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**Grain contention or
Wheat production in Kazakhstan**

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List of Acronyms

AS RK	Agency of Statistics of the Republic of Kazakhstan
CIS	Commonwealth of Independent States
EDA	Exploratory Data Analysis
FAO	Food and Agriculture Organisation of the United Nations
FCC	Food Contract Corporation
FCI	Food Consumption Index
FDI	Foreign Direct Investment
FAS	Foreign Agricultural Service
FOB	Free-On-Board
GDP	Gross Domestic Product
GNI	Gross National Income
MMT	Million Metric Tons
NB RK	National Bank of the Republic of Kazakhstan
OECD	Organization for Economic Cooperation and Development
PPP	Purchasing Power Parity
R&D	Research and Development
UNCTAD	United Nations Conference on Trade and Development
UNPD	United Nations Population Division
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USSR	Union of Soviet Socialist Republics
VAT	Value Added Tax
WAOB	World Agricultural Outlook Board
WASDE	World Agricultural Supply and Demand Estimates
WB	World Bank

Abstract

Kazakhstan is one of the important wheat producing and exporting countries, which has experienced transition from state regulated command economy to free market capitalism. Given increased demand for wheat from the global market and its strategic nature to domestic food security, high volatility of outputs and diverging trends in production have raised concerns about the performance of the Kazakh wheat sector.

This research paper looks at the drivers of wheat production and the role of the state in it. Considering how different state approaches to the economic development may affect agricultural output helps discovering that state involvement is crucial to enhancement of wheat output growth.

Relevance to Development Studies

There are a large number of scholarly written papers on agriculture of transitioning economies and several academic articles on Kazakhstan specifically exploring the reasons and the causes of Kazakh grain sector dynamics. However the bulk of the research in this area focuses on the period prior to 2000. Therefore this study seeks to contribute to the academic literature by providing an analysis of the performance of wheat production and factors affecting its total output growth after this period.

Keywords

Agriculture, wheat production, government intervention, Kazakhstan

Chapter 1

Introduction

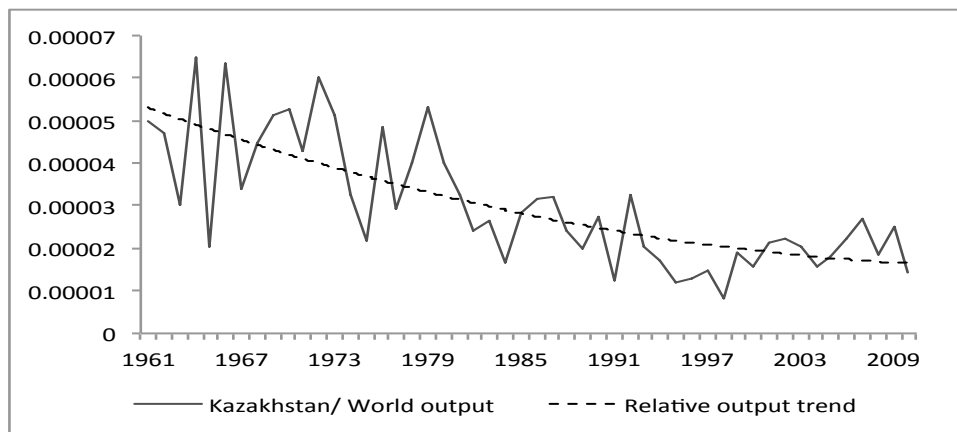
1.1 Indication of the Problem Area

The recent agricultural outlook for 2011-2020 produced by OECD and FAO forecasts a continued increase in agricultural commodity prices due to a rise in global demand for food and production volatility (OECD/FAO 2011). FAO (2011) forecasts that a continued increase in global demand for food will take place in the coming decades while the global food production is likely to slow down. It appears that, this development in the global food market should encourage producer countries to enhance the production of their tradable agricultural commodities.

Thus it seems that the global food market provides incentives to Kazakhstan, as an important producer and exporter of wheat, to strengthen its position and promote wheat production. However, Kazakh wheat production takes place in adverse weather conditions with low quality soil and consequently yields are lower than yields of other major wheat producing countries and are highly volatile (*Bnews.kz* 2009). In addition, producers seem to face other constraints such as weak infrastructure, remoteness from main markets and restrictive institutional environment (Gain report 2011, Visser and Spoor 2011: 320).

Relative wheat output of Kazakhstan has been declining in last fifty years when compared to the world output conveying that Kazakh wheat production has not been keeping up pace with global wheat production rates (Figure 1). On the other side the figure shows that the trend line is quite steep in the beginning and becomes less steep in the last decade, conveying that the rate of decline is slowing down and suggesting improvements in the Kazakh wheat production especially after 1999.

Figure 1
Relative performance of Kazakh wheat sector to the World wheat output, 1961-2010



Source: Author's own illustration based on AS RK and FAOstat data

Therefore the scope for investigating wheat production in Kazakhstan in order to reveal the key factors affecting its performance becomes evident.

1.2 Justification and Policy Relevance

Wheat is one of the most important food-grains and food sources consumed and traded internationally (Atkin 1989, Loftas 1995, WAOB 2011). The importance of wheat is accentuated by its production for use as food for humans, feed for livestock, raw material for alcohol and other ingredients and growing use for further procession into bio ethanol (OECD/FAO 2011: 101). Those dimensions of the use of wheat are highly important for sustainability of economic growth and human development and at the same time are competing areas, in terms of land, income opportunities and food and fuel security around the world. Moreover wheat production also requires favourable climatic, socio-economic and institutional conditions.

Kazakhstan, a top 10 wheat exporter, has the ability to export without compromising its domestic food security, as average production is significantly larger than domestic consumption (RFCA 2010: 7). In this view wheat production is a mature area of the Kazakh grain sector with a remarkable export potential. Nevertheless, despite growing global demand for wheat, it seems that Kazakh wheat producers are constantly confronted to a number of difficulties and are challenged to achieve and maintain high output levels (ATFBank 2010: 5).

The bulk of the research in this area focuses on the period prior to 2000 (see Spoor 1999, Meng et al. 2000, Cormier 2001, Longmire and Moldashev 1999, Toleubayev et al. 2010). The reason might be that the period of transition from command economy to market-oriented economy was extremely interesting for economists. The academic research on Kazakh wheat production particularly and agriculture in general that has focused on the developments of the last decade is fewer in number and comes mainly from Kazakh researchers and is not available for international readers. Therefore policy makers can consider this paper as a significant addition to the existing literature as it provides a deep analysis of factors affecting wheat production and touches on effectiveness of government policies for a more extensive time period.

1.3 Research Objective and Questions

Objective

The aim of this paper is to contribute to the existing literature by the means of an in-depth exploration of dynamics of wheat production in Kazakhstan, in order to reveal the nature of impediments and drivers to Kazakh wheat output growth through:

- Achieving an understanding of factors affecting Kazakh wheat production;
- Performing an analysis of production trends, marketing and regulatory mechanisms in the wheat sector of Kazakhstan.

Therefore the main research period is from 1991 to 2011. However, the study will go back in the past in order to retrieve the relevant information on wheat sector and broad economic setting when necessary.

In order to achieve the research objectives the paper sets the main research question as:

- What have been the forces driving and hindering Kazakh wheat production?

The sub-questions of the research are designed to help answer the main question and are set as follows:

1. Is it possible to divide Kazakh wheat output growth in periods?
2. What are the factors undermining or contributing to the growth of wheat production in those periods?

By answering these questions the research paper intends to illustrate that three periods of wheat production in Kazakhstan can be distinguished and therefore such periodization is important for the analysis of production trends. The paper also aims to reveal that after the end of the first period under command economy, the period of transition to free market results in a severe deterioration of production, due to withdrawal of state support measures to agricultural producers. The recovery of wheat output starts in the third period and is partially due to government involvement in the market-based production and provision of support measures contributing to the welfare of producers.

1.4 Methodology

For the purposes of this research the secondary data was generated from website materials and other related published documents and involves study and detailed analysis of statistical data, policy documents, development plans and government initiatives. Statistical data was collected from both international and national sources, such as the Agency of Statistics of the Republic of Kazakhstan (AS RK), National Bank of the Republic of Kazakhstan (NB RK), World Bank database (WB), UNCTAD, FAO and the Department of Agriculture of US (USDA).

The quantitative analysis techniques used in the study to evaluate information offers the opportunity to dig deeper into the data and look for greater meaning. For the purpose of this paper, exploratory data analysis (EDA) is seen as a suitable method of addressing the research questions. The reason for choosing this approach is that EDA techniques are graphical by nature and help to explore the data open-mindedly by providing maximum insight into data, uncovering underlying structure and extracting important variables (NIST/SEMATECH 2003).

1.5 Scope and Limitations

This paper focuses on the change of economic environments and related factors affecting wheat production in Kazakhstan, mainly comparing three

different periods of economic development and their overall effect on wheat output, thereby excluding the firm level study.

The targeted period of the study is the period since independence, which is from 1991 to 2011. However, there is also a need to provide an extensive overview of policies prior to the independence to set a comprehensive background.

Data limitation is one of the major obstacles to the accuracy of the analysis. The study relies on secondary data from different national and international sources. The data from the pre-independence period and early years of independence is not available for certain variables. The data on government spending and investments in agriculture becomes available only from 2000s. However, in the absence of the data from official sources, the study uses non-official data provided by commercial Internet sources in the cases where it is appropriate. The author recognises possible inaccuracy of these sources and makes appropriate notes.

Due to limited wheat specific data the author extrapolates from the aggregated information on some occasions, assuming that overall grain or some agriculture related policies would have a similar effect on the wheat sector.

1.6 Research Paper Structure

The research paper consists of five chapters. First chapter provides background for the research, explains research objectives, and sets research questions and scope of the study. Second chapter focuses on the literature review of the factors affecting agricultural production growth and brings forward debates on the role of the state in promotion of production of agricultural commodity, with focus on wheat. Third chapter delivers an overview of the Kazakh economic development since independence with emphasis on policies around grain production and reveals specific aspects of the functioning of Kazakh wheat sector. Fourth chapter centres on the analysis of the production determinants of wheat and the discussion of the research questions. The final fifth chapter contains concluding observations and policy recommendations.

Chapter 2

Agricultural Commodity Production: Literature Review

2.1 Introduction

The literature on production of agricultural commodity is largely dominated by arguments on favour of supply or/and demand factors as driving forces of output growth (Andreosso-O'Callaghan 2003, Southgate et al. 2007, Christiansen 2009). Within this there have been important debates about state intervention in agricultural production, between proponents of free market relations and advocates of government involvement in the market (Rosegrant 2008, Landy 2009).

Therefore this chapter explores previous scholarly works on the production of agricultural commodities in order to reveal major demand and supply factors affecting production and the role of the state in it. Although the study considers the literature on a broad agricultural commodity production, it is applied to wheat production, as most general features have been found to be applicable for wheat specific research.

2.2 Demand Side Factors

Economic literature distinguishes prices of a commodity and its substitutes and population growth rates and its income per capita as main factors reflecting the volume and the structure of demand for a food commodity (Andreosso-O'Callaghan 2003, Southgate et al. 2007, Von Braun 2008). As staple food commodities are consumed in domestic and international markets, these factors should be considered in both settings.

On one hand, the recent rise in global grain prices led to shortages in grain availability in some regions and raised concerns about food security worldwide (OECD/FAO 2010). On the other hand, grains have been widely used as raw materials for the production of biofuels, which further induced the price rise, as it created additional demand for grains (Rosegrant 2008). However, the use of wheat for bio ethanol is very limited, its main use is as food and its use for feeding livestock has been rising in order to substitute maize, which is diverted for the production of biofuel (Wright and Cafiero 2011: 64). Nonetheless, recent technological advances allow wheat to be considered as a raw material for biofuels with large potential (OECD 2011).

According to FAO (2011: 69) estimates, the global food production index which remained at the levels of 2.6 and 3.8 percent in 2007 and 2008, slowed to 0.6% in 2009 and preliminary estimates for 2010 average at the level of 0,8% growth, while global food consumption (FCI) index has been steadily increasing at the level of over 2 percent a year. OECD and FAO (2011)

forecast a continued increase in global demand for food for coming decades. Although the rate of population growth is forecasted to slow down, the increases in per capita income is likely to be the main driver of the increased food consumption. Whereas sustaining high levels of food production is the biggest challenge due to climate change and availability of fertile land.

Moreover, Southgate et al. (2007) drawing on UNPD demographic projections have estimated different scenarios for food demand, assuming that with higher population growth rates, increases in consumption per capita will be slower and vice versa. The study predicts a median increase in food demand between 2000 and 2050 by 79 % given that population equals 9,32 billion people and per capita annual consumption increases by 0,3%. Those forecasts are consistent with UNPD (2009) long-term trends. Yet, even the lowest projection with population increase up to 7,87 billion and annual per capita consumption increase by 0,4% averages at 59% increase in demand by 2050 (Southgate et al. 2007: 33). This is also in line with the argument made by Bechdol et al. (2010) based on the US Population Reference Bureau data. The authors argue that the demand for food will not be only growing but also diversified. The study shows that with the same projections of the World population increase by 2050 about 86% of the population will be living in less developed countries, compared to 82% in 2010.

A more detailed analysis of the FAO report on 'The State of Food and Agriculture' (2011: 70) indicates that per capita food consumption will be rising in specific regions: Eastern Europe, Latin America and Caribbean, Asia, and Near East and North Africa. The trend of food consumption index has been steadily rising for these regions since 2000, while other regions have seen a decline since 2006.

Food consumption levels do not directly imply higher intake of grains, and more specifically of wheat, as improved incomes allow consumers to diversify their diets out of grains towards meat, fruit and vegetables (Meng et al. 2009: 27). Thus, food consumption index might not be an appropriate variable to explain increasing demand for a certain food crop worldwide. Nonetheless, in case of the developing world, where the majority of the population has rather low incomes, those criteria have a significant impact on demand of the staple food crop of their regions (Andreosso-O'Callaghan 2003). This is because consumers tend first to increase the level of consumption of staple food until a desired level, and only once this level is reached start diversifying their diets.

As wheat is a staple food for many world regions, and is a part of FCI, the increases in FCI reflect the increasing demand for wheat as well. Dixon et al. (2009: 2) suggest the demand for wheat is expected to reach 760 million metric tons (MMT) in 2020, nearly 813 MMT in 2030 and around 900 MMT in 2050. In addition, according to the projections of US wheat association the regions with the highest grain import capacity are the Middle East, north Africa and sub-Saharan Africa with 29,5 MMT, 51,4 MMT and 35,4 MMT wheat imports projected by 2050 (Weigand 2011).

Moreover, a number of authors argue that increased urbanization rates have an impact on demand for food crops from increases in urban population

and from changes in their consumption preferences as well as from risen pressures on availability of food (Von Braun 2008, Christiansen 2009, Satterthwaite et al. 2010). For example in China urban consumption of grain increased from 52 million tonnes in 1985 to 89 million tonnes in 2005 as a consequence of massive urbanization process (Christiansen 2009: 565).

Urbanization seems to be influencing demand for food by creating limitations for food availability and production through the following mechanisms. First, it is expected that the proportion of the global urban population not producing food will continue to grow, while the rural population producing food will hardly increase at all (Satterthwaite et al. 2010: 2809, Zhang 2011). Second, the volumes of grain lost as a consequence of conversion of farmland to urban areas are not replaced at a adequate rate to answer pressuring demand of urban areas for food, thus requiring an increase of imports and intensification of land use, which in turn leads to its graduate degradation (Christiansen 2009: 567).

2.3 Supply Side Factors

Agricultural producers generate supply of agricultural commodity by exploiting a number of factors of production (land, labour, capital) and determine their supply schedules based on the estimation of the prices of the commodity, its substitutes and inputs used for the production of this commodity, and are influenced by market structure, weather conditions and government policy (Southgate et al. 2007, Andreosso-O'Callaghan 2003). Although on the first view all these factors seem to be highly important for sustaining high levels of food production, it is important to keep in mind that the theory of agricultural supply is based on the assumption that producers act in a way to maximise their profits (Hennessy 1998, Andreosso- O'Callaghan 2003: 49, Deb et al. 2009). This is why consideration of those factors should be done relative to producer profits and therefore, we shall further focus on the drivers of producer profits.

Bechdol et al. (2010) make producers' profits central to the supply of agricultural commodity and argue that profitability prospects of input suppliers, competitors and substitutes largely affect agricultural producers' ability to generate profits. Therefore in order to achieve and maintain high profitability of crop production it is important for producers to increase their productivity. The paper suggests that given increasing demand for food and limited land areas available for cultivation of crops, producers are forced to constantly increase their yields per unit of land by applying new technologies.

However, wheat areas have been decreasing worldwide. Majority of main wheat producing countries, such as USA and EU and parts of China perform at the frontier of their yield capacity and it is unlikely that the yields in those regions will rise substantially (Neumann et al. 2010: 321).

Furthermore, the Sustainability Institute Report (SI 2003) attempts to explain the mechanisms driving the growth of commodity production. The authors assert that the driving force of increasing production is profit, which in turn leads to more supply of the commodity. The system is described as a 'causal loop diagram', where production led by profits increases supply, then in

turn improves efficiency and builds new capacity. The paper argues that if the prices for commodity fall and profits are low, efficient systems together with expansion lead to higher production. If the profits were high, reinvestments made out of them would lead to increased production. At the end, a typical commodity producer will expand production.

Nevertheless, the paper reveals that this mechanism cannot work permanently on its own. In short run, as the prices of commodity become depressed, governments tend to intervene by offering subsidies to support producers' profits. In the long run, intensive cropping leads to rates of harvest higher than natural regeneration rate of soil (ibid: 17). Thus the output will tend to decline, and will turn prices up again. In addition more investments would be needed for the regeneration of land.

Overall, it becomes evident that producers' profit prospects are central to the production of agricultural commodity. As farmers often suffer from price and income instability generic to this type of production related to output volatility, it seems that increasing their incentives and sustaining their profits are necessary to assure the needed level of supply of agricultural product.

2.4 The Role of the State

In order to meet the rising demand for grains different scholars have been offering various solutions to stimulate farmers' incentives and production. The main debate appeared between advocates of market led growth and promoters of agricultural growth with active state involvement.

The proponents of state interventions argue that in case of grain, which is considered to be a strategic staple commodity, government intervention in the market is required in order to control production levels and domestic price fluctuations (Landy 2009: 69). However there are also an extensive number of arguments from scholars supporting a liberal agenda who are against any state intervention and regulation in agriculture. According to them governments tend to grant market players a major role in time of abundance and go for an intervention in time of scarcity, thus creating distortions to the free markets (Anderson et al. 2008).

At first view, it is difficult to disagree. If markets are functioning well, then interventions are not needed. In the opposite case, as Chang (2009: 5) argues when markets are not functioning properly, then 'distortions' may serve the purpose and even if intervention-led inefficiencies occur in the short term, they may bring larger long-term benefits. Moreover, government interventions are justified on the grounds of missing, incomplete or imperfect markets due to changes in the social costs and benefits created to the society in the production or consumption of agricultural commodities (Sandall et al. 2009).

Historically even today's developed countries have always supported their agricultural sectors. Agricultural policy in OECD countries has been largely dominated by price support mechanisms and financing of price support measures for agro-producers still accounts for a significant share of total support to the sector (OECD/FAO 2010: 62).

Besides, EU farm subsidies account for almost 40% of EU's total annual budget (*EUBusiness* 2010). United States, one of the major players in the grain

market, supports its farmers' profits in a consistent manner through a number of farm subsidy programmes, which resulted in a remarkable productivity growth and addressed issues that majority of farmers face persistently, such as: variability of prices, low farm incomes, low rural asset values, environmental degradation and international price competitiveness (Sumner 2007).

Additionally, most OECD countries provide market price support and technical and investment support as tools of farming risk management (OECD/FAO 2010: 61). The measures for risk mitigation, in particular income taxes smoothing systems, countercyclical payments with respect to prices or revenue, subsidies for insurance are also provided by a large number of countries.

The experience of many large grain producers among developing countries has also shown that active government involvement was crucial in boosting countries food self-sufficiency and producers' welfare (Malekmohammadi et al. 2011: 2017). For example, successful rice production in countries such as China and India is determined not only by increased finance in grain infrastructure, research and development and adoption of new technologies, but also by subsidized inputs and credit, procurement of minimum support prices and promotion of auxiliary sectors (ibid).

The proponents of noninterventionist policies believe that implementation of better governance practices would bring more benefits to the producers and rural ecosystems (La Vina et al. 2006: 20). Under those practices they mean decentralization of authority over land, strengthening of agricultural laws and regulations, improvement of rural infrastructure and the business climate to increase private investment. Despite being in agreement with those policy suggestions, the advocates of interventionist policies argue that especially in developing countries those measures are not sufficient and governments should promote the development of agricultural sector by providing additional support to producers (Chang 2009).

Another argument against production or consumption subsidies, and imposition of trade barriers and price controls is that such interventions create an economic cost to the society (Anderson et al. 2008: 305). Often government intervention by the means of subsidies is blamed to be politically driven and creating opportunistic behaviour from officials controlling subsidy allocation and diversion of subsidised inputs away from the intended use (Schmitz et al. 2010: 47). Therefore, Anderson et al. (2008: 372) argue that instead of providing production subsidies governments should focus on elimination of market access barriers, such as import tariffs and quotas, as the benefits for the producers and the welfare effect for the society will be greater.

As response to this argument, proponents of state involvement debate that under transparent and effective implementation of such programmes it is possible to avoid or minimize social costs and bring significant economic benefit (Dorward 2009). In addition, volatile outputs and prices were found to be creating higher transaction costs that seriously hinder investments in input supplies, credit services, storage and processing facilities, reinforcing thus low productivity (Poulton et al. 2006: 343).

Furthermore, one of the underlying arguments in favour of the state interventions is based on domestic food security concerns (Dorward 2009: 7).

The supporters of free markets accused national food security of being an inappropriate goal arguing that a greater engagement with international markets will give the economy additional incomes and a greater ability to secure the necessary amounts of food through international trade (Chang 2009).

Moreover, they proposed the idea of international coordinated food reserves, which necessitates the commitment of main grain exporters to hold certain amount of grain to be used in the moments of shortages in importing countries (Wright and Cafiero 2011: 69). However, this idea has been found to be difficult to realize, as it requires building large stocks in specific areas, which involves high realization costs, and encounters collective action problems in the absence of legal framework for managing the global food reserve (OECD/FAO 2010: 63). Nonetheless, the issue of domestic food security has become very prominent since last food price hikes and motivated governments to increase their state strategic reserves and apply support measures for agricultural producers worldwide (OECD/FAO 2010, *EUBusiness* 2010).

Overall, the overview of the debates about promotion of incentives for agricultural producers seems to accentuate the necessity for agricultural support policies and responsible state involvement in the market in order to ensure income stability for producers and consequently production growth.

2.5 State Support Policies to Enhance Food Production Growth

Government policies have played a critical role in determining the supply of agricultural commodity (Meng et al. 2000, Andreoso- O'Callaghan 2003, Dollive 2008). From the previous section we can conclude that government intervention is seen as desirable to provide support and ensure domestic food security by viable, accountable and transparent policies.

On one hand, as the supporters of the orthodox thinking argued, government policies might have a distortive effect on markets and government's active involvement in the market is costly. On the other hand, depending on the objectives of the interventions, their effects will differ. As consumers and producers are the counterparts in the market for wheat, those interventions affect either one or both actor (Dorward 2009). In that sense interventions harming both consumers and producers can be truly considered disruptive, as the overall welfare effect will be negative. Likewise, if the intervention is benefiting both sides, then it is a necessary measure, which will bring positive effect for the society as a whole.

However, governments often face a difficult choice and might need to choose one or the other type of intervention in favour of one or the other side. When domestic food insecurity becomes a major concern, due to low yields within the producing country or international price hikes, then governments tend to support their consumers and undertake measures such as export bans and price controls (Bouet and Laborde 2010). In cases where there is no immediate concern about the domestic food security government, interventions usually focus on the producer support (Dorward 2009: 29). Those measures have a long-term impact, as strong grain sector can better

guarantee domestic food availability and agriculture-induced growth (Chang 2009).

Therefore government programmes such as input subsidy, provision of extension services, financial services, supply of complementary inputs, price stabilization, and development of market infrastructure are found to be effective as complementary policies within a larger agricultural development strategy (Tiba n.d.: 14). This is why we shall distinguish between different types of interventions and their overall welfare effects, bearing in mind that consequences might be different in different settings depending on pre-existent policy environment.

Further the paper will examine three types of government interventions specifically in the grain market in order to reveal their importance and efficiency in implementation.

2.5.1 Subsidies

Input subsidies (e.g. for fertilisers and seeds) have been widely used among grain producing countries. Central arguments for subsidies in agricultural production are concentrated on the improvement of agricultural productivity through the adoption of new technologies (Ellis, 1992: 135). Subsidisation of fertilizers together with credit and extension services are meant to reduce cost of production for the farmers, increase profitability and reduce risks perceived by farmers in adopting them; this has become prominent especially after the dramatic surge in the price of fertilizers (Tiba, n.d.). On the other hand, the high price of fertilisers means that effectiveness of their use is strongly affected not only by physical returns of fertiliser use, but also by relative prices of fertilisers and crops, which means that state support on fertilizer acquisition is adequate when the change in relative price of fertiliser to the price of crop becomes discouraging for their use (Dorward 2009).

Subsidization of seeds is one of the targeted measures helping to boost the production of specific crops and is highly effective for strategic grain production as this enhances the use of high quality seeds resistant to weather vagaries (Poulton and Dorward 2008). In addition it has been argued that seed subsidies coupled with fertilizer subsidies is more effective in achieving higher returns than each separately (Dorward 2009).

Additionally, farmers in developing countries are often credit constrained for the purchase of inputs and machinery, especially after the years of poor harvest. Usually governments try to overcome this problem by establishing state founded or subsidized rural banks or credit cooperatives or imposing lending requirement on private banks, although this requires well developed financial market to be present in the country (Chang 2009: 29). Agricultural state founded or subsidized credit has been commonly agreed as a successful instrument in boosting agricultural production by tackling cash constraint, despite entailing bigger risks than input subsidy (Poulton and Dorward 2008: 28). This is why such credit programmes perform better in developed countries, where higher productivity and availability of efficient insurance reduce the risks.

One more type of constraints that subsidy can address is a physical barrier to trade, such as long distance to the international market. Transport costs of trading might be high enough to make it unprofitable to produce for international markets (Anderson et al. 2008: 308). In this case government support policies such as transport subsidies for exporters of agricultural commodities are found to be efficient in encouraging production in remote areas as they allow reaching bigger markets (Dorward 2009: 2).

2.5.2 Price stabilization measures

As grain production tends to be highly volatile due to weather vagaries and prices are dependent on total supply both domestically and internationally, farmers' incomes tend to be unstable. In order to stabilize grain producers' incomes most governments adopt price stabilization policies, like price controls, buffer stocks and provision of agricultural insurance (Chang 2009: 42).

One of the commonly implemented strategies to stabilize the domestic wholesale price is by the means of guaranteeing public acquisition of grain at a pre-announced price, which introduces corrections to the domestic price tendencies and builds buffer stocks. Grain available in buffer stocks can be released to ease temporary price surges in domestic market, and replenishment of stocks should provide an additional instrument for supporting post-harvest producer prices in times of abundance (Poulton and Dorward 2008: 46). However, price stabilization schemes have to be carefully designed, as setting a procurement price and guaranteeing large purchase of grain might become costly to the state budget, or to the producer.

As agriculture is a risky activity by its nature, insurance is seen as a tool to cover farmers' income fluctuations. Most OECD countries offer market price support services that include measures for risk mitigation such as countercyclical payments and provision of insurance policies (OECD/FAO 2010: 61). However, in developing countries, with higher agricultural risks governments' attempts to develop insurance systems have not always been successful. This is why targeted subsidization of insurance is justified to support constrained small farmers, although it leads to additional costs for the government (Binswanger 1986: 85).

Export restrictions and managed trade environments have been widely used by grain exporting countries and were also found to play a key role in reducing the transmission of high international prices to domestic markets and provision of domestic price stability. Nevertheless, imposition of export bans or tariffs by key exporters are blamed for masking market signals to producers and imposing pressure on international prices by restricting supplies (OECD/FAO 2010). On the other side, in the time of shortages the imposition of export restrictions in combination with fair crop pricing appears to be an adequate measure to impede price manipulations by speculators and address domestic food availability without suppressing producers (Wegren 2011: 150).

2.5.3 Public investment

Private and public investments in primary agriculture and downstream services like storage and processing are required to support grain output growth. However during the previous decade the levels of investments were low and appear to be one of the reasons of diminishing growth rates of agricultural productivity (OECD/FAO 2010, Wright and Cafiero 2011).

Due to the public-good-nature of knowledge and technology, the private sector tends to under-invest in R&D. This justifies public intervention – either direct state investment or subsidization of research, education and information, because increasing costs of scientific research have made this area beyond the reach of individual farmers (Chang 2009: 19). For example, provision and breeding of high quality seeds is critical for grain production and therefore, control over the quality of seeds and support to experimental enterprises are necessary measures to improve productivity and increase profitability of grain producers.

Whilst investment in irrigation systems and high yielding varieties help minimize weather dependence and improve productivity, transport infrastructure is essential in connecting the agricultural sector to the broader national and global economy. Therefore, government involvement is also crucial in provision of physical infrastructure such as canal irrigation, electrification, roads, railways and maritime ports as these are also considered to be public goods and the costs of construction of these facilities are too high to be borne by private sector (ibid: 35).

2.6 Stimulation of Agricultural Production Growth in Transition Economies

Since the breakup of the Soviet Union a large amount of research has been done on transition economies and the development of their agricultural sectors (Spoor 1999, Kourmanova et al. 2008, Swinnen et al. 2009, Wegren 2011 and others). The experience of transition economies is unique in the sense that they have lived through the period of very distinct liberalization and turned to a state regulated market economy development path (Swinnen et al. 2009).

Liberalization reforms of early 1990s in agriculture of transition economies have led to a deterioration of agricultural output and decapitalization of the agricultural production complex (Gow and Swinnen 1998: 332). Many studies have revealed the following causes of such a downturn: worsening terms of trade for agricultural producers, financing problems due to fewer sources of agricultural credit, market uncertainty with high inflation, disorders caused by farm restructuring, privatization and land reforms and the disruption of traditional exchange systems within the agro-food chain (Jackson and Swinnen, 1995, Gow and Swinnen 1998).

The experience of major wheat producing countries of the CIS - Russia, Ukraine and Kazakhstan, was comparably similar. Together these countries control about 20% of the world wheat market and according to USDA projections have the potential to increase their exports by 50% in coming ten years (USDA 2010: 35). Likewise, Neumann et al. (2010) show that production

of wheat is cost effective in CIS wheat producing regions due to accessibility of labour and with additional support they can considerably increase their yields.

The period of liberalisation coincided in all these countries with subsidy cuts, decrease of agricultural output by at least 20% and dramatic divergence between prices of agricultural inputs and outputs, which resulted in the decline of profitability rates of production (Swinnen et al. 2009). This period was also characterized by appearance of high rent seeking activities creating large transaction costs causing disincentives to production and investment (Gow and Swinen 1998: 333). Transaction costs are still high and are largely present in forms of unofficial payments on the borders, complicated and time consuming custom procedures and non-transparent regulations (Kourmanova et al. 2008).

In addition these countries still encounter insufficient investments in agriculture, poor and very volatile productivity, limited access to export market, especially in the case of Kazakhstan, and insufficient public spending on infrastructure (ibid, Neumann et al. 2010). Nevertheless, all grain producing countries followed international experience and adopted agricultural policies with active state involvement. Countries adopted protectionist agricultural development programmes and strategies that are designed to bring sustainable growth to the sectors concerned by providing support measures to producers.

Russia's agricultural strategies envision subsidization of credit interest rates, 50% subsidy on agricultural equipment and fuel, establishment of state procurement prices for the purchase of grain in Regional Food Funds and control over bread prices (Belozertsev 2010). Ukraine grants partial compensation of interest rates, crop subsidies, VAT exemption and preferential tax rate to agricultural producers (Aboulenein et al. 2010). Because of concerns about domestic food security Russia, Ukraine and Kazakhstan have been imposing export bans and tariffs in the years of droughts on their territories (Deb et al. 2009: 32).

2.7 Conclusion

To sum up, this chapter demonstrated that in a market driven economy in the context of rising demand for grains including wheat, the provision of grain supply could be guaranteed only with active state support. The literature review of the debates on factors affecting production growth reveals rising incomes in developing countries on the demand side and the importance of state participation and its active involvement in the production of food crops to ensure profitability of agricultural production on the supply side.

Although there have been critical urgings against government involvement in the grain markets, arguments showed that in the absence of public spending and accurately designed state support policies, growth of agricultural output is difficult to achieve. It appears that production growth is achievable under the condition of high and viable profit prospects for producers, and as agriculture by its nature is risky and outputs are unpredictable governments should step to provide such incentives. The practice of support to agricultural producers has been widely implemented by majority of grain producing developed and developing countries. This proves

the effectiveness of such policies in improving and sustaining producers' incomes.

Having said that, it is also important to underline that government interventions may have different effects on the stakeholders in different settings and hence in order to bring positive results their implementation should be a part of a broader agricultural development programme coupled with institutional improvements.

Chapter 3

Background

3.1 Introduction

This chapter focuses on the description of the development of political and economic situation over the last twenty years that has had an impact on agricultural sector, which is expected to clarify developments in the wheat production. Although the time period of our concern is the time since independence, which is between 1991 and 2011, the study goes back up to past fifty years in order to present a more comprehensive picture of the development of agricultural sector.

3.2 Economic Background

The modern day Kazakhstan became a part of USSR as Kazakh Soviet Socialist Republic in 1936 and was declared an independent state - Republic of Kazakhstan in 1991 after the breakup of the Soviet Union (Central Intelligence Agency 2011). Kazakhstan's territory is 2,7 million square kilometres, mostly dominated by steppe lands, which makes it appropriate for agriculture (Longmire and Moldashev 1999). Despite being advantageously placed geographically in the heart of Central Asia, it is the largest landlocked country in the world (OECD 2011: 66).

Historically Kazakhstan had nomadic traditions linked to the rearing of livestock and therefore its main economic activity was agricultural herding. However, during the period of USSR forced collectivisation, by the means of confiscation of livestock and large-scale conversion of steppes into collective and state farms (kolkhozes and sovkhoses), Kazakhstan was turned into an important grain producer, with wheat being the main crop (Meng et al. 2000: 701). Having said that, Kazakhstan didn't have economic independence because the whole economic system was built in such a way that it created structural dependency between the centre and the periphery heavily exploiting their resources (Spoor 1999).

The first years of independence were marked by a sharp liberalisation of the economy, which implied state deregulation and extensive privatization of assets (ibid). Those measures were believed as necessary in stimulating entrepreneurship, effective resource allocation and bringing economic growth (Amrekulov and Massanov 1994: 6). However, neo-liberal reforms coupled with high level of corruption and inability of the government to smooth the transition from command to capitalist economy caused a severe economic crisis (Toleubayev et al. 2010: 358).

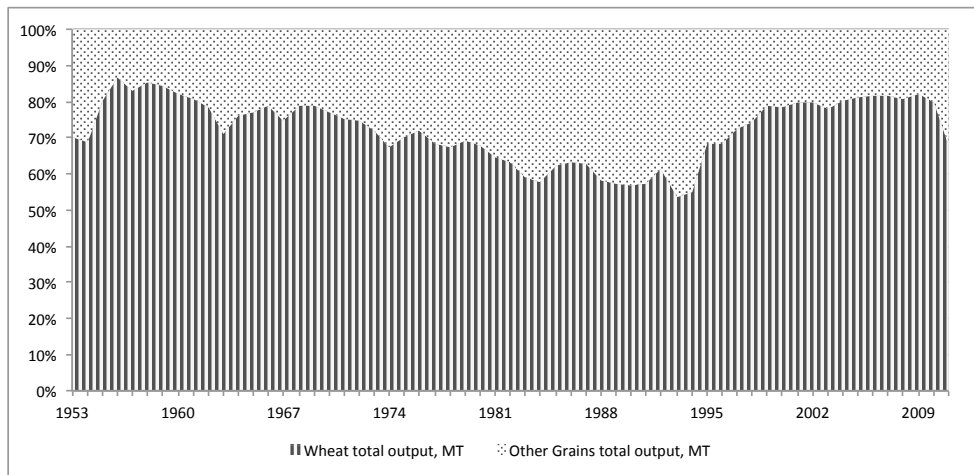
Because of the data unavailability for the soviet period it is difficult to appreciate economic growth in the Soviet time and illustrate the effect of the crisis on the economy, however Spoor (1999) finds evidence that the Kazakh GDP in 1995 contracted to almost 46% of its pre- crisis level. The main macroeconomic indicators start to improve after 1999 and show relatively

stable positive rates of growth (Sultanov et al. 2011: 162). It was argued that the period of GDP growth was mainly achieved by the means of improvements in service and industry sectors, which were the consequential outcomes of the exploitation of large oil fields and increased investments in that area (Moros and Irvine 2008).

3.3 The Kazakh Wheat Sector

Kazakhstan produces a large variety of grains, but about 80% of its grain production is high milling quality hard wheat (Figure 2). As production of wheat is superior to domestic needs, it has become a major agricultural export good renowned for its superior quality due to high gluten strength and protein content (FAS USDA 2010, OECD 2011).

Figure 2
The share of wheat production in total grain production, 1953-2011*



Note: The data for 2011 is as per 28 October 2011

Source: Author's own illustration based on USDA and AS RK data

In the years of record yields of independent Kazakhstan 1992 and 2009 the total wheat output averaged around 18 and 17 MMT respectively, the year 2011 is expected to bring even higher wheat output (*Tengri News* 2011). Kazakhstan consumes domestically about 8 MMT of wheat; the government purchases different volumes, usually from 0,5 to 2 MMT, to fill the state reserve (*ibid*). Consequently, depending on total harvest the entire surplus is available for export. Nevertheless, not always export capacity is fully exerted, due to limited import capacity of traditional export markets and logistics problems (Pavlov 2011).

Main wheat producing regions of Kazakhstan are Akmola, North-Kazakhstan and Kostanai, all geographically located in the north of the country, where availability of arable land is the main determinant of large scale grain cultivation (Smayilov 2010). Other regions of Kazakhstan also produce wheat, but in significantly smaller quantities.

Broadly there are two agro-climatic environments for wheat production that define the type of wheat (Meng et al. 2000: 707). Due to climatic conditions, producers in the north of Kazakhstan cultivate spring wheat, which accounts for about 75 % of total wheat output, whilst in the southern parts of Kazakhstan farmers cultivate winter wheat varieties (FAS USDA 2010). Winter wheat yields are considerably higher than those of spring wheat. This is largely due to the fact that northern regions of Kazakhstan consist of dry land steppes and production takes place under adverse weather conditions, whereas winter wheat is cultivated in southern areas of Kazakhstan, where climatic conditions permit sowing in autumn because winters are milder and shorter, and farmers benefit from better soil quality and irrigation systems (Kaskarbayev 1998).

Historically Kazakh farmers in the northern areas experience frequent droughts on average two out of five years, which leads to highly volatile yields and unstable production (Gossen 1998: 46-47). Thus, Kazakhstan's grain production dependency on climatic conditions is much stronger than of other world leading producers and exporters of wheat. Studies have shown that over the past decade, fluctuations in crop yields in Kazakhstan (the ratio of maximum to minimum yield) have had amplitude of 2,05 (*Bnews.kz* 2009). The same study shows that in the same period the ratios of maximum and minimum yields in Canada, have been 1,18, in Australia – 1,24, in Germany – 1,09 and even Russian grain production has shown less dependency on the weather vagaries and averaged at 1,51.

3.4 Periods of Agricultural Production Growth and Related Government Policies

3.4.1 Why periodization is needed?

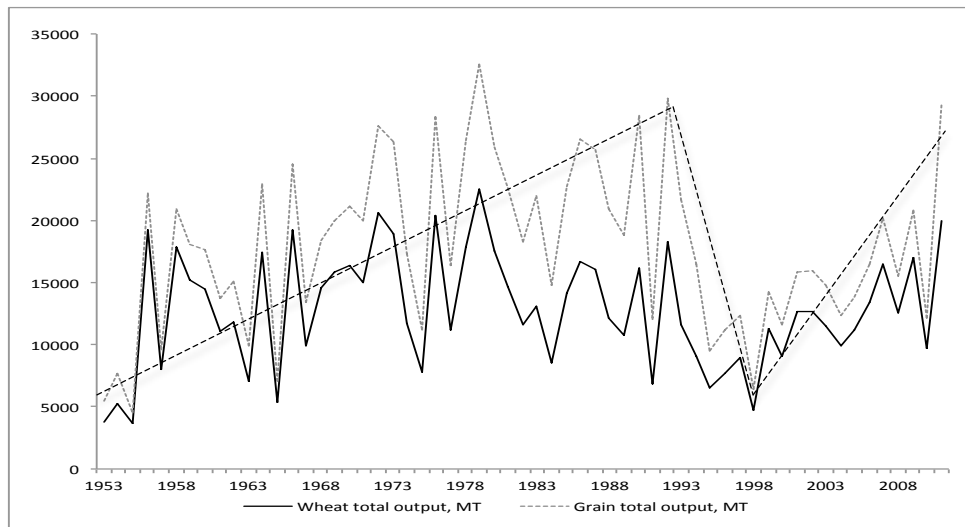
As the previous section revealed there were three important periods of economic development of Kazakhstan: the period under the Soviet rule and command economy, the transition period from command to market economy and the period of stabilization and positive growth.

This periodization of economic development reflects on periods of agricultural production. A number of scholars suggests that after the period of transition to market economy by the means of neoliberal reforms, the state designed a set of more interventionist policies to mitigate the adverse effects of agrarian crisis and threats to domestic food security, thus splitting the developments in agricultural sector in two periods after independence (Kaliyev et al. 2006: 5, Toleubayev et al. 2010: 358).

The other stance of Kazakh literature represented by government officials and state founded national institutes despite distinguishing the same periods, suggests that the period between 1991 and 1998 was crucial in establishing market relations and overcoming the crisis that appeared during the last years of the Soviet era; and the period starting from 1999 is the outcome of successful political reforms of preceding years (Saudabayev 2001, Sultanov 2009: 256. Sultanov et al. 2011: 161). Although there is no common agreement between authors on the effects of policies, they all acknowledge the existence of two distinct periods.

The Figure 3 demonstrates the historic yearly output and volatility of grain in general and its main component-wheat since 1953. The figure clearly shows three distinct periods of production despite its yearly volatility. For instance one can determine the long-term periods of growth between 1954 and 1991, another period of sharp decline in outputs between 1992 and 1998 followed by improvements starting from 1999. Hence our further discussion will be based on such periodization.

Figure 3
Total grain and wheat output and yields, 1953-2011*



* Note: The data for 2011 is as per 28 October 2011

Source: Author's own illustration based on AS RK and FAOstat data

By examining policies applied during those three periods, we shall find domestic factors affecting wheat output in Kazakhstan. Especially the period of the post Soviet Union economy is expected to provide a valuable insight into the drivers and impediments to the growth of grain output and as wheat represents almost 80% of grain production in Kazakhstan those findings are expected to be explanatory for wheat production as well.

3.4.2 Period of Soviet farming: 1954 -1991

Large scale grain seeding started in Kazakhstan with the beginning of the Virgin Lands cultivation campaign in 1954 in the central and northern parts of the country with main purpose to increase grain production by 38 million tons to satisfy growing demand for food and feed in USSR (Alexandrov 1996). In order to achieve that level of production new land areas (virgin lands) of 13 million hectares needed to be placed under cultivation. Since about 50% of the "virgin land" was to be found in Kazakhstan, the country took a central role in that campaign (Nusupbekov et al. 1980: 265).

The politics of sedentarization, despite being brutal to the nomads, brought its results and within ten years Kazakhstan became the 3rd largest

producer of wheat on the territory of USSR after Russia and Ukraine exporting three quarters of its output to meet the needs of other soviet republics (Pomfret 1995, Sadykov 1998).

Moreover extensive farming was enhanced by intensive land and technology use (Longmire and Moldashev 1999). In order to protect the land from wind erosion, anti-erosion and conservation technologies were applied to all the area sown under grain; plant protection chemicals and intensive fertilizer application between 1976 and 1990 assured high yields and outputs of that period (Gossen 1998: 44). In addition, as production levels were planned in advance, storage and transport infrastructure were also adjusted in advance to meet the expectation about future output (Amrekulov and Massanov 1994: 45).

The Soviet approach to farming had other remarkable distinctions. Apart from specialisation of labour and state provision of all the necessary inputs such as machinery, seeds and fertilisers, it used knowledge intensive approach to grain cultivation (Toleubayev et al. 2010: 364). The research community was highly supported by state and received better finance, which allowed acquiring and applying specific knowledge in the area of grain production.

In addition the farms' production was planned in detail based on 'technological maps', created by teams of agronomists and scientist for each crop in each region on yearly basis and indicated the necessary amounts of fertilizers, pesticides, seeds, machinery, timing for each operation, etc. (Chenkin et al. 1974). This approach allowed building a strong knowledge base for agricultural production and improving outputs by adopting more intensive modes of production reflected in improvements of yields (Toleubayev et al. 2010: 365).

Nevertheless, Soviet normative planning approach to economic development despite being successful in increasing grain production and provisioning of all necessary inputs, has been widely criticised for ineffective exploitation of resources, sometimes overexploiting them and sometimes suppressing economic potential of the region (Wadekin 1990: 148). For example overuse of fertilizers which led to the loss of humus content in soil within 40 years of intensive farming under command economy is believed to be one of the outcomes of ineffective land use (Gossen 1998: 45). Moreover Soviet farming was often criticised for inefficiencies in storage, trade and distribution, because normative planning could not foresee output variations from the State plan (Toleubayev et al. 2010: 365).

3.4.3 Period of the transition: 1992-1998

The breakup of the Soviet Union in 1991 led to the disintegration of the inter-republican economic relations and negatively affected all economic sectors, including production of wheat (Toleubayev et al. 2010: 356). The policy toward agricultural production was ignored up to early 2000s relying on the efficiency of the free market. The transition from planned to market-oriented economy led to cuts of subsidies and price liberalization, which turned to be the main reasons of the increase of inputs prices and consequently their usage decline (et

al. 2009). Subsequently, these developments depressed producers' incentives to maintain their production at the pre-transition level.

The situation was aggravated by very limited access to credit and lack of finance to replace old machinery (Toleubayev et al. 2010: 358). Financial institutions were indisposed financing the sector with highly volatile outputs, low revenues and high-risk averseness without suitable collateral (USAID 2003: 17). Consequently, the agricultural machinery park contracted dramatically. For example the number of tractors declined by 80% between 1990 and 2000 (Toleubayev et al. 2010: 366). The equipment had not been renewed for an average of 7 years: the purchase of new machinery declined by 85%, for the same reason the supply of the farm equipment declined by 39% (Kolobaev and Nikitina 1998: 74).

At the same time the decrease in global wheat prices caused a decline of terms of trade and contributed to a fall in labour and land productivity (Macours and Swinnen 2002). As a result no scientific research was conducted, good agricultural practices were not performed, and transport and storage infrastructure deteriorated - all leading to the total production decrease (Satybaldin 1998: 18). For example, poor storage and processing facilities caused the loss of 30% of the bumper grain output in 1992 (Meng et al. 2000: 711). Moreover, price liberalisation and currency depreciation resulted in negative price gap, high transportation and storage costs pushed farmers to establish farm-gate prices below the level of reference price, thus deteriorating the profitability of production (OECD 2011: 145).

Furthermore, the main element of the reforms - the transformation of the form of land tenure from large state owned farms to privately or cooperatively owned farms, by the means of privatization did not yield positive results (Swinnen et al. 2009). Macours and Swinnen (2002: 387) argue that in a free market setting a major factor for agricultural output improvements is the strong allocation of property rights. As this criterion was not met and individual property rights were not clearly defined, farmers showed little motivation to invest in land (Swinnen et al. 2009).

The land reform turned large public farms into numerous small units, most of which could not adapt to the new market environment, because of the lack of knowledge, machinery, working capital and the absence of decent profit prospects (Baydildina et al. 2000: 738). In addition, high level of corruption negatively affected the process of land distribution. As a result the new owners of land were not professional farmers and did not have specific knowledge of farming, majority of them were former communist elites who used their positions for their own enrichment (Spoor 1999, Toleubayev et al. 2010).

Several sources of high transaction costs have been established in agricultural sector of Kazakhstan in the time of transition. Information costs were high, because majority of new farmers were not professionals and had to act in a new economic environment full of risks and uncertainties (Cormier 2001: 31). Contracting costs reflected in time to open a bank account, receive a bank loan, or execute deliveries led to high levels of bribery by officials at all levels (ibid: 34). Overall, rent-seeking activities were common at every stage of

production, marketing and transportation and had a damaging impact on agricultural output.

Those changes in farming negatively affected all the areas of agriculture that are tightly interlinked. Livestock dramatically declined in that period from 18,5 million head in 1990 to 8.5 million head in 1998 (Baydildina et al. 2000: 738). The reason of this drastic decline was twofold. One on side, decreases in fodder crop production led to the losses in animal heads, on the other side reduced number of animals has reduced domestic demand for feed, thus disincentivising grain producers.

One of the main reasons of the above mentioned agricultural problems is that agricultural producers did not obtain incentives provided by market and did not receive enough attention from government because of the reliance on market mechanisms and focus on the mineral resource sector (Meng et al. 2000: 713). As a result agriculture did not receive state financing, was taxed at the same rates with other industries despite its low and unstable profitability rates and deteriorated state.

The only measure that was designed to directly affect wheat producers was the establishment of Food Contract Corporation (FCC) in late 1997, which was in charge of the management of government grain reserve and control over domestic food price (Gain Report 2011).

3.4.4 Period of improved growth: from 1999 onwards

The fall in agricultural output threatened domestic food security and growing social tension forced the government to intervene (Baydildina et al. 2000). The Ministry of Agriculture undertook a new approach towards agricultural development and put an emphasis on grain production with focus on wheat and hence determined a set of policies meant to help grain producers to become more productive, competitive and profitable (Toleubayev et al. 2010: 359).

First the new law “On Land” was accepted in 2001 obliging landholders to personalise their plots. The acceptance of the new law coupled with the development of financial sector started the new period as it finally turned the land into a commodity, and therefore provided farmers with incentives to develop their plots, permitted to use as collateral, to lease and sublease them (ibid: 357).

In addition the law “On Grain” adopted in 2001 defined for the first time at the legislative level rules governing the relations in the process of production, storage and marketing of grain. The institution of grain receipts guaranteed by the government, introduced to the law in August 2002, was the major innovation that significantly changed the order of grain sales (Suleymenov 2009: 31).

Moreover, according to the current ‘Tax Code’, agricultural producers work under preferential tax regimes. Agricultural companies work under special mode paying only 30% of total taxes, whereas peasant farms pay a

single land tax, the amount of which represents 0.1 to 0.5% of the appraised land value (ibid: 57).

Then, the adoption of State Agro-Food Programme for 2003-2005, which enhanced the role of FCC, largely contributed to the improvement of the situation by providing budgetary support to the agricultural sector (Fesenko 2006). The programme is developed as a part of the Strategic Plan of Development of the Republic of Kazakhstan until 2010, which calls to follow the 'East-Asian model' of development (USAID 2003: 6).

The programme focused on competitiveness and efficiency of agricultural producers by providing technical support to agricultural producers through input support measures, namely subsidies to reduce the cost of inputs (e.g. seeds, fertilizers, pesticides and fuel) and indirect price support measures, provided through the Food Contract Corporation (USAID 2003: 6). For instance, the government subsidizes 40 % of the price of elite seeds, 50% of the costs of mineral fertilizers, controls the price of the fuel during main seeding and harvesting periods (*Bnews.kz* 2009).

The amount of 145,8 Bln. Tenge (approximately 1,05 Bln. US\$) were allocated for the subsidization of agriculture within the Agro-Food Programme (Fesenko 2006). The programme increased dramatically lending by commercial banks to the grain producers, by providing subsidies for interest rates of credits. Support measures helped to make available for leasing 3166 units of agricultural machinery and to increase the proportion of certified seeds from 53 to 100 with seeds of the highest category accounting for almost 70% (Suleymenov 2009: 31).

However, only 20% of grain producers could benefit from subsidies and subsidized bank loans, moreover majority of them were large companies (*Bnews.kz* 2009). In addition, even with those measures of state support the average support per hectare of sowed land in 2005 was around 7 US\$, whilst in the same period Canada allocated 83 US\$ per hectare, the United States-107 US\$ and the European Union- 855 US\$ (Fesenko 2006). Although the government has continued to subsidize grain production, and the average subsidy per one hectare of land sowed reached 11 US\$ in 2010, the farmers still find this level of financial support not motivating (*Qazyna* 2010). The reason is that output volatility translates directly in unstable rates of profitability and in the absence of effective support and insurance, farmers are exposed to the risk of high losses (Suleymenov 2009: 57).

In the new setting FCC has become a very important player on the grain market of Kazakhstan. The mission of FCC is to act on the market in order to guarantee food security of the country and to stabilize grain prices through large-scale purchase and sale of grain on the domestic market (Food Contract Corporation n.d.). In the seasons of higher yields and consequently lower wholesale domestic prices FCC would set a higher price for state acquisition in order to support wheat producers, whereas in the seasons of lower yields and higher domestic prices, FCC would release wheat from the state reserve in order to push domestic prices down (Suleymenov 2009: 291). In addition FCC signs forward contracts with wheat producers, which helps them to receive

funds earlier and guarantee a certain level of production, although the price set by those contracts is usually lower than the market price (OECD 2011: 71).

Moreover since 2007 the Corporation started commercial purchases of wheat and has become the largest grain trader - exporter of Kazakh grain on the world market and the main competitor for domestic grain producers on the export destinations (Suleymenov 2009: 433). Nevertheless farmers have largely criticized the commercial activity of FCC. The main argument against is that FCC uses its position to buy wheat from local farmers at farm-gate price and sells it at world prices, pursuing purely commercial interest (Homyak 2010). The current dual role of FCC as profit making organization and a public benefit organization seems to be leading to a conflict of interests within this institution and prevents it from following its original mission.

An export subsidy to support wheat exporters was introduced in 2009 by the Ministry of Agriculture at the level of 20\$ per ton of wheat exported and increased to 40\$ in 2011 to cover the transportation costs despite being criticized by Russia and Ukraine, the main competitors in the region (*Novosti-Kazakhstan* 2011). The Ministry argues that Kazakhstan is the only major wheat producing country, which is the most remotely located from the seaports and this subsidy is important to maintain price competitiveness of domestic wheat exporters (Baydauletov 2011).

Despite the termination of the programme the government still continues to support the agricultural sector, by allocating large financial resources to food producers. However the recent Strategic plan of the development of the food sector for 2011-2020 demonstrates that from now on wheat producers will be receiving less direct subsidies, because government finds that wheat production is a profitable area and the investments should be directed to support the production of other crops (FCC 2010). Nonetheless export subsidies for wheat exporters to cover for transportation costs are likely to remain (*Novosti-Kazakhstan* 2011).

3.5 Organisation of the Modern Kazakh Wheat Market

Modern day Kazakh wheat producers are mainly represented by large vertically integrated companies and medium sized farms. Transnational corporations such as Glencore, Cargill and a number of Russian companies in form of joint ventures are present in the sector (FCC 2010). Although there is no clear evidence on the relative efficiency of large farms compared to small farms, the study led by OECD (2011: 77) shows that in capital and land intensive regions, which is the case in Kazakhstan, large farms can be more productive. This is because vertically integrated companies produce, store, transport, and market wheat by their own means, whereas smaller producers do not have all necessary facilities to incorporate next stages in the chain and have to contract with third parties (FCC 2010).

The role of elevators is crucial in the process of grain marketing as those are the only place, where certification takes place and the loading to the train trucks is possible (KazAgro 2010). Farmers after harvesting wheat transport it to elevators, where apart from quality control, drying and weighing takes place. After transferring wheat to elevators farmers receive state procured 'grain

receipts' that indicate the amount and the quality of wheat belonging to the farmer. Then they have a choice of selling those grain receipts either to traders, milling companies or to sell it to FCC.

Smaller farmers do not export wheat on their own and sell it to domestic licensed traders. In 2007 licensing of wheat exports was introduced in order to control export volumes and procure domestic food security. Since then there has been a lot of debates around their cancellation, because high rent seeking was determined on the side of executive officers at the stage of license distribution (Kalpakbayeva 2010). In addition since 2009 the Ministry of agriculture has been proposing to cancel licensing itself for several reasons. First, the ministry acknowledges that the procedure of license issuance is lengthy and costly and therefore the number of export traders is small. Second, licensing creates oligopolistic behavior from traders putting producers in a disadvantaged situation (Lazarevitch 2010).

Throughout the years of independency three stable export directions have been developed (Map 1). As the map suggests traditional markets for Kazakh wheat are mainly neighbouring central Asian countries, Afghanistan, Iran, Georgia and Turkey.

Map 1
Traditional export markets



Source: ACEPAS 2010

Export of wheat from Kazakhstan to the closest neighbours is arranged by the means of railways, as this is the most price-effective way of shipment (Kalpakbayeva 2010). The grain for European and African destinations is delivered through the territory of Russia and sometimes Ukraine to one of the Black Sea ports and is traded on the base of FOB Black Sea price (Berezhnaya 2010).

Kazakhstan has direct access only to Caspian Sea, which means that any exports are complicated by transit, transportation and storage costs imposed by transiting country. The fact that the transport infrastructure is limited to one

terminal in port Aktau city, old railways and roads with limited capacity and considerable distance to the markets creates challenges for fully expanding exports (Kalpakbayeva 2010).

The capacity of port Aktau has been insufficient to ship wheat timely and in quantities required. In order to increase the country's export capacity the government initiated construction of the transportation corridor Aktau-Baku-Batumi to ensure sea route to Iran (ATFBank 2010). Regardless this initiative, Aktau port is able to ship wheat only in the destinations of Iran and Azerbaijan.

The price that farmers can get paid for their products is determined as FOB Black sea minus transport costs (*Bnews.kz* 2009). Thus the amount of transport cost is one of the determining factors, playing role on exports' profitability. According to the Mr. Kabdrahmanov, the Head of the FCC, the average transportation cost from Central Kazakhstan to the Black Sea via Russia or Ukraine is around 60 USD per metric ton (*Panorama* 2011). Therefore, the transport subsidy is expected to advance exports to the new international markets (*ibid.*). Moreover, the study by Kalpakbayeva (2010) reveals that price competitiveness of Kazakh wheat is high only for the closest export destinations such as Kyrgyzstan, China and Iran, where transportation of wheat is organized directly without transiting third countries territories. For the rest of the market Kazakh wheat's price competitiveness is rather low.

An additional factor hindering the pace of exports is the lack of its own wagons and grain trucks. Currently existing park of wagons and grain trucks has an export capacity of not more than 500 thousand tons a month, which is 6 MMT a year (ATFBank 2010: 13).

Another problem experienced by Kazakh wheat producers arise in the years of high yields. The storage capacity of domestic elevators was found to be insufficient, especially in the main wheat producing regions (Table 1).

Table 1
Certified elevator facilities by regions

Region	Storage capacity, MT	Level of provision*
Akmola	3 738,5	85%
Kostanay	3 618,2	78%
North- Kazakhstan	3 107,1	64%
Other	3 664	-
Total	14 127,8	83%

Note: Level of provision is based on 2009 wheat output
Source: Kazagro 2010

Because of the lack of certified elevators and the high cost of their services producers are forced to store wheat in non-certified facilities, which leads to high losses and worsening of the wheat quality. Moreover, to free

space for new yields in the elevators, it becomes necessary to move previous crop to other regions of Kazakhstan where storage capacities have not been used fully, which implies additional transport costs (*Panorama* 2011).

3.6 Conclusion

This chapter provided an overview of the policies and economic environment affecting wheat production in Kazakhstan. It has been established that different periods of development played important roles in the establishment of the modern wheat sector. The period of soviet farming shows the absence of the concerns about profitability of production, because of the state provision of inputs and distribution of outputs. Therefore, this system was largely criticised for inefficient use of resources.

The period of transition shows that the breakup of command economy exposes producers to market driven economy without any state support and reveals their inability to generate viable profits under new circumstances. The absence of producer incentives appears to be the main reason of the wheat output collapse. The last period sees improvements in wheat production coupled with the increase in state funding of agriculture supporting producers' incomes and provisioning domestic demand as well as creating additional incentives to increase production for international markets.

This period of improved growth with active government involvement and adoption of state strategies to support agricultural production seems to be the most stimulating for wheat output growth.

Chapter 4

Analysis of the Findings

4.1 Introduction

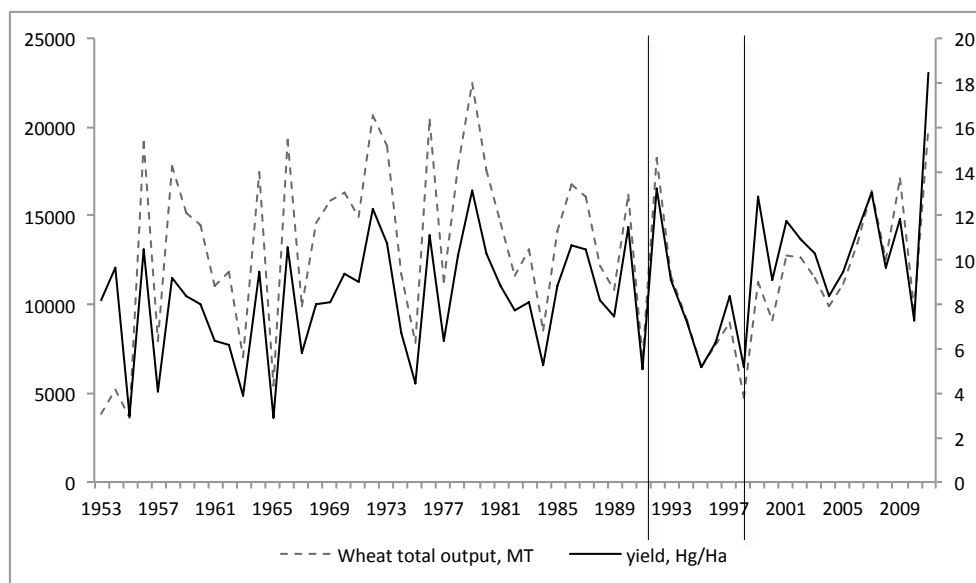
This chapter focuses on the analysis and the discussion of the findings on the Kazakh wheat production performance. The chapter discusses trends in wheat production by differentiating three periods of agricultural development defined in the background chapter. Similarly it discusses demand and supply factors affecting Kazakh wheat production and attempts to establish the relationship between wheat output growth and related variables.

The data for this paper was collected from different national and international sources. However, not always the data is available for all the time periods. In those cases the graphs represent only the records for available periods.

4.2 Analysis of the Kazakh Wheat Production

The earlier chapters showed that Kazakhstan produces a large variety of grains, but wheat represents about 80% of total grain production. However, wheat output is highly volatile. The Figure 4 demonstrates the history of yearly output and yields volatility for wheat since 1953.

Figure 4
Total wheat output and yields, 1953-2011*



* Note: The data for 2011 is as per 28 October 2011
Source: Author's own illustration based on AS RK and FAOstat data

The data shows that wheat production rose rapidly in three first years of the Virgin land campaign and maintained fairly high levels of production with increasing trends until the break-up of the Soviet Union. A large decline is observed between 1992 and 1998, which is followed by improved total production and yields trend. It is also depicted by the figure that wheat output volatility is a reflection of its yields volatility. This volatility is explained by weather conditions and corresponds to the information provided by National Meteorological Centre Kazgidromet in the Annual Bulletin of Monitoring of Climate Change in Kazakhstan (Kazgidromet 2010) about precipitation and temperature anomalies.

However, the Figure 4 also displays that yields volatility used to have large amplitude in the Soviet period and just after the break-up and has lessened since 1999. The Table 2 represents findings on amplitude and average yields for three periods and reveals that the period between 1999 and 2011 shows the lowest amplitude and the most improved average yield. Therefore we shall further identify the drivers of those movements in wheat production.

Table 2
Average wheat yield and its amplitude

Periods	Yield amplitude	Average yield
1953-1991	4,25	8,16
1992-1998	2,54	7,80
1999-2011*	2,46	11,12

* Note: The data for 2011 is as per 28 October 2011

Source: Author's own calculation based on AS RK and FAOstat data

Likewise, long-term changes in wheat output correspond to the changes in areas cultivated under wheat (Figure 5). As the Figure 5 indicates the total land under grains is relatively stable under the Soviet rule, although the decrease in land areas is observed since 1975. The first eight years of independence are tracked by a large decline in areas sowed and harvested conveying that output decline is caused by fall in land use. As it was suggested in the literature review, this period was characterised by uncertain land tenure conditions discouraging investments in land leading to output collapse.

The third period illustrates a sizeable rebound in land use, echoing the suggestion of a number of authors about effectiveness of state intervention and policies to promote output growth. Although the land area under wheat production has been increasing during the last decade, it has not reached its pre-independence level yet, suggesting that there is also a possibility of increasing production by the means of extensive farming, an opportunity not available to the majority of wheat producing countries.

Figure 5
Total grain and wheat areas harvested, 1953-2011*



* Note: The data for 2011 is as per 28 October 2011
 Source: Author's own illustration based on AS RK and FAOstat data

As pointed out earlier Kazakh wheat represents a large part of total grain production of the country and is tightly linked to animal husbandry. Those are subsidiary areas, as the outputs of one subsector are partially used as inputs for the other. The Figure 6 illustrates this relationship on a very clear manner. This figure suggests that in the years of a dramatic fall in grain production between 1992 and 1998 the number of cattle decreased almost three times, which is also in line with the findings of Baydildina et al. (2000: 738).

Figure 6
Relationship between grain production and animal husbandry, 1991-2010



Source: Author's own illustration based on AS RK data

However, this increase in the number of cattle was not reflected in the volume of meat production, this implies that because of the unavailability of feed for animals, the sector saw immense losses, which turned to be difficult to recover, as the country still cannot reach the pre-independence level in the number of cattle and volumes of meat production. However, we do also see that the long-term improvements in grain production after 1999 move together with slight improvements in the number of cattle heads. Although the change is not significant for the time being, the dynamics of the previous period permit to conclude that increasing output of grain in general and wheat for feed in particular should create favourable conditions for agricultural livestock rearing, which in turn would create additional demand for feed.

Overall, it has become evident that wheat production is an important part of Kazakh agriculture, the development of which has a significant impact on the livestock production and its long-term performance follows the general trend in economic development of the country since its independence. Moreover, the analysis revealed that country possesses large land areas, which used to be sown under the grain, but are not cultivated at present. This means that Kazakhstan can also adapt to increase wheat production by extending the cultivated land, in order to make up for the relative underperformance.

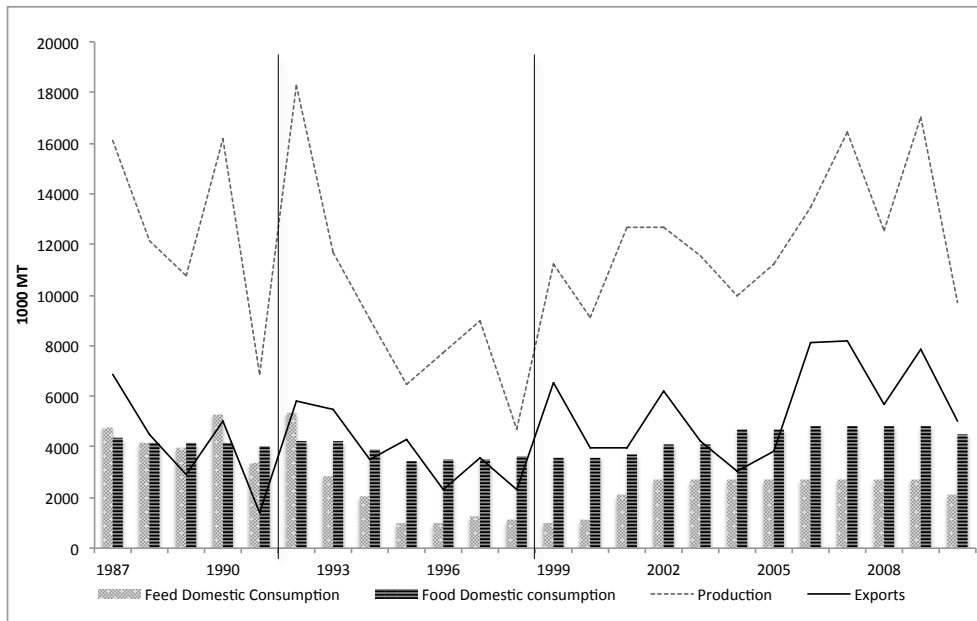
4.3 Analysis of Demand Side Factors

As an important producer of wheat worldwide Kazakhstan's main production is oriented towards both domestic and international consumption. We shall next look at the markets for Kazakh wheat and try to determine their absorption capacities in order to assess whether those markets can provide demand incentives to expand domestic wheat production.

4.3.1 Domestic market demand

By looking at the structure of wheat distribution one could determine that domestic food consumption of wheat has been relatively stable throughout all three periods (Figure 7). However, domestic feed consumption shows a different trend. During the soviet era feed consumption was almost at the same level as food consumption. The major fall in feed consumption happens in the period of transition. The volume of feed consumption declines from around 50% of total domestic consumption in 1987 to almost 30% in 2010, with a deeper slump in 1996 due to a decrease in the number of livestock following the break-up of the soviet economy as we have noted before. The figure also suggests that wheat exports are unstable and show the same volatility trend as total wheat output in all the periods.

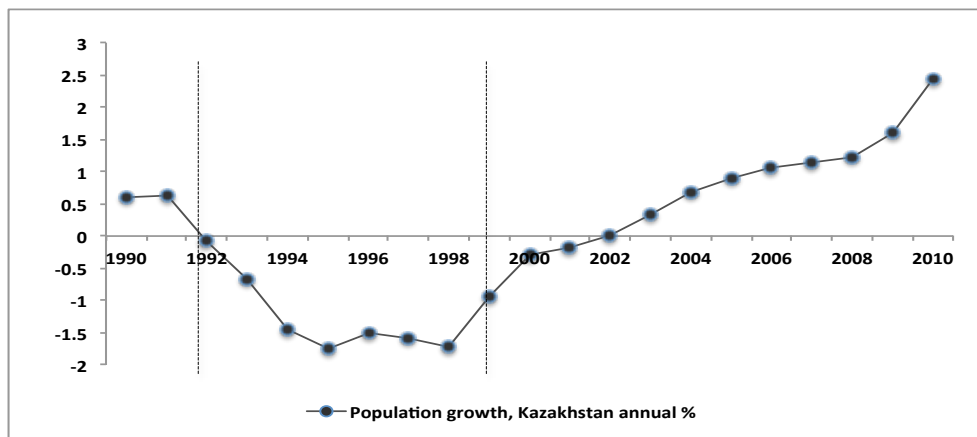
Figure 7
Distribution of Kazakh wheat output, 1987 -2010



Source: Author's own illustration based on USDA and AS RK data

As the literature review suggested, population growth rate might be one of the factors determining output growth. The Figure 8 shows population growth trend in Kazakhstan for the last twenty years. It is seen that although population growth was negative between 1991 and 2000, which coincided with first decade of transition and was largely explained by migration out of the republic, the numbers improve starting from 2002. The annual rate of population growth reaches 2.5 % by 2010. It is unlikely that the trend would rapidly change and therefore it is expected that it would at least keep the same rate of growth.

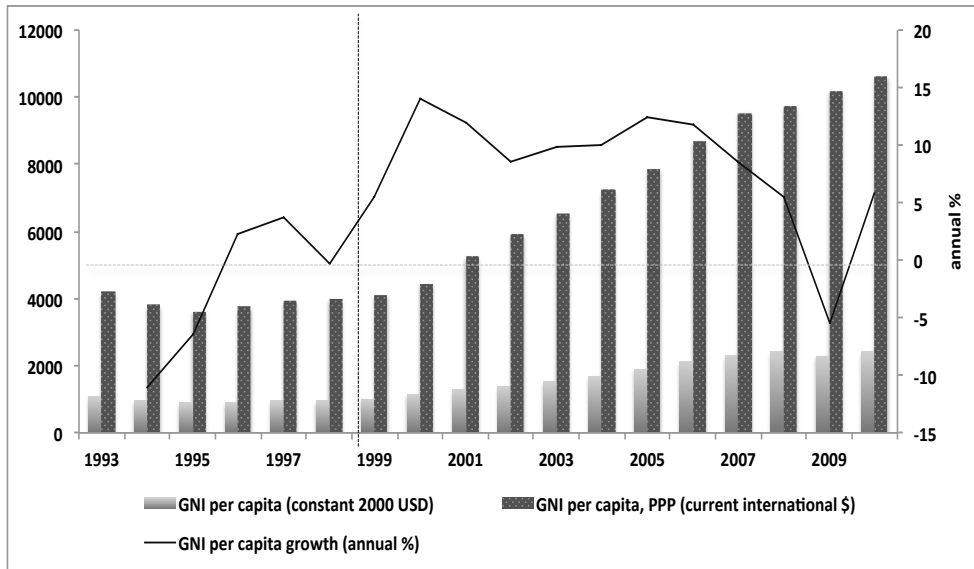
Figure 8
Kazakhstan - Population growth, annual %, 1990-2010



Source: Author's own illustration based on WB and AS RK data

Hence, one may expect that domestic market for food will grow in size. However, as the Figure 7 on wheat distribution shows, domestic consumption has not changed majorly in the last decade. The explanation could be that Kazakhstan has reached a level of lower middle-income country, where average incomes allow diversifying human diets out of grains.

Figure 9
Kazakhstan, GNI per capita, 1993-2010



Source: Author's own illustration based on WB data

Indeed Figure 9 indicates that although rates of GNI per capita growth are unstable, GNI per capita *per se* has been increasing. Whilst GNI in constant prices appears as not being high averaging around 2 000 USD, the value in PPP is almost five times higher, suggesting that incomes are relatively high and population has already reached an optimal level of food consumption and can afford food product diversification. Thus income elasticity of demand for wheat in the domestic market is low, which is consistent with arguments made by Johnston (1991) and Meng et al. (2000), suggesting that domestic wheat consumption for food is not likely to rise substantially and drive wheat production growth.

On the other side, as stated previously, domestic consumption includes feed consumption, the share of which has been falling throughout the years of our analysis. Given that the number of cattle stocks is improving and currently the government has been making efforts to promote animal husbandry due to a strong believe that this is the second largest potential agricultural export product one could expect that more demand for wheat for feed might appear in the future. Thus domestic demand for wheat is likely to increase under the condition of increase in animal husbandry population or significant technological change that would upgrade the wheat producing chain and

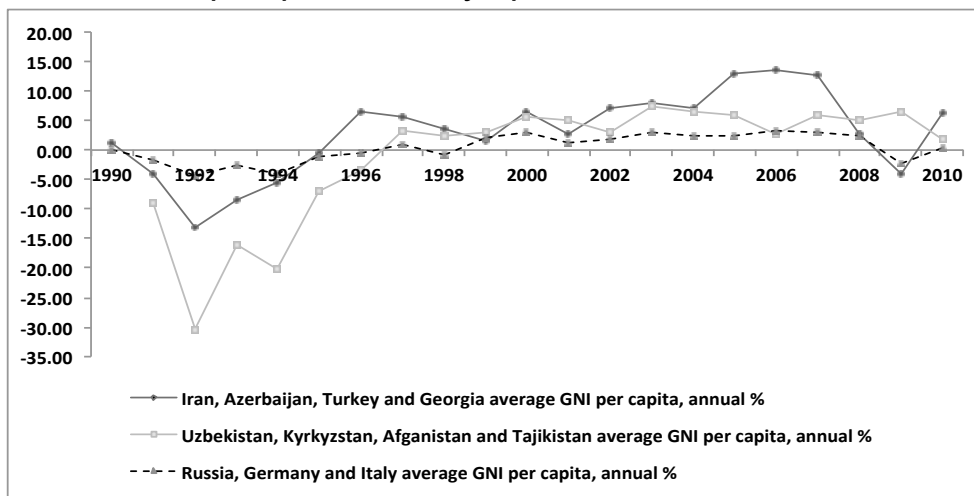
require wheat as an input for products with higher value added and larger markets.

4.3.2 International markets demand

Consideration of population and income growth rates in the main export destinations shows that traditional export markets for Kazakh wheat have not been experiencing considerable income growth rates, whilst population growth rates have been declining¹ (Figures 10 and 11). In addition a number of importers of Kazakh wheat, such as Uzbekistan and Iran have been increasing their grain production in order to reduce their reliance on imports of staple food (Suleymenov 2009).

Given the circumstances of the Kazakh wheat production it is possible to conclude that population and income growth of traditional markets in the last two decades do not seem to be driving wheat output increase. Whilst the absence of the data on exports of Kazakh wheat to Soviet republics, and their population growth rates during the period under Soviet rule does not permit to trace whether the production was driven by growing demand, it is likely to conclude using the arguments made in the background chapter that favourable demand conditions were present in that period, because the level of output was planned by the centre in Moscow to meet the needs of all the republics.

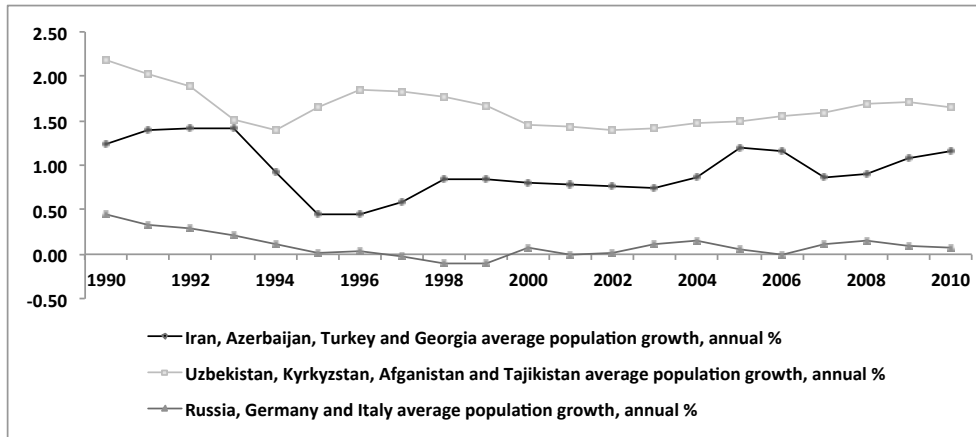
Figure 10
GNI per capita, annual%, by export destinations, 1990-2010



Source: Author's own illustration based on WB data

¹ For this analysis the indices of GNI per capita, population and their growth rates were generated for the countries in three export destinations distinguished in the background chapter.

Figure 11
Population growth, annual%, by export destinations, 1990-2010



Source: Author's own illustration based on WB data

Therefore it seems that in order to receive demand side incentives to increase production there is a need to look for the new markets with a larger capacity to absorb Kazakh wheat. By looking at the map of traditional markets presented earlier one could determine that other countries at the equivalent distance with the similar import needs could be a good addition to existing markets. Moreover, the reports by FAO (2011) and US wheat Association (Weigand 2011) revealed that among countries with growing FCI several are within the reach and comparable geographical proximity to the traditional export destinations. Those are Eastern Europe, Asia, and Middle East and North African countries. In addition, the presence of a large market such as China is also an advantage. Although China produces wheat domestically its import need for high quality wheat is large (Kalpakbayeva 2010).

Consequently, given rising consumption trends especially in the developing world together with current trends of import necessity of the same regions, Kazakhstan's geographic location can be seen as its advantage in terms of proximity to the markets with high import capacity. Having said that, another factor to bear in mind is that Kazakh producers are not the only ones with the same advantage. Producers of other two CIS net wheat-exporting countries – Russia and Ukraine, are competing for the same markets, as the quality of their products is comparable with Kazakh's.

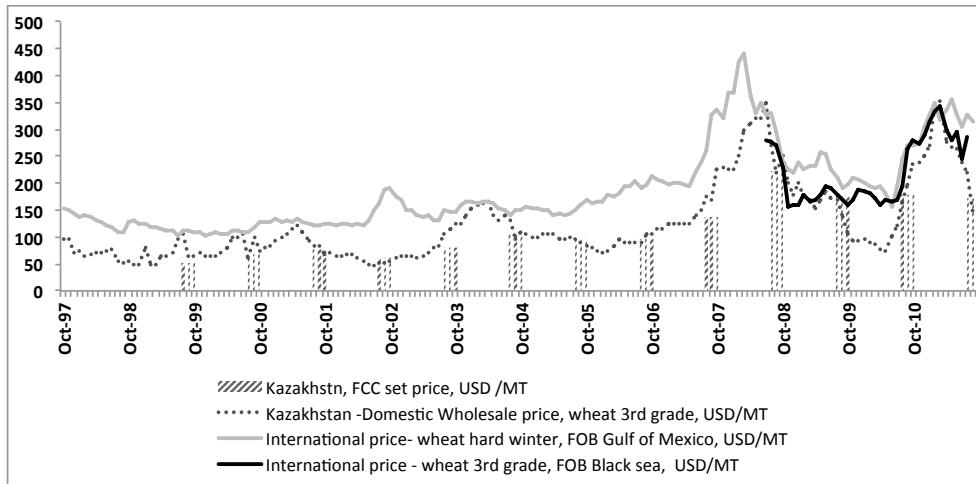
4.4 Analysis of the Supply Side Factors

The rising price of wheat was found to be among main drivers of wheat output growth and therefore they shall be examined in depth. As Figure 12 suggests international prices for wheat have been rising in the long term, although they have been showing major volatility signs. From the background chapter we know that Kazakh wheat has been traded mostly through Black sea ports. Although the data for FOB Black sea prices is limited to the last three years it shows clearly that the trends and levels are the same as for biggest trading port Gulf of Mexico.

The Figure 12 also shows that domestic wholesale price of wheat follows closely international price trends and suggests a high level of integration of

Kazakh wheat market to the international market. Bearing in mind that Kazakh wheat price is usually formed on the basis of FOB Black sea minus transport costs as stated by the Head of FCC (*Panorama* 2011) averaging around 60 USD per metric ton, what strikes the attention is that domestic wholesale price is higher than FOB Black Sea price in May – September 2008 and follows the price hike in international prices

Figure 12
Wheat prices, October 1997 – September 2011



Source: Authors own illustration based on WB, UNCTAD and Kazakh Zerno information agency data

Although this raises concerns about data accuracy, which is also a possibility, because the data on domestic wholesale price was collected from an unofficial source (Kazakh-Zerno information agency) and is used to provide a general direction in the price movements, this finding is in line with the ATFBank research suggestions (2010: 14). This research shows that the increase in the wholesale price was caused by high global prices and the concerns on that year’s wheat harvest. This is why government banded all the exports for the given period in order to control inflationary trends within the country. However, when the concerns were found to be groundless the ban was removed and the price decreased immediately.

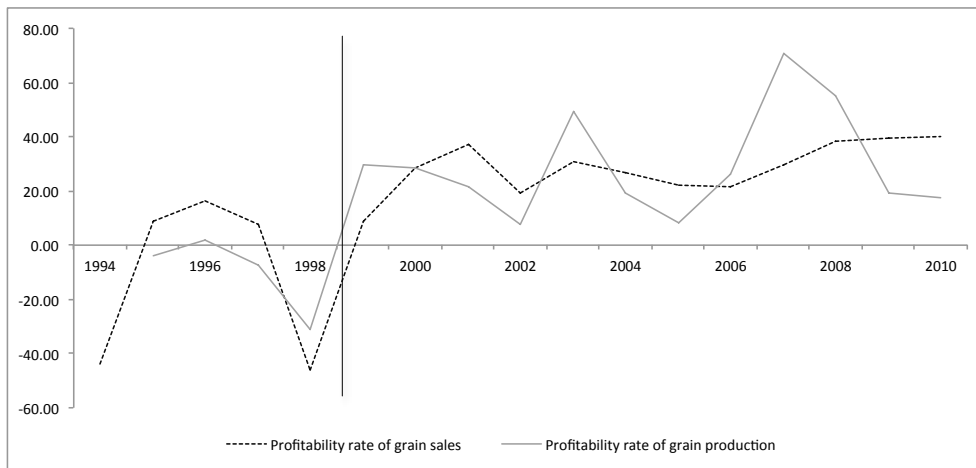
Moreover, the interventional price, established by FCC in July 2008, which was lower than domestic market price, coupled with the export ban, drove the wholesale price down. Nevertheless that was the single case of practice of export bans in Kazakhstan. Although the harvest of 2010 was one of the lowest, the government did not restrict trade, but it procured the necessary amount of wheat to the domestic market by the means of state acquisitions of wheat directly from farmers to the strategic reserve based on a price settled within the agreement between FCC and the Union of the wheat producers of Kazakhstan (Gabitov 2010).

Although the price for the domestic state purchase of wheat was agreed at the level of 180 USD, whilst the wholesale price averaged at 250 USD, one should bear in mind that the wholesale price is set by the retailers and includes transportation costs. Therefore, farmers agreed to the price offered by state as

it fully covered the cost of production and FCC procured 2 Mln. tons of wheat for domestic consumption avoiding involvement of traders and additional 1 Mln. Ton for the state reserve at the market price (ibid, *Delovaya Nedelya* 2011). This means that in 2010 FCC managed to take control of the market and protected domestic prices from the international price tendencies without damaging farmers' incomes and restricting exports.

However, there are still disagreements about profitability of wheat production. Whilst government officials argue that with all the state support this sector has become highly profitable, farmers disagree and claim that their rate of profitability is very volatile (ibid). The Figure 13 represents two profitability indices. Overall both indices show positive levels since 1999. The data prior to 1994 is unavailable, and therefore it is difficult to analyse rates of profits for the missing years. Despite showing large drops between 1994 and 1998, the profitability of grain sales, which is the rate of profitability of grain traders, has been stable in general.

Figure 13
Profitability rates, 1994-2010

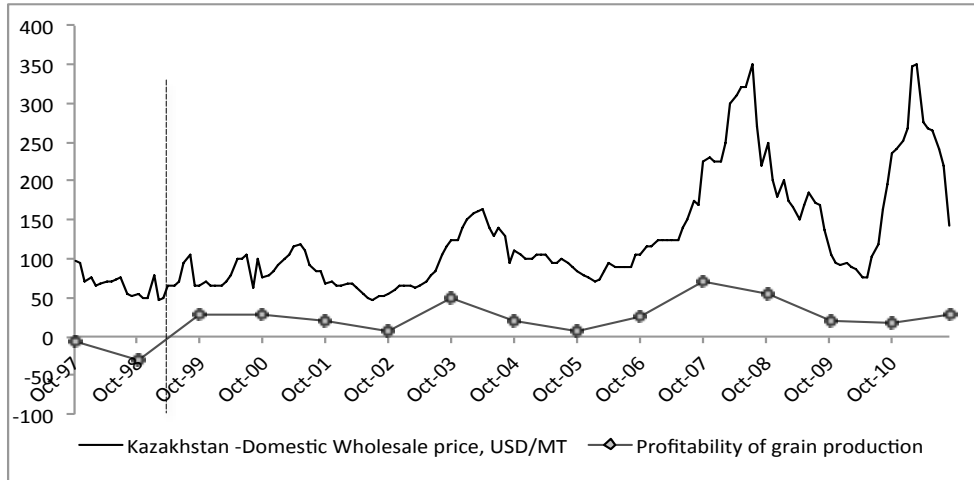


Source: Authors own illustration based on AS RK data

The rate of producer profitability represents farmers' profits and shows more volatility, which means that although farmers can generate higher levels of profits as in 2006-2008; they are more risk-averse. Therefore, the government officials' argument is valid for traders, who show rather stable profitability averaging around 30%. Keeping in mind that the state has been subsidizing grain export through the transport subsidy since 2009, which is paid to traders to diminish their costs, this also reflects in their profitability.

If we plot profitability of wheat production against its wholesale price, we can clearly see that profitability follows closely the trend in domestic wholesale prices, which means that a higher price permits earning a larger mark-up (Figure 14). However, this Figure contains a small inaccuracy, because the wholesale price was taken as a proxy to replace the farm-gate price whose data is unavailable.

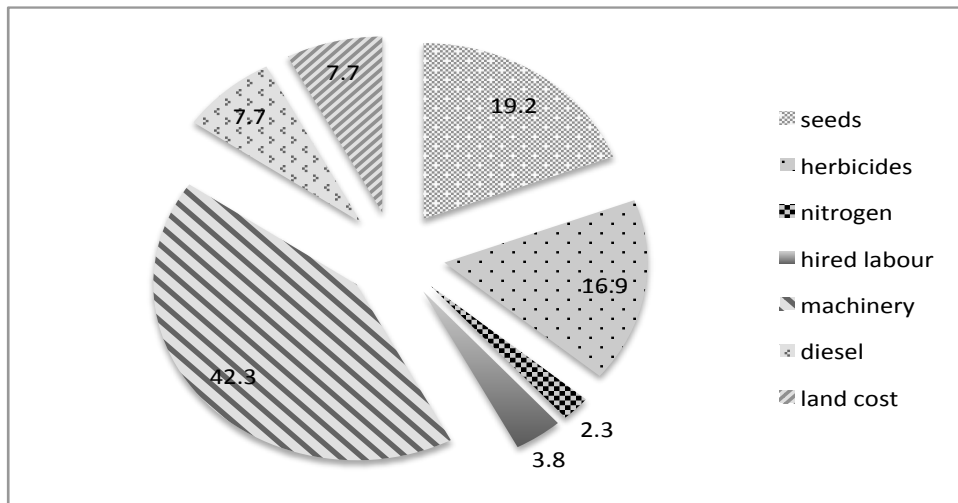
Figure 14
Domestic wholesale prices and rates of profitability, October 1997- September 2011



Source: Authors own illustration based on Kazakh-Zerno information agency and AS RK data

In order to explore producers' profitability even further and make our analysis complete, we shall also look at the production cost and its structure. Figure 15 demonstrates that the main part of the cost is composed of machinery, which means that machinery park of wheat growers requires large investments. According to the Agency of Statistics, inventory of agricultural machinery has reduced significantly over past 20 years. A large share of the machinery is more than 15 years old (FAS USDA 2010). This is why framers either invest heavily in the new machinery or have to spend on the maintenance of the old assets.

Figure 15
Cost composition for production of 1 MT of wheat, % of total

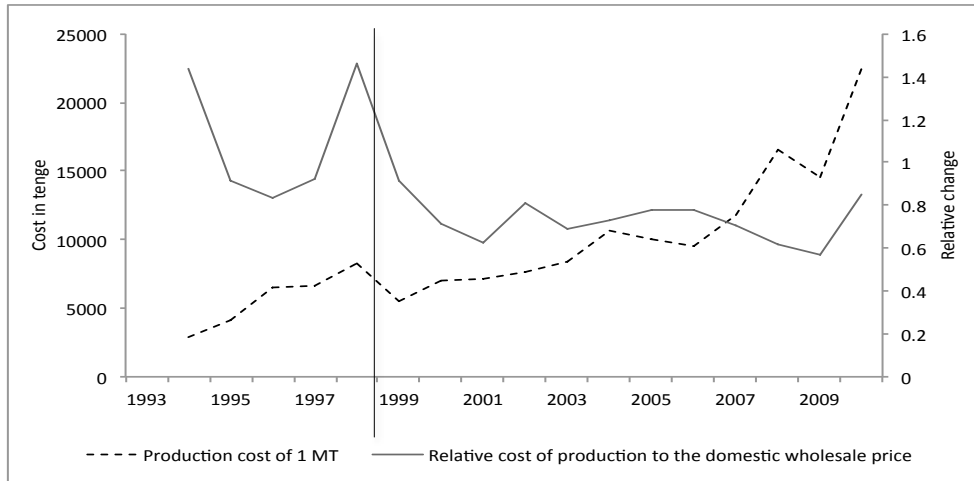


Note: Cost composition is based on 2010 estimates of producer expenses and profits

Source: Authors own illustration based on Zimmer 2011

The shares of seeds and herbicides acquisition are the next largest at about 19% and 17 % respectively. The costs of hired labour, land and other inputs appear to be minimal, which is in line with Neumann et al. (2010) finding stating that grain production in Kazakhstan is cost effective in terms of cheap labour accessibility. On the other side, although the cost of production has been constantly rising, the relative cost of production to the domestic wholesale price sees a sizeable decline, although relatively unstable (Figure 16).

Figure 16
Production and relative costs, 1994-2010



Source: Authors own illustration based on and AS RK and Kazakh-Zerno information agency data

Again, the relative costs are high and extremely unstable in the transition period, when the increase in input prices due to the liberalization of the market and low output prices lead to the deterioration of the entire sector. This point was also made by a number of authors and was stated in the literature review. However, the relative cost decreases and maintains a relatively stable level, except for the year 2010, when low output and moderate price for wheat increased the cost compared to the output price. Still this slight upswing becomes visible because of the deep reduction in the relative cost in the previous year.

To sum up, this part of the analysis revealed that the increase in international wheat prices seems to provide incentive for producers to expand production, but their profitability is very sensitive to the price changes. On the other side profitability rates for both producers and traders have improved since 1999 and are likely to mirror a long-term average increase in international wheat prices and a decline in relative production costs. Moreover, long-run levels of production and amplitude with average wheat yields reflect the periods in profitability rates, leading to the conclusion that one of the important drivers of production growth is profitability expectations of producers. Therefore, the next section shall look at the factors that can explain profitability dynamics.

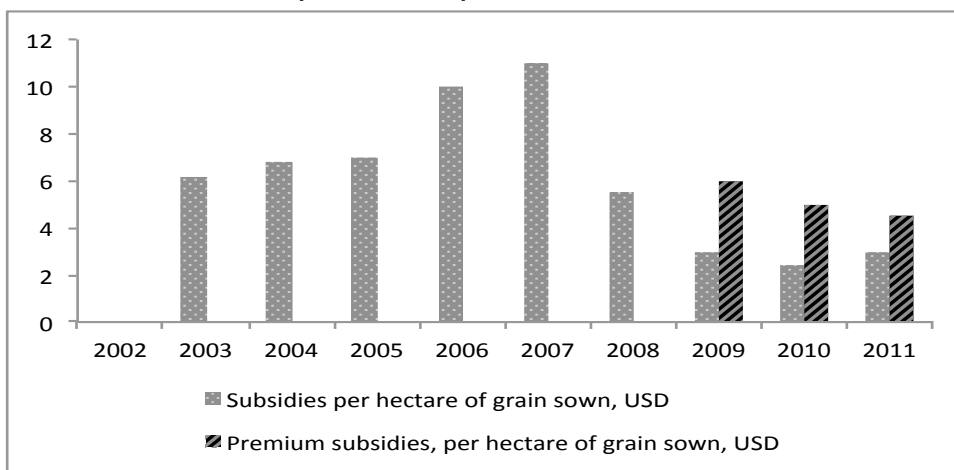
4.5 Analysis of the Impact of Government Intervention

It was previously stated that the government has been directly addressing the cost components by subsidizing seeds, fertilizers and bank interest rates for machinery acquisition. The government seems to be fairly successful in helping farmers with subsidies over the last decade. As stated earlier, overall improvements in wheat production started in 1999 and the state support programme for agriculture started in 2003.

Although there is no data on the amount of subsidies for each input separately, the data on average level of subsidy for seeds and fertilizers per hectare of land is available (Figure 17). This Figure shows that prior to the launch of the programme there were no subsidies to the farmers within a strategic development framework.

Since the beginning of the programme the subsidies are allocated to the farmers per hectare. However, it seems that this type of subsidy may lead to an unbalanced distribution of funds. As larger the land plot, greater is the amount of subsidy that the producer gets. This means that large producers, often represented by vertically integrated holdings with participation of transnational companies that are less constrained financially, are the most likely to receive most of the subsidy. Whilst smaller producers receive less, as their land plots are smaller.

Figure 17
Input subsidies per hectare, 2003-2011



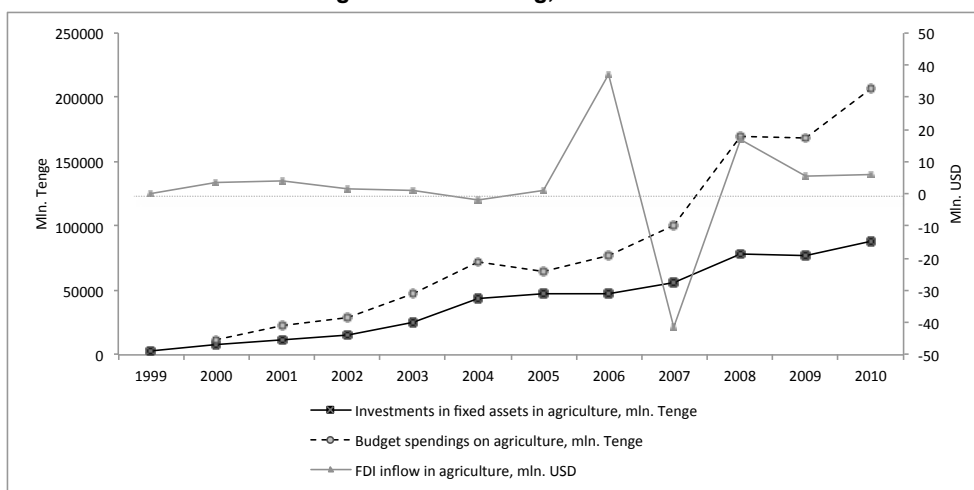
Source: Authors own illustration based on Kazakh-Zerno information agency data

Moreover, as subsidies are distributed on the per hectare basis, they do not necessary imply increased productivity. If it were allocated per unit output, or on the basis of combination, it would have forced producers to increase output and productivity and hence use more advance technology. In order to better assess the effect of this type of subsidies further research on the fund allocation by producer type is required.

However the figure also shows that the government has been also trying to stimulate productivity by diversifying subsidies. Therefore starting from 2009 it differentiates subsidies and introduces premium subsidy for those producers who are using resource-saving technologies and experimental varieties of seeds, which is nearly the double of the conventional subsidy.

As there is no published data on the volume of subsidies in general and by input category, the general data on government spending and investments on agriculture as proxy explanatory parameters is examined. As the Figure 18 depicts, the level of spending on agriculture was close to zero in 1999. With improvements in the overall economy of the country, agriculture started receiving more investments and public funding.

Figure 18
Agricultural funding, 1999-2010



Source: Authors own illustration based on the data from National Bank of Kazakhstan

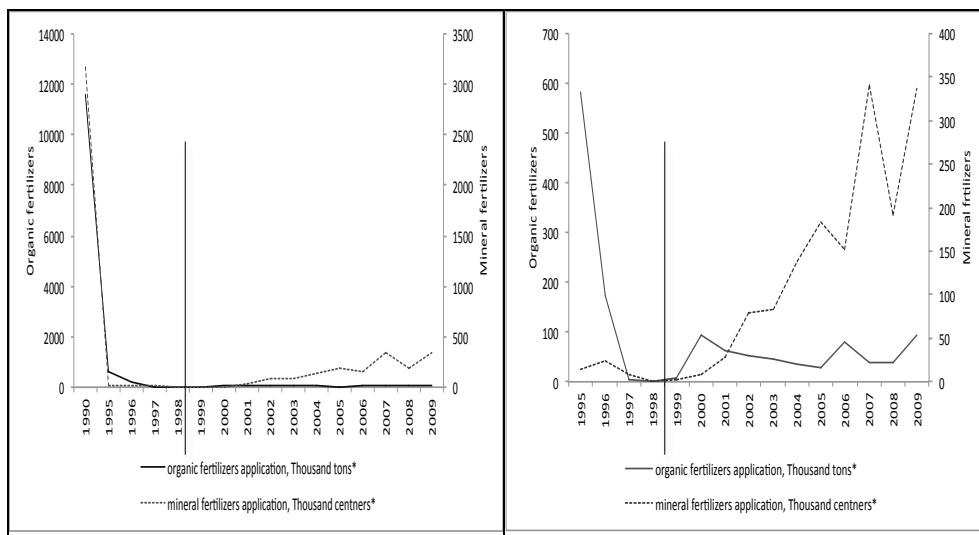
The figure also plots the data on foreign direct investment (FDI) in agriculture. It seems that this sector is seen as unattractive for FDI, which implies that grain sector does not receive any substantial foreign investments. Except for a surge in 2006 and an identical flow out in 2007 the level of FDI is close to zero. Nevertheless, the availability of arable land in Kazakhstan is seen as an attractive investment for a large number of foreign investors and officials and private entrepreneurs from China and UAE have already expressed their willingness to invest in Kazakh farmland (Visser and Spoor 2011: 312). Hence one could expect an increase in FDI inflows to the agricultural sector in the near future, although it does not necessary imply FDI inflow in wheat production.

As one of the major spending categories of public funds for the producers support is a subsidy on fertilizers application, we shall further examine whether government spending had a desired impact on fertilizer use. The Figure 19 depicts two graphs. The first graph shows the trend for two types of fertilizers starting from 1990, and as the fall in fertilizer use was

dramatic the author removed the data for 1990 and presented the findings starting from 1995 in the second graph in order to deliver a sharper picture.

The first graph in the Figure depicts that there was a very large decline in fertilizer application since 1990. Soviet Economy was often blamed for overuse of inputs and ineffectiveness of production and now it is difficult to assess what is the effective rate of fertilizer use. However the level of the decrease of fertilizers corresponds to the long-term output decline within the period of transition. The second graph in the Figure clearly shows that the improvement in fertilizer application already started in 1999, which suggests that the terms of trade for inputs and outputs have become adequate to increase their usage. Moreover, the application of the mineral fertilizers rises even further starting from 2003, implying that introduction of fertilizer subsidies further enhanced its usage. The rate of organic fertilizer application has not changed noticeably, as it is linked to the production of the manure by the livestock.

Figure 19
Use of fertilizers*, 1990-2009



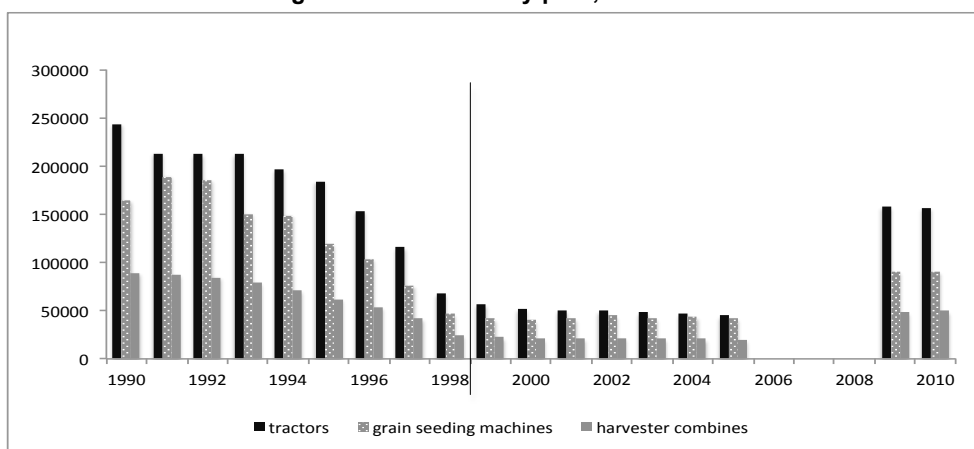
*Note: Use of fertilizers in three main wheat producing regions: Akmola, Kostanay and North-Kazakhstan

Source: Authors own illustration based on AS RK data

Lastly, as the literature review on the government support measures suggested, bank interest rates were also subsidized for the acquisition of agricultural machinery. However, the data on credits for agricultural sector and the volumes of subsidies was not found. Therefore, we shall study changes in this area by using previously discussed investments and state funding levels in agriculture.

The Figure 20 points out that the number of agricultural machinery was declining starting from independence until 2000. Although the inventory of the machinery was large enough to sustain production in the period of transition, however it did not result in output growth because of the absence of the producer incentives.

Figure 20
Agricultural machinery park, 1990-2010

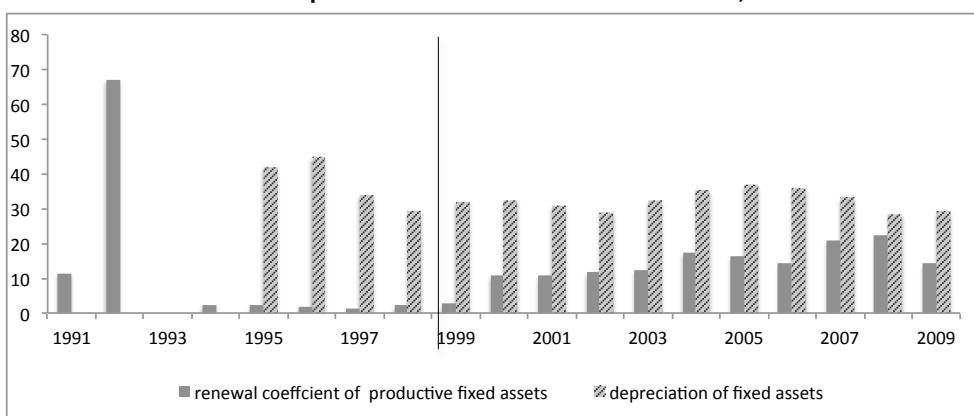


Source: Authors own illustration based on AS RK data

The figure does not show any significant changes for the period between 2000 and 2005 and the data for following three years is unavailable. Nevertheless, we see a considerable change in 2009, meaning that there were investments in assets made in previous periods as well.

Despite these findings one should also consider that the number of the machinery does not show its rate of deterioration and renewal. It was established that inventories of agricultural machinery has deteriorated significantly over past 20 years and a large share of the machinery is more than 15 years old (FAS USDA 2010). In line with the above argument the Figure 21 depicts that depreciation of the fixed assets in agriculture sees visible changes from almost 50% in 1996 to 30% in 2009.

Figure 21
Renewal and depreciation coefficients of fixed assets, 1991-2009



Source: Authors own illustration based on AS RK data

The renewal rate was exceptional in 1992, and most probably the machinery was renewed just before the collapse of USSR. That was followed by almost undetectable renewals until 1999 and steady improvements since then, suggesting that investments in fixed assets presented in Figure 18 backed by subsidization of interest rates were reflected in the increase of machinery acquisition.

To sum up this section, it is established that the period of transition saw very low levels of renewal of agricultural fixed assets, a dramatic decline in fertilizer use due to imbalances in input-output prices, high levels of relative cost of production and absence of government support explaining low levels of profitability of wheat production and consequently lower output.

The period after 1999 sees introduction of government support measures leading to the increase of fertilizer use, improvements in the fixed assets renewal coefficients, and gradual growth in the number of agricultural machinery. All of this seems to be leading to decreasing relative cost of production and improved profitability rates, which consequently finds reflection in substantial productivity growth and hence higher level of total output.

4.6 Conclusion

This chapter attempted to provide a detailed analysis of the trends in the wheat production. It was established that domestic and traditional market demand is unlikely to drive Kazakh wheat production growth under the current conditions. Because of the limited capacity of these markets it seems that there is a need to find new market destinations.

The performance of wheat production was analysed by periods. It was found that the period under Soviet rule shows positive output growth despite high yield volatility due to expansion in land use. Demand for Kazakh wheat in this period is assured by Soviet republics and domestic food and feed consumption.

Wheat production in the period of transition sees a large downturn, although main production factors were present. Over this period on the demand side feed consumption falls. On the supply side land areas cultivated under wheat decrease dramatically, use of fertilizers drops exposing the lack of producer incentives and negative profitability of production.

The third period from 1999 onwards shows growth and improvements in yields. These trends are explained by state involvement in grain sector with supporting policies and public funding of agricultural subsidies, which improved profitability rates of producers and stabilised profitability of wheat traders. After the state got involved, wheat production seems to have improved, although the effectiveness of the state policies needs to be explored further.

Overall, it seems that the basic driver of wheat production growth is the rate of producer profitability conditioned by the presence of demand for wheat. However, achieving viable levels of profitability is unlikely without state support and therefore measures targeting improvement and stabilisation of farmers' incomes seem to be crucial.

Chapter 5

Conclusions and Policy Implications

The main objective of this research was to investigate and analyze the performance of wheat production in Kazakhstan and to define major demand and supply factors affecting its output growth. The study started with a literature review on factors affecting production growth and brought the debate between proponents and opponents of state involvement in the economy.

The literature review suggests that on the demand side increasing per capita incomes in developing countries are likely to be the driver of production growth. Whereas on the supply side the main factor affecting production is producer's profitability. Although the study reveals that market signals are important in defining production levels and supply of a food commodity, state involvement and regulation of the strategic food crop production is necessary to improve producer's incomes and provide support against markets imperfections, price volatility and weather vagaries.

It was also argued that government support to producers should be a part of a broader agricultural development programme targeting long-term agricultural growth, and should therefore include institutional improvements, investments in infrastructure and R&D.

The study showed that periodization is not only possible but also necessary to analyze the wheat production trends in Kazakhstan and supply side drivers. It explored the Kazakh economy and its agricultural sector as a background for the wheat production analysis and defined three distinct periods of wheat production tightly linked to the overall economic development. The first period was command economy between 1953 and 1991.

The period of transition between 1992 and 1998 is characterized by a painful transition from command to market oriented economy, wild market liberalisation process, non-interventionist state policies, and high transaction costs. All economic indicators collapsed in that period and wheat production fell dramatically.

The third period of improved wheat output starts in 1999 and sees significant investments in agriculture. This period was portrayed by active state involvement in the grain sector - large public investments in infrastructure, producer support measures, all within the Strategic Plan of Development of Kazakhstan.

The analysis of the Kazakh wheat production reveals that wheat output was sluggish under non-interventionist policies supporting free markets and its performance improved significantly once government stepped in. It was established that the period of transition saw very low levels of input; high levels of relative cost of production and absence of government support all explaining low levels of profitability and lower output. The period of large

public investments in support measures improved profitability of wheat production and led to the increase of average yields, areas of land under wheat cultivation, size of agricultural machinery park and consequently long-term output increase.

Nevertheless, the study uncovers that subsidies might not be as effective as they are designed to be, as they do not reach all producers. Moreover it was also established that the sector's performance is limited to the development of accompanying infrastructure. The problems related to limited capacities of storage and transportation facilities that remain even today were found to be one of the limitations to the expansion of the industry.

Overall, the study revealed that the forces hindering Kazakh wheat production are low level of demand for wheat in domestic and traditional markets coupled with institutional and infrastructural problems. Among factors contributing to the improvements in productivity and production growth are abundance in arable land, possibility to reach new markets and government's commitment to promote wheat production and support farmers' income and profitability. Therefore based on the present findings it seems that following policy suggestions would further enhance the performance of Kazakh wheat production.

Government support measures meant to improve wheat output should remain and even increase and reach at least the level prevalent in Kazakhstan's main competitors in the wheat market. Subsidies should be targeted in such way that it stimulates further productivity growth, addresses output volatility and secures stability of exports so that Kazakh producers become reliable suppliers of wheat to international market. As current markets capacity does not seem to be stimulating output growth, looking for new markets is necessary in order to address low driving force of demand, where export subsidy is seen as an effective measure to help reaching those markets.

In addition to direct support measures increasing investments in R&D, knowledge and capacity building are important. Promotion of FDI inflow in agriculture and agro industry would bring additional benefits in forms of new technology and capital. To promote advance research in this area government should solve data availability problem by making state bodies more accountable and transparent. Due to data limitations, a number of important factors were not thoroughly explored. Future research needs to be done in more detail on issues that are not explored in depth.

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