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The Role of Historical Regional Development
in Kazakhstan's Post-Soviet Economic Transformation

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To my parents

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Abstract

The study analyses data from a survey of Kazakhstani industrial enterprises in order to examine the relationship between industrial performance and the interregional structure of the economy. The study employs a firm-level production function approach, which captures the relationship between the production performance of an enterprise and its industrial and regional characteristics. A transformation of the production function approach allows the employment of a multinomial logit framework. Estimations of the logit model were made on the basis of more than 4000 observations of Kazakhstani industrial enterprises, in total, for the period between 1997 and 2001 on a quarterly basis. The data employed in the research consists of a mixture of secondary data from the national statistics agencies plus questionnaire data from a survey on individual Kazakhstani industrial enterprises. The dependent variable employed in the estimated model is a qualitative measure of the production performance of individual Kazakhstani industrial enterprises, while independent variables include individual, industry-specific and location-specific characteristics of the regional industrial enterprises. Model estimations for 20 quarters of the transition economy in chronological sequence indicate a picture of fluctuations and instability in the recovery of industrial enterprises from the shock effect of the Soviet collapse. The results of the study found support for the argument that the process of economic transition engenders significant spatial industrial restructuring, and that in addition to the characteristics of individual enterprises, the spatial aspects of this restructuring are key determinants of firm performance. Moreover, these effects of spatial restructuring appeared to dominate both industry-specific and location-specific characteristics.

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Introduction

1. The significance of the study

The regional development in transition is becoming an increasingly important issue both nationally and internationally, due to the high level of economic potential, which to date is not used in terms of regional co-operation for the efficient development of a country as a whole. The case study of this research is the Kazakhstani economy, which was part of the Soviet economic system until its collapse in 1991. During the Soviet era the study of inter-regional development did not receive a significant academic attention, where the development was concentrated purely on individual regions. Regions of the intensive development were a priority for the growth of the whole Soviet economy and at the same time they increased disparities on the inter-regional level.

Being a part of the Soviet economic system its republics had numerous benefits for their economies, where industrialization and infrastructure played key roles. Created during the Soviet era, industrial enterprises were integrated and linked vertically as well as horizontally across the whole country, where no account was taking of borders between its republics. The infrastructure of the Kazakhstani economy was created in order to facilitate the links between producers and markets of their finished and intermediate goods across the whole Soviet Union. Soviet industrial enterprises of the vertical integrations were connected to enterprises across the borders of republics. However, the build up of the economy infrastructure inside republics was not important enough for the functioning of the whole country. Nevertheless, the structure of the Soviet economy worked adequately and permitted the continuous growth of industrial sectors until 1985.

After the collapse of the Soviet Union, all its republics became newly independent states with no proper internal infrastructure. At the same time industrial links with other newly independent countries of the former Soviet Union

were severed. As a result, industrial sectors of the post-Soviet economy had many enterprises in different republics that could no longer function because the links to other industrial enterprises had been vital to enable them to continue production. As a result many industrial enterprises were destroyed because the manufacturing chain of which they constituted one link was no longer viable. Thus, industrial sectors were at the edge of the collapse not only in one particular newly independent state, but in all new transitional countries of the former Soviet Union.

Kazakhstan is the one of few countries in the former Soviet Union, which is well endowed with mineral resources. During the Soviet era, Kazakhstan had a highly developed industry engaged in the extraction of raw materials and in the production of semi-finished goods. The specialisations of the Kazakh SSR in the Soviet industry were oil and gas, metallurgical, machine-building, and agricultural products. The main market for finished and intermediate goods of these sectors was outside the Kazakh SSR. After the collapse of the Soviet Union Kazakhstan was cut off from the main markets for its products, and some industrial enterprises were left without input sources. Production could not be maintained at the same level without sufficient demand and supply of input factors.

After the collapse of the Soviet Union, the socialist system, which was based on the central planning of the economy, has been abandoned in favour of the capitalist system¹. Formerly Soviet republics followed the planning orders of the central authorities, who had planned all economic activities around the country and were the main decision makers who could not be questioned. However, after the collapse of the Soviet economy, newly independent states had gained independence in political terms, but found themselves literally abandoned in economic terms. The abolition of central planning left new states in a state of uncertainty as they lacked the information necessary to take actions that would permit the independent economies to operate. This

1 The Kornai (1998) change of system assumes that the economy shifts from the socialist system changing its specific characteristics towards capitalist system. However it does not mean that all features of the capitalist system immediately were present in the transition economy.

became the starting point for the transition process, which involved the transformation of these countries' economies into new market economies that might take a long time to be stabilised.

In such conditions of uncertainty and the lack of information on how to behave in order to reach desirable results, the main target of transition was the economic stabilisation through the World Bank and IMF package of reforms (International Monetary Fund, 1992). The elaborated regional policy of Kazakhstan did not bring expected results due to the high emphasis on the maintenance of priority regions, such as Western Kazakhstan (hydrocarbon rich regions), Akmola (the region of the new capital) and Almaty (the region of the former capital). Consequently, regions, that were initially better off, started to benefit from the development of the economy, however backward regions could not implement new programmes of development due to the reason of the initial lack of basic economic instruments, such as a developed infrastructure, education and central management, in order to adapt to changes in the economy. Therefore, every year of the transition process the disparities between central and peripheral regions in economic terms widen.

The purpose of this study is a better understanding of causes of the unequal regional development at the industrial level. The answer to the given question would be useful in the design and improvement of a regional policy for economic development and industrial concentration.

Kazakhstan is a valuable producer of oil and gas not only in the Caspian Sea region, but also beyond its borders. Kazakhstani oil extraction amounted to 4.52% of the oil production of the entire Soviet Union in 1990. By 2001 it accounted for 10.55% of oil extraction in the former Soviet Union, while its share of natural gas extraction increased from 0.87% to 1.84% during the same period. The oil and gas production of Kazakhstan as a proportion of world production is of course much lower, but is still a substantial for a single country. Thus, Kazakhstan's share of global oil extraction increased from 0.86% in 1990 to 1.12% in 2001, while its share of the global extraction of natural gas increased from 0.34% to 0.47% for the same period (*Kazakhstan: 1991-2002*, 2002; *Kazakhstan i strany SNG*, 2001). However, the concentration on the

production of oil and gas damages the whole economy of the country in terms of the lack of the support for the development of other industrial sectors. The higher diversification of the Kazakhstani economy in terms of its industrial sectors would help to the country to be less dependent on such a sensitive sector as the hydrocarbon sector, where success depends not only on internal factors. It also might be affected by external factors, such as world commodity prices. Therefore, the diversification of the economy could promote the development of Kazakhstani regions, which have a high degree of industrial specialisation.

Transition brought many changes to the Kazakhstani economy, which significantly improved the image of Kazakhstan in the world. The share of Kazakhstani exports to countries outside of the former Soviet Union increased from 44% of all exports in 1995 to 70% in 2001. These exports mainly consist of rare mineral resources (*Kazakhstan: 1991-2002*, 2002). However, there is still long way to go to improve that image and to reach a degree of economic stability. In order to design the appropriate policy for the growth of the economy of Kazakhstan, it is necessary to understand the performance of industries and the impact of their location, from the point of view that steady development of regions is the basis for the stable development of the Kazakhstani economy. The industrial economy consists of individual industrial enterprises, while their classification into groups defines the development of particular industrial sectors. Therefore, in order to understand the behaviour of industrial sectors, it is important to study the behaviour of individual industrial firms, where the location can play a crucial role with regard to their performance. Thus, this study will help to provide information on trends of industrial location in Kazakhstan in connection with the characteristics of particular industrial firms, which will play a crucial role in the definition of the regional policy design.

2. Objectives of the Study

The objectives of the present study fall into two parts. The first part examines the *first hypothesis*, which states that the performance of Kazakhstani industrial enterprises in terms of their production growth depends on the set of

specific characteristics of enterprises, such as individual, industrial and location. The second part of the study analyses the *second hypothesis*, which states that the characteristics of Kazakhstani industrial enterprises were associated with their location, testing to what extent characteristics of industrial enterprises in transition economies are statistically different for different locations. In addition, the research attempts to identify reasons for regional inequalities in terms of the performance of industrial sectors in Kazakhstan under conditions of transition. The vast territory of Kazakhstan (2.7 million km²) requires the fundamental co-operation between regions in order to provide and to maintain the steady growth of the economy. However, there have been few studies on regional development and even fewer on the causes of the unequal regional development of Kazakhstan.

In order to analyse patterns of the behaviour of industrial enterprises by regions, a database on the performance on Kazakhstani industrial enterprises was created. These enterprises were sampled into groups according to their industrial sectors, regional location, size of workforce and ownership type and analyses how the production behaviour of industrial enterprises is related to their individual, industrial and location characteristics.

3. Organisation of the Study

The plan of this book is to begin with the analysis of location as a factor in the industrial development of the Kazakh SSR in the Soviet economy. ***The first chapter*** underlines trends of the location of particular industries in the Kazakh SSR, where the main reason for the allocation of industrial resources and infrastructure development was based on the needs of the Soviet economy. The chapter is divided into several sections, which are organised according to the chronological periods of the development of industries in the Kazakh SSR. The chapter starts from the analysis of the location of industrial establishments in the Kazakh SSR in the beginning of its creation and during the war and post-war periods. Then the chapter continues with the exploration of roots of the acceleration of agricultural development in regions adjacent to the Russian border and the industrial growth, which is related to the growth of agriculture. Then it analyses the development and emergence of

Kazakh SSR industrial clusters on the basis of their location adjacent to borders with other Soviet republics. The next section discusses the period of changes, *perestroika*, where the administrative managerial system, which is analysed in the last chapter, started slowly to move towards giving enterprises greater responsibility for their finances. This had negative effects on the production of industries in the Kazakh SSR, whose causes and consequences are explored in the final section of the chapter. Finally, the last section introduces the administrative managerial system of the Soviet Union, where the planning approach and soft budget constraints played the key role in the production composition.

The second chapter of the study underlines and examines changes of location trends of the industrial performance of Kazakhstan since transition began. The chapter critically evaluates changes in the regional concentration of industrial activities in Kazakhstan caused by transition. Throughout the chapter, the attempt has been made to answer the question: why did the collapse of the Soviet Union negatively affect the industrial growth of Kazakhstan? This chapter begins with the analysis of the impact of the collapse of the Soviet Union on the Kazakhstani economy. It then presents the performance of Kazakhstani industries in the transition process and their reflection of the destabilised economic situation. Furthermore, the chapter highlights the trends of development of Kazakhstani regions and evaluates the need for a regional policy. Finally, the chapter explores the changes in the trends of industrial concentration of each region of Kazakhstan on the basis of the transition process and analyses the effect of the capital transfer on the performance of regional industries.

The third chapter explores the theoretical background of the regional economy applicable to transition economies and their differences in location choices compared to the neoclassical one and two sector models of factor allocation and migration. Neoclassical models are examined in order to investigate possibilities of their application to transition economies with reference to their specific initial conditions. This chapter represents models of inter-regional factor allocation and growth and attempts to understand how they can be appropriately used for the explanation of location behaviour in transi-

tion economies, particularly in ex-Soviet countries. The chapter is laid out as follows: after the short introduction (3.1) it presents an analysis of location patterns of industrial development in the Soviet Union on the basis of central planning (section 3.2). The next section (3.3) analyses four models of inter-regional development in order to help to understand the possible outcomes of Kazakhstani regional development during the transition process towards a market economy. However, the free inter-regional mobility of such input factors as labour and capital in the transition economy does not always follow rules of classical regional theories. Therefore, the next section (3.4) presents theories and models of regional economics, which might explain the chaotic behaviour of industrial enterprises during transition. This section critically examines models of inter-regional labour migration under the conditions of a transition economy with the specific characteristics of Kazakhstan (e.g. the recent move of the capital). Finally, the chapter presents principles, which could explain the regional economy of Kazakhstan in transition, preparing the background for the next chapter, where the specific model will be applied for the empirical study of the Kazakhstani case.

The final chapter of the book presents the empirical study of the research. The first section presents and analyses the database used in the study and assesses the reliability of its data based on the questionnaire of industrial enterprises. The next section focuses on the model framework for the analysis of the dependence of firms' characteristics on their location followed by the introduction of variables for hypotheses tested in the study. The final section provides and analyses results of the econometric tests of hypotheses within the chosen model framework. Finally, the conclusion summarizes the findings of the study.

1 The Development of the Industrial Sector of the Kazakh SSR on the Basis of the Soviet Economic System

1.1 Introduction

Kazakhstan² is in the process of a fundamental transformation of the nature of its economy and radical changes in its industrial structure. This chapter aims to describe and analyse the economic initial conditions of the country by focusing on the industrial development of Kazakh SSR regions on the basis of the Soviet economy. A number of academic studies discuss the overall economic structural changes of Kazakhstan (Peck 2003; Kalyuzhnova 1998; Pomfret 1995, 1996; Kaser 1997; Olcott 1995, 2002; Amrekulov and Masanov 1994; and others), but only few highlight regional industrial perspectives (Massanov 1995; Koshanov, Isaeva and Yesentugelov 1993; Kenzheguzin, Isaeva 1998; and others). A focus on regional issues is important, since development in Kazakhstan was very uneven and industrial activities are concentrated in certain areas. In terms of income, employment, education and other economic opportunities, the disparity between the capital and the rest of the country has persisted over the decade of transition. This raises the question of how to decentralize growth and achieve more balanced development throughout the country.

The Soviet economic system was the basis for the formation of the contemporary Kazakh SSR economy for many years (1917-1991). Industrial devel-

2 The following terminology is used in this study: The term *Kazakh SSR* and *Kazakh SSR economy* refer to the country prior to 1991 during the Soviet period. On the other hand, *Kazakhstan* and *Kazakhstani economy* refer to the country prior to 1920 (when it was incorporated in the Soviet Union) and after 1991. Being a part of the Soviet Union, Kazakhstan was called the Kazakh Soviet Socialistic Republic (Kazakh SSR), and after gaining its independence from the Soviet Union in 1991, the country took its current name of Kazakhstan.

opment in the Kazakh SSR was based on the needs of the Soviet Union as a whole, with no consideration of any regional balance. Kazakhstan is a land-locked country, which makes it difficult for it to develop local industries for external trade; however, it is unique by its endowment with a wide variety of mineral resources. Being part of the Soviet Union, the Kazakh SSR happened to be one of the few republics that escaped the German occupation during the Second World War (1941-1945), which played the crucial role in relocation of industrial factories from occupied Soviet republics, such as Russia, Ukraine and Belarus. Factories were moved to distant republics, such as the Kazakh SSR and other Central Asian republics³ from those occupied by German forces, in order to continue the production of important goods for the population and the war effort. Production facilities were located in regions close to sources of raw material with easy access to republics that remained under control of the USSR. Regions with railway links connecting the Kazakh SSR to republics under Soviet control had mostly benefited from the relocation of factories. The industrial development of the Kazakh SSR increased the inflow of skilled labour to provide the manpower need by the new factories, which significantly increased the skills level of local labour. Industrial enterprises, which moved to the Kazakh SSR not only recovered their production, but also created additional branches in order to satisfy the growing demand of the occupied republics. After the war ended in 1945 many industrial enterprises were left in the Kazakh SSR together with some of the workforce that had moved there. Thus, the Kazakh SSR experienced intensive industrial development not only during the war but also after the war, when industries in the Kazakh SSR were appealed for help with the recovery of destroyed industrial enterprises in occupied republics of the Soviet Union. Thus the development and production level of Kazakh SSR industries was significantly increased.

Thus, the economy of the Kazakh SSR was specifically created on the basis of political decisions, in order to provide for the accelerating needs of the growing Soviet Union and its war effort. It was a response to the wartime cri-

3 In terminology of the Soviet Union, Central Asia included the Kyrgyz SSR, the Uzbek SSR, the Turkmen SSR and the Tajik SSR, while the Kazakh SSR was considered separately.

sis and the movement of production activities to the Kazakh SSR. After the war, there was not incentive for industrial enterprises to locate in other regions of the Kazakh SSR as economic decisions were centralised and administratively governed by the Central Government of the Soviet Union. Therefore, the efficient pattern of locating industrial capacity was considered from the point of view of Soviet central planning and not on the basis of the requirements for the efficient development of the Kazakh SSR itself. The underdeveloped infrastructure in regions, which did not have a strategic location and resources for Soviet development, placed a further constraint on the relocation of industry. As a result, the industrial development of the Kazakh SSR is polarised and clustered in few locations, which were determined by the location of important resources for the Soviet Union and easy access to Russia. The development of agricultural regions of the Kazakh SSR at the beginning of the 1950s was based on the growing needs of the Soviet Union as well, however, only northern regions of the Kazakh SSR experienced intensive development due to their proximity to the Russian border. The Russian Federation was one of the main transit territories for the transportation of agricultural output to other Soviet republics, which had other comparative advantages for the total production of the Soviet Union.

At the outset of transition the economy of the Kazakh SSR was the product of the Soviet planned economy based on political decisions with regard to the allocation of industrial capacity, where regions of the Kazakh SSR and its industrial clusters were connected to other Soviet republics, rather than having internal links. Consequently, the system in Kazakhstan was characterised by uneven regional development, which had a very detrimental impact on the whole economy after the collapse of the Soviet Union. Therefore, in order to attempt to explain the unbalanced growth of regional development of Kazakhstan, it is important to analyse the experiences of regional development in the country and examine the role of industrialisation in the country's regional development under the Soviet system, and to assess the gains and losses of regions from centralised management of their industrialisation.

The chapter is divided into several parts, which are organised according to distinct periods of the development of the Soviet economic system. The chap-

ter starts from the analysis of the location of industry in the Kazakh SSR on the basis of Soviet central planning in the beginning of its creation and during the war and post-war periods. Then the chapter continues with the exploration of the roots of agricultural development in regions close to the Russian border and analyses the development of industrial clusters in the Kazakh SSR on the basis of their proximate location to borders with other Soviet republics. The next section discusses the period of changes, *perestroika*, when the administrative managerial system, which is analysed in the last section of the chapter, started slowly to move towards giving enterprises greater responsibility for their financial activities. It is shown that this had a negative effect on industrial production in the Kazakh SSR. The causes and consequences of this are explored in the final part of the chapter. Finally, the last section introduces the administrative managerial system of the Soviet Union, where the approach to planning and soft budget constraints played the key role in determining the organisation of production.

1.2 The establishment of industrial sectors prior and during the Second World War

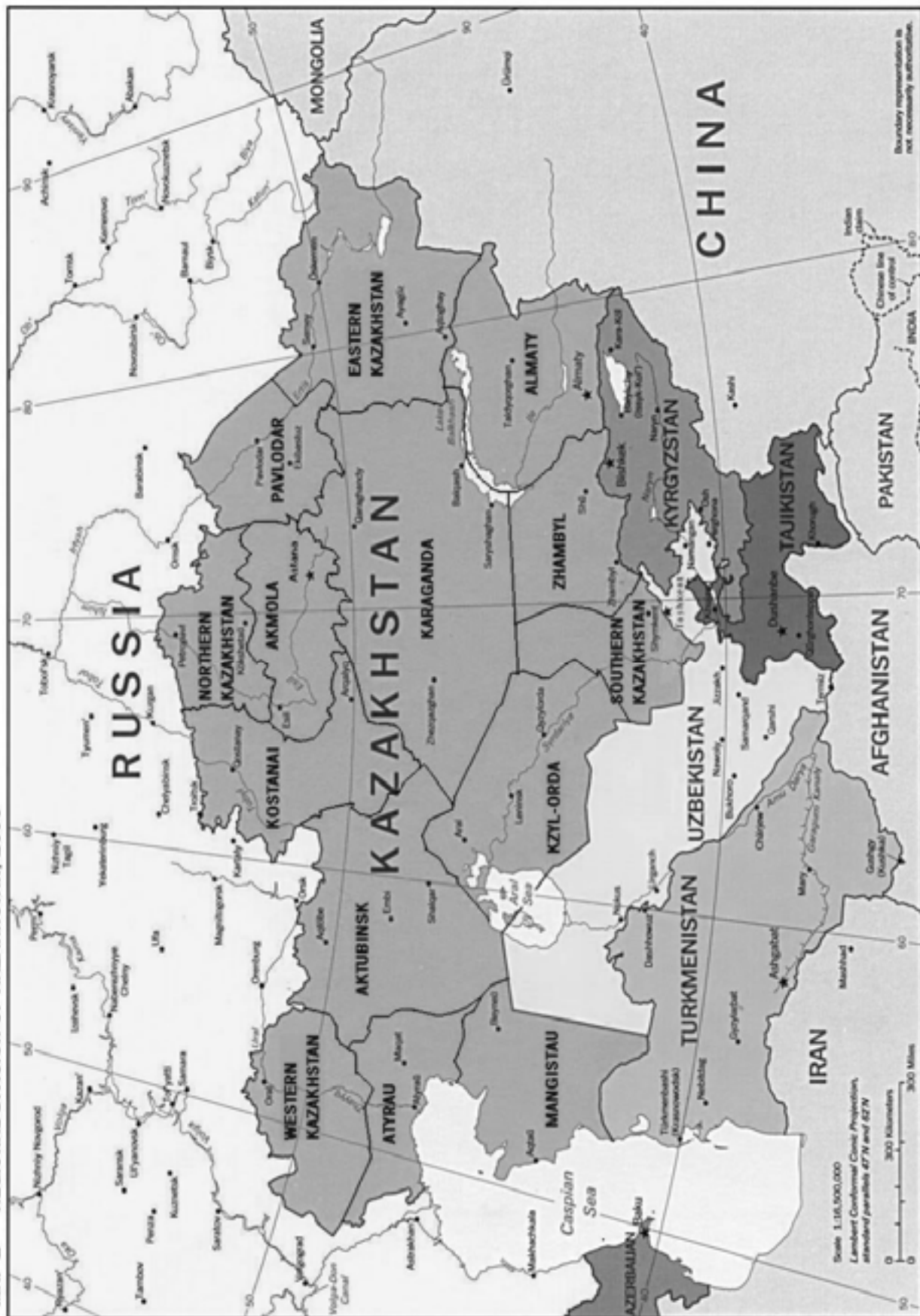
Historically, Kazakhstan had a nomadic style of life. The majority of the population were migrating livestock farmers and were not engaged in agriculture, except in regions that were located along the rivers Syrdariya, Talas and Chu (the Kzylorda, Zhambyl and Southern Kazakhstan regions, Map 1. Regional division of Kazakhstan, 2003). These three regions compose the Southern part of Kazakhstan with a very warm climate. The presence of rivers makes this part of Kazakhstan very favourable for plant farming. Following the affiliation with Russia in the second part of the 19th century, Kazakhstan significantly developed plant farming and started to create its first industrial firms. Thus, the end of the 19th century was characterised by the mass migration of Russian, Ukrainian, Tatar and Moldavian peasants to Kazakhstan as a result of crop failure and famine in their homeland. Therefore, in order to derive the greatest benefits from farming, migrant-peasants occupied the most suitable lands of Kazakhstan, which did not require artificial irrigation. These regions were located in the north, east and south east of Kazakhstan, i.e. the

Kostanai, Akmola, Pavlodar regions, the Northern and Eastern Kazakhstan regions, and the Almaty region, where migrant-peasants brought a fresh wave of agricultural development, significantly increasing the proportion of Russian people in these regions. However, later in the transition period, the economy of these regions suffered losses as a result of a high percentage of the migration of Russian people from Kazakhstan. Many industries experienced a shortage of labour, including qualified specialists.

The second part of the 19th century is defined as the start of industrial development, led by the mining industry. The central part of Kazakhstan – the Karaganda region became the principal location of newly developed mines. At the end of the 19th and at the beginning of the 20th century⁴, the volume of industrial production of Kazakhstan accounted for only 15 % of the total GDP of Kazakhstan (Figure 1.1.) and amounted to a mere 0.7% of the total volume of industrial production of Russia (*Sovetskii Soiuz – Kazakhstan*, 1970). The remaining 85% of Kazakhstani GDP was accounted for by agricultural production.

4 Considering period is between 1880 and 1912-13.

MAP 1 REGIONAL DIVISION OF KAZAKHSTAN, 2003

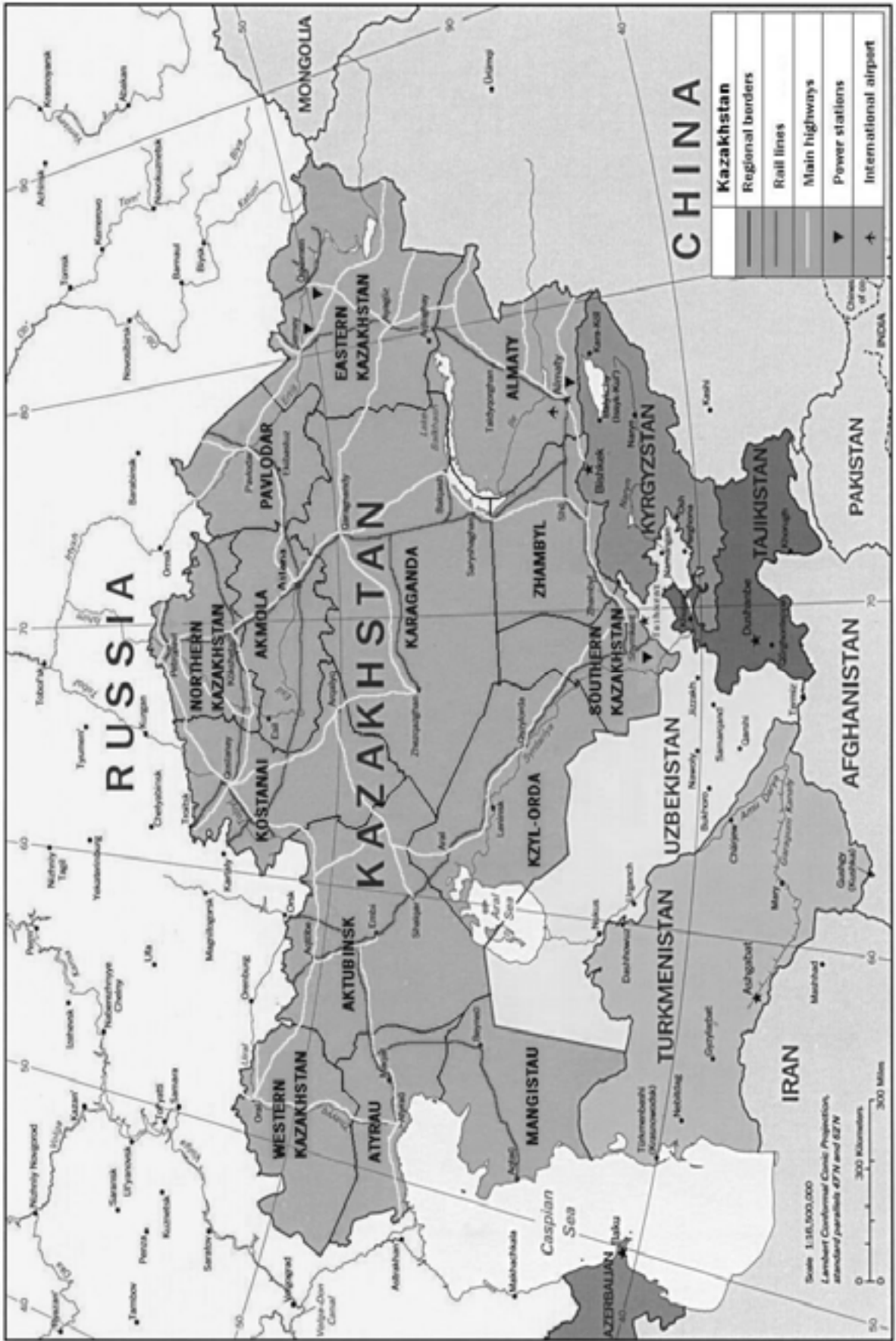


Food industry accounted for the main share of industrial production (63%), consisting of wheat mills, butcheries, distilleries and breweries. Light industry⁵ accounted for 11% of industrial production, mainly the production of cotton, wool and leather. As a result of close cooperation between Russia and Kazakhstan, the factories were located in the northern and eastern regions of Kazakhstan, which share a border with Russia. Intermediate goods manufactured by Kazakhstani light industry were transported to Russia for the production of finished goods. The mining industry was responsible for 20% of the volume of industrial production with factories located throughout the whole of Kazakhstan. Coal mining was concentrated in the Karaganda region, mineral resources, copper and lead mining and manufacture in Eastern and Central Kazakhstan, oil in the Aktubinsk region (on the Emba river) and salt in the Pavlodar and Kzyl-Orda regions.

In 1920, Kazakhstan entered the Soviet Union with its title changed to the Kazakh Soviet Socialist Republic (the Kazakh SSR). The Kazakh SSR was rich with raw materials, however, industry accounted only for 20% of GDP, while the remainder came from agriculture. In order to benefit from the possession of the Kazakh SSR of unique raw mineral materials, the Soviet Union made industrial development in the Kazakh SSR a priority. Entire branches of industry were created, such as chemical, metallurgical, oil and gas industries. New factories for food, light and mining industries were built and old factories were refurbished and modernised. At the same time the railway network was developed with the building of new rail lines to link the central and southern regions of the Kazakh SSR with Russia (Map 2. *Main roads of the Kazakh SSR by 1970*). The industrial development of the Kazakh SSR was directed to the markets of the whole Soviet Union and not specifically those of the Kazakh republic. However, at the beginning of the 1930s the ability of the industries of the Kazakh SSR to sell their products throughout the Soviet Union contributed to industrial growth, which doubled the share of industrial production as a proportion of the GDP of the Kazakh SSR (amounting to 40%).

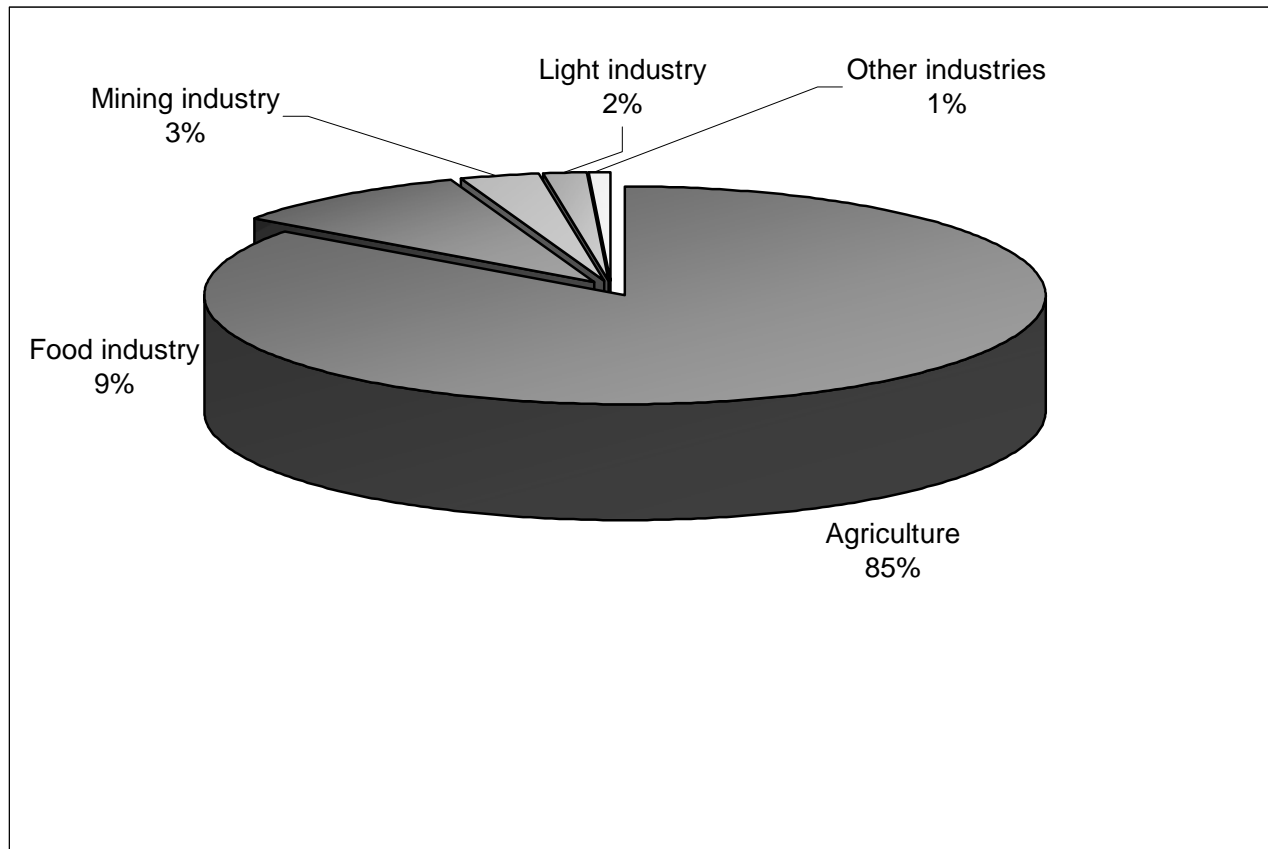
5 The light industry includes the production of goods for consumption such as different types of textile (cotton, wool, silk, linen) leather, fur, clothing, shoes and clothing accessories. (*Ekonomicheskaja enciklopedija-1*, 1962).

MAP 2 MAIN ROADS OF THE KAZAKH SSR BY 1970



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Figure 1.1. Division of GDP in Kazakhstan at the end of the 19th and at the beginning of the 20th century.



Source: *Sovetskii Soiuz – Kazakhstan, 1970.*

In the mid-1930s Karaganda's coal manufacture became third in the Soviet Union by production volume. The Atyrau and Aktubinsk regions became important regions in the Soviet Union for oil production. Southern and eastern regions of the Kazakh SSR were progressing in the development of metallurgical industry and grew to be the main metallurgical centres of the Soviet Union. By the end of the 1930s the Kazakh SSR had become one of the biggest and most important centres of mineral resources for the Soviet Union after Russia, whose industries became dependent on the raw materials of the Kazakh SSR.