic

#### Central Asia

- Baku (61xx), Fergana, Caspian Sea, Astrakhan, Semipalatinsk, Syr Daria & Tashkent, Elizavetpol, Samarkand, Uralsk, Akmolinsk, Turgai, Aral, Central Asia, Transcaspian

#### Caucasus

- Kuban, Terek, Tiflis, Kutais, Black Sea, Chernomorsk, Dagestan, Azov Sea, Erevan, Stavropol, Caucasus

#### Siberia & Far East

- Maritime Region, Enisei, Irkutsk, Tomsk, Amur Yakutsk, Transbaikal, Sakhalin, Sea of Japan, Sea of Ohotsk, Tobolsk, Indian Sea, Amur, North Eastern Siberian rivers, Lena, Enisei, Ob, Siberia & Far East

#### Moscow

- Moscow (24xx)

#### St. Petersburg

- St. Petersburg (37xx)

#### Not-classified

- Foreign countries in general, Entire Empire, Africa, Turkey, Persia, South Asia, Mongolia, China, Korea, Japan, Unspecified foreign country, Location not-specified

The four-digit function codes used in the RUSCORP database are borrowed from the Standard Industrial Classification (SIC) system from the year 1987.<sup>302</sup> The system consists of 9999 codes which define the function of industrial enterprises. The used variable in the tables has been FUNC1 which indicates the primary function of each corporation. The codes in the tables of this study are combined in following categories:

#### Tables 2, 3, 5 & 6

Finance, Insurance, Real Estate	60xx
Other	38xx, 70xx, 72xx, 25xx, 39xx, 99xx, 42xx, 48xx, 80xx, 79xx, 73xx, 82xx
Textiles	22xx, 31xx, 23xx
Food Industry & Tobacco	20xx, 21xx
Chemicals	28xx
Electricity, gas and water equipment	49xx
Paper, lumber, wood, forestry	24xx, 26xx, 08xx
Transportation	41xx, 27xx, 47xx
Transport equipment	37xx
Metal Industry	33xx, 34xx
Water transportation	44xx

302 [http://www.secinfo.com/\\$/SEC/SIC.asp?Start=#Standards](http://www.secinfo.com/$/SEC/SIC.asp?Start=#Standards) cited 24.04.2015.

Railroad construction	40xx
Machinery	35xx
Stone, glass, clay industries	32xx
Wholesale & retail trade	50xx, 51xx, 56xx, 59xx, 53xx
Mining	10xx, 11xx, 12xx, 13xx, 14xx
Agriculture	00xx-09xx
Petroleum & coal industry	29xx, 46xx
Rubber & plastic industry	30xx
Electricity	36xx
Construction	15xx, 16xx, 17xx
Printing, publishing	27xx

**Table 4**

Petroleum products:	29xx, 13xx
Coal:	11xx, 12xx
Iron and steel, (inc. rails):	10xx, 33xx, 347x, 40xx
Lumber:	24xx
Sugar:	206x
Cotton & Wool:	22xx