Cultivating Russia's Forgotten Treasure

Explaining the current international agricultural investments in Russia

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Ina Cronstedt 20051
Ida Sundahl 20055

Supervisor: Ari Kokko
Examiner: Mats Lundahl

This paper attempts to answer *to what extent and how can the current foreign investors capture the alleged potential of the Russian agricultural market?* The question is answered in a combined analysis of Russia's comparative advantages in agriculture, expressed in terms of relative factor endowment, and an analysis of the competitive advantages of the foreign investors. Black Earth Farming Ltd. is used to exemplify the foreign investors. It is shown that Russia has comparative advantage in agriculture but that it takes a financially strong investor to realize the potential. Being a foreign investor induces constraints but can bring competitive advantages.

Contents

1 Introduction

Here the purpose behind the thesis is presented followed by an outline of the methodology and the delimitations.

1.1 Purpose

"Russia has all the potential to play an ever increasing role in the global agricultural market" (Black Earth Farming Ltd., 2009, p. 4). Companies active on the Russian agricultural market use the high profit potential of the unexploited Russian agricultural land as a core selling proposition to the investment community. Despite the high risk factors involved, recent developments show an increasing volume of foreign investments into the Russian agricultural sector[1]. The capital typically enters Russia via foreign agricultural holdings, often based in tax-havens such as Cyprus and Gibraltar, who invest in land and then set up a number of large-scale, capital-intensive, Russian agricultural subsidiaries. This behavior demonstrates an active rather than passive involvement of international investors looking to take advantage of some kind of opportunity on the Russian agricultural market.

There are still people who believe that the land grabbing in Russia is a speculative opportunity that has emerged from an institutional change coinciding with a current global rush for agricultural land. Indeed, the global competition for agricultural land has intensified. Whether or not the activity taking place in Russia is pure speculation, there must be a belief that the land will generate cash flows at one point. This seems to contrast the historic development of Russia's agricultural sector. Looking at Russia's increasing trade deficit in agricultural output[2] and decreasing the area of cultivated land[3] over the past two decades suggests that Russian agricultural land has not been a sought after investment target. Rather, it gives the impression that land has become a forgotten resource.

Considering the fact that many of the agroholdings are undertaking significant investments not just into the acquisition of land but also into making the land productive, it is probably more than just a speculative activity. This invites to a closer examination of actual potential of Russia's agricultural sector and an evaluation the situation foreign investors are getting involved in. Foreign investors typically face much greater challenges than domestic market players, wherefore they require sufficient returns that

[1] See *Appendix C.1*
[2] See *Appendix E.*
[3] See *figure 1* in *section 2.1.*

can compensate for the additional obstacles. In other words, the target market needs to hold good profit potential and the foreign investors need to be competent enough to be able to stand up against the local competition and extract these profits.

In the light of this we evaluate conditions of the Russian agricultural market and the qualifications of the foreign investors to determine *to what extent and by what means can the current foreign investors capture the alleged potential of the Russian agricultural market?*

As there are multiple foreign investors that have taken the step to invest and operate on the Russian agricultural market we hypothesize that the sector holds sufficient economic potential, which foreign investors can realize via the employment of strong competitive strategies.

1.2 Methodology

Given that the research question calls for a better understanding of both the potential of the Russian agricultural market and the ability of the international inventors to capture any such potential, the study should ideally take both a macro perspective of the market and a micro view of the active organizations. For this reason we choose to adopt a combined analysis of comparative and competitive advantages. The two are not necessarily studied in conjunction since they belong to different schools; comparative advantages are a fundamental principle in economics and international trade theory and competitive advantages are more commonly spoken of in business strategy contexts.

We regard the two concepts as strongly complementary for our study where one examines the state of the industry and aspects firms cannot influence directly while the other turns the attention to firms' self-made factors to be able to participate in the industry. Indeed, trade theory and the comparative advantage principle have been criticized for being unable to explain intra-industry international trade. Nevertheless, they have long served to explain the structure of goods trade, especially commodities. Together they cover both the prerequisites for agricultural commodity production and for foreign direct investments (FDI) into Russia.

While the study is rooted in these two theories and related ideas, this is a study with considerable amount of empirical research necessary for both for the theoretical analysis and for the background information. The phenomenon touches several disciplines. First of all it deals with FDI in land, which have increased in the past few years on a global level and in most cases on a much larger scale than in Russia. Then, since we are dealing with Russia we are also dealing with the process of transition from a

planned to market economy. Consequently there is an interesting history on the development of its agricultural sector. Then there is the more technical side of agriculture, both in terms of production and in terms of economic aspects. We cannot incorporate all these aspects into one study but since they are still of high relevance they are covered in the background section.

For the actual analysis we employ statistical databases, reports, company information, and interviews as sources of information. The comparative advantage analysis consists almost exclusively of statistical data extracted from international databases managed by the United Nations (UN). This guarantees a certain level of standardization, which is advantageous as we are conducting a cross-country comparison. The competitive advantage analysis is based on a case of one of the larger and longest operating international investors in the Russian agricultural sector, Black Earth Farming Ltd. (BEF). Using a combination of interviews, company reports, and independent reports we assess the degree of competitiveness this company has to then be able to draw general conclusions for similar companies.

1.3 Delimitations

Although we try to carry out a comprehensive study balancing both macro and micro aspects we will not be able to give a complete answer to the research question. It really asks why and how international investors are taking the big step to invest in Russian agriculture, which can be answered in many alternative ways even if staying within the discipline of economics. We limit the study to an analysis of comparative and competitive advantages

Even the comparative and competitive advantage analysis has to be limited since there are numerous possible advantages for both kinds. The comparative advantage study covers a selected number of agricultural production factors for one category of agricultural goods. Hence we cannot draw full conclusions for the agricultural sector overall. Furthermore, we stick to only one analytical interpretation of comparative advantages, although there are others. Consequently we have to reserve for the fact that our conclusion could have a different outcome with an alternative analytical definition of comparative advantages and the inclusion of other production factors. To facilitate the interpretation of the comparative advantage analysis we carry out a benchmark study against other countries, and also these are limited to include just a few. We must also reserve for reporting errors in the statistical databases because, although we extract data from harmonized databases, data collection methods are not always the same.

The competitive advantage analysis is limited to a few kinds of advantages, although there are several other strategies and assets firms could use to compete on the Russian agricultural market. We try to keep the focus and analyze only the most crucial advantages selected based on our findings from the empirical and theoretical research. Empirically, BEF has the biggest input in our selection and analysis overall. This is when aiming to generalize the results but with the help from theory, other reports and studies we try to overcome the fact that we are limited to just one company.

A final aspect to consider about the scope of this study is that it will not enable us to make too many predictions about the prospects for the foreign investors in Russia. We aim to make conclusions about the condition of the Russian agricultural sector and about the performance of the international investors thus far. To a certain extent this can serve as a stepping stone for making predictions about the future, which will also try to do, but it will not be the focus of the thesis.

2 Background

It cannot exactly be classified as a revolution, but through the increased international land investments global agricultural production is changing away from being run by country-bound farmers and companies to multinational enterprises. This section provides an overview of the agricultural sector in Russia and the development over time. Following is a section on the current development within the area of foreign investment in agricultural land, globally and in Russia. The next section treats the conditions that characterize the Russian agricultural sector and makes a presentation of BEF. to the last section provides some insight into how the pricing on the grain market works to better understand the rationale behind the development in different parts of the world, not the least in Russia.

2.1 Agricultural History of Russia

A century ago Russia, with its highly fertile black earth belt, was a leading producer of agricultural products topping the world exports of several grains (Goodwin & Grennes, 1998). At the beginning of the twentieth century the sector experienced somewhat of a revival as the Stolypin Reforms, granting peasants land ownership rights, boosted productivity and output. Russia became a net exporter of grains and served as Europe's breadbasket (Medvedev, 1987, p. 14).

The picture changed during World War I, which disrupted agricultural activities and turned the production surplus into a shortage. The lack of food spawned demonstrations and a resentment against the monarchy and combined with other conflicts ultimately resulted in the 1917 Red Revolution (Medvedev, 1987, pp. 20-21). The regime, convinced of being capable to enhance productivity in every sector, eliminating ownership rights, including those over land. Land was nationalized then collectivized into state-owned Sovkhozes and collective Kolkhozes (p. 70).

Whether or not the collectivization process fulfilled its main purpose of improving efficiency in the agricultural sector is disputed. Western scholars have repeatedly blamed the Soviet Union for being unproductive (Allen, 2001), which is a reasonable conclusion if one considers the fact that private land represented only 1.6 percent of total arable land but produced about a third of total agricultural output. At the same time the private sector had much lower productivity per farmer. Overall both private and nationalized farms performed poorly in comparison their Western counterparts (Medvedev, 1987, pp. 364-365). What is unfortunate is that during this time much of the agricultural knowledge that had prevailed during Tsarist Russia disappeared (Black Earth Farming Ltd., 2007).

Seeing how successfully China had reformed after the communist regime expectations in Russia were high as the Soviet Regime fell in 1991. On the contrary the Russian agricultural sector, despite various reforms, almost collapsed in the decade that followed (Rozelle, S. & Swinnen, J., 2004).

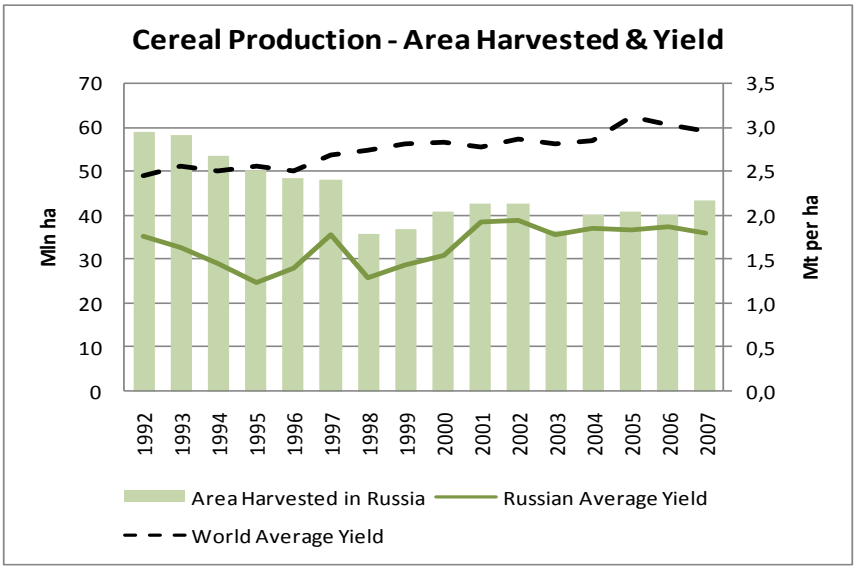

Figure 1 – Area used for Russian cereal production and Russian average cereal yield vs. world average cereal yield (Faostat, 2009).

As *figure 1* shows, the area used for harvesting cereals decreased by 25 percent since Soviet's fall and while world average yield increased by 20 percent the Russian yield saw no improvement. In combination with the 20 percent decrease in harvested land this resulted in a cereal output drop by almost a quarter.

Many studies[4] have tried to identify the reasons for the collapse and most fall back on the failure to privatize. Former president Yeltzin initiated the first reform aiming to establish market-oriented farms by privatizing the Sovkhozes and Kolkhozes (Gidadhubli & Mohanty, 2002). These were turned into joint stock companies by allotting land shares to employees, who were then free to farm on an area corresponding to their allotment. The process had two main problems. Firstly, having been under the comfort of the communist system, the new landowners were both unwilling and unable, not only financially but also knowledge-wise, to run their own farms. Secondly it was next to impossible to identify the true land owners and shares were allotted without demarcations, which may be one of the

[4] See for example: Dolinskaya, I. (2002). Explaining Russia's Output Collapse. IMF Staff Papers , 49 (2), 155-174.; Mathijs E. & Swinnen J. F. M. (1998) The Economics of Agricultural Decollectivization in East Central Europe and the Former Soviet Union. Economic Development and Cultural Change, 47 (1), 1-26.; Rozelle, S. & Swinnen J. (2004).

biggest issues in the whole privatization process (UNDP, 2002). Furthermore, the sector has suffered from an almost chronic shortage of capital due to several reasons and the capital that has been available in Russia has shown little interest in agriculture (FAO, 2009).

It is only in the past decade that Russian agriculture has experienced somewhat of a recovery. More political emphasis has been placed on developing the agricultural sector and making Russia agriculturally self-sufficient (Putin, 2008). The first improvement happened after the 1998 crisis as the state intervened and provided financially strained agro-industrial organizations, consisting of several agrofirms integrated under an agroholding, with financial support. To receive state support agroholdings had to abandon profit maximization objectives and instead rehabilitate bankrupt firms, sell their products at state regulated prices, among other things (Gataulina et al., 2006). This improved agricultural output levels[5] and even attracted foreign capital but it also inhibited market competition. In addition Gataulina et al. (2006) stress that agroholdings suffer more than the independent agrofirms from losses and rising debts because of strong inefficiencies that result from excessive government intervention and their complex organizational structure.

The other improvement followed after the implementation of the Farm Land Bill of 2002 when Russia, for the first time in its history, liberalized the farm land market allowing owners to purchase, sell and mortgage land freely (The Economist, 2002). The intention was to ease the credit and financing problems that had been troubling private farmers and increase investment opportunities within the agricultural sector (Gidadhubli & Mohanty, 2002). Even so, OECD (2007) concludes that the land transaction process is still difficult to carry out in practice due to the lack of transparency and consistency of Russian institutions. Moreover the reform limits foreign ownership of land to lease contracts with duration of no longer than 49 years, reflecting the overall nationalistic elements of Russian agricultural policies (Gidadhubli & Mohanty, 2002).

2.2 FDI in Farmland

Foreign capital has only recently taken an interest in agricultural land investments but it is a growing trend receiving attention from governments and private investors all around the world. The factors driving the investments, however, differ from each other.

[5] See *Appendix B.*

2.2.1 World Wide Movement

China has been a pioneer in foreign land investments and has since 1989 bought farmland for the purpose of safeguarding a steady inflow of food products to feed the country's growing population (The Australian, 2008). Since the beginning of the 1990's there have been several noteworthy reforms in agricultural policies all over the world. One interesting example is the new standpoint on the policies of the Arabian Peninsula. Previously Saudi Arabian a self sufficiency policy, developed in 1970-1980, which led to an immense water usage. The outcome was not as expected and instead of being more independent Saudi Arabia drained their water resources and became dependent on fertilizer, labor, and equipment imports. In the late 1980's the price of grain in Saudi Arabia was up to three times higher than the world market price (Metz, 1992). Since then the Saudi Arabian government has revised their policy on agriculture including looking into investing in African countries, and they are not alone in doing so. Today Africa receives a lot of attention from countries like India, China and North African countries, which have all increased their presence in and support to Africa, mostly to increase their food security (Africa News Network, 2009). Abu Dhabi, the largest of the seven members of the United Arab Emirates, is currently looking towards cultivating over 70 000 hectares of land in Sudan for its own account to secure food supply since only one percent of the land in Abu Dhabi is arable. Sudan is the biggest country in Africa and only about 20 percent of its arable land is cultivated because of a long time of conflict and misrule. To attract funding Sudan allows projects such as the one launched by Abu Dhabi free of charge (Financial Times, 2008).

Investments made by foreign organizations can lead to tensions. Sudan has experienced a massive inflow of FDI, especially to the agricultural sector mainly from Arabic countries, Saudi Arabia, Qatar, Egypt, Libya, Syria and Jordan, which have invested heavily in Sudanese land for the purpose of securing food supplies. Water shortage in these countries makes crop farming extremely expensive if not impossible. Even if foreigners consider Sudan to have a great potential in the agricultural sector the country is periodically plagued by famine making the foreign investments in land a sensitive issue. The government claims, however, that all deals signed leave 30 percent of what is produced within the borders of Sudan (Business Monitor International, 2009).

Besides food security, bio fuel production is a major reason for investing in foreign agricultural land. Ethanol production is also one of the main drivers behind the rising prices of agricultural produce (FAO, 2009a). Brazil has sent bio fuel crop experts to some African countries, free of charge, officially to

provide African states with knowledge and know-how but unofficially to increase their presence in the rather land abundant African continent for the future (Stabroek News, 2009). European firms are also eager to invest in African land and agriculture for the purpose of producing ethanol. For example, in Angola a major Portuguese firm has waited for the go-ahead to plant bio fuel crop (Redvers, 2009) and the Swedish Company SEKAB is also looking into expanding in Africa (SEKAB, 2009).

Cultivation of crop for bio fuel production is also a sensitive issue. Since it has become more profitable to grow crop for ethanol production, crops for feed and food are being out-competed. Several conflicts in Africa have their origins in large organizations driving local farmers off their land to make way for larger plantations (Redvers, 2009). In Tanzania, about 40 companies own plantations for ethanol production, forcing local farmers to grow less profitable crop, such as those for food consumption, to move. As a result the Tanzanian government is currently working on a legislation in order to control the companies' investments and protect the interests of the country. Until the new legislation is in place local governments have been given instructions not to sell land to companies for bio fuel production purposes[6] (Mande, 2009).

Apart from food security and ethanol production purposes there is yet another category of investments in foreign agricultural land where the home country supplies capital but the produce is sold on the host country market, occasionally also exported to the world market. In such projects there is no underlying interest in feeding the home country population. Rather, these kinds of projects are initiated by the home country for the sole purpose of profit making, both from the production yield and possibly also from an expected increase in land prices. In order to determine whether the investments are driven by speculation or made for a longer term the equilibrium price after the price surge in 2007 is an important factor to consider. The equilibrium price is discussed more closely in *section 2.3*. Currently, a number of Swedish initiatives are carried out in Russia.

2.2.2 Development in Russia

The Russian agricultural sector has attracted investors from different places in the world. The nature of the projects differs from each other. Some are completely private, where a single farmer sees an opportunity to buy a couple of thousand hectares of land at a relatively low price, while others are set up as agroholdings with several subsidiaries that together control hundreds of thousand hectares of

[6] For a more comprehensive description of the ongoing FDI in agricultural land turn to the table in *Appendix C*

land. Naturally, not all investors in the Russian agricultural sector are foreigners. The majority is Russian, however, this thesis focuses on the initiatives funded by foreign capital. In *Appendix C* the largest three are presented. Two of them are Swedish, Alpcot Agro and Black Earth Farming Ltd., while the Trigon is Danish. Of these three, BEF is the largest and a lot of the empirical material in this thesis comes from representatives of BEF. For this reason it is useful to take a closer look at the company.

Black Earth Farming Ltd.

BEF is to a large extent financed by Swedish capital. It was initiated in 2003, shortly after the Land Reform Bill was passed in Russia. BEF started off as a purely privately funded project but quite soon Vostok Nafta became a strong partner. Kinnevik joined in the second funding round and became the second largest owner (Black Earth Farming, 2010).

BEF has acquired control of approximately 323 000 hectares of farm land within the five years of its existence. In the early stage of the company's existence it cultivated land in the Kursk, the Tambov, and the Voronezh but as of today the company is also active in the Lipetsk, the Samara, and the Ryazan Oblasts. The main activity is related to crop covering production, handling, logistics and trade. The registration and acquisition of land is a necessary side activity and large-scale dairy farming is another secondary activity (Black Earth Farming Ltd., 2010).

Much of the land acquired by BEF is in poor condition and needs restoration before it can carry any yield. The restoration includes chemical analysis, disk tilling, deep tilling, and leveling (Black Earth Farming Ltd., 2010). It may take up to several years before the yield reaches its maximum levels (Gustavsson, 2008). Currently BEF focuses on production of winter wheat, winter rape, barley, spring rape, sun flowers, corn maize and triticale, cultivated in a crop rotation scheme according to western agricultural standards. A rotation scheme is used to avoid diseases and depletion of the soil. The production is thus not only dependent on which crop gives highest margin, but soil standards must be taken into account (Black Earth Farming Ltd., 2010)**.**

Dairy farming is only conducted on a smaller scale and does not constitute one of the main activities of BEF. However, it is used by the company to diversify its activities in order to decrease the risks connected with crop production, such as bad weather conditions, and uneven cash flows. BEF has announced that it might expand dairy farming but it will not be a primary activity (Black Earth Farming Ltd., 2010)**.**

Black Earth Farming was listed on the Firth North market place in Stockholm in December 2007 as Swedish Depository Receipts. In June 2009 its shares were listed on the Mid Cap segment on NASDAQ OMX Stockholm but the single largest owners are still the Swedish companies Vostok Nafta and Kinnevik[7] (Black Earth Farming Ltd., 2010).

Value of Farmland

The price of farmland is an important factor when it comes to attracting investors to Russia. Since the fall of the Soviet Union the agricultural sector was almost neglected. People abandoned the countryside and moved to the urban areas and the farmland was left to overgrow. Today much of the farmland in Russia has been put under production again but a lot of land still lies fallow. It takes time, energy, and financial resources to put the land back into production, which affects the price of it. Even if the black earth region is one of the most fertile land in the world, the state of the land and the "lack of demand" have contributed to the low price paid by organizations looking for business opportunities today (Gustavsson, 2008).

Figure 1 shows the relative valuation of farmland in Russia in comparison to Sweden, Western Europe, East U.S. and Argentina. Clearly, the value of Russian farmland is low in comparison.

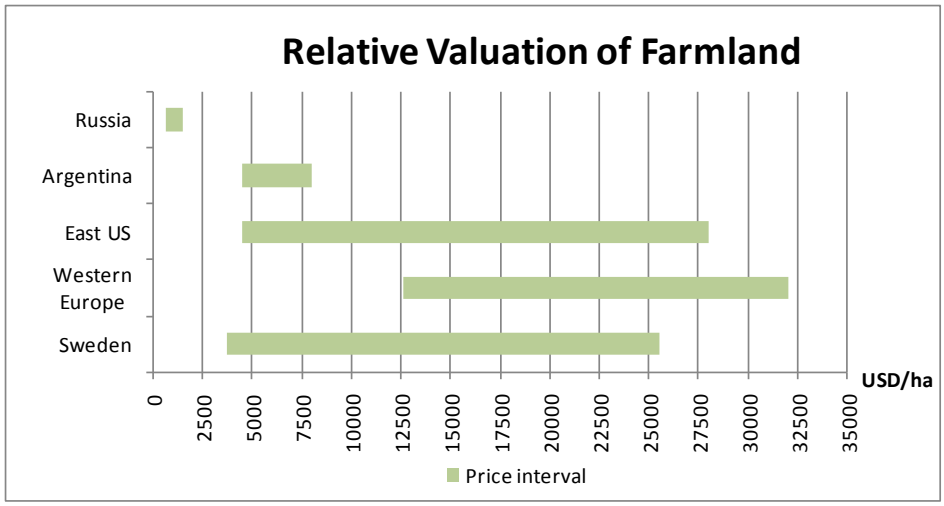

Figure 2 – Relative valuation of farmland in Russia, Argentina, East U.S. Western Europe and Sweden (Tuwesson, Agriculture in Russia and the CIS, 2006).

[7] For more detailed information about the largest owners in Black Earth Farming see *Appendix B*

A common decisive factor for undertaking an agricultural land investment is its scarcity, especially taking soil quality and climate into account, and it is becoming even scarcer due to climate changes and urbanization. The larger the world population grows the more will the access to food and energy and thus land be of interest.

Besides soil quality other factors will play a part when deciding to invest or not. Institutions and barriers to operation and trade are crucial. As described there have recently been some changes to the Russian legislation regarding landowner rights. The agricultural policy in Russia has also changed.

Institutions and Policies

After the sharp price increase in 2007 the border protection in Russia on agricultural goods was raised considerably. The producer support to the agricultural sector has decreased during the period 2005-2007 in comparison to the period 1995-1997 and today it consists mainly of border protection. Overall there has been an increase in exports and a decrease in imports if comparing the same two periods. In 2007 the inflation in Russia increased, especially from October 2007 to May 2008. Together with the sharp increase in real prices of agricultural produce and food overall this laid ground for policy changes and duties on exports of wheat and barley were imposed (OECD, 2009a, p. 119). Furthermore there is currently a minimum and a maximum price band carried out by the Agency for Regulation of Food Market. It works as such that when the market price falls below the minimum price the government withdraws grain from the market and releases it again if the market price rises above the maximum price. During the price peak in 2007-2008 85 percent of the total intervention stock was released. Thereafter, in June 2008, export duties on grain were abolished (p. 116).

In order to expand the agricultural sector, spending to facilitate for operators have increased mainly in the form of an interest rate subsidy on loans to agricultural producers. Most of this subsidy is allocated to organizations rather than private individuals; in 2007, 59 percent of all spending accrued to agricultural organizations mostly through interest rate subsidies. This is an interesting figure since only 43 percent of all output is produced by organizations. There are further subsidies on input purchases such as fertilizers, seed, and chemicals and a special fuel subsidy for sowing. In addition there is a federal per tonne subsidy available for all crop producers. The Federal Law on Development of Agriculture (2006) holds the ”creation of a favorable investment climate in the agro-food sector (…)” as one of Russian agricultural policy’s main objectives (OECD, 2009a, p. 116). More resources have been allocated to improve infrastructure and inspection services and efforts have been made on the

legislative side to concretize ownership rights and thus to create a market for buying and selling these rights. Recently there has also been a subsidy introduced to stimulate activity to bring back land that has laid fallow since the fall of the Soviet Union into production again (p. 127).

In 2003 a special tax for agricultural organizations was implemented by those who wished, called Single Agricultural Tax (SAT). It consists of six percent of the difference between the gross revenues and costs of organization. Included in the tax policy is also that the organizations wishing to implement SAT are exempted from property tax, income tax, single social tax and in most cases also VAT. A majority of the agricultural organizations operating in Russia, namely 65 percent, have adopted SAT. Even so, only 1.5 percent of the total tax collected from agricultural organizations was SAT. This tax policy is obviously advantageous for incorporated actors in the Russian agricultural sector. There are no specific policies concerning organizations producing crop for bio fuel production (OECD, 2009a, p. 130).

It might seem like there are only positive sides to operating in Russia but there are several drawbacks. As mentioned above the grain market is quite shut off from the world market and the infrastructure is poor. Corruption is high; Russia is ranked as number 146 out of 180 in Transparency International's Corruption Perception Index in 2009 (Transparency International, 2009). The land acquisition process is as described, complicated and involves a lot of red tape. This indicates that the Russian institutions need to be improved. Sture Gustavsson (2008) points out that in order to be able to conduct business in Russia it is important to "understand the Russian mentality, the viscosity of the system" and as an example he mentions that during the land acquisition processes personal contacts are of outmost importance.

2.3 Price of Grain

Since the decision to invest or not is highly dependent on the expected return, regardless of sector, the variables affecting the profit in the agricultural sector are worth taking a closer look at. To better understand the market of agricultural products it is necessary to understand the movement of the grain price and the factors it depends on. The production varies from year to year depending on the climate. During years with favorable climate and large harvests, stock is built up to save for poorer years. *Figure 4* shows the world levels of consumption and production from 2000 to 2007. In years when production is higher than consumption the stock increases and, conversely, in years when consumption is higher than production the stock level decreases to satisfy demand.

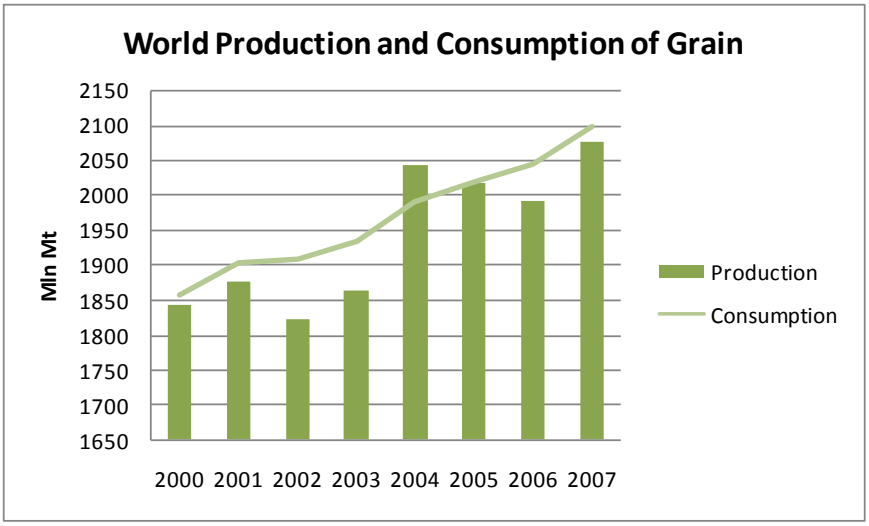

Figure 4 – World consumption and production levels of grain during the 21st century measured in million metric tonnes (U.S. Department of Agriculture, 2008).

In *figure* 5 below the net of the consumption and production are pictured as the stock level measured in days of consumption. The price of wheat is used to show the correlation between the price and stock level. The correlation is clearly negative suggesting that the stock level decides the price. Consumption of grain has increased at quite a steady pace, but the production level has been lower than the consumption level in the past few years, except in 2004, causing a decrease in stock.

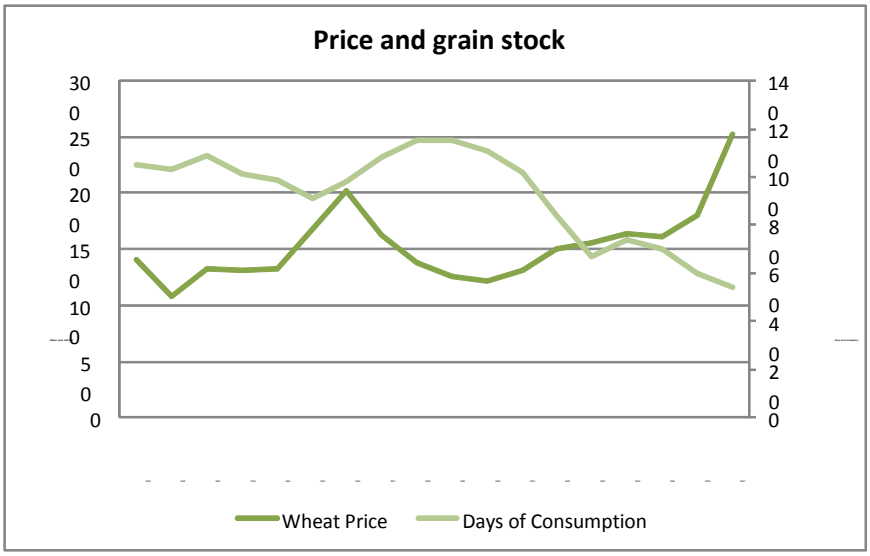

Figure 5 – The U.S. export price on wheat and the world stock of grain. ρ=-0.69 (U.S. Department of Agriculture, 2008).Quite recently the demand factors have changed. Some of these factors can offer an explanation for the price surge of agricultural produce seen in 2007[8].

[8] See *Appendix A* for more information.

As described in *section 2.2* production of bio fuel is one of the most important factors for the development of FDI in land seen around the world. The increased demand for bio fuels has recently had an impact on the price of agricultural produce due to the competitive use of farmland. Currently ethanol production is not economically viable in the absence of policy support or subsidies, with the exception of Brazilian sugar cane ethanol. The profitability of ethanol is closely linked to the petroleum price. When it reaches the level where ethanol becomes competitive the demand goes up. As demand increases ethanol outcompetes other agricultural produce, which increases the price of all competing crop. This link between the energy market and agricultural products is new and it suggests that there are new factors at force affecting the price of agricultural products (FAO, 2009a).

Changing food patterns is another important demand driver that caused part of the price surge, which started in 2007. Because of rising income levels and a growing population, food consumption in the world is increasing. As people have more money to spend on food the demand for meat and other energy intense food rises. Rising income levels in some major developing countries, particularly in China, India, and Brazil, is not the only reason for the changing consumption patterns, however (FAO, 2009a). Prior to the price increase in 2007 advances in agricultural productivity has decreased the real price of food, allowing a larger fraction of the world population to increase their consumption of energy and input intense food such as dairy products and meat (Schmidhuber, 2003). Consequently, not only must cereal produced for food compete with ethanol production but also with the meat industry.

It is under discussion whether increased speculation in the futures market for agricultural products is responsible for pushing up the price or if the speculators were drawn to the market due to the price surge. The causality in this relationship is not established and more research is needed within this area before any conclusions can be drawn (FAO, 2009a).

The equilibrium price after the peak in 2007 is also being debated. After the peak prices have fallen again. The high prices stimulated output, mainly in the developed countries and the BRIC countries. The financial crisis hit the world economy and the weaker demand that followed is thought to be the main contributor to the price drop. Predicting what level prices will stabilize at involves taking several factors into account. Prices still remain above their five year average even when taking the sharp drop into account. Some of the factors that explain the price increase in 2007 remain, such as the increased demand for bio fuel. Stock levels are still quite low and the supply has not increased immensely, in fact in the developing countries it fell during 2007-2008. The population is still growing and the oil prices

remain high. Taken together these factors speak for a permanent change in equilibrium prices. It is also difficult to predict what will happen once the world economy recovers from the ongoing financial crisis and how this will affect the demand structure (FAO, 2009a). OECD forecasts suggest that the wheat price will stabilize on a higher level than before[9].

2.4 Russian Climate and Soil Quality

Here we discuss two of the factors that we do not account for in the analysis but nevertheless are nevertheless important aspects to consider when evaluating the potential of the Russian agricultural sector. The Russian climate and soil quality is not homogenous considering the size of the country. Below is a presentation of the conditions in the Kaliningrad region which holds a large part of the agricultural land in Russia and the Saratov region where BEF has parts of its operations. The largest agricultural areas are in the rural area around Kaliningrad and around Saratov in the black earth region. However, the climate profiles for these two areas differ.

Kaliningrad

The Kaliningrad climate is described as moderately warm (Aquastat, 1997) and the annual perception is about 800 mm per year and the average winter temperature is minus three degrees Celsius (All Met Sat, 2009). The combination of the mild winters, which allow for the winter crops to survive to a greater extent, and the rather generous rainfall permit the yield to reach up to six tonnes of winter wheat per hectare (Tuwesson, 2006).

The soil quality is a mix between clay and sand. The sand mix makes the soil lighter and thus easier to cultivate, not tearing the machinery to as great an extent as pure clay soils do. A drawback of sandier soil is that it does not hold water as well as the clay soil, but considering the amount of rainfall this does not constitute a great problem for the farmers in this area (Tuwesson, 2008).

Saratov

In the agricultural areas around Saratov the perception is approximately half of the one received in Kaliningrad (All Met Sat, 2009). This area belongs to the climate zone described as moderately warm and semi-dry zone. Here, the scarce rainfall is the main factor of limitation to the yield which is around 3 tonnes of winter wheat per hectare. The winters are more severe and also dryer. This implies that not

[9] See A*ppendix A* for illustration

only is it colder, but when the cold hits there might not be an insulating cover of snow to protect the crop from the cold. The summers are warm and dry, complicating the survival of the crop (Aquastat, 1997). Since the temperature swings are more extreme it is more difficult to predict and plan the next step in the cultivation process.

The soil consists of chernozem, which is one of the most fertile soil types on earth. It is rich in hummus; the fraction of organic matter in the black earth is up to 16 percent. It is also rich in calcium ions and is very suitable for grass like vegetation (Encyclopaedia Britannica Online, 2009). The high fertility of the soil and the dryer climate helps bringing down the input costs to 55 percent of the input costs required in the area of Kaliningrad due to less cultivation needed, less fertilizer and fewer chemicals in form of pesticides and herbicides (Tuwesson, 2006).

However, large areas in the black earth region has been fallow land since the fall of the Soviet Union in 1991 and the initial input to make the soil fit for cultivation can thus be larger here. It can take up to three years of cultivation of land which has been fallow before the soil yield the highest possible yield.

Further south in the black earth region the climate is even drier and the temperature differences from summer to winter more drastic. For this reason the northern parts are more suitable for growing cereal.

2.5 Water Management

Approximately 40 percent of world production originates from the irrigated land, which amounts to only 17 percent of the total land cultivated. The main reason for these high yields is the fact that in warmer areas, such as South East Asia and Northern Africa, several harvests can be obtained per year. Since the 1970's the irrigated area has decreased due to increased irrigation costs, overuse and salinization. The lack of water is one of the greatest threats to feeding the world's growing population (Fogelfors, 2001, pp. 33-34).

As described in the sections above, rainfall is one of the most important limiting factors when it comes to the yield. In Kaliningrad irrigation has never been of interest since there the rain fall is quite sufficient. In other parts of Russia, irrigation has been more wide spread. The irrigation technique has been used in Russia since the end of the nineteenth century but it really took off in the 1920s. Draining areas for cultivation also became more frequent during the same period. However, the negative effects from irrigation and drainage have decreased the usage of these methods since the beginning of the 1990s. It is also likely that this development is closely connected to the fall of the Soviet Union. The most recent

data available, from 1994, shows that the area equipped for irrigation decreased by 16 percent between 1990 and 1994 and in 1994 only 79 percent of the area equipped for irrigation was actually irrigated. During the same period of time the area drained decreased by 22 percent (Aquastat, 1994). The water managed areas were mostly used to grow “unprofitable crops like fodder crops, grain and potatoes” to increase the yield, if ever so slightly, making it possible to make a profit (Aquastat, 1997). However, since 1997 the price paid for such crops have increased and it is reasonable to believe that water managed land is not longer necessary to make it profitable. The figures from 1994 indicate that about 2.5 percent of the agricultural land area was irrigated and the trend is decreasing. In 2003, agriculture stood for 20 percent of the total water withdrawal in Russia, approximately the same figure as the Russian households. The remaining 60 percent was used by the industry (World Resources Institute, 2003).

3 Literature Review

The novelty of the phenomenon studied has resulted in a very broad review of literature. The following section presents a selection of the most relevant literature on the concept of comparative advantages and international trade theory, competitive advantages in business strategy, and a selection of previous empirical studies on the comparative advantage of Russian agriculture.

3.1 Comparative Advantages

The concept of comparative advantages was first developed by the classical economist David Ricardo (1919) building on Adam Smith's (1776) principle of absolute advantages. If a country has comparative advantage in the production of a good over another country it means that its opportunity cost of production is relatively lower than in the other country. In contrast, a country with absolute advantage produce the good at a lower price overall. If a country has absolute advantage in the production of all goods it will not trade, hence absolute advantages are not a sufficient condition for trade to occur. Nor are they a necessary condition because a country with an absolute disadvantage in the production of a good can still benefit from trade if it has a comparative advantage in its production since this implies that its opportunity cost of production is lower.

Smith and Ricardo explained the occurrence of absolute and comparative advantages as the result of differences in production technologies. Neo-classical economists Eli Heckscher (1919) and Bertil Ohlin (1933) developed the idea of comparative advantages further in a model based on differences in resource endowments instead. Specifically, a country will export goods that use its relatively abundant resources intensively and import goods that use its scarce factors intensively. Although the original Heckscher-Ohlin model originally includes only the two production factors capital and labor, the model can be applied to any kind of production factor such as skilled versus unskilled labor or land versus labor.

The Heckscher-Ohlin factor intensity theory has and is still of great theoretical importance and this has spurred several attempts to test the model empirically. The theory has shown to fail in empirical test and one of the most commonly known such test is the one carried out by Wassily Leontief (1954). He arrived at the conclusion, now referred to as the Leontief paradox, that even though the U.S. is a capital abundant country it exports labor intensive goods. According to the Heckscher-Ohlin theory the U.S. should export capital intensive goods. A few years later Jaroslav Vanek (1959) provided an explanation

for Leontief's paradox when he examined the natural resource content of U.S. imports. He discovered that the natural resource content of imports was twice that of exports and suggested that the reason for the high capital import ratio in U.S. is due to the fact that capital is a complementary production input in the production of natural resources. Vanek therefore argued that the factor intensity theory cannot be applied to natural resources.

Besides relative differences in technology and resource endowments there are other sources of comparative advantages. There is theory that treats demand and its influence on the technological development of industries as a contributing factor to comparative advantages[10]. Other models work with market imperfections such as the models of economies of scale, where an increase in output can lower production costs and thereby give rise to comparative advantages. Models of imperfect markets also allow for governmental policies such as export promotion or R&D subsidizing, which can too give rise to comparative advantages. In other words, countries do not necessarily have to be naturally endowed with production factors to hold comparative advantages in production. After all the industrial revolution is just one verification that comparative advantages are not static but dynamic and change over time.

3.2 Competitive Advantages

Another significant economic development apart from the industrial revolution is the increased internationalization of businesses. In conjunction with the recent globalization, standard international trade models and the concept of comparative advantages have lost their popularity in many circles. In their place models of competitive advantage have emerged, which emphasize the ability of individual firms as even countries on an aggregate industry level to compete. Although true followers remain loyal to either one or the other concept, the distinction between them may not be so obvious. Some argue it is simply a matter of who is discussing the topic, economists or business scholars.

At any rate there is no single definition of competitive advantage. Porter (1990) developed the concept and derived it from a firm-level perspective. A formal definition of competitiveness was never really given but a decade later Hoffman (2000), after reviewing the literature on the topic, defined sustainable competitive advantage as the "prolonged benefit of implementing some unique value-creating strategy

[10] See Lindner, S. (1961). *An Essay on Trade and Transformation*. Uppsala: Almqvist & Wiksell.

not simultaneously implemented by any current or potential competitor along with the inability to duplicate the benefits of this strategy".

Although the starting point is the firm, Porter (1990) developed his competitive advantage framework based on an empirical study of advantages on a nation-wide level. The study revolves around the idea that countries do not inherit prosperity from natural endowments but create it via the continuous innovation of their industries. Using the study Porter identifies four determinants of competitive strategy: *factor conditions*, *demand conditions*, *related and supporting industries*, and *firm strategies*. At first some of these look very similar to the determinants of comparative advantages. However, Porter makes explicit distinctions between them. Factor conditions are not the traditional resources but the resources that a firm creates. Demand conditions concern the character of the demand on the market and not its size. Related and supporting industries refer to such firms and their innovativeness in a competitive sense and not the mere number of them. Firm strategies are the managerial and organizational strategies and not the national policies of the state. It thus seems as if Porter views competitive advantages as qualitative measurements and comparative advantages as quantitative.

A widely recognized type of competitive strategies is the first-mover strategy. The so-called first-mover advantages was conceptualized by Lieberman and Montgomery (1988) in an article that is still of great importance. First-mover advantages they define as "the ability of pioneering firms to earn positive economic profits". The advantages originate from three primary sources comprising *technological leadership*, *asset preemption*, and *buyer switching cost*. The authors also explain how first-mover advantages get realized. Initially there is always some kind of asymmetry and this enables a firm to get ahead of other market players. The firm that manages to do so might either have a unique ability of some kind or is simply lucky. While firms can earn good profits by being early on the market there can also be specific costs attached to it. These are referred to as the first-mover disadvantages and include, among others, free-rider problems and the tendency of the incumbent to become inert or weak in its response to competition.

3.3 Studies on Russian Comparative Advantage in Agriculture

Since the fall of the Soviet Union economists have attempted to predict and later evaluate Russia's economic performance during its different stages of transition. One hypothesis is that, as Russia progresses in its reform and market forces start to kick in, trade patterns will better correspond to

Russia's comparative advantage[11]. Speculations about Russia having a comparative advantage in agriculture have drawn attention to the topic. Hayes et al. (1995) tried to predict Former Soviet Union (FSU) trade patterns by using a Heckscher-Ohlin-Vanek model. Following the logic of comparative advantages he concluded that the FSU has capacity to expand its agricultural sector and predicted that FSU would become an agricultural net exporter.

Liefert, an agricultural economist who specializes in transition economies in the FSU, has conducted several empirical studies. In 1994 he performed a study on FSU's comparative advantage in grain and meat production relative machinery and equipment by looking at import cost ratios[12]. His conclusion was that during Soviet times FSU had a comparative disadvantage in grain and meat production relative western countries. Putting the blame on productivity, he predicted that FSU could continue having a comparative disadvantage in agriculture since a reform can serve to increase productivity in all sectors and not just in agriculture (Liefert, 1994). Some years later Liefert (2002) did a study specifically on Russia's comparative advantage in agriculture, which from our research appears to be the only one of its kind. He measured comparative advantage by looking at the social cost-benefit (SCB) ratio[13] and concluded that Russia has a comparative disadvantage in agriculture versus the energy sector, agricultural inputs have an advantage over agricultural outputs, and bulk crops have an advantage over meat. Taken together all of the studies give no clarity in whether or not Russia has a comparative advantage in agriculture. It seems to depend on how comparative advantage is being measured and the type of agricultural produce being studied.

[11] See for example: Hayes et al. (1995) and Johnson, D. (1993). Trade Effects of Dismantling the Socialized Agriculture of the Former Soviet Union. Comparative Economic Studies, 35(4), 21-31.

[12] The import cost ratio is a way to express comparative advantage. It calculates the domestic cost of production of a good relative its import price. See Liefert (2002).

[13] The SCB ratio measures the value of all tradable and non-tradable inputs in the production of a good, adjusting for subsidies and taxes, i.e. the domestic production cost over the good's border trade price. See Liefert (1994).

4 Theoretical Framework and Methodology

This chapter presents the theories applied to and methodology used for the analysis. The attractiveness of Russia's agricultural sector in terms of its comparative advantage is part of the macro perspective of the study. The competitive strength of the foreign agricultural investors in terms of their competitive advantage over local firms belongs to the micro perspective.

4.1 Macro Analysis: Comparative Advantages

The purpose of looking at comparative advantages is to determine whether or not Russia's agricultural sector is attractive from a trade perspective and therefore an interesting target for investors. Since agricultural goods requires, above all, the input of basic production factors such as land we look exclusively at the agricultural factor endowment and no other sources of comparative advantages. The relevant theory for the macro analysis is therefore the Heckscher-Ohlin theory. Specifically we use the Heckscher-Ohlin-Vanek (HOV) factor proportions analysis, which is a variation of the Heckscher-Ohlin model, as our theoretical base for determining the comparative advantage. Finding the calculation somewhat limited in its interpretation of the data we complement it with an analysis of the production factors in detail in terms of their concentration in the countries studied.

In the following section we first select the countries, the goods, and the production factors to be used in the HOV factor proportion analysis. Then we describe the HOV construct and the comparative advantage calculation. Finally we describe the method for our complementary analysis of the production factors.

4.1.1 The Choice of Goods, Countries, and Production Factors

Here we describe and justify our choice of goods, countries, and factors in the HOV factor proportion analysis. Regarding the choice of goods, the aim is to find a rather homogenous group of goods, produced under similar conditions, to make a comparison possible. For the choice of countries we want to stay focused and select countries that are relevant to study based on the choice of agricultural goods. We will only analyze production factors that are used in agricultural production ensuring, however, that we cover the traditional production factor types: capital, labor and land.

Agricultural Goods

The primary agricultural sector, that is non-processed agricultural products, consists of two main groupings, crops and livestock. Crops are then split into sub-groupings such as cereals, oil crops, and

fruits (Faostat, 2009). We choose cereals as the group of goods for a number of reasons. First of all, it is a homogenous group with similar input needs for its cultivation in terms of land area, labor and machinery. Secondly, it is by far the most important group of crops as it constitutes a third of all the crop output in the world in terms of quantity and approximately 15 percent of the world's total agricultural area[14] is used for cereal production (Faostat, 2009; The World Bank, 2009). Thirdly, it is not a group overly restricted by climatic conditions, such as many fruits, making it possible to include countries subject to different climatic conditions. Last but not least, the international investors in Russia are primarily engaging in cereal production before other agricultural goods.

Countries

A complete study would include a ranking against all countries of the world. This is both an unachievable task because of limited statistical data and an impractical task for the kind of study we are undertaking and would not have a significant contribution to the analysis. Since we choose to study cereal production we believe the strongest argument for Russia's suitability or unsuitability for cereal production can be found when ranking Russia against the world's biggest net exporters of cereal. We do the ranking based on the total net export of cereals in tonnes from 1992, the year the Russian Federation was established until 2007; the latest year in which data for all countries is available. The number of countries we limit to ten, which we find a representative share of the top cereal net exporters. In order these constitute the U.S., France, Argentina, Canada, Australia, Germany, Thailand, Kazakhstan, Ukraine, and India[15].

Agricultural Capital Stock

Agricultural production can be either labor or capital intensive and while the two complement each other capital can replace labor and vice versa. The optimal combination of capital and labor in agricultural production depends on several factors, which we will not deal with to a larger extent in this thesis. For our analysis, an understanding that an economy endowed with a relatively larger share of agricultural machinery should be well-suited for capital intensive agricultural production and vice versa suffices.

[14] See below under the section on land for details on the type of land included in agricultural area.

[15] See *Appendix D.1.*

Limited by the fact that there are no data available for the overall value of agricultural capital we use two proxies for agricultural machinery, one general proxy and one specific to cereal production. Agricultural tractors (hereafter referred to as "tractors") make up the general proxy since they are used in all kinds of agricultural production. Combined harvesters (hereafter referred to as "combines") represent the specific proxy. Rather than looking at the total value of the machinery stock we look at the total quantity of machines since, on the one hand, value is not reported in the database and, on the other hand, it is needed for the extended analysis of the factor.

Unfortunately, the categorization of agricultural machinery does not consider machinery of different capacities. Since there are both tractors and combines of different sizes and capacities the mere number of them will not give an indication of the overall capacity. If a country has a relatively smaller stock of agricultural machinery than another country, its machinery could still be able to produce as much output the machinery stock of the other country if the overall capacity per machine is larger. This is a fact we cannot account for in our analysis but should nevertheless be kept in mind.

Land

Land is the single most important factor in agricultural production and has a self-evident importance in the analysis. Land deserves a bit of attention when classified as a production factor. The latest SNA[16] (System of National Accounts, 2008, p. 420) emphasizes that land is also a kind of capital that supplies production with capital services. What distinguishes land from conventional capital, however, is that it is a non-produced capital and "under good management, the value is assumed to remain constant from year to year except for the effects of inflation in land prices".

This thesis is not as concerned with the value of land, apart from the discussion in the background, as with its availability. In this regard the type of land chosen for the study is of importance. Just like agricultural production capital land is also of different qualities and capacities and not all are suitable for agricultural production. The Food and Agricultural Organization of the United Nations (FAO) uses a standard classification of land starting with the all-encompassing country area, which less the area covered by water bodies becomes land area. This is then is divided into agricultural area, forest area,

[16] SNA stands for System of National Accounts and is a framework for setting international standards for valuing the market economy. Responsible for its publication are the United Nations, the Commission of the European Communities, the International Monetary Fund, the Organization for Economic Co-operation and Development, and the World Bank.

and other land including built-up, barren, and other wooded land. The land of interest in this thesis is agricultural area, which covers arable land, land used for permanent crops, and permanent meadows and pastures. Arable land includes land used for temporary agricultural crops such as cereals, temporary meadows used for mowing or pasture, gardens, and temporary fallow land[17] (Faostat, 2009). For the HOV analysis we choose to use agricultural area as this gives the current size of land that is or can be put under agricultural production.

We place particular emphasis on the land endowment analysis because of land's importance in agricultural production and because it is non-producible. Seeded land area can be expanded by cultivating fallow land but once this is done there is no more to get. Tractors, on the other hand, can be built and labor can be hired. Thus land is more or less fixed in supply and an abundance of arable land grants a country a high output potential in agriculture regardless of the supply of other factor inputs.

Labor

Labor, although more adaptable and thus less fixed to one industry than many capital goods for example, should not be underestimated in its diversity. A lot of research is being done on human capital and how to map the human resource pool in order to assess its value in production. Although SNA does not consider human capital to be an asset, with the argument that it is not a resource that can be subject to ownership rights and produce economic benefits to its owner (System of National Accounts, 2008, p. 19), SNA does recognize its value:

> "Human input is the major input in most production processes, and the value of that input is to a large extent dependent on the knowledge that humans bring to the production process. It is well recognized that an educated population is vital to economic well-being in most countries" (p. 609).

Different production processes require different worker skills and value is created when these are well-matched. Concluding that an economy is well-supplied with labor does not immediately imply that it is fit for all kinds of labor-intensive production. Agricultural production also requires a special kind of skill and large-scale commercial farming requires a different kind of knowledge than small-scale farming.

[17] Temporary fallow land is land that has not been sown for up until five consecutive years. Is land not sown for more than five consecutive years it is classified as permanent meadows and pastures, forest or wooded land, or other land (Faostat, 2009).

Hence, labor in one sector is not necessarily transferrable to another sector and small-scale farmers may not be transferrable to large-scale farms without significant investments into training them.

We study the labor supply at two levels, the overall *labor supply*, including both employed and unemployed citizens, and the *agricultural labor supply*, defined as the total economically active population in agriculture, be it hired staff or private individuals. Both factors come from the International Labor Organization (ILO). Keeping in mind what was said about the transferability of labor; a country abundant in labor we recognize as a country less suitable for capital-intensive agriculture. Rather, it is more suitable for labor-intensive industries including labor-intensive agriculture. If a country is abundant in agricultural labor we understand this as a country more suitable for labor-intensive agriculture than for capital-intensive agriculture. Having said that, we can still not ignore the fact that labor is never completely fixed and that an expansion of the agricultural sector could cause a transfer of labor to the sector. Therefore the labor endowment results will not have the permanent character as the results for land.

4.1.2 The Heckscher-Ohlin-Vanek Factor Proportion Analysis

The Heckscher-Ohlin model aims to determine trade patterns of goods. Jaroslav Vanek altered the model trying to analyze trade and comparative advantages from a slightly different angle. He still used Heckscher-Ohlin's idea, that production factor endowments give rise to comparative advantages, but instead of looking at goods trade he looked at the factor content of trade. Furthermore, he relaxed the Heckscher-Ohlin model's assumption of there being only two goods and two production factors and constructed a multiple-factor multiple-goods model in its place. Vanek assumes that there are more than two countries with multiple but an equal number of goods and multiple but equal number of production factors. The central idea is that one can rank an economy's endowments in terms of its share of the world total supply and thereby determine its relative endowment abundance or scarcity and, ultimately, determine in which industries the economy has comparative advantages. A country is abundant in a factor if its global share of the factor is higher than its share of global income. It is scarce in factors that have a lower share than the country's share of global income. This laid the basis for Vanek's theorem[18], which is often referred to as the Heckscher-Ohlin-Vanek (HOV) Theorem. Formally

[18] See Vanek, Jaroslav (1968). "The Factor Proportions Theory: The n-Factor Case," *Kyklos* 4, (October), pp. 749-756.

the theorem states that the ranking of a factor's net export content over its contribution to an economy's total production output equals the economy's ranking of endowments.

We are not as interested in the theorem itself as in the work behind it. In our analysis we employ the endowment ranking as suggested by Vanek and formally proved by Leamer (1980). There are two or more production factors and always more production factors than kinds of goods. Using Russia as an example, let E_i^R be the endowment of factor *i* in Russia and E_i^W in the world and let there be a total of *m* factors. Let GDP^R be the income of Russia, measured in terms of GDP, and GDP^W be the world total income. The ranking thereby looks as follows:

$$(E_1^R/E_1^W) > (E_2^R/E_2^W) > \ldots > (E_i^R/E_i^W) > (GDP^R/\ GDP^W) > (E_{i+1}^R/E_{i+1}^W) > \ldots > (E_m^R/E_m^W)$$

Everything above the relative income share, $GDP^R/\ GDP^W$, is relatively abundant and everything below is scarce.

4.1.3 Agricultural Production Factor Concentration

The HOV analysis, as formulated, can tell us about a Russia's absolute share of the world's agricultural resources and put it in relation to other countries. Defining abundance and scarcity as the factor share in relation to the relative income share we can discern if Russia has a relatively good profit potential in agriculture. However, we need to carry out further analysis of these resources to determine their concentration in Russia, that is, how the relative supplies of agricultural production factors stand against each other. If we then compare the production factor concentrations with other countries, in other words use other countries' concentrations as a benchmark, we can identify whether there is a need to make further investments in Russia to increase the stock of some of its agricultural resources.

If the production function of cereals consists of the three inputs we have identified, agricultural machinery, labor, and arable land, then the level of output will depend on the amount of these three inputs in their combination. For a given set of production factors and their costs, producing efficiently implies maximizing output at the lowest possible cost via an optimal combination of production factors. We will not carry out a maximization problem along four dimensions but conduct the simple analysis of agricultural production factor concentration in Russia and compare it with the relative supply of factors in the selected cereal exporting economies. By doing so we aim is to identify possible shortages of agricultural production factors in Russia.

To do a comparison of the production factor concentration we need to fix a relevant variable against which the supply of factors can be compared. A good example of relevantly compared factors is agricultural yield, where the output is usually measured against the unit of harvested area used to produce that output. Considering that land is, as discussed, rather fixed in supply we choose to do the analysis of production factor concentrations by making the supply of land constant. In order to compare relevant variables with each other we use different kinds of land depending on the production factor we are comparing. Since tractors agricultural workers are used for all kinds of agricultural production we compare these against agricultural land. Combines are used in cereal production so we compare the supply of them against the area of land used in cereal production. Taken together the concentrations we analyze are:

- combines per 1 000 hectares of land used in cereal production
- tractors per 1 000 hectares of agricultural land
- agricultural workers per 1 000 hectares of agricultural land

Although the concentration of a production factor may be low the stock can have a high production capacity. For example, a small stock of combines can still be able to harvest a lot of output because, as was mentioned before, there are combines of different sizes and capacity levels. Also, we cannot take for granted that the machines and workers are being utilized to their full capacity or are fully productive. Of course, output also depends on yield levels, that is, output per unit area, which also affects the productivity of the other production factors. When the output yields are high agricultural machinery and workers have to work on a smaller piece of land to produce the same amount of output. Although we cannot distinguish between the different cases we still measure the output level per machine and worker in order to get an idea about their productivity levels. Hence we perform the following output calculations:

- cereal output per hectare of land used in cereal production
- cereal output per combine

Since there is no good unit for measuring agricultural output in general, neither in value nor in physical properties, we do not analyze output per agricultural worker.

4.2 Micro Analysis: Competitive Advantages

The competitive advantage analysis serves the purpose to, on a firm-specific level, assess the ability of a company like BEF to successfully operate on the Russian agricultural market. We use the competitive advantages as defined by BEF (2009a, p. 68) in the prospectus for their NASDAQ OMX listing in June 2009. As these cover some competitive advantages that in the theoretical background were categorized as comparative advantages the macro analysis will exclusively deal with competitive advantages but also of some comparative advantages on top of relative factor endowments. Anyway, as already pointed out, there is a vague distinction between comparative and competitive advantages why this should not be a problem.

Due to limited data the competitive advantage analysis is less technical. BEF is still in part operating in a ramp-up phase so investment costs and some expenses are not in line with each other. Hence it is meaningless to perform a detailed economies of scale analysis, for example. Instead we do a qualitative analysis of the defined competitive advantages based on our findings from BEF's financial performance, interviews, other empirical studies, and theories. Porter anyways regards competitive advantages as more qualitative than comparative advantages. The aim with the analysis is to determine whether a supposed competitive advantage really qualifies as one and thereby discern what competitive advantages are important when investing in the Russian agricultural market. We base our definition of competitive advantages on Hoffman's (2000) definition, that company assets or strategies are not implemented by other competitors; however we relax the idea that they cannot be duplicated.

4.2.1 Selection of Competitive Advantages

The analyzed competitive advantages have been selected based on the ones that BEF claims to hold. These include first-mover advantages, economies of scale, access to capital, management expertise and know-how, legal expertise, vertical integration and product diversification, and modern farming methods (2009a, p. 67). Among these we will focus on the first four, even though the some of the others will be touched upon in the analysis.

As a background we summarize BEF's perspectives on the selected competitive advantages. BEF argues that they are enjoying first-mover advantages because their early market entry has enabled them to preempt competition and acquire large areas of land at a competitive price. They believe they hold economies of scale in production since their focused acquisition strategy of acquiring contingent blocks of land has allowed them to utilize their machinery and storage facilities optimally. They are also able to

source centrally and implement a standardized production governing system for inputs and field work. Management expertise they stress as an important competitive advantage. They claim that they have a successful combination of Western and Russian managers with international and local agricultural expertise. They also see their owners in their international constellation as an advantage as they provide BEF with better access to international capital.

4.2.2 Selection of Theories for Evaluation

BEF claims it has first-mover advantages and, because of its international ownership, good access to capital and a competitive combination of international and local knowledge. With the help from the first-mover advantage theory as presented by Lieberman and Montgomery (1988) and the theory on the importance of capital in agriculture as presented by Blackman (2001) and other research we will analyze whether these competitive advantages really qualify as advantages and are of importance when investing in Russian agriculture.

As previously mentioned Lieberman and Montgomery (1988) classified three kinds of sources for first-mover advantages covering technological leadership, asset preemption, and buyer switching costs. The first-mover advantages BEF is referring to are the advantages arising from the preemption of assets and specifically agricultural land. Lieberman and Montgomery describes the preemption of assets as a way gaining advantages over rivals by ensuring control over scarce assets that already exist, not assets created by the firm. Once all scarce assets have been claimed there is no more to get and competitors will not be able to enter.

Blackman (2001) develops a theory concerning financing of agricultural activities. He argues that information asymmetries are the reason for credit shortages being more of a problem among large-scale farmers than large ones.

5 Findings and Discussion

Here the findings are presented and discussed. The macro analysis of comparative advantages concerns the Russian agricultural sector's attractiveness in terms of Russia's relative endowment of agricultural production factors. The micro analysis focuses on the competitive advantages a foreign, large-scale agricultural company like BEF holds on the Russian agricultural market. The aim is to have a good understanding of Russia's endowed agricultural factors and the company-created factors to be able to do an encompassing analysis of all relevant advantages in our study.

5.1 Macro Analysis: Russia's Relative Factor Endowment

The relative factor endowment analysis is divided into two parts. In the first part we present and discuss the results of the HOV factor proportions. The second part contains the comparison of agricultural production factor concentrations.

5.1.1 The HOV Factor Proportions

The main results of the relative factor endowment analysis are presented in *table 1* below. The abundant factors are highlighted.

	Income Share	Tractors	Combines	Labor Force	Agricultural Labor	Agricultural Land
U.S.	25.05%	14.97%	7.92%	5.04%	0.21%	8.35%
France	4.72%	3.87%	1.75%	0.90%	0.05%	0.60%
Argentina	0.48%	0.87%	1.14%	0.59%	0.11%	2.66%
Canada	2.42%	2.50%	1.85%	0.60%	0.03%	1.37%
Australia	1.50%	1.07%	1.29%	0.35%	0.03%	9.00%
Germany	6.04%	2.62%	1.95%	1.34%	0.06%	0.34%
Thailand	0.43%	2.83%	4.79%	1.22%	1.52%	0.40%
Kazakhstan	0.19%	0.15%	0.43%	0.26%	0.09%	4.20%
Ukraine	0.26%	1.15%	1.31%	0.75%	0.21%	0.84%
India	2.14%	10.74%	10.88%	14.42%	20.09%	3.64%
Russia	2.35%	1.38%	2.46%	2.45%	0.51%	4.36%

Table 1 – Results of the Relative Factor Endowment Analysis (see appendix D).

Again, the countries selected apart from Russia are the world's largest net exporters of cereals. This is calculated based on total net export volume of cereals from 1992 to 2007, the period starting from the fall of the Soviet Union up until the last reported year for cereal trade. In this period Russia ranks as number 74 out of a total of 190 cereal trading countries[19].

[19] See *Appendix D.1*

Before going into details about the different production factors there are some particulars on the selected countries' economic statuses that should be mentioned. There is no homogeneity among them in terms of economic wealth. In 2007 nominal GDP per capita ranged from slightly around USD 1000 in India to around USD 9000 in Russia and above USD 45000 in the U.S.[20].

Moving on to the results and starting with agricultural capital stock, the results show, in order going from the largest to the smallest share, that India, France, Thailand, Canada, Russia, Ukraine, and Kazakhstan have a relative abundance of tractors. All of these countries, apart from France and Canada, are also abundant in combines together with Argentina and Australia. Among the countries abundant in agricultural capital India, Ukraine, and Thailand stick out as their relative share of the world stock of tractors and combines is at least 5.5 times bigger than their share of the world income. Just looking at the figures this implies that they are very abundant in agricultural machinery.

Russia is abundant in combines but not extremely so. It has a shortage in tractors, which suggests that it is better equipped for cereal production. Not to forget, a lot of capital in Russia is outdated and this includes agricultural machinery (Gustavsson, 2008). Hence the results for Russia as well as the other former Soviet states may have turned out differently had the reported figure excluded outdated machinery, but unfortunately such statistics are unavailable.

Regarding the labor force, India, Russia, Thailand, Ukraine, Argentina, and Kazakhstan are abundant in labor overall. Populous India sticks out with a labor force share that is more than seven times larger than its income share indicating an advantage in labor-intensive production, be it in agriculture or in other sectors. Only India and Thailand also have a relative abundance in agricultural labor.

Interesting to study are the agricultural labor force shares of the four largest economies, the U.S., Germany, France, and Canada, all with a world income share above two percent. Although they are among the top net exporters of cereal their agricultural labor shares amount to no more than 0.06 percent of the world total, apart from the U.S. where the share is 0.21. Russia's agriculturally active population at 0.51 percent share is thus rather high in comparison. At the same time Russia does not display the same labor force distribution[21] as the less developed economies India and Thailand, whose agricultural labor force shares are greater than their overall labor force share.

[20] See *Appendix D.2.*
[21] See *Appendix D.3.*

An observation worthy of note regards the combined relative endowment of labor and agricultural capital. Canada is scarce in agricultural labor but abundant in tractors. Thailand and India are abundant in both agricultural labor and machinery. The U.S., France, Australia, and Germany are scarce in both workers and machinery. This fact could be partly due to a large input of other agricultural inputs, such as fertilizers or water that increase yields without additional input of capital or labor. Russia and Argentina are scarce in workers but abundant in both tractors and combines. In this regard Russia stands out as a capital intensive agricultural producer.

The final and important production factor is agricultural land. Germany, Thailand, France, Canada, and the U.S. are relatively scarce in agricultural land. Still the fact that the U.S. clearly has the second highest share of agricultural area after Australia should not be ignored. Russia has the third largest share, which is a significant result in the analysis.

To sum up the HOV analysis we look at the joint endowment of all agricultural production factors, tractors, combines, agricultural workers, and agricultural land. Russia has a larger share of agricultural land than eight of the countries. Among these only Argentina, Kazakhstan, and Ukraine also have a smaller share of the other agricultural production factors. France, Canada, and Germany have a greater share of tractors. Thailand and India have a greater share of all other production factors.

At this point of the analysis the most interesting question is how big the shares of agricultural inputs should be in relation to each other. Taking what we have in the HOV analysis we look at the average shares of tractors, combines, agricultural workers, and agricultural land among the top ten net exporters (Average-10). Since the U.S. has an extreme share of agricultural capital and India an extreme share of agricultural capital and workers we also look at an average (Average-8) leaving these two countries out.

	Tractors	Combines	Agricultural Labor	Agricultural Land
Russia	1.38%	2.46%	0.51%	4.36%
Average-10	4.08%	3.33%	2.24%	3.14%
Average-8	1.88%	1.81%	0.26%	2.43%

Table 2 – Comparison of Russia's relative share of the world total factor supply and the average factor share among the largest cereal net exporters.

Against Average-10 Russia has a greater share of agricultural land but smaller shares of all the other factors. This brings substance to the claim that Russia has not taken advantage of its land resource and invested enough in the complimentary production factors agricultural capital and labor. On the other

hand, against Average-8 the situation does not look quite as bad. On the contrary, its share of agricultural land is 1.8 times greater than the average. For agricultural workers this factor is 1.9, for combines 1.4, and for tractors 0.7. This means that Russia is only deficient in tractors in relation to those eight cereal exporters.

5.1.2 Agricultural Production Factor Concentrations

The supply of agricultural factors relative each other becomes clearer when looking at their concentrations. Doing so for all of the countries we can determine how high or low Russia's concentration of agricultural production factors is in comparison. For comparison we use, above all, Average-10 as a benchmark. As shown in *table 3* below the U.S. and India are, apart from in worker density, no big outliers anymore so we do not look at Average-8. The world average is used as another benchmark. The cereal output per unit area and per combine ratios give an indication of how productive the stock of production factors is.

	Combine Density *per 1000 ha of land used in cereal production*	**Tractor Density** *per 1000 ha of agricultural land*	**Worker Density** *per 1000 ha of agricultural land*	**Cereal Output per Combine** *tonnes per machine*	**Cereal Output per Unit Area** *tonnes per ha of land used in cereal production*
U.S.	5.6	10.6	6.6	1 197	6.7
France	8.5	38.4	22.3	776	6.6
Argentina	4.9	1.9	10.9	884	4.4
Canada	5.0	10.9	5.1	592	3.0
Australia	3.0	0.7	1.0	389	1.2
Germany	13.0	45.1	44.0	475	6.2
Thailand	17.8	42.3	999.6	171	3.0
Kazakhstan	1.2	0.2	5.8	1 069	1.3
Ukraine	4.4	8.2	64.1	503	2.2
India	4.7	17.5	1 438.0	546	2.6
Russia	2.7	1.9	30.6	742	2.0
World	6.3	5.9	260.3	536	3.4
Average-10	6.8	17.6	259.8	660	3.7

Table 3 – Comparison of agricultural production factor concentrations and cereal yields (Faostat, 2009; ILO, 2009).

Russia scores rather poorly in all density measurements in comparison to Average-10 and to the world, especially in terms of agricultural capital. For the combine density measurement only Kazakhstan scores lower. Russia deviates negatively from the world tractor density and significantly so from Average-10. High tractor density in especially France, Germany, and Thailand is the cause for the high Average-10

figure. In any case, the figures show that Russia has a low concentration of agricultural capital in terms of its agricultural area especially in comparison to the largest cereal exporters.

Worker density is very low in Russia in comparison to the two averages. However, in comparison to the U.S., France, Argentina, Canada, Australia, Germany, and Kazakhstan the worker density is still high. In other words, in comparison to the wealthier economies studied Russia has a rather high agricultural worker concentration but in comparison with the less wealthy countries and the world it does not.

Of the two machinery density measurements there should be a higher correspondence between combines and land used in cereal production than between tractors and agricultural area. Statistical data make it possible to measure the productivity of combines against the output they produce. Russia's cereal output per combine scores above both the world average and Average-10, which shows that although the concentration of them is low and output per hectare is low their productivity is fairly high. It is not near as high as in the U.S., however, but this is probably due to the high cereal yield in the U.S. Regarding yield, at a cereal output per hectare of land used in cereal production of two tonnes Russia scores poorly in relation to the world average and Average-10. Only Australia and Kazakhstan score worse than Russia.

This leads on to a discussion on the production factors that have not been included in the study, namely fertilizers and chemicals, which have a significant impact on the yield. Water and climate also have an impact, which has been discussed in *section 2.4* and *2.5*. Concerning fertilizers and chemicals, they are not included in the relative factor endowment analysis because statistical data is insufficient for a decent comparison. In any case, even though they have a rather critical impact on yield and can constitute a significant production cost at well above half of the direct costs (Tuwesson, 2006), we argue that they are not an input that would give a country a comparative advantage in agriculture. The reason for this is that most of the countries studied are net importers of chemicals and fertilizers and hence face the world market price. If any country has a comparative advantage in these production factors then it is Russia, which apart from Canada is the only big net exporter of chemical fertilizers among the countries studied[22].

[22] See *Appendix D.2.*

Going back to the production factor concentration analysis, overall it shows that agricultural capital concentrations in Russia are low but productivity is high, especially considering the low land yields. Relating this to the HOV analysis, the capital share could increase further to reach a capital-land ratio similar to the other cereal exporters with high capital shares. In other words, here there is room for investment. This could replace the agricultural workers, whose concentration is rather high in comparison to the same cereal exporters. The implication for investors is that Russia's agricultural sector could expand to become more capital intensive. There is enough land to give room for more capital. At the same time it seems as if the concentration of capital does not need to be as high in Russia as in other cereal exporting economies since the productivity of combines is high.

5.2 Micro Analysis: Competitive Advantages

This part of the analysis will evaluate the applicability and strength of the selected possible sources of competitive advantages for large-scale foreign agricultural investors using BEF as an example. With theories and findings we evaluate each competitive advantage to determine if they really qualify as a competitive advantage. We place particular focus on the overall advantage of being foreign-owned and managed.

5.2.1 First-Mover Advantages

We begin by analyzing the competitive advantage of being the first-mover. By definition a company that pioneers in acquiring scarce assets can only claim first-mover advantages if the returns exceed the costs for doing so. First-movers may enjoy higher returns than latecomers if they, for example, acquire the better quality land, purchase contingent areas of land while only smaller, isolated pieces of land remain for the latecomers, or if first-movers preempt the land resource to such an extent that there is no more left for later competitors.

On the other hand first-movers may face higher costs. BEF has devoted a lot of resources into complicated land registration processes and into treating the land to make it regain its productivity. As a foreign first-mover BEF should be particularly disadvantaged, lacking the local expertise to carry out the land registration process. Latecomers, on the other hand, could avoid all these costs by acquiring land already in production from a first-mover, provided of course that the land is up for sale. Furthermore land prices may drop after the first-mover's point of entry. In these scenarios an early point of entry looses economic rationale.

Before BEF reaches an equilibrium stage of operation and more market observations are available it is hard to determine whether BEF has an advantage as a first-mover. Still there are some interesting developments that should be noted in the context. Shortly before the financial crisis the CEO of the biggest agricultural holding in Russia, Razgulay, declared that the Russian market was running out of arable land. He predicted that within a year good quality land would only be available from other agricultural holdings (Paxton & Budrys, 2008). There are obvious advantages of being among the first movers if such a peak in land grabbing comes about. However, shortly thereafter came the crisis and BEF was offered around one million hectares of arable land by credit squeezed companies and individual land owners at attractive prices (Black Earth Farming Ltd., 2009, p. 19).

This kind of development makes first-mover advantages questionable. BEF maintains, however, that the land offered was not of good quality and never an investment option in the first place. Attractive land still lies under tight control of their owners (Gustavsson, 2008). It should not be forgotten that all market participants, first-movers and later entrants, are exposed to the risk of economic downturns, even though first-movers face a greater risk in total. We still believe BEF can realize first-mover advantages because it has enabled them to become large land owners, which we argue is an advantage[23]. At the same time we believe that being foreign offsets some of the first-mover advantages in that it involves a complicated registration process.

5.2.2 Economies of Scale

The fact that BEF does not stand alone as a large agricultural holding on the Russian agricultural market might be explained by the presence of economies of scale. The Russian agricultural market contains mostly by large-scale organizations and small farms produce only seven percent of the total output (OECD, 2009a, p. 116). Due to the supply of vast areas of arable land large-scale farms can control large land areas in the same region. This is especially beneficial when it comes to logistics and storage. Agricultural infrastructure for distribution is weak in Russia and expensive to develop (FAO, 2009, p. 72). Although there is a need for it, it is not possible for small-scale farmers to make investments on their own in infrastructure as this does not become profitable without sufficient operational activity that can compensate for the investment cost.

[23] See *section 5.2.2 and 5.2.3.*

The same problem goes for storage, which is especially important in grain production. Grain prices suffer from seasonal variation and the lowest prices are usually paid to producers just after the harvest, around August-September in the Northern Hemisphere and March-April in the Southern Hemisphere (Gustavsson, 2008). Access to storage may improve the profit but this requires some investment into storage infrastructure. BEF has already undertaken and is budgeting for more infrastructure investments. This increases the proportion of fixed costs so clearly BEF will enjoy economies of scale. They are already seeing decreasing costs per tonne of grain as a result of increased harvested hectares (Black Earth Farming Ltd., 2009).

5.2.3 Capital Market Access

One competitive advantage that BEF highlights is access to capital markets. This is certainly an advantage when capital markets are not working properly. Since the Russian agricultural sector has been plagued by capital shortage its capital markets can be considered as malfunctioning. BEF claims that capital is available to them because of their international composition. This is true especially since they during the crisis have shown to be more liquid than other market participants. At the same time BEF is competing against strong local agroholdings who rely on a purely Russian management. We therefore argue that being foreign is not the only means of obtaining sufficient capital. Rather, it seems that size is a more important parameter for access to capital.

Using Blackman's (2001) theory we find an argument for why large-scale farmers have easier access to credit loans than large-scale farmers. Credit problems among smaller farms, according Blackman, arise because of information asymmetries about farmers' intentions. Small-scale farmers are especially sensitive to consumptions shocks, since they do not have room to diversify production to such a large extent. Instead of investing loans some large-scale farmers may be tempted to consume loans, even though there are of course still farmers who actually invest the loan. Those who consume the loan default intentionally and will therefore accept any interest rate. Lenders are, however, unable to distinguish between defaulters and serious investors and are therefore reluctant to lend money. Larger land owners, on the other hand, can use their land as collateral when borrowing money, which makes the loan less risky for the lenders who consequently become more willing to offer credit and this at a more reasonable rate.

In Russia it is not possible to use land as collateral, even for a larger land owner, which necessitates equity capital to replace credit financing. The situation becomes clear when comparing the Swedish and

the Russian agricultural markets with each other. As previously mentioned, crop farming involves great variations in cash flow. Crop farmers therefore need to have access to credit during periods of low cash flow. In Sweden, where the agroholding structure basically does not exist, the credit system is well developed and land is commonly used as collateral when taking loans. In Russia the value of land varies in the lower end of the world's farm land prices making it a poor collateral[24]. Also, since the ownership rights distributed among the former kolkhoz workers are sometimes not defined, using land as collateral is not even possible. This means that a farmer must be able to finance the business entirely by equity as well as keep a buffer large enough to survive shocks. In contrast to private farms agroholdings are able to acquire the external equity necessary to fulfill these capital requirements (Kugelberg, 2010).

A third explanation for the importance of size in with regards to capital access may be found in practiced government policies. As discussed in *section 2.1* larger organizations seem to have been the greatest benefiters of Russian agricultural policy, at least before the latest reform. The government intentionally targeted agroholdings, arguably because they believed that the solution to Russia's poorly performing agricultural sector lies in reconstructing the Soviet farm structures. Our findings also suggest that smaller farms have indirectly been left out of the state funding. A commonly used condition for receiving agricultural government grants is to guarantee the employment of local citizens. Obviously larger agricultural enterprises are better able to employ workers than smaller private farms (Gustavsson, 2008). In this respect government policies are also a contributing factor to size being an advantage for capital access in a competitive sense.

5.2.4 Expertise and Know-How

BEF places special emphasis on their knowledge assets and argue for them to be one of their most important competitive advantages. In a country like Russia, that is said to be deprived of agricultural know-how as a result of the many decades of state controlled agricultural production, knowledge may serve as a strong competitive advantage. Looking at the composition of BEF's managers and board representatives (2009a, pp. 68-70) they undeniably possess good operative knowledge. Gustavsson (2008) argues, however, that Russia is not poor in agronomic knowledge. Rather it may lack enough knowledge about running a profit-seeking business, or at least there is little of it within the agricultural sector. Since BEF hosts a team of experienced business representatives, even of those with a combined

[24] See *figure 2*

experience of business methods and agricultural farming, its foreign-owned and managed company constellation is an advantage. Being foreign is also a disadvantage in terms of lacking local expertise. BEF has overcome this problem by recruiting Russian experts especially in the legal department.

It is hard to substantiate the claim that BEF possess a competitive advantage in expertise and know-how. This is not because there are doubts that they do, because at least operational performance seem successful so far. They have been able to register a substantial share of land under their ownership already and improved grain yields in many cases above Russian averages. The claim is challenged because we can find no evidence to prove that other competitors do not have this know-how. Realistically the knowledge BEF holds domestic competitors can also hold and it is not a unique resource. For this reasons we consider expertise and know-how necessary assets for operating on the Russian market but not sources of competitive advantage.

More plausible is that BEF holds a competitive advantage against other foreign investors in its knowledge resources. BEF was founded by a native Russian with international contacts and experience and he is one of the contributors to the constellation of international and Russian management. Against other investors completely run under foreign regime BEF might therefore hold a stronger competitive position.

6 Conclusion

The agricultural sector in Russia hosts economic potential for investors who enter the market with the right strategies and the right resources. Russian agriculture displays a certain degree of comparative advantage, particularly in terms of land while other production factors are relatively scarce. The analysis confirms that there is an underutilization of land as a productive resource and consequently there is room to expand the agricultural sector. Successful expansion requires at least a strong capital base and the ability to operate on a larger scale. Both local Russian and foreign investors are capable of fulfilling these requirements.

The study is a combined macro analysis of the profit potential of the Russian agricultural sector and micro analysis of the foreign investor's ability to realize such profits. Studying a combination of comparative and competitive advantages enables a more comprehensive survey of the situation than looking at one of them in isolation. Neither of the two sets of advantages is complete; Russia does not have a relative abundance in all of the analyzed production factors and not every one of BEF's company resources and strategies are unique enough to be considered competitive advantages. This does not preclude successful business for foreign investors like BEF.

Russia is abundant in land but deficient in agricultural capital. There is a shortage in agricultural labor force but not in comparison to the labor densities of other important agricultural exporters, which instead employ more agricultural machinery. Provided there is enough investment capital Russia could expand its agricultural sector by increasing its stock of agricultural machinery closer to the levels of these agricultural producers. Consequently a competitive advantage in access to capital receives additional importance and along with it the ability to operate on a large scale. In this regard being an early mover may be necessary in order to secure the amount of land needed to reach a sufficient scale of production.

With this reasoning the important factors for BEF's continuation of operations may be its combination of a strong capital base, managerial experience in large-scale agricultural production, and early entry on the market facilitated by its in-housed local knowledge of the business environment. A lack of one of these would probably not have kept the company on the market for so long and eliminated it together with the other companies that left the market in the crisis. Nevertheless, the challenge still remains to fulfill the high expectations of the stakeholders, which is doubtlessly more difficult for an international company. Shareholders face a greater risk when investing abroad, not the least on an emerging market

like Russia, and therefore require higher returns. Remembering that the Land Reform of 2002 only allows foreign companies to rent Russian land, not own it, Russian stakeholders should also exert surplus pressure on a foreign owned holding company like BEF. With such challenges there must be a high belief on the company side in the potential of the Russian agricultural market. Increasing world demand for agricultural produce should serve as economic incentives to continue operations. At the same time there has never before been such intense international competition for land. If this development continues then it may very well be that BEF and other investors discontinue operations and sell the land at a profitable price.

7 Reflections and Recommendations for Further Research

This thesis focuses on the development in Russia but it would be interesting to widen the study to include other parts of the world to a greater extent. Ongoing projects in Africa and Australia, as mentioned in the introduction, could be worth taking a closer look at. In this thesis most of the company-specific data used originates from Swedish-funded companies and particularly BEF. However, as can be derived from *figure C.1* in *appendix C*, the Netherlands are taking a keen interest in the Russian agricultural sector. Expanding the study to include more data also from companies funded by investors in other European countries or even include world-wide data on foreign-funded agricultural projects in Russia could be of interest. When more data is available it would also be interesting to conduct an econometric study on investors' propensity to invest in agricultural land and econometrically discern which factors matter the most when setting up an agricultural enterprise in Russia.

It is certainly not only the agricultural sector which has received attention from Swedish investors. Quite the opposite, the agricultural sector is a rather new discovery in purely financial context. Long before it was possible to purchase stock and thereby indirectly own a piece of Russian soil, Swedes have taken an interest in investing in Russia. The willingness to invest capital eastwards have resulted in several fund options focusing on eastern European countries. Johansson and Vahlne (1979) discuss the importance of knowing the market in which the firm operates. The more the investors know about the market situation the larger market commitment the firm is willing to make. The more knowledge the investor possesses the less risky is the investment.

As described in the background section of this thesis the market for Russian agricultural land can currently not be described as well-functioning Projects carried out in the Russian agricultural sector can be described as high-risk for several reasons, among others the volatility of the market but also a political risk involving the risk of expropriation (Tuwesson, 2006). Tuwesson claims that Sweden's long history in quite close connection to Russia plays an important part in explaining Swedish investors' tendency to invest in Russia and that this might be a reason for why Swedes have a good reputation in the Russian business world. This longtime involvement has allowed an accumulation of knowledge now exploited by firms investing in Russia and the rest of Eastern Europe. The market dynamic and the country specific risks are well mapped out. In addition, firms often internalize knowledge about the market through recruitment or acquisition (Johansson, J. & Vahlne, J., 1979). Black Earth Farming for

example, states that it is dependent on key persons both when it comes to knowledge and network (Black Earth Farming Ltd., 2007).

Geographical proximity can explain why we see strong Swedish interest concerning the development in the Russian agricultural sector rather than for example the agricultural sector in Argentina which is another land abundant nation[25]. As displayed by *figure C.1* the majority of the largest investors in Russia are nations situated quite close, geographically speaking. These factors speak for that it is interesting and relevant using Swedish data but also that it is reasonable to draw more general conclusions from the result as to encompass investors from other countries as well.

The statistics in *figure C.1* may to some extent be misleading since many groups with operations in Russia have registered their holding companies in countries such as Cyprus, Belize, Gibraltar and the U.K. Virgin Islands for tax reasons. It is likely to assume that a great part of the investments registered as coming from these countries may actually come from other nations. For example, Black Earth Farming's holding company is situated in Cyprus[26]. Along with the assumption that the actual FDI flow from Cyprus probably is smaller than the figures indicate, we presume that it is likely that the direct investments coming from other countries such as Sweden and the Netherlands may be underestimated.

As brought up in the introduction, some of the ongoing investments in Russian agricultural land may be undertaken for purely speculative reasons. The investors do not intend to cultivate the land; the only reason for acquiring control is to wait until land prices have risen and to sell the land to ha higher price. These investors are probably less interested in the short run development of cereal price except for the sole reason of temporary price increases of agricultural land. These kinds of speculations build on the limitation of land in the world and speculative investors calculate that sooner or later, because land is relatively cheap in Russia, the prices will increase. The land price is probably positively correlated with, not only on the short-sighted development of grain prices, but also the pure scarcity of its nature and the fact that land is immobile forever.

[25] The agricultural land in Argentina is 47 percent of the total land mass (Faostat, 2009).
[26] See *Appendix B*.

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Appendices

Appendix A – Wheat Price and Input Prices

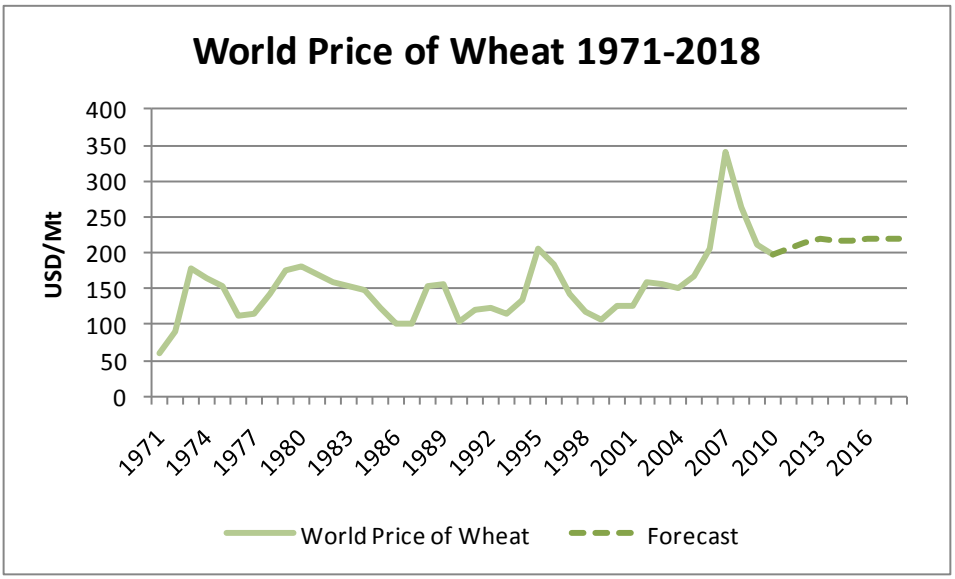


Figure A.1 – World price of wheat from 1971 to 2009 and forecast of future wheat price from 2010 to 2018. Source: (OECD, 2009)

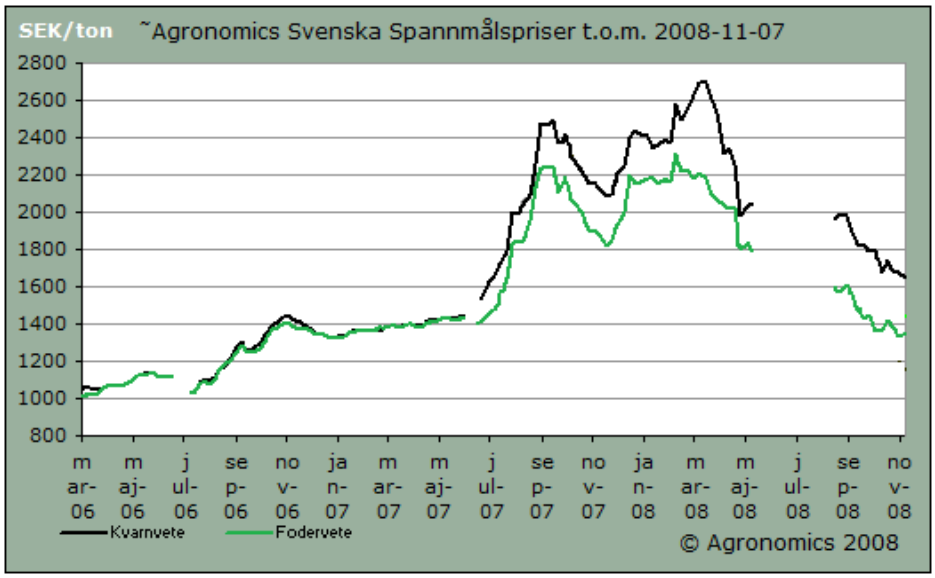


Figure A.2 – Price development of wheat from March 2006 to November 2008 in SEK per tonne. The black line shows the price of flour wheat and the green line represents the price of feed wheat (Agronomics, 2008).[27]

[27] Price information concerning grain prices from month to month turned out difficult to come over. We judged this to be the most pedagogic picture, clearly showing the increase in the wheat price starting in mid-2007. The

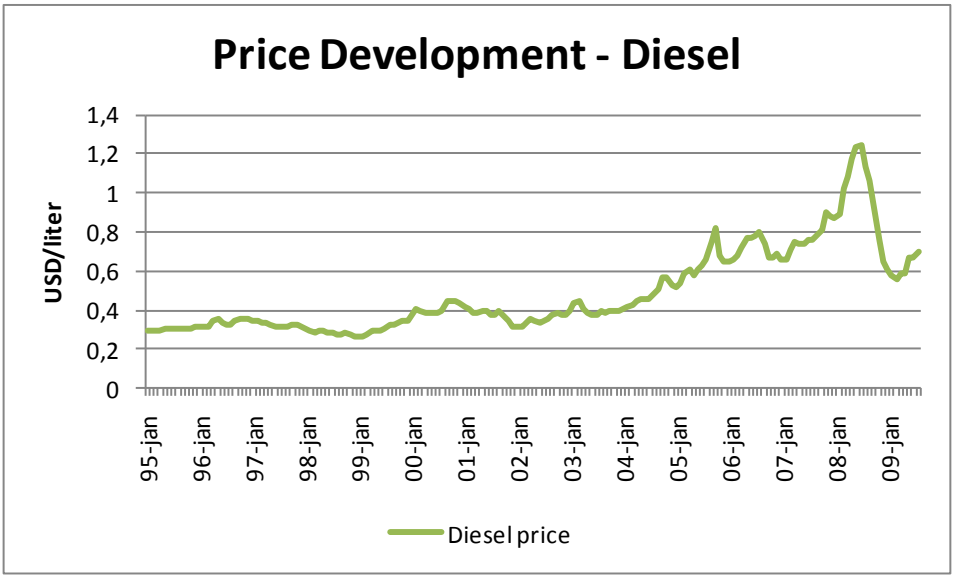


Figure A.3 – The average diesel retail price in the U.S. for the period January 1995 to August 2009 measured in USD/liter (Energy Information Administration, 2009).

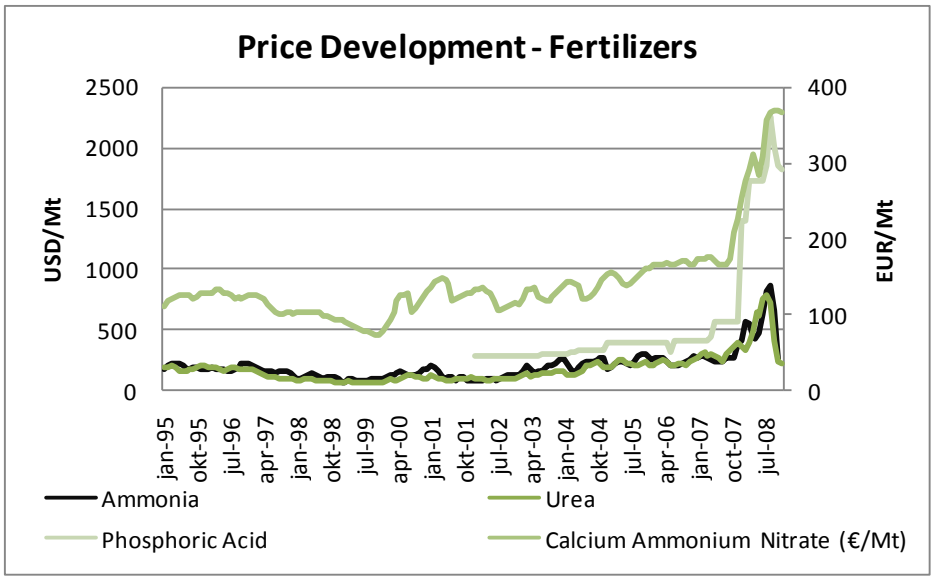
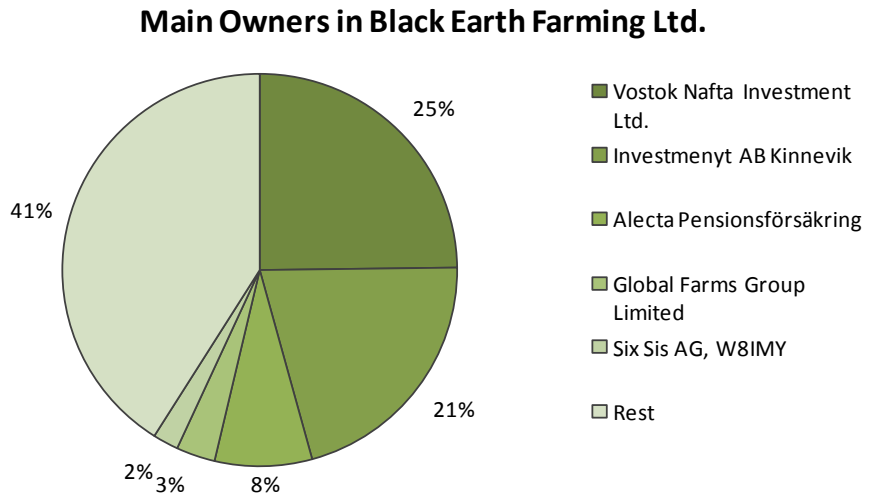
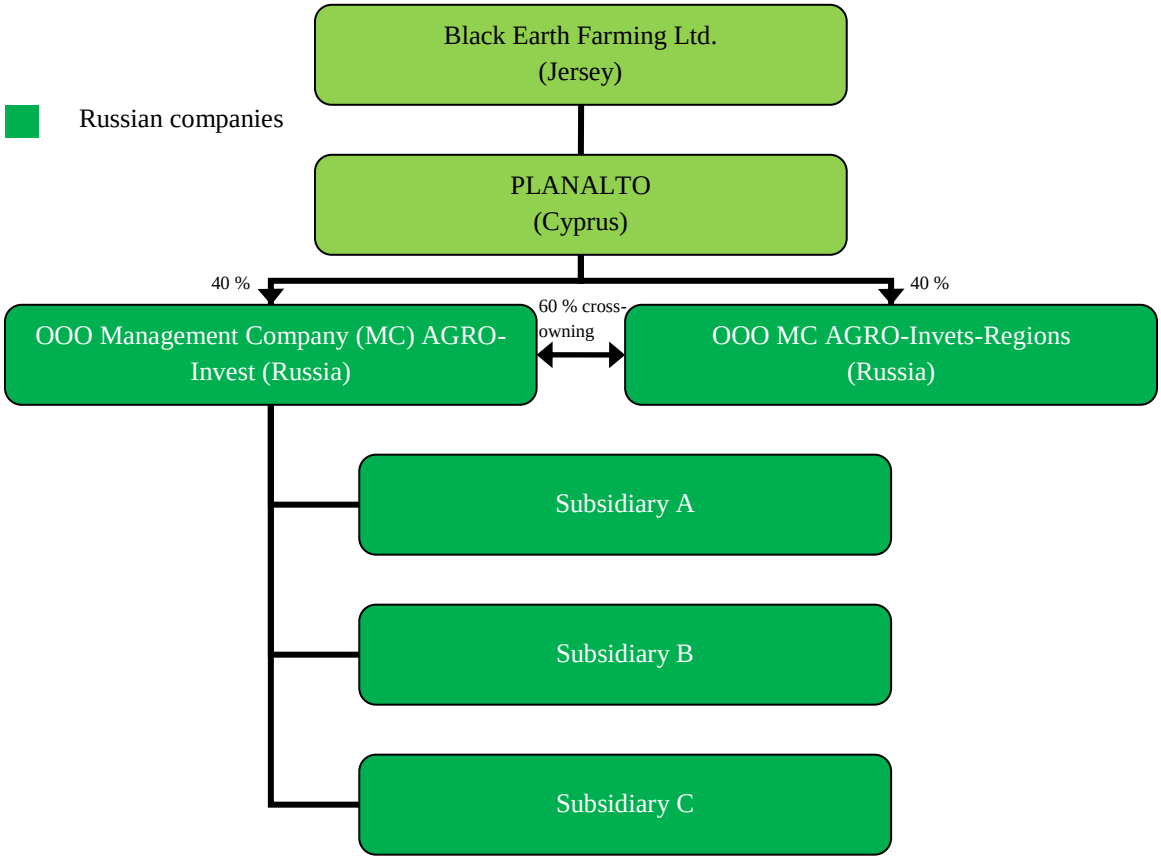


Figure A.4 – The price development for fertilizers for the period January 1995 to December 2008. (Fertilizer Price Index, 2008)

entities (SEK/tonne) and the fact that it shows Swedish wheat prices is of less importance since the development has been similar all over the world.

Appendix B – Black Earth Farming[28]





[28] As of Dec 31, 2009, OOO MC AGRO-Invest had 35 subsidiaries.

Appendix C – FDI in Agriculture

Codes	Host Region	Target country	Investor Region	Investor Country	Investor Organization	Nature of Deal	Area (ha)	Status of Deal	Date Announced/Signed
G2G	Africa	Democratic Republic of Kongo	Asia	China	ZTE International	Crop for biofuel	2800000	Unknown	n/a
G2G	Africa	Ethiopia	Asia	India		4 billion USD agriculture flowers and sugar		Unknown	n/a
G2G	Africa	Kenya	Middle East	Qatar		Fruit and vegetables	40000	Signed	08-nov
G2G	Africa	Malawi	Africa	Djibouti		Leased		Signed	09-apr
G2G	Africa	Mali	Middle East	Libya		Rice	100000	Signed	n/a
G2G	Africa	Mozambique	Asia	China		800 million USD invested to expand rice production		Discontinued	n/a
G2G	Africa	Sudan	Middle East	Egypt		Land to grow 2 million tons of wheat annually		Signed	n/a
G2G	Africa	Sudan	Middle East	Jordan		Livestock and Crops	25000	Signed	n/a
G2G	Africa	Sudan	Middle East	Kuwait		"Giant" strategic partnership		Signed	08-sep
G2G	Africa	Sudan	Middle East	Qatar		Joint holding company set up to invest in agriculture		Signed	08-jul
G2G	Africa	Sudan	Middle East	Saudi Arabia	Hail Agricultural Development company	Wheat, vegetables and animal feed, 60% payed by the Saudi Arabian government	10000	Signed	09-feb
G2G	Africa	Sudan	Asia	South Korea		Wheat	690000	Signed	May-08
G2G	Africa	Sudan	Middle East	United Arab Emirates			378000	Under implementation	n/a
G2G	Africa	Sudan	Middle East	United Arab Emirates		Corn, alfalfa, wheat, potatoes and beans	30000	Signed	n/a
G2G	Africa	Tanzania	Middle East	Saudi Arabia		Lease	500000	Requested	n/a
G2G	Africa	Tanzania	Asia	China	Chongqing Seed Corp.	Rice	300	Signed	n/a
G2G	Africa	Zambia	Asia	China		Jathropa bio fuel	2000000	Requested	n/a
G2G	Asia	Cambodia	Middle East	Kuwait		Land leased for rice		Signed	08-aug
G2G	Asia	Cambodia	Asia	Vietnam		Rubber	100000	Unknown	09-mar
G2G	Asia	Indonesia	Middle East	Saudi Arabia	Bin Laden Group	Rice	500000	Discontinued	n/a
G2G	Asia	Laos	Asia	Vietnam		Rubber	100000	Unknown	09-mar
G2G	Asia	Pakistan	Middle East	United Arab Emirates			324000	Under implementation	n/a
G2G	Asia	Philippines	Middle East	Bahrain		Agro-fishery	10000	Signed	09-feb
G2G	Asia	Philippines	Asia	China			1240000	Discontinued	n/a
G2G	Asia	Philippines	Middle East	Qatar		Leased	100000	Unknown	08-dec
G2G	Other	Turkey	Middle East	Bahrain	Agricapital	500 Million USD agricultural project		Signed	09-apr
G2G	Other	Ukraine	Middle East	Libya			247000	Signed	08-nov
B2G	Africa	Angola	Europe	United Kingdom	Lonrho	Rice, leased	25000	Signed	n/a
B2G	Africa	Democratic Republic of Kongo	Africa	South Africa	Agriculture South Africa	Offered to farmers Union	10000000	Unknown	n/a
B2G	Africa	Ethiopia	Middle East	Saudi Arabia	Unknown Private Investor	Leased land		Signed	09-mar
B2G	Africa	Madagaskar	Asia	South Korea	Daewoo	Maize	1300000	Signed	08-nov
B2G	Africa	Nigeria	Europe	United Kingdom	Trans4mation Agrictech Ltd		10000	Signed	n/a
B2G	Africa	Sudan	North America	U.S.	Jarch Capital		400000	Signed	n/a
B2B	Africa	Ethiopia	Middle East	United Arab Emirates	Dubai World Trading Company	Joint venture - tea	5000	Signed	09-apr
B2B	Other	Russia	Asia	South Korea	Hyundai	Company take-over	10000	Deal Implemented	n/a
B2Unknown	Africa	Cameroon	Asia	China	Unknown Company	Rice production	10000	Deal Implemented	n/a
B2Unknown	Africa	Egypt	Middle East	Saudi Arabia	Jenat	Barley, wheat and animal feed	10000	Unknown	n/a
B2Unknown	Africa	Ethiopia	Europe	Germany	Flora EcoPower	Bio fuel crop	13000	Signed	n/a
B2Unknown	Africa	Ethiopia	Europe	United Kingdom	Sun Biofuels	Bio fuel crop		Deal Implemented	n/a
B2Unknown	Africa	Mozambique	Europe	Sweden	SEKAB	Bio fuel crop	100000	Unknown	n/a
B2Unknown	Africa	Mozambique	Europe	United Kingdom	Sun Biofuels	Bio fuel crop		Deal Implemented	n/a
B2Unknown	Africa	Tanzania	Europe	United Kingdom	CAMS Group	Bio fuel crop	45000	Deal Implemented	2007
B2Unknown	Africa	Tanzania	Europe	United Kingdom	Sun Biofuels	Bio fuel crop	5500	Unknown	n/a
B2Unknown	Asia	China	North America	U.S.	Goldman Sachs	Poultry and pig farms		Deal Implemented	n/a
B2Unknown	Other	Brazil	Asia	Japan	Mitsui	Soybeans	100000	Deal Implemented	2007
B2Unknown	Other	Ukraine	North America	U.S.	Morgan Stanley		40000	Deal Implemented	09-mar
B2Unknown	Other	Ukraine	Europe	United Kingdom	Landkom	Leased	100000	Deal Implemented	n/a
B2Unknown	Other	Russia	Europe	Sweden	Alpcot Agro		128000	Deal Implemented	n/a
B2Unknown	Other	Russia	Europe	Denmark	Trigon		100000	Deal Implemented	n/a
B2Unknown	Other	Russia	Europe	Sweden	Black Earth Farming		331000	Deal Implemented	n/a
							21525600		

Source : (von Braun & Meinzen-Dick, 2009)

G2G: A governmental agreement

B2G: An agreement between a non-governmental organization in the investor country and the government in the host country

B2B: An agreement between non-governmental organizations on both sides

B2Unknown: An agreement between a non-governmental organization in the investor country and an unknown counterpart in the host country

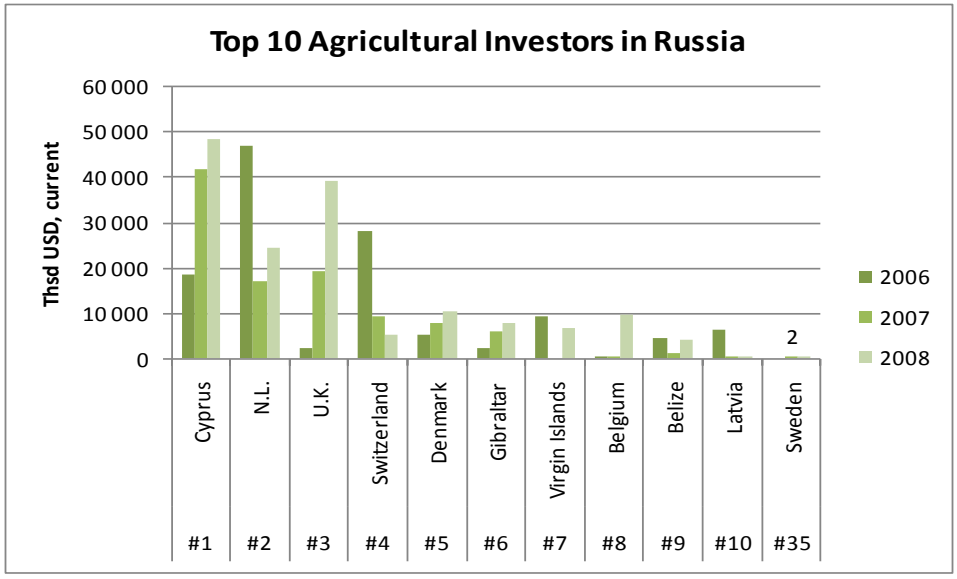


Figure C.1 – The top ten foreign investors and Sweden in Russian agriculture from 2006 to 2008 in thousand current USD (GKS, 2009).

Appendix D – Comparative Advantage Analysis

80 of the World's Largest Net Exporters of Cereals ranking based on cumulative value of net cereal exports in tons from 1992 to 2007								
	Country	**Exports**	**Imports**	**Net Exports**		**Country**	**Exports**	**Imports**	**Net Exports**
1	United States	1 394 820 990	82 078 205	1 312 742 785	**41**	Grenada	129 748	330 997	-201 249
2	France	472 593 450	22 452 798	450 140 652	**42**	Samoa	0	220 416	-220 416
3	Argentina	310 774 224	586 724	310 187 500	**43**	Seychelles	61	241 976	-241 915
4	Canada	342 818 369	35 775 281	307 043 088	**44**	St. Vincent, Grenadines	388 581	632 063	-243 482
5	Australia	292 650 081	1 687 424	290 962 657	**45**	Vanuatu	0	250 660	-250 660
6	Germany	160 468 023	59 764 264	100 703 759	**46**	Saint Lucia	19	284 557	-284 538
7	Thailand	113 450 883	16 103 811	97 347 072	**47**	Belize	3 383	294 501	-291 118
8	Kazakhstan	72 140 857	1 337 846	70 803 011	**48**	Bahamas	3 880	295 643	-291 763
9	Ukraine	80 004 323	13 924 394	66 079 929	**49**	NL Antilles	621 438	1 019 828	-398 390
10	India	78 792 100	15 578 066	63 214 034	**50**	Bhutan	152 472	601 541	-449 069
11	Hungary	50 244 630	2 074 734	48 169 896	**51**	Solomon Islands	47	499 152	-499 105
12	Viet Nam	55 988 653	14 361 243	41 627 410	**52**	C. African Republic	21 555	530 775	-509 220
13	United Kingdom	70 782 109	51 557 804	19 224 305	**53**	Maldives	17	548 392	-548 375
14	Denmark	28 606 090	11 422 328	17 183 762	**54**	New Caledonia	783	595 806	-595 023
15	Pakistan	39 333 824	24 139 319	15 194 505	**55**	French Polynesia	392	598 018	-597 626
16	Sweden	17 397 778	3 290 399	14 107 379	**56**	Comoros	3 407	650 159	-646 752
17	Bulgaria	14 100 151	2 903 028	11 197 123	**57**	Burundi	1 614	661 076	-659 462
18	Czechoslovakia*	17 335 679	6 997 860	10 337 819	**58**	Brunei Darussalam	790	717 493	-716 703
19	Paraguay	10 214 549	810 492	9 404 057	**59**	Timor-Leste	0	825 273	-825 273
20	Uruguay	11 896 274	2 983 931	8 912 343	**60**	Cambodia	271 797	1 120 734	-848 937
21	Serbia-Montenegro*	8 812 740	1 288 060	7 524 680	**61**	Iceland	854	926 804	-925 950
22	Austria	14 947 059	7 746 718	7 200 341	**62**	Barbados	77 647	1 093 636	-1 015 989
23	Finland	9 160 997	3 489 846	5 671 151	**63**	Rwanda	6 308	1 049 244	-1 042 936
24	Myanmar	6 565 818	1 326 575	5 239 243	**64**	Chad	0	1 100 847	-1 100 847
25	Lithuania	5 690 552	2 503 629	3 186 923	**65**	Guinea-Bissau	0	1 192 099	-1 192 099
26	Slovakia	5 650 650	2 478 321	3 172 329	**66**	Nepal	168 350	1 413 486	-1 245 136
27	Guyana	3 284 006	906 447	2 377 559	**67**	Cape Verde	3 439	1 304 070	-1 300 631
28	Croatia	3 398 584	1 814 297	1 584 287	**68**	Turkey	35 614 620	36 959 285	-1 344 665
29	Latvia	1 918 684	1 183 068	735 616	**69**	Russia	86 185 917	87 710 397	-1 524 480
30	Moldova	2 919 564	2 243 799	675 765	**70**	Estonia	711 138	2 264 227	-1 553 089
31	Suriname	866 638	623 971	242 667	**71**	Swaziland	81 429	1 690 806	-1 609 377
32	Luxembourg	613 636	464 859	148 777	**72**	Djibouti	148 678	1 843 976	-1 695 298
33	Ethiopia PDR	1	0	1	**73**	Gabon	2 734	1 738 580	-1 735 846
34	Saint Kitts, Nevis	17	71 545	-71 528	**74**	Bahrain	88 277	1 868 270	-1 779 993
35	Antigua-Barbuda	0	83 290	-83 290	**75**	Gambia	3 483	1 788 383	-1 784 900
36	Dominica	285	115 754	-115 469	**76**	Fiji	178 191	2 196 044	-2 017 853
37	Tonga	0	120 729	-120 729	**77**	Togo	445 158	2 514 974	-2 069 816
38	Lao	282 194	409 437	-127 243	**78**	Botswana	56 704	2 397 279	-2 340 575
39	Aruba	105 573	240 207	-134 634	**79**	Malta	21 664	2 529 772	-2 508 108
40	Guam	0	139 231	-139 231	**80**	Qatar	24 245	2 576 411	-2 552 166

**Serbia-Montenegro is composed of Serbia-Montenegro (1992-2005), Serbia (2006-2007), and Montenegro (2006-2007). Czechoslovakia is composed of Czechoslovakia (1992), Czech Republic (1993-2007), and Slovakia (1993-2007).*

Table D.1 - 80 of the World's Largest Net Exporters of Cereals, cumulative value from 1992 to 2007 (Faostat, 2009).

Country	GDP	Population	GDP/capita	Cereal Output	Tractors	Combines	Labor Force	Agricultural Labor Force	Agricultural Land	Land in Cereal Production	Chemical Fertilizers* Net Export
Year	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Unit	*current USD*			*tons*					*ha*	*ha*	*tons of nutrients*
Source	WDI	WDI		Faostat	Faostat	Faostat	ILO	ILO	Faostat	Faostat	Faostat
Argentina	262 450 806 576	39 503 466	6 644	44 187 137	254 011	50 000	18 296 298	1 436 000	131 350 000	10 152 231	-1 325 632
Australia	820 973 541 650	21 015 000	39 066	21 998 000	315 000	56 500	10 897 007	443 000	445 149 000	18 768 000	-899 284
Canada	1 329 882 896 090	32 976 000	40 329	48 108 800	733 314	81 258	18 493 697	346 000	67 569 000	16 226 000	10 439 905
France	2 589 841 098 215	61 707 072	41 970	59 329 802	1 135 000	76 500	27 997 678	660 000	29 550 000	9 050 176	-2 964 214
Germany	3 317 365 597 285	82 268 357	40 324	40 632 149	767 300	85 480	41 443 678	750 000	17 031 000	6 571 690	2 383 066
India	1 176 890 254 664	1 124 786 997	1 046	260 485 900	3 149 000	477 000	446 965 362	258 642 000	179 858 000	100 696 000	-7 759 875
Kazakhstan	104 853 480 212	15 484 200	6 772	20 089 994	43 715	18 802	8 195 945	1 210 000	207 848 000	15 134 650	-22 879
Russia	1 290 082 127 493	142 100 000	9 079	80 189 613	406 000	108 000	75 874 457	6 590 000	215 680 000	40 302 250	13 365 074
Thailand	236 614 829 822	66 979 359	3 533	35 964 180	830 000	210 000	37 909 756	19 594 000	19 600 000	11 815 760	1 944 585
Ukraine	142 719 009 901	46 509 350	3 069	28 937 800	336 848	57 503	23 296 219	2 648 000	41 304 000	13 112 300	1 505 518
United States	13 751 395 444 730	301 290 000	45 642	415 165 682	4 389 812	346 935	156 287 558	2 728 000	412 878 000	61 931 237	-13 067 582
World	54 891 056 636 250	6 614 396 907	8 299	2 348 996 350	29 320 418	4 382 366	3 099 812 483	1 287 200 000	4 945 770 400	694 559 441	-

** Chemical fertilizers include nitrogen, phosphate, and potash fertilizers.*

Table D.2 – Statistics for comparative advantage analysis. Source as indicated in table

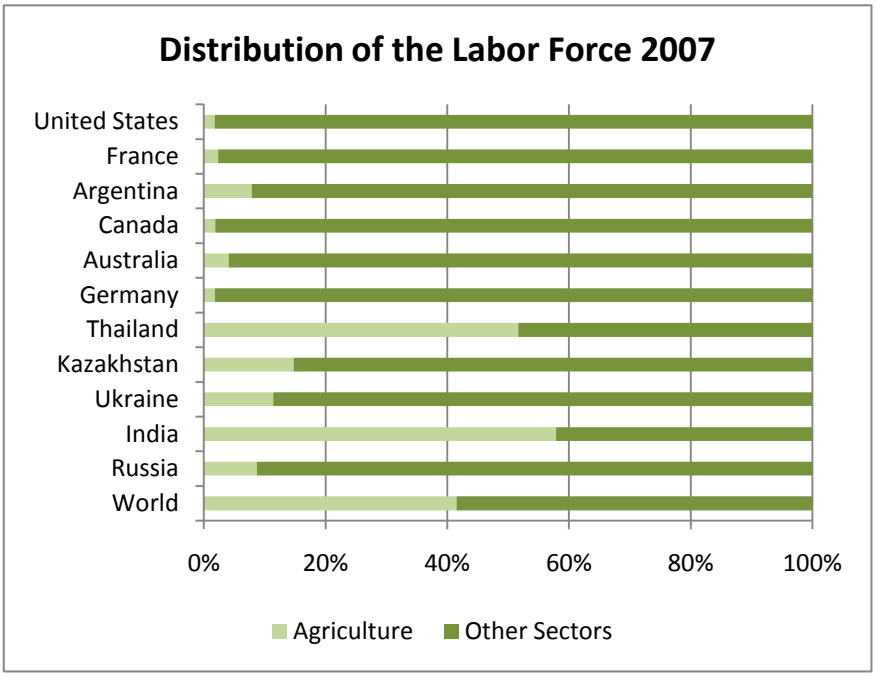


Figure D.3 – Distribution of the top 10 cereal net exporters' labor forces in terms of agricultural labor and other labor (ILO, 2009).

Appendix E – Russian Trade in Agricultural Goods

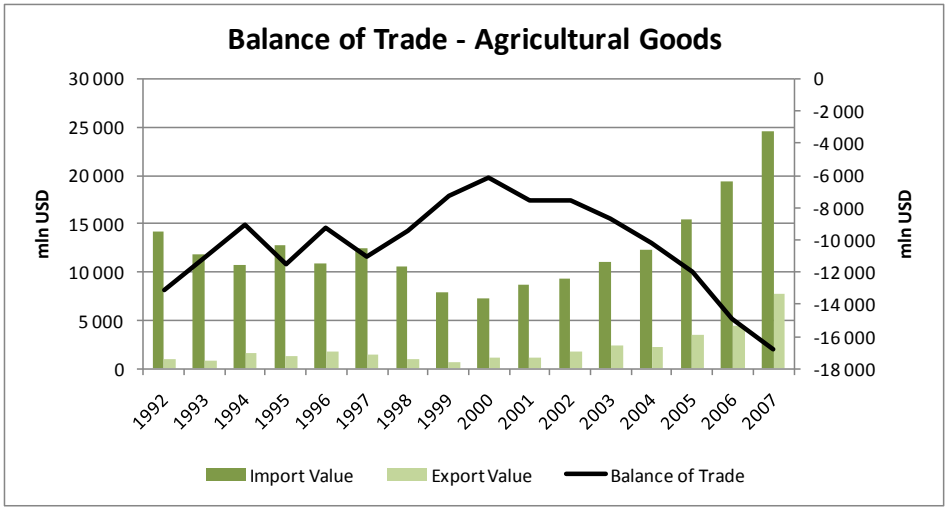


Figure E.1 – The Russian balance of trade in agricultural goods from 1992 to 2007 measured in million current USD. The values of imports and exports are showed on the left axis and the balance of trade on the right axis (Faostat, 2009).