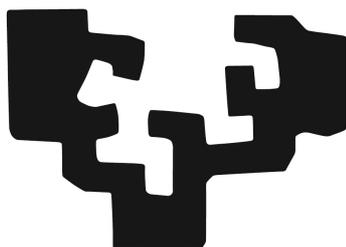


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**Economic Growth Features in Developing Countries: the Case of
the Kyrgyz Republic**

by

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*I dedicate this thesis to my
beloved parents
and my sister for their
unconditional love.*

I love you dearly.

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1. INTRODUCTION

Following the idea of understanding the causes of economic growth across countries, the current thesis is addressed to identify economic growth features in the Kyrgyz Republic (KR). All three contributions aim to analyze economic growth of the KR from different perspectives within a broad context of economic growth theory.

Our aim in this introduction is to give a general understanding of the recent economic growth theories and to provide a justification of the theoretical framework described in all three chapters. Firstly, we review the relevant literature on economic growth related to each chapter of the thesis, as each chapter is written as a self-contained unit. Secondly, we present the overall structure of the thesis and refer to the general and specific objectives, and findings of each chapter.

1.1. Review of relevant literature

For years economists have been interested in the growth of nations and to answer the question: what makes some countries rich and others poor? Thus, growth economics has aimed to understand what are the forces that drive economic growth since the times of Adam Smith and Karl Marx. Yet for all the progress in the growth theory, the truth is that economic growth remains something of a mystery. Literature emphasizes the recent three revivals of interest in the growth theory, that give explanations of a mystery of economic growth from different perspectives, generally known in the mainstream literature as the ‘waves’ of interest in the growth theory¹.

Regardless of considerable interest in economic growth, growth economics was formed as a discipline within economics only in the 1950s, since the recent waves. The first wave goes back to Solow (1956) and Swan (1956) who developed a theory explaining the effects of capital accumulation (physical and human capital), and technology on the long-run economic growth of a single country. Acemoglu (2011) points out the simplicity of the model and its abstract representation of a complex economy, which became a starting point for richer models. In Solow’s model, economic growth is generated by capital accumulation and it is

¹ Literature on growth economics provides two “waves” of interest in economic growth theory, however we consider that the new institutional economics has changed general opinion on growth theories formed by exogenous and endogenous theories. Therefore we assume that the new institutional economics as the third wave of interest in economic growth theories, which has set completely new view to economic growth.

only temporarily assuming that the population grows at a constant rate, the capital depreciates at a constant rate, and the productive labor improves at a constant rate. Therefore, investment in the capital to effective labor is required to keep the capital-labor ratio at its original level and to compensate capital depreciation. However, the required investment leads to economic growth only till the steady state is reached. Once the economy is at the steady state, the ratio of capital to effective labor depends only on the rate of technological progress, and technological progress in Solow's growth model is considered to be exogenous. According to the exogenous model the diminishing marginal productivity of all factors of production implies that the income level in the long-run would be expected to converge across countries. All countries are supposed to have the same growth rate, which depends on the rate of exogenous technological progress (Helpman, 2004). However, Barro and Sala-i-Martin (1992) and Mankiw et al. (1992) questioned Solow's argument of 'absolute convergence' arguing that saving rates and population growth rates vary from country to country, thereby these differences generate different income levels in the long-run. By analyzing differences in saving rates and population growth rates, the authors evidenced that poor countries and rich countries converge to different income levels, so there is no an 'absolute convergence', but 'conditional convergence'. Hence, the main implication of the exogenous model is that a fundamental cause of long-run economic growth is technological progress, and it is exogenous. However, exogenous theory could not provide a satisfactory explanation of divergence across poor and rich countries, hence the same question remains: what forces make some countries rich and others poor?

The second "wave" of interest was initiated by Romer (1986) and Lucas (1988), with their endogenous growth models, and the new growth theory provides another answer to the question. Both exogenous and endogenous models stress the technological progress as an engine of economic growth. However, unlike the standard neoclassical growth theory based on the impact of exogenous technological progress on the long-run growth, the new research argues that the technological progress is, indeed, endogenous. Furthermore, Romer (1986) and Lucas (1988) link the technological progress to the stock of knowledge and state that economic growth is determined by increasing the stock of knowledge rather than physical capital. According to them knowledge externalities accelerate the increasing returns to scale, which compensate the decreasing returns to scale from capital accumulation and thus generate economic growth in the long-run. In terms of convergence/divergence hypothesis, Helpman (2004) argues that developing countries do gain from international knowledge spillovers, but developed countries benefit from higher output and this leads to divergence of

income levels across countries, not convergence. Thus, the new growth theory provides a plausible explanation of causes of economic growth, evidencing that the technological change is endogenous and closely linked to human capital. More precisely, the theory emphasizes that human capital allocated in the R&D and innovation is central in explaining sustained economic growth. However, the arguments of new growth theory lead to the greater divergence between poor and rich countries.

Under the ideas of endogenous growth theory that gives a central role to human capital, innovations and knowledge spillovers in promoting economic growth, Krugman (1991) highlights the spatial nature of knowledge spillovers and agglomeration. His ideas on the role of location in fostering knowledge spillovers and innovation, and thereby economic growth resulted in the formation of the new economic geography. According to Krugman's theory geographical concentration of economic activity explains economic growth through innovation, knowledge spillovers and production process. Geographic concentration results as a consequence of knowledge spillovers if distance is a factor in the diffusion of knowledge. As the firms located closer to the R&D activities learn earlier than the firms located farther, thereby early-adopters grow faster and more effectively (Martin and Ottaviano, 1996). Similarly, Romer (1990) emphasizes a positive effect of the spatial organization of economic activity on economic growth, i.e. an increase in the size of the market due to the concentration of firms may foster economic growth due to the R&D activities. Shortly, the new economic geography likewise the endogenous growth theory considers that knowledge spillovers and the R&D activities foster economic growth, but geographic concentration enhances knowledge diffusion, therefore boosts economic growth. Nevertheless, substantial differences in growth across countries remained even after accounting for technological progress, investment in the R&D and geography. Thus, the previous growth theories, both exogenous and endogenous, and the new economic geography did not provide a complete answer to the question 'why some countries are getting richer and others not?'

The third wave of interest in growth theories has started with the creation of New Institutional Economics (NIE) in the beginning of 1990s. The NIE has been attracting a considerable attention during the last 20 years. According to this theory institutions matter for growth and divergence across countries can be explained by the differences in institutions. North (1990) argued that the factors mentioned by the exogenous and endogenous growth theories (such as technological progress, innovation, a stock of knowledge and capital accumulation) are the proximate determinants of growth; in fact, a fundamental explanation

of differences in growth are institutions. Similarly, Hall and Jones (1999) consider that variations in capital accumulation, overall productivity and output per worker across countries are caused by differences in institutions. With respect to institutions, Rodrik (2007) states that markets are not self-creating, self-regulating, self-stabilizing, or self-legitimizing. Therefore, markets require non-market institutions addressed to regulate, stabilize and legitimize the economy; and every well-functioning market is a combination of state and market, laissez-faire and intervention. This is consistent with the North's (1990) definition given to *institutions* “... are rules of the game . . . or . . . humanly devised constraints”. Hence all institutions, in general, are endogenous and established by the government, society or part of it (North, 1990, Rodrik, 2007; Acemoglu and Robinson, 2008). Nevertheless, it is much more complicated to identify which institutions matter for growth. In this context, Rodrik (2007) emphasizes the importance of property right institutions, arguing that better protected property rights promote investment and enhance technological progress and therefore increase income levels. Similarly, Knack and Keefer (1995) stress the importance of property rights, political and bureaucracy institutions on economic growth. Acemoglu et al, (2005) highlight the role of economic institutions in structuring economic incentives in society, thus economic outcomes. He argues that nations with proper economic institutions that create incentives for factor accumulation, innovation and efficient allocation of resources will prosper². However, there is no a general set of institutions for economic growth, every country is unique in its institutional design. So that each country has its unique institutional preconditions and the need to define the right set of institutions in order to accelerate economic growth.

Thus, new institutional economics shifted the focus from technological progress and human capital to the environment (rules) in which economy and its agents operate. Institutional arrangements have become more fundamental determinants of economic growth, then accumulation or investment in R&D. Institutions as determinants of growth explain economic growth reasonably well, yet it does not provide a convincing answer why countries differ in their set of institutions and how do ‘good’ institutions arise.

² Other research on the impact of economic institutions on economic growth: Rubin H. (2005) identified three key mechanisms for the establishment of rules and constraints, such as legislature, private entities and, particularly, law jurisdictions, judges and courts. Rosenberg and Birdzell (1986) conducted detailed historical analysis of impact of property right institutions on economic growth. Mauro (1995) mentioned an impact of corruption on economic growth. Acemoglu et al, (2005) distinguished property right institutions which are addressed to protect economic agents against government and elite expropriation, from contracting institutions, which are addressed to support private agreements and contracts.

1.1.1. Cluster theory. Does location matter?

As we discussed at the beginning, location matters for growth, as geographical concentration allows firms to gain positive externalities through knowledge spillovers and agglomeration effects. These effects occur due to the clustering of production processes in a single location. In this regard, the cluster theory, as one field of economic geography, has been a subject of increasing research since the seminal work of Porter (1990) discussed the competitive advantage of nations. According to him “*clusters are geographic concentrations of interconnected companies, specialized suppliers and service providers, firms in related industries, and associated institutions (e.g. universities, standards agencies, and trade associations) in particular fields that compete but also cooperate*” (Porter 2000)³. In order to provide a complete discussion about the cluster approach, we review the most prominent theories proposed by Krugman (1991), Porter (2000) and Sölvell et al. (2003). They highlight the importance of concentration of industries in specific geographical areas for achieving regional and national economic growth. As it is discussed before, the theory of Krugman (1991) began a revival in the geography-based analysis, which has become to be known as the “new economic geography”. His theory explains the benefits of geographic concentration for firms and emphasizes the importance of increasing returns, but it does not propose any answer or tools to direct the concept of geographic concentration to enhance economic growth. An appropriate tool to initiate economic growth and stability is provided by Porter (1990) and Sölvell et al. (2003) by their ideas about cluster initiatives (CIs). They define CIs as “*organized efforts to increase growth and competitiveness of clusters within a region, involving cluster firms, government, institutions and/or the research community.*” They emphasize the importance of cooperation between cluster and government bodies, when the government increases the competitive advantage of clusters by improving physical infrastructure, creating favorable legal environment and public institutions. Potential beneficiaries of cluster (involved parties) have an interest in strengthening competitive advantage of the cluster by achieving the following six objectives: creating a highly

³ The cluster theory is considered to have originated from neoclassical economist Marshall (1920) who first discussed about agglomeration phenomenon in his seminal work the “Principles of economics”. Marshall first linked knowledge spillovers and regional economic growth, by mentioning the agglomeration effects. Decades later, his agglomeration theory was expanded upon by a number of authors; Weber (1929) proposed a concept of agglomeration economies in its “industrial location theory”, considering that an industry’s costs are affected by transportation and labor costs and the agglomeration effect. Same-industry spillovers, localization and agglomeration economies are known as “Marshall-Arrow-Romer” externalities, based on Marshall’s idea on the agglomeration, Arrow (1962) in his concept of “learning-by-doing” described the effects of innovation and technological change, and Romer (1986) proposed an analysis of increasing returns.

specialized and qualified labor market, attracting external firms fitting into the cluster, identifying new markets for further growth, enhancing cooperation among firms within the cluster, promoting innovation and knowledge spillovers, and improving business environment. Sölvell et al. (2003) argue that the abovementioned objectives are crucial to improve the competitive advantage of CIs and thus to generate economic growth.

Relying on the studies summarized above, it is possible to set up an image of cluster as a broad concept. The authors agree that cluster connects firms, economic actors and institutions; this in turn creates a competitive advantage from their mutual proximity and connections. The location matters due to its benefits of lower costs and knowledge spillovers, and this creates a competitive advantage and thereby generates economic growth of a region or a nation. Lastly, cluster is not only about developing individual firms or involved parties within an industry, but it is an implementation of agreed strategy for development. Therefore a whole industry will be better placed to create a competitive advantage and opportunities of cooperation.

As the current thesis is focused on the analysis of economic growth in the KR, which is an agrarian country and agriculture is the main source of income for more than a half of its population. We aim to contribute to the understanding of the development of the KR's agricultural sector. Therefore, giving the importance to agricultural development in economic growth of the KR and following the ideas of endogenous growth theory, new economic geography and the cluster theory that highlight the role of innovations, knowledge spillovers and geographic concentrations in economic growth, the first chapter of the thesis addressed to analyze the role of clusters for the Kyrgyz economy and if the country has strong prerequisites to implement an agro-based cluster in particular⁴.

⁴ The cluster approach is a quite new “phenomenon” for all Central Asian countries. There are only few research on agro-based clusters in Central Asia. The literature does not provide a research on agro-clusters in Tajikistan or Turkmenistan. More research has been done with respect to Kazakhstan’s agricultural sector: McCombie and Spreafico (2014) investigated if it is optimal to implement a resource-based cluster development strategy for Kazakhstan; Maira et al. (2016) formulated a cluster model and gave recommendations to promote a livestock cluster as this can enhance the competitiveness of entire livestock industry of the country; Kim and S. Hasanov (2013) and Hasanov et al. (2014) assessed the agricultural sector of Uzbekistan to identify if the country can benefit from of agro-based clusters. Referring to the research on the KR, the possibility of implementing of an agricultural cluster in the country has not been investigated, except Choi et al, (2013) who analyzed agricultural sectors of the KR, Kazakhstan, Uzbekistan, Turkmenistan and Tajikistan and consider that agro-clusters could be one of the promising strategies for all these countries. However, the study did not provide any specific recommendations for each country in particular.

1.1.2. Growth Diagnostics. One economy, many recipes.

As we have seen, there is an extensive literature on economic growth, explaining what factors are the key determinants of economic growth and debating what policies best serve economic growth. The recent literature emphasizes that better institutions result in greater economic growth. Rodrik (2007) states that if an economy is so far below its steady-level of income, even a little movement in the right direction can accelerate growth. It is not necessarily to perform ambitious reforms, it is more reasonable to identify the most binding constraint on growth at the right time by undertaking the so-called ‘growth diagnostics’.

The ‘Growth Diagnostics’ approach is developed by Hausmann, Rodrik and Velasco (2005), the so-called ‘HRV’ approach provides a refreshing framework for thinking about country’s growth constraints that is practical and country-specific in its application. The HRV approach suggests an analytical framework to formulate hypotheses on what factors may be constraining growth.

Closely related to the neoclassical economics, the Growth Diagnostics framework considers that private investment and entrepreneurship are the main engines of the long-run economic growth. Yet, the fundamental difference between the Growth Diagnostics approach and previous growth models is that, the former is addressed to a particular country, and the latter to a general phenomenon in which individual countries are examples. The approach proposes a new view to foster economic growth; it is focused on the identification of the potential obstacles on growth rather than identifying the causes of growth.

In order to identify binding constraints, Hausman et al. (2005) conceptualized its methodology as a decision tree⁵. The basic assumption of the decision tree is that the levels of private investment and entrepreneurship depend on the costs of finance and the returns to economic activity. The tree suggests, firstly, identifying whether the costs of finance are high or that the returns to economic activity are low. Once the problem area is defined, then an analyst focuses on the determinants of the problem area. The concept, in general, is complex and includes many potential determinants (physical and human capital, infrastructure, geography, international and domestic finance, governance, institutions). Based on the assumption that there could be a variety of constraints on growth, the authors consider that each constraint generates a different set of “symptoms”. These symptoms need a distinctive diagnostics in which the analyst tries to differ among potential explanations of what is restricting a country from achieving sustainable growth (Hausmann et al., 2008).

⁵ The decision tree proposed by Hausman et al. (2005) is discussed in the second chapter of the thesis.

Once the binding obstacles are defined, the consequent issue of interest for policy designers is how the framework works. The government cannot remove constraints directly, therefore an appropriate policy with the best set of policy levers is needed to remove these constraints. The main objective of the policy is to remove or reduce the negative effects of those binding constraints on the economy, by definition removing nonbinding constraints cannot affect growth. That is “*good diagnostics facilitate better therapeutics*” (Hausman et al., 2008, pp. 90). The role of *therapeutics* is to design a policy that promotes growth, given the understanding of problem areas in a particular economy. This is very different from the agenda where growth policies are assumed to be identical for all countries. Growth policies should be country-specific, as each economy is unique and has its circumstances, opportunities and constraints that should be taken into account. It also differs from a ‘best practice’ agenda, usually based on international experience, where the areas of policies are compared to a benchmark and the government attempts to move its policy towards that benchmark, without evidence of its applicability (Hausmann et al., 2005). Thus the government policies should be carefully targeted on removing own binding constraints, rather than going after too many reforms or moving towards some international ‘best practice’ agenda.

Resuming, as it is formulated by Rodrik (2007) “*One economics, many recipes*”, that is to say that all countries are unique in terms of their opportunities, circumstances and threats. One economics, but each country has its own recipe for growth. The recipe based on the country’s unique problems, opportunities and threats and the policies ignoring the uniqueness cannot not be successful. Therefore, being motivated by the concept ‘*one economics, many recipes*’ and as well as the fact that the framework has not been applied in Central Asian countries; this study aims to employ the Growth Diagnostics approach to identify the most binding obstacles on growth in the KR.

1.1.3. The role of central bank. Do Institutions Matter?

Reviewing the literature on the growth theories, we highlighted a fundamental role of institutions in enhancing economic growth, thus institutions matter for growth. Indeed, market needs to be regulated: ‘*markets are not self-regulating and self-stabilizing. Markets require extensive regulation to minimize abuse of market power, internalize externalities, deal with information asymmetries and etc. ...*’ (Rodrik, 2004 p. 27). In this respect, the new institutional economics emphasizes a particular importance of monetary and fiscal institutions for macroeconomic stabilization and growth. These institutions can contribute to growth by

decreasing macroeconomic uncertainty, by enhancing the resilience of an economy to macroeconomic shocks and by reducing inflationary pressure (Serven and Montiel, 2005). There is an extensive literature explaining that economic growth comes as a consequence of macroeconomic stabilization and good performance of both monetary and fiscal institutions.

According to the results of our previous paper (the Growth Diagnostics approach) weak institutions are one of the binding constraints on growth in the KR. Therefore, the third chapter of the thesis assesses the performance of central bank of the KR, as the main financial institution, and its role in promoting price stability and economic growth. Thereby, further discussion is intentionally focused on the contribution of central bank to economic growth.

Achieving sustained growth while ensuring low and stable inflation has become the primary objective of central banks all over the world. Central bankers and policy makers view price stability as a worthy objective of monetary policy due to the insight that inflation is costly. As high and volatile inflation is harmful for economic growth and it causes welfare costs⁶. The general consensus is that firms and other economic agents are considered to perform poorly when inflation is volatile and uncertain. In fact, contemporary mainstream macroeconomic thought, represented in New Neoclassical Synthesis (NNS)⁷, stresses a conducive role of monetary policy in short-run economic growth. The effect of monetary policy disperses in the long run due to the neutrality of money. Following the NNS, there has been a gradual recognition of the importance of giving to central bank a mandate clearly focused on price stability. The main NNS conviction is that price stability maximizes household welfare because price stability precludes fluctuations in price markups, which would otherwise arise due to sticky prices (Goodfriend and King, 2001). In conditions of fully credible price stability, households decide not to change prices as current prices are already maximizing their profit. Stable average markups, in turn, lead to sustained increase in output and employment. By contrast, in an environment with high and volatile inflation, households tend to move actual prices up with expected price increase (Goodfriend, 2008). So the best that central bank can do is to ensure low and stable rates of inflation, so that economic agents can anticipate future inflation and, by doing so, smooth economic cycles. Furthermore, Barro (1995) states that inflation results in a decrease in investment and lower levels of investment adversely influences economic growth. Lucas (2000) argues that inflation volatility and uncertainty about future inflation have a significant negative effect on

⁶ Widely discussed in the literature: the so-called ‘shoe-leather costs’ (non-payment of interest on currency, Issing, 2000; Lucas, 2000; Mankiw, 2008) and ‘mark-up costs’ (Goodfriend and King, 1997; Lucas, 2000).

⁷ For more discussions see Blanchard et al. (2009), Woodford (2009), Goodfriend (2007), Goodfriend and King (1997)

the price mechanism and leads to the misallocation of resources, decline in investment and hence decline in output (Lucas, 2000). Thus, monetary policy ensuring price stability favorably influences the nature of output – inflation relationship, reduces fluctuations of output and thereby may tend to contribute to growth⁸.

Nonetheless, the world financial crisis resulted in the reassessment of the role of central banks in the context of protecting the soundness of financial system and supporting macroeconomic stabilization. Therefore particular attention has been paid to the strengthened link between the financial and price stability and to the role of central bank in enhancing financial stability. Referring to the link between financial and price stability, a predominant point of view is that price stability is an essential precondition for financial stability and in the long-run price and financial stability reinforce each other⁹. Another insight is that the nexus between price and financial stability should be reversed. According to this insight, stable and low inflation may result in too optimistic view on the future financial development and soundness, assuming that stable inflation at low levels may lead to an increase in assets value (Borio and Lowe, 2002; Borio et al., 2003, Shirakawa, 2012). Accordingly, the link between price stability and financial stability is still need to be investigated.

Referring to the role of central bank in supporting financial stability, there is no a general stream of thought whether financial stability should be an explicit objective of monetary policy, as price stability is. One insight is that the central bank should implement a more proactive policy towards financial stability by extending central bank's objectives, so that is to include financial stability as an explicit goal of monetary policy (Eichengreen et al. 2011). Another insight is that financial stability should be an objective of an institution particularly created for this purpose. Hence, this view distinguishes financial policy from monetary policy (Svensson, 2011).

Resuming, it has been generally recognized that central bank's primary objective is to maintain price stability and, in doing so, create a favorable environment for economic growth. However, to achieve price stability objective central bank needs a sound financial system, an essential condition for an efficient monetary transmission. Yet, price stability remains a priority objective of any central bank, but concern over central bank's role in enhancing financial stability is still an open issue.

Thus having discussed the importance of central bank in ensuring price stability and following the convictions of NNS and as well as the ideas of new institutional economics that

⁸ Fischer (1993), Bruno and Easterly (1996), Boyd and Champ (2006);

⁹ Bordo and Wheelock (1995), Bordo (2007), Bordo et al. (2000), Issing (2003);

give essential role to central bank as an institution that contributes to economic growth by provision of price and financial stability, we address our last paper to analyze the performance of central bank of the KR. Our third paper is devoted to assess monetary policy of the KR and its role in promoting price stability as a necessary condition for economic growth.

1.2. Thesis structure

The thesis is structured in three chapters, which represents the main axis of the dissertation and each chapter is written as an independent unit. The general objective of the thesis is to contribute to the empirical literature of economic growth by analyzing the case of the KR by applying three different approaches under the ideas of recent theories of economic growth. Therefore, the first chapter implies the idea of new economic geography and the cluster theory; the second chapter employs the Growth Diagnostics framework in order to identify the key obstacles restricting growth in the KR; and the third chapter based on the considerations of the new institutional economics, addressed to analyze the performance of central bank of the KR; Despite that each chapter is written as an independent paper, all of them could be merged into one broad topic, namely growth economics.

The first chapter aims to answer the question: “if the KR has strong economic opportunities and prerequisites in agriculture to implement an effective agro-based cluster in the livestock sector?”¹⁰ A complex S.W.O.T. analysis is carried out to analyze internal and external environment. We consider that the implementation of livestock cluster can foster development of agricultural sector of the economy, and as well as it will increase the agricultural production growth and improve the food security of the country, increase income of farmers and align regional economic development. Yet, the key finding is that the country has good climatic and natural preconditions to start adapting to form a livestock cluster, but there is still lack of standards for food quality and safety, weak sanitary and veterinary conditions, including poorly equipped laboratories that are some of problems of the sector.

The second chapter of the thesis employs the HRV approach developed by Hausmann et al. (2005) in order to identify the most binding constraints on economic growth. The analysis is based on the qualitative and quantitative data at national and international levels. The following CIS countries such as Armenia, Azerbaijan, Georgia, Belarus, Kazakhstan,

¹⁰ This chapter is based on the article published in the journal of Review of Agricultural and Applied Economics: “Regional Development Based On Cluster in Livestock Development. Cluster in Livestock Sector in the Kyrgyz Republic”. ISSN 1336-9261, XVII (Number 2, 2014): 103-112 doi: 10.15414/raae.2014.17.02.103-112

Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan are chosen as a comparator group of countries in order to formulate a plausible hypothesis on the binding constraints. Key findings indicate that weak institutions, a limited access to domestic funds and inefficient energy sector are the major factors restricting economic growth in the country.

The third chapter aims to analyze monetary policy framework of the National Bank of the KR. It provides a brief overview of monetary reforms during the country's transition period after the collapse of USSR and proceeds to the current monetary trends. In order to assess the behavior of monetary policy of the NBKR, we employ the Taylor-type rules for an open economy. The key findings of the study give two possible explanations for the NBKR's monetary policy. First explanation is that the NBKR performs a pro-cyclical monetary policy by adversely responding to output deviation. Another explanation is that it performs price stabilization policy strongly reacting to the changes in inflation and exchange rate. However, both possible policies do not give a plausible explanation for opposite reaction of the NBKR to output growth.

In the last chapter the main results are summarized. And we suggest possible avenues for future research.

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CHAPTER I

2. REGIONAL DEVELOPMENT BASED ON CLUSTER IN LIVESTOCK DEVELOPMENT. CLUSTER IN LIVESTOCK SECTOR IN THE KYRGYZ REPUBLIC¹¹

Abstract

In most developing countries, where agriculture is the main economical source, clusters have been found as a booster to develop the economy. The Asian countries are now starting to implement agro-food clusters into the mainstream of changes in agriculture, farming and food industry. The long-term growth of meat production in the Kyrgyz Republic during the last decade, as well as the fact that agriculture has become one of the prioritized sectors of the economy, proved the importance of livestock sector in the economy of the Kyrgyz Republic. The research will evaluate whether the Kyrgyz Republic has strong economic opportunities and prerequisites in agriculture in order to implement an effective agro cluster in the livestock sector, focusing on the description of the prerequisites of the Kyrgyz Republic in agriculture to implement livestock cluster. The main objective of the research is to analyze the livestock sector of the Kyrgyz Republic and observe the capacity of this sector to implement an agro-cluster. The study focuses on investigating the livestock sector and a complex S.W.O.T. analysis was carried out based on local and regional databases and official studies. The results of the research demonstrate the importance of livestock cluster in national economy. It can be concluded that cluster implementation could provide benefits to all of its members if they build strong collaborative relationship in order to facilitate the access to the labor market and, implicitly, to the exchange of good practices. The ability of potential cluster members to act as a convergence pole is critical to acquiring practical skills necessary for the future development of the livestock sector.

Keywords: Development, livestock, cluster, agriculture;

JEL: L16, O11, O13, Q13, R11;

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2.1. Introduction

The concept of clusters has attracted increasing interest in researchers of development, regional studies, and industrial development studies during the 1990s (Hector O. Rocha. 2004). During the last two decades, the successful performance of clusters in developed countries has stimulated new attention to the cluster organization for firms of developing countries. The possibility of clustered firms to be economically competitive and developed has attracted interest in development studies (e.g. Schmitz, 1995). However, it is likely to be quite a challenge. The existing literature shows that clusters in developing countries (including those in the agricultural sector) are usually dominated by smaller-scale firms, which are organized in a more informal manner, have weaker linkages among actors, face more difficulties in achieving a critical mass of firms and are specialized in lower-value niches, although they are now increasingly entering higher-value markets. Consequently, it is far more difficult to promote clusters in developing countries than in developed ones (Eva Gálvez-Nogales, 2010).

Livestock production in the Kyrgyz Republic is predominately based on traditional agriculture. Livestock farmers manage to preserve age-old traditional methods and experience in livestock. Meat products are environmentally friendly, because the animals are fed on natural feed, without using chemical deposits such as those from insecticides and fertilizers. In return, the government makes efforts to develop the livestock sector while simultaneously maintaining traditional agriculture. All of these above mentioned factors give a strong point of livestock industry and determines good perspectives for the industry. Growth of the livestock sector during the last decade improved the material and technical basis for clusters, creating a large number of farms and an availability of trained professionals are the achievements of livestock breeders. At the same time, livestock development has also had a number of problems that need to be solved in order to provide sustainable livestock sector development.

The agro-processing sector of the Kyrgyz Republic is at a disadvantage not only in respect to export markets; they also face similar problems while trying to remain competitive in local markets. Difficulties within the union of farmers such as lack of organizational and methodological guidelines in order to rearrange their functions in accordance with the needs of farmers, lack of sufficient cooperation between members of the association, insufficient quality of resource base, small production volumes, lack of equipment for processing enterprises and packaging, lack of standards for food quality and safety, including poorly

equipped laboratories are some of the problems of the sector. Insufficient processing of agricultural products is becoming a major obstacle to the further development of agriculture (MAM strategy, 2012).

Livestock, namely the meat production sector, is of great importance to the Kyrgyz Republic's economy and, subsequently, to the country's GDP. The Kyrgyz Republic is a country which has the potential to produce large amounts of meat and has good perspectives to export meat products to neighboring countries such as Tajikistan, China, Iran and members of the Customs Union, namely Russia, Kazakhstan and Belarus. The Customs Union envisages unified customs territory between the member-countries of the union where custom duties and economic restrictions are not applied. The exceptions are special protecting, anti-dumping and countervailing measures. In case the Kyrgyz Republic joins the Customs Union between Russia, Kazakhstan and Belarus, the Kyrgyz Republic must provide laboratory data not only for meat, but also for any produced food.

The poverty level in rural areas is very high, where the number of people living below the poverty line is about 60 percent. Rural population is mostly engaged in agriculture. Thus, development of livestock sector could be the way to overcome poverty in these areas.

Experience of the countries implementing clusters in the agricultural sectors has provided evidence that they create favorable conditions which boost business competitiveness through the implementation of strong linkages between cluster members associated with their geographical proximity, including facilitating access to new technologies, management skills, use of knowledge as well as reducing transaction costs, providing the prerequisites for the formation of joint cooperation projects and productive competition.

Agricultural clusters became popular and successful in developing economies. A good example is root crop processing cluster in Dong Lieu (Vietnam), grape cluster in Maharashtra (India), Chinese livestock clusters, Kenya cut-flower cluster, South African wine cluster (Eva Gálvez-Nogales 2010). All of these successful examples of clusters demonstrate the importance of agro-based clusters for developing economies and indicate beneficial influence of agro-based clusters on economic development of developing economies.

This paper focuses on cluster development in the Kyrgyz Republic, which illustrates challenges present in a developing country's settings. Development of agriculture must be considered as one of the prioritized sectors of the economy. Ethnographic preconditions have played an important role in the development of livestock in the Kyrgyz Republic. For many centuries, the Kyrgyz people were engaged in cattle breeding. Although there is a wide range of research papers and initiatives relating to clusters in general, there has been little attention

paid on clusters in developing economies and just few of them dedicated to agricultural sector. This is a relatively poorly investigated area within research on clusters. Furthermore, there has not been any meat cluster in the territory of Central Asia up to date. All of these conditions create the relevance of this study.

In the least developing countries, agriculture is the major source of income for 70 percent of the world's poor in rural areas. It takes up more than one-third of the world's area (the World Bank, 2013). Since agriculture represents the largest share of output and employs the majority of the labor force, this sector has been integral to any linking about development (NSCKR, 2012). Hence, the greatest potential for sustainable growth lies in agricultural sector. But, ironically, it is the sector where poverty is the most widespread and found in its worst forms. So, "new agriculture" needs new tools to increase its competitiveness and innovation capacity. One of these tools is the promotion of clusters.

Concerning pro-poor growth, it has been shown that cluster approach can be a strong tool to reduce poverty (UNIDO, 2010). Implementing clusters in developing countries can be crucial on the way to achieve broad-based growth. In order to maximize pro-poor benefits, cluster research should focus on specific investment with respect to the poor. Despite a lot of benefits to be achieved by implementing a successful clustering strategy in developing economies, there are several obstacles influencing negatively on enterprises and supporting institutions in one location to work together. For instance, (1) engaging in collaborative ventures entails high transaction costs related to gathering and assessing information on, for example, whether partners are reliable and the relationship beneficial. Also, (2) small-scale firms usually operate under short-term horizons, leading them to magnify short-term costs while preventing them from identifying longer-term benefits. (3) Low levels of trust also makes difficult cluster firms and supporting institutions to interact, reducing their propensity to exchange information and hindering the development of business partnerships (Meyer-Stamer 2005). Local governments can be unresponsive to the needs of the private sector, particularly when this is mainly constituted by small firms.

2.2. Materials and methods

Farmers, households, and industries in the livestock sector of the Kyrgyz Republic, who have capacities to produce livestock products, were selected for this study. The cluster study was based on analyzing qualitative data on farmers, workers, households, food processing enterprises, policy makers at national and local levels. Current research is based on official publications, surveys, interviews and experts' opinions. This method was important because

there is considerable shortage of analytical data and research for the Kyrgyz Republic. The study classified actors into seven groups according to Maya-Ambía (2011)—namely, suppliers of inputs; a group of companies, as a basis of clusters; designers of public policies; research, development and educational institutions; financial institutions; consumers. Data is analyzed by using the framework of S.W.O.T. analysis. S.W.O.T analysis helped to reveal weaknesses and strengths of cluster development. Secondary data were collected from the research, publications and annual reports of the Ministry of Agriculture and Melioration of the Kyrgyz Republic, National Statistical Committee of the Kyrgyz Republic, USAID, the World Bank. The results from this research were used to evaluate whether the Kyrgyz Republic has capacity to implement agro-based cluster in livestock sector. This paper is organized as follows: The second section analyses general economic situation, agricultural industry and the livestock sector in the Kyrgyz Republic. The third section proposes the cluster model for the Kyrgyz Republic. The final section concludes and provides recommendations.

2.3. Results and discussion

The Kyrgyz Republic's economy operated within the Soviet economic system, which had a planned economy, prior to the establishment of the Commonwealth of Independent States (CIS). The Commonwealth of Independent States (CIS) was formed in December of 1991. The Kyrgyz Republic joined the CIS in March of 1992. The Kyrgyz Republic's main economic indexes such as employment, inflation, income, GDP were mostly at an average level, as it had received sufficient financial support from central budget that allowed the country to grow. After the collapse of the Soviet Union national borders and international trade controls were set up and divided Soviet Union member-countries into small independent countries with their segmented market economies with limited economic growth potential. Before the Soviet Union disintegration, all these CIS countries were interrelated in terms of production base due to the allocation of natural resources and production bases located in different countries according to their possibilities, but then they were separated from each other.

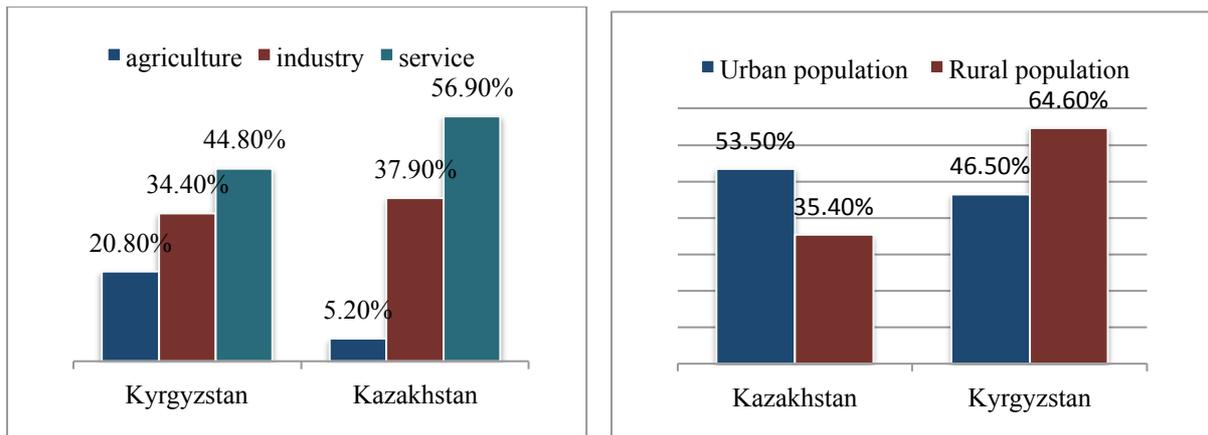


Figure 1 GDP by sectors (% of total GDP), (2012)
 Figure 2 Urban and Rural population (% of total population)
 Source: The World Bank (2013)

In order to clearly explain the importance of agricultural sector for the Kyrgyz Republic, I seek to compare some economic indicators of the Kyrgyz Republic and Kazakhstan. It can be helpful to compare both countries, because both of them are located in Central Asia, they have similar economic, climatic, historical and cultural background. Despite having the same background, Kazakhstan is more developed in economic terms. According to the structure, Kazakhstan's GDP resembles the more developed countries, as the main part of the GDP is industry and services, and the Kyrgyz Republic's agricultural sector is a major part of national production and income (Fig.1). But at the same time, a main part of the production and exports of the Kyrgyz Republic and Kazakhstan are neither innovative nor high-tech products, but the products of farmers and mining.

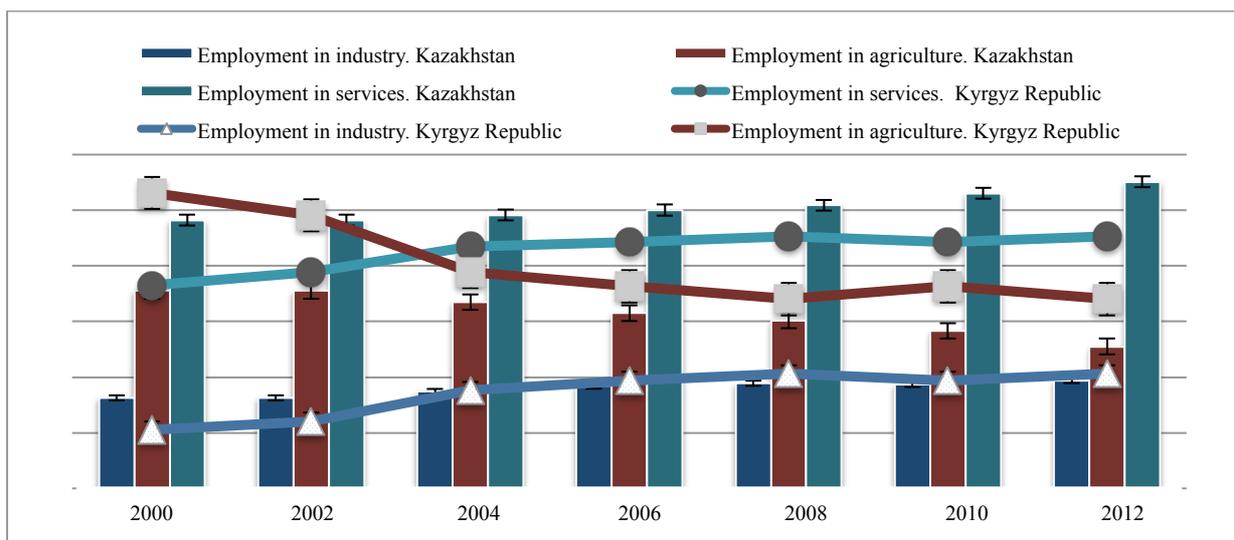


Figure 3. Employment by sectors in the Kyrgyz Republic and Kazakhstan (% of total employment)
 Source: UNCTAD stat (2014)

Figures 2 and 3 show that more than half of the population of the Kyrgyz Republic is rural population. It indicates the central role of agricultural development for the country. On the contrary, Kazakhstan has more of an urban population, demonstrating a comparatively lower influence of agriculture for economic growth. As it is shown, the Kyrgyz Republic is an agrarian economy, thus almost half of total labor forces are engaged in agricultural sector and agriculture is the main industry providing employment opportunities. In accordance with the research of the Ministry of Agriculture and the goals of the Kyrgyz Republic; being to make agriculture the main source for employment, this sector uses only 2 percent of all his production capacity.

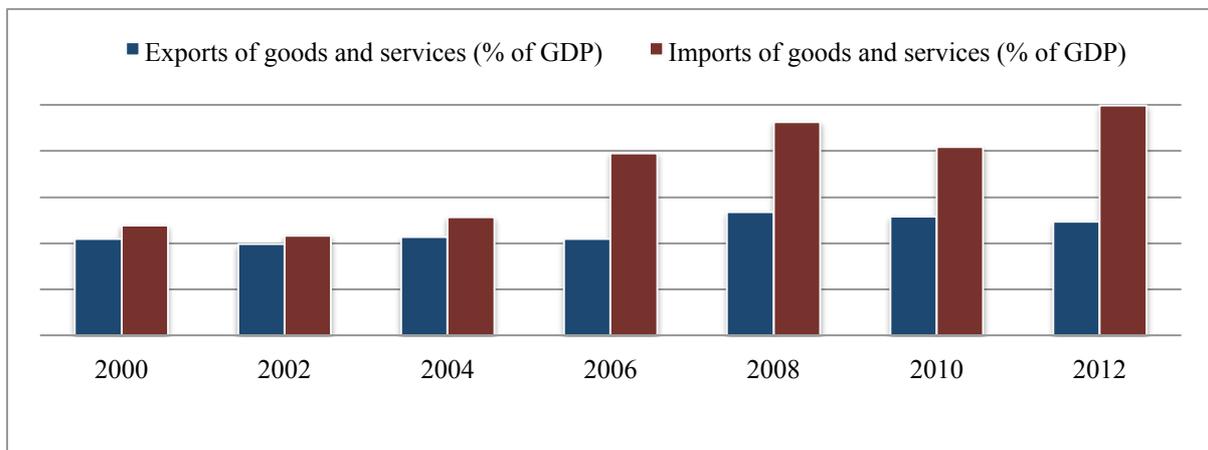


Figure 4 Export and import of goods and services (% of GDP)
 Source: National Statistical Committee of the Kyrgyz Republic (2013)

As shown in figure 4, the economy of the Kyrgyz Republic is dependent on import. The Kyrgyz Republic imports food products (17.2 percent), machinery and transport (24.3 percent), minerals (22.2 percent), metal products (8.1 percent), textile (8.6 percent), and others (19.6 percent) (NSCKR). Taking into consideration that the country is agrarian the ratio of import of food products to total import indicates that the Kyrgyz Republic’s domestic market is still weak to provide population with the food.

Review of agricultural –industry of the Kyrgyz Republic

As other CIS countries, the Kyrgyz Republic started its economic transition in 1989-1990 after the Soviet Union disintegration. In the past, there was no private land ownership and land was organized in the form of large-scale collective farms sized at thousands of hectares with hundreds of workers. Since the Kyrgyz Republic has become independent, it started its transition into market-oriented agricultural industry. The Kyrgyz Republic is a mountainous country. It has about 10 million hectares of agricultural land, 900,000 hectares

are irrigated land and 9.2 million ha are pastures. Most of the population lives in rural areas (60 percent). Specifically, 40 percent of agricultural output is produced by private farmers, and more than 50 percent by family farms (USAID, 2012). 60-65 percent of population engaged in agriculture. Overall poverty level in rural areas is higher than in urban areas (NSCKR).

Agriculture in the Kyrgyz Republic is a growing sector of the economy, which has tendency to increase year by year. In order to enhance the productivity, government and private sector should work in close cooperation in terms of creating conditions to develop livestock cluster. Annual growth of production in 2012 is 1.2 percent, compared with 2008 increased by 7.6 percent. Average annual growth of production during the period 2008-2012 increased by 1.7 percent. In 2012 share of livestock production was 47.9 percent of the total gross output of agriculture.

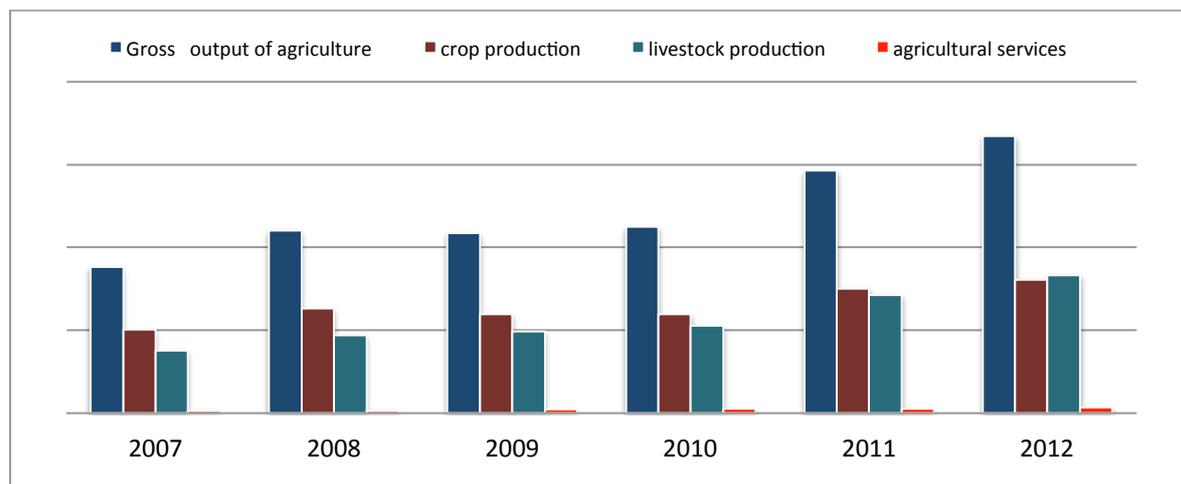


Figure 5 Gross output in agriculture including services
Source: National Statistical Committee of the Kyrgyz Republic (2012)

Despite the low production level of the livestock sector it has the potential to develop a livestock cluster. The Kyrgyz Republic has very strong potential to create a livestock cluster because of favorable climate conditions, territory possibilities (53.3 percent of total territory is agricultural land (NSCKR, 2012) and available natural resources. The livestock sector in the Kyrgyz Republic is one of the leading agriculture sub-sectors and a key component of agriculture. Involvement of farmers in clusters could provide for an effective use of local resources, which could be competitive not only in the domestic market, but also in international markets. The agricultural sector consists of 33 percent of total value-added GDP (NSCKR, 2012).

Livestock sector performance

More than 350 000 individual livestock farmers are operating in the Kyrgyz Republic, 70 percent of them have 1-5 cattle, about 10 sheep and several horses (NSCKR). Stockbreeding is based on two systems: (1) grazing on highland pastures and croplands in the mountain valleys; and (2) grazing on arable lands in valleys, where intensive dairy production and beef production are based mainly on indoor farming techniques. Mountainous regions can specialize in breeding calves for further growth in less mountainous areas. These regions have great number of cattle, sheep, horses and yaks, and these conditions create a good opportunity to develop domestic processing with increased added value and improve the performance of the region.

Seven distinct breeds of sheep are recognized. Though broadly adapted to the local conditions, the new breeds were more dependent on winter housing and supplementary winter feed than the traditional ones. During this time the dominant characteristic of the original indigenous fat-tail and-fat-rump, coarse wool sheep was changed to merino type fine wool breeds. Nonetheless a number of the indigenous breeds such as the Kyrgyz Coarse Wool Fat-tail and the *Hissar (sic Gissar)* fat-rump were retained and even 'improved' though in reduced numbers. Mutton from the indigenous types is generally preferred by the local Asiatic population (FAO, 2010).

Sheep and goats in the Kyrgyz Republic are about a million, and the approximate annual production capacity is 48,800 tons (NSCKR). Domestic demand for mutton and its consumption is very high. There is high external demand for mutton, for instance, the Iranian company has its cattle slaughter point in Kaiyndy. The company sends carcasses to Iran. Recently, the company began to cut the carcass, then pack and freeze them in boxes of 20 kg for export to Iran.

Structure of livestock cluster

For a clearer understanding of the capacity of livestock sector to implement an agro-cluster S.W.O.T. analysis is carried out (The World Bank, 2009) as follows:

Table 1. S.W.O.T. Analysis of livestock sector corresponding to meat-cluster.

(i)Input Suppliers	(ii) Production	(iii)Designers of public policy	(iv)R&D, educational institutions	(v)Financial institutions	(vi) Demand and consumers
<i>Strengths</i>					
<p>Suitable natural and climatic recourses; Presence of pastures; (MAM operational data, 2012) Environmentally favorable region; Feed supply is satisfactory; (MAM strategy, 2012)</p>	<p>Low taxes on production stage; Presence of sufficient labor force at the production stage; There are a number of meat processing companies producing sausages for the local and regional markets; (CCI, 2012)</p>	<p>Presence of government labor authorities that are responsible for agricultural-livestock development. They could focus on regulation, coordination, control, monitoring and support.</p>	<p>Possibility to hybridize local breeds; Veterinary services are not developed properly;</p>	<p>Financial sector of the Kyrgyz Republic is not developed enough to be able to provide the country with good finance farmers and enterprises involved into the cluster. There are sufficient number of banks, non-bank financial institutions; (NBKR)</p>	<p>Large number of markets for products of livestock; The Kyrgyz Republic was the entire Soviet Union and it has a high quality meat; Steady demand for fresh meat in domestic market; The Kyrgyz Republic exports meat products to Kazakhstan, Russia, Tajikistan, Iran; (NSCKR, 2012)</p>
<i>Weaknesses</i>					
<p>Lack of initiatives on the part of farmers; Unstable feed supply; Lack of logistics between farmers and processors (slaughter floor); Absence of contemporary cattle slaughter points; (USAID, 2011)</p>	<p>Small-scale production; Low technical level of meat processing companies;</p>	<p>Sanitarian inspections not carried out properly; There are no ; inspectorates, restricting uninspected meat; (USAID, 2011) Absence of sanitary standards;</p>	<p>Absence of laboratories for product standardization</p>	<p>The Kyrgyz Republic has budget deficit, consequently it has not enough financial resources to invest;</p>	<p>Large number of traders, livestock are bought and sold several times; Border issues restricting export; (MAM operational data, 2012) High retail costs; The Kyrgyz Republic imports large number of cheap Chinese meat;</p>
<i>Opportunities</i>					
<p>Traders could be involved in order to establish links between regions that having livestock surplus and fattening farms; Possibility to create contemporary cattle slaughter points;</p>	<p>Production of economically friendly products that meet international standards; Taxes based on patent; Increase the level of production to provide with fresh meats markets in CA countries;</p>	<p>Government of the Kyrgyz Republic could be responsible for meat inspection, licensing; Creation of Veterinary association; Development of other production and substitution policy</p>	<p>Most of high educational institutions are involved into international programs, which allow students to train abroad in the field of agriculture.</p>	<p>Presence of many international organizations such as USAID, UNDP, OSCE, WB, ADB, t creates opportunities to attract foreign grants, support, aid and investment.</p>	<p>High demand for cattle in Kazakhstan; Develop legal cattle trade in Kazakhstan's market; Develop young stock market in Dubai; Growing demand for meat production in Russian, Tajikistan;</p>

Threats

<i>Emergence and spread of animal diseases and epidemics; (MAM operational data, 2012)</i>	<i>Reduced competitiveness and comparison with sanitary Chinese conditions led to spread of disease outbreaks; Absence of outbreaks; Integrated approach across trade" and bribes; the value chain (from the farmer to the buyer) could do not control matters uninspected meat; worse as a whole; (USAID, 2011)</i>	<i>Lack of inspection, poor tendency in the number of students who allocated due to the high level of corruption and shadow economy.</i>	<i>There is a decreasing financial recourses could be allocated ineffectively, due to the high level of corruption and shadow economy.</i>	<i>Attracted meat and meat products from China, Russia, Kazakhstan; Increased number of packaged meat from Turkey and Germany; (NSCKR, 2012) New requirements and regulations of the Customs Union which restrict the volume of export;</i>
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An agro-industrial cluster has the following seven components [13]: (i) input suppliers, (ii) production, a group of companies as a basis of clusters (meat processing companies), (iii) designers of public policies, (iv) R&D and educational institutions (v) financial institutions, (vi) consumers.

(i)The first component of the cluster that was mentioned above is that it is a common supplier of inputs and services. The most important inputs and services for the livestock sector are cattle, seeds, agrochemicals and specialized machinery. Pastures in the Kyrgyz Republic occupy approximately 9.2 million hectares. These grazing systems are based on three grazing seasons: winter (animals are contained in a shed or outside the house), the inter-season (spring and autumn, when the animals are grazed in pastures or households) and summer (animals being kicked away from home to mountains). It should be mentioned that almost all families in rural areas have livestock. Therefore, there is a very low demand for meat and milk, because people do not need to buy them outside their own communities (MAM operational data, 2012). Small fattening farms are located in Chui and the Talas regions. The Chui region has become a center of livestock fattening, having more than 500 fattening points (MAM operational data, 2012). Improved feed rations and a reduction of production costs could help to improve the competitive advantage of the companies specializing in fattening cattle, sheep, horses for slaughter and export. Cattle slaughter points do not correspond to international requirements. Cattle slaughtering is carried out in old state buildings that were previously used as meat factories or slaughterhouses. A large number of cattle is slaughtered in private backyards and other uncontrolled territories. Consequently, the quality of meat and sanitary conditions are unsatisfactory. Newly established contemporary slaughter points will comply with standards for production buildings. Cattle slaughtering

points will be able to perform several functions: (1) sell meat carcasses of beef, lamb and horses to fresh meat markets; (2) Process carcasses into the main part (the major muscle groups); (3) separate meat from bones and prepare fresh or frozen cuts of meat for retail sale; and (4) sell meat parings to meat processing companies for production of meat products. In total, the first component of the cluster is extremely weak.

(ii) Currently, the meat processing industry is one of the most dynamic sectors of the Kyrgyz Republic's economy. One-third of industrial output is processed and more than 25 percent of production is exported to other countries. By the end of 2012 the total number of meat processing enterprises reached 298, including 92 legal entities and 206 individual entrepreneurs (NSCKR). The highest growth was observed among individual entrepreneurs. Currently, these small companies produce more than 93 percent of the total meat production in the country (MAM strategy, 2012). Their production over the last five years is steadily increasing. Even if there is an upward trend in the number of food-enterprises, most of them do not have sufficient capital to invest in necessary equipment which would enable them to be competitive and to meet international requirements. Furthermore, in accordance with the Ministry of Economy of the Kyrgyz Republic it is reported that only 2 percent of processing capacities are used in meat industry. The meat processing industries are characterized by low innovation and technology use, a lack of current assets and high indebtedness. We can conclude that the second component of the cluster is almost complete in terms of presence of sufficient number of food-enterprises, but at the same time it is not developed enough.

(iii) The next key component is a set of public institutions that design policies conducive to the formation of a cluster. Successful clusters reveal that the different levels of government (local, regional, national) play a central role. In the case of the Kyrgyz Republic, both the state and national government led to a large-scale livestock sector through the creation of required infrastructure. The main state institutions which would play a significant role in the livestock cluster are the Ministry of Agriculture and Melioration and other state bodies such as the Ministry of Economy and Anti-monopoly policy of KR; the Ministry of Finance; State Custom Service under the government of KR; the Ministry of Agriculture and Melioration and its main departments related to livestock development, for instance: State Veterinary Department; Department of pastures; Department of Mechanization and energy supply; Republican State Seed Inspectorate; State selection and breeding center; Certification Center of veterinary medicines. They could focus on regulation, coordination, control, monitoring and support. The central government could play a supportive role by managing funds. The State Veterinary Department could be responsible for the appropriate veterinary services

provided by government and private sector; Department of pastures could make regulations for the effective use of pastures. State selection and a breeding center may regulate laboratories in order to improve selection and breeding activities. However, there is a big lag in other infrastructure items, especially, an obsolete railroad operating in poor conditions and bad highways, particularly during the rainy and snowy season. In sum, the third key component of the cluster is complete and present.

(iv) The fourth component of a cluster is R&D and educational institutions. Most studies of successful clusters highlight the presence and active participation of educational institutions such as universities where research is carried out closely related to the economic activities of the cluster's core enterprises. There are two institutions whose graduates are closely related to livestock: Kyrgyz National Agrarian University named after Skryabin and the Institute of veterinary medicine and biotechnology. These High Educational Institutions train more than 8000 students (NSCKR). The most important problem of agricultural education system is an insufficient quality of education, regardless of specialty and status of institution. A number of educational institutions providing training in agriculture have disadvantages in teaching methods, material and a technical base. The present situation with low professional level of veterinarians is gradually getting better; however, the skills of these professionals are still unsatisfactory. Agricultural science is weakly involved in carrying out research work aimed to provide sustainable agricultural production. In sum, it is concluded that the fourth component of the cluster is present but still extremely weak.

(v) The fifth component involves financial institutions supporting the cluster's activities. They are public financial institutions, government authorities at different levels (local, state, national) or private companies such as banks or non-bank organizations. The financial system is represented by 24 commercial banks, 195 micro-credit companies, 63 micro-credit agencies, 146 credit unions (NBKR, 2013). MKK "Finka", FG "Companion" are the largest micro-finance companies, which are considered as the largest creditors in agriculture. At this moment the financial and credit institutions system is institutionally developed, there are associations of banks, micro-credit companies and credit unions. Thus, all these conditions make it possible to provide farmers and agro-producers with financial services. Despite all these possibilities, several problems need to be resolved. For instance, high costs for insurance, leasing, financial services and lack of experience in leasing operations; Summarizing, the fifth component of the cluster has all the prerequisites to be completed, but in order to implement the cluster, these financial resources are not sufficient.

(vi) A final component of the cluster is the presence of customers and consumers within the cluster or outside. In this case direct customers are local companies within the country. The indirect final clients would include a wide range of buyers, mainly local and regional population. In this case, the key to the operation of the Kyrgyz Republic's export of livestock is the concentration of trading companies at the border point closest to the producing region. Widespread practice is that farmers sell livestock to local traders, who in turn sell it to commercial traders, who have large trucks that could accommodate 60-70 sheep or 15-20 cattle. Kazakh traders buy livestock and livestock products in a livestock market located in Tokmok, but also directly from farmers and other private markets. The existence of trans-boundary diseases (FMD, anthrax, brucellosis) and a low capacity of national veterinary services to control the spread of these diseases have led to the fact that Kyrgyz producers of meat and meat products are not officially allowed to sell their goods in the markets of Russia, Kazakhstan and Belarus. However, this fact does not stop dynamic development of shadow market sales of beef carcasses and processed meat. Most of meat products are sold in local open markets. Enhanced and rapid increase in weight of livestock will benefit modern slaughtering industry, which, unfortunately are not developed at the moment. In conditions of absence of contemporary cattle slaughtering industry, conforming to required sanitary standards, livestock breeders will not be able to sell their livestock at the highest possible prices. The livestock are slaughtered in the places which do not conform to sanitary norms, thus, limiting the possibility of Kyrgyz meat products to be sold in international markets. Due to absence of contemporary cattle slaughtering points there is no opportunity to effectively processing of carcasses for fresh meat markets and for meat processing industries as well. Resuming, the last component of the cluster exists, but it is not adequate.

The proposed livestock cluster model for the Kyrgyz Republic

Having analyzed the agricultural sector of the Kyrgyz Republic, and having studied features and the potential of the Kyrgyz Republic for the implementation of livestock cluster, I will discuss the implementation of a cluster in Chui region. Almost 40 percent of meat and dairy processing companies are mainly located in this region (NSCKR). Furthermore, the location of the cluster in the Chui region is the most effective in terms of selling meat in the local and international markets, due to a high demand for meat and meat products compared to other regions. Additionally, the international livestock market is located in the Chui region, Tokmok. This fact may facilitate access to the markets of Kazakhstan and Russia, which are the main foreign markets of meat in the external market. In terms of logistics and

infrastructure for the development of the cluster, the Chui region is the most developed. In terms of labor resources, main agricultural educational institutions are located in Chui. Taking into account the presence of both the local labor force and internal labor migration to Bishkek, I conclude that the cluster would have all possibilities to be provided with necessary human resources. To present more clearly the model of cluster, I propose this organizational scheme of agro cluster which could be implemented in the Kyrgyz Republic.

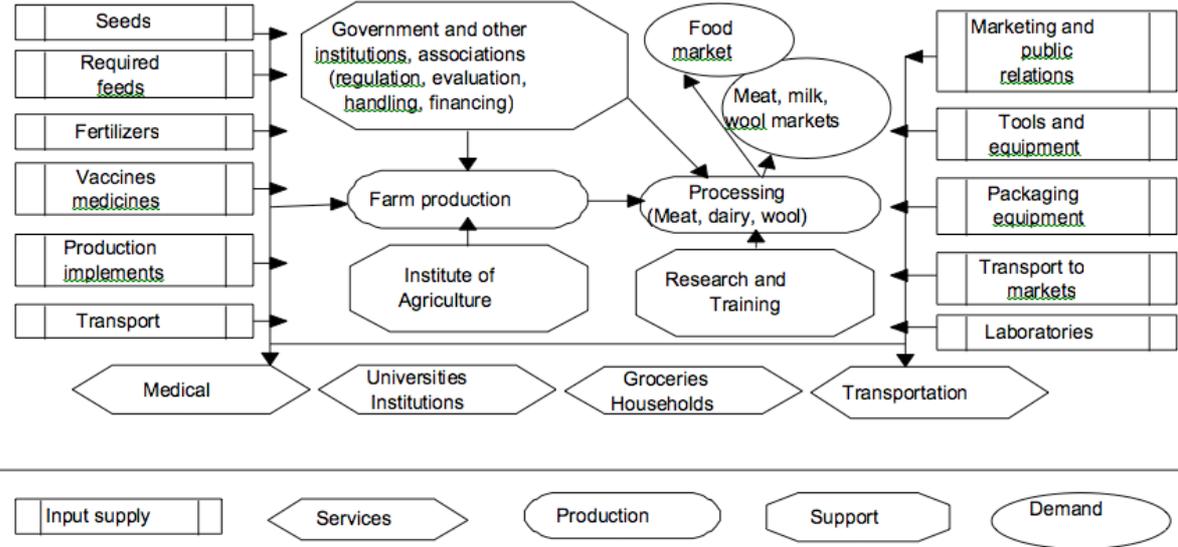


Figure 5 Proposed model of livestock cluster in the Kyrgyz Republic
 Source: own elaboration based on the data given above

Implementing any cluster initiatives in developed countries is different from implementing them in developing ones. With respect to developing countries, the role of government would be the most important. The importance of government intervention in developing countries is caused by the weakness of market institutions and low coordination possibilities between private and state actors. It does not mean that government should create clusters from “scratch” by declining markets and industries. Instead, government may work as a catalyst, a broker bringing actors together, creating forums for dialogs, supplying supporting structures and incentives to facilitate the clustering and innovation process.

The government’s policy to clusters should be implemented by taking into account the Kyrgyz Republic’s specifics, especially agricultural sector and cluster members. In order to implement successful meat production cluster, the government must develop a program for cluster development and include it to the regional, local and national strategies. The government must take legal and administrative measures in order to provide direct and equal partnership inside the cluster through creating legislative basis. Only with creation of cluster institutions to control and monitor financial, sanitary, organizational issues, it would be

possible to develop effective clusters. Support of government and local authorities are needed in order to establish strong linkages between main actors of cluster: companies, government, research community, financial institutions, trade associations, etc. Regional and local authorities may serve as a nucleus of cluster formations and development. They could stimulate farmers to enhance cluster efficiency through strong cooperation in solving common problems. In the case of the Kyrgyz Republic, it is possible to apply a “top-down” cluster approach (Andersson et al., 2004): (i) step - Identify companies that could be basis for further growth and would be a basis for clustering, by identifying leading companies in order to concentrate on the basic recourses and tools, such as budget, centralized, own, borrowed etc. State-private partnership should be used for creation of these basic companies; (ii) step – Clusters should be formed based on these leading companies, which would include input suppliers, processing, trade, marketing, and financial organizations. Recourses should address to create effective value chain. Livestock cluster should have three main centers: development of raw material production; development of meat processing; development of sales. These centers would ensure investment, planning, and production.

At the preliminary stages of the cluster development the government must support maintaining and expanding traditional methods of agricultural production and develop policy supporting specialization of agriculture in production of environmentally friendly products. Clusters of organic livestock production should specialize in producing competitive agro-products and products produced by using organic agro technology. Organic livestock production should be oriented toward international markets, which have high stable demand. External economic orientation of the cluster ensures rapid growth of profits of agro-producers, which allow the base to improve their technologies. Government must develop technical regulations on production and control of environmentally friendly products based on Eco-EU standards, national standards of halal products. Regulatory legal acts, which would contain provisions on production and controlling ecologically friendly products, must be developed (MAM strategy, 2012).

This paper pays more attention to implementing cluster and the role of the government in livestock cluster development. Mentioning the government as one of the main actor of cluster implementation is caused by weakness of market institutions and low coordination possibilities between private and state actors. But on the other hand other risks of involving government still exist. Large-scale corruption can stand a main obstacle to implement the livestock cluster and it would restrict its development. Due to high level of corruption in high-level officials the political situation had been extremely unstable during the last years since

2010 year. Large-scale corruption restricts the operations of international companies that wish to expand to the Kyrgyz Republic. Furthermore, getting licenses and permits is also used to be obstacle in doing business in the country. Another negative issue is high bureaucracy which can lead to corruption. Protection of property rights is still weak that confines the attractiveness of the country for foreign investors as well as for local business agents (GAN, 2014). Transparency International's 2013 Corruption Perceptions Index ranks the Kyrgyz Republic 150th out of the 176 countries and territories assessed. In accordance with the data of the World Bank the Kyrgyz Republic has scored 10.4 on control of corruption on a scale from 0 to 100 (Maira Martini, 2013).

Taking into account all the information mentioned above, it can be concluded that in order to succeed in the implementation of effective livestock cluster, corruption reducing measures should be taken first. Otherwise, involvement of the government in contributing to the development of the cluster will result in its failure. To address corruption in the country, the government of the Kyrgyz Republic has adopted the Anti-Corruption Plan in December 2013 which is aimed at preventing corruption among judicial and law enforcement officials. In order to support international companies and foreign investors in facilitating bureaucratic procedures, the government has implemented a one-stop shop licenses and permits office under the Ministry of Economy and Anti-Monopoly Policy. The Kyrgyz Republic has five law enforcement agencies that deal with corruption: the Prosecutor General's Office, the State Customs Committee, the Financial Police, the National Security Service and the Ministry of the Interior (GAN, 2014).

2.4. Conclusions

Development of agriculture is a complex social and economic problem. The agricultural sector provides jobs for more than half of the Kyrgyz Republic population. Furthermore it is the main source of income for the most families living in the rural areas. Development of agriculture is possible only through the implementation of appropriate public policy aimed at organizing modern agricultural production, more efficient use of existing resources and improvement of population's quality of life in the rural areas. This paper is aimed to investigate the livestock sectors' capacity to implement effective livestock clusters.

Being an agrarian country, the Kyrgyz Republic has not developed any agro-cluster. Before implementing any cluster in the country, all its capacities and features must be analyzed. The Kyrgyz Republic has all necessary preconditions in order to start forming a livestock cluster. Markets of organic agricultural products over the world are growing year by

year. Kyrgyz people have been engaging in cattle breeding for centuries, up to now they could preserve traditional methods of livestock breeding, which will allow them to produce environmentally friendly meat products applying their unique skills. Natural and climatic conditions create possibilities in order to provide farmers and processors with required quantity of livestock, feed, and seed. Significant share of agricultural products are produced with minimal use of chemical fertilizers and pesticides. Livestock are fed on natural pastures. It gives additional opportunities for the Kyrgyz Republic to organize the production oriented to segment of environmentally friendly products. At the same time, veterinary and sanitary conditions are still weak. The lack of standards for food quality and safety, including poorly equipped laboratories are some of problems of the sector. International meat trading is a real opportunity for meat industry of the Kyrgyz Republic which requires compliance with certain sanitary requirements. The cost of compliance with these standards can be high and, therefore, necessary to attract financial resources at least in the initial stages.

Long-term results of cluster implementation in the country would result in agricultural production growth improvement of food security of the Kyrgyz Republic, increase in income of farmers, alignment of regional economic development, reduction in migration. The main outcome would be the development of agricultural production. Successful cluster implementation may result in reducing import of livestock products, as local producers would be able to provide for the domestic market.

In case of the Kyrgyz Republic (KR) it is clear which public institutions would be able to support network formation and clustering. The government bodies such as the Parliament, the Ministry of Agriculture and Melioration and its departments, the Ministry of Economy and Anti-monopoly policy, the Ministry of Finance, State Sanitary, Veterinary and Phytosanitary Inspections under government supervision may directly be involved design processes through creating legal framework which can serve as a cluster's codified policy. In sum, the main role of the government in cluster development is to create supporting networks and knowledge exchange structures for all actors involved in the cluster, namely farmers, households, food processing enterprises, financial institutions and non-government organizations.

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CHAPTER II

3. DIAGNOSING GROWTH CONSTRAINTS IN CENTRAL ASIA: THE CASE OF THE KYRGYZ REPUBLIC

Abstract

The Kyrgyz Republic is a country with transition economy and its growth performance is constantly one of the lowest compared to the CIS countries. The weak growth performance is mainly caused by a strong political instability and high corruption. Despite being a leading reformer in the region, the country has not done enough to solve the key problems. Thus, the current study employs the growth diagnostic approach proposed by Hausmann et al. (2005) to identify the binding constraints of growth in the country. The paper finds that a weak institutional framework, high corruption, a large share of the informal economy, inefficient energy sector are the most binding constraints to the KR's economic growth.

Key words: growth, constraint, institutions, corruption;

3.1. Introduction

The nature and principles of sustainable economic growth have always attracted the attention of researchers, experts from the business sector and policymakers. The literature on economic growth broadly discusses the nature of economic growth and there is an increasing debate by both economists and policy designers regarding the set of policies to ignite economic growth, particularly in transition and developing economies; while most of prescriptions on the right policies promoting growth have remained very general. The one size fits all approach, which is well known as the Washington consensus, typically recommends a general set of required reforms to achieve growth. However, by the end of the 1990s it became clear that the recommended set of reforms did not bring the desired outcomes without strong governance and institutional foundations.

The need to avoid the one size fits all approach and to develop context-specific and country-specific growth policies has become a new conventional stream. In this regard, Hausmann et al. (2005) proposed a growth diagnostics framework as an analytical instrument to determine what are the key problems constraining economic growth in a particular country with an emphasis on developing economies¹². Focusing on a small number of binding constraints, instead of removing all possible distortions that use the conventional Washington Consensus approach, is the most distinct characteristic of the growth diagnostic framework (Felipe and Usui, 2008). Due to its systematic focus on constraint conceptualization, the approach has become a tool for formulating country-specific growth policies in many developing countries over the last decade and it has become a subject of increasing debate among researchers, development economists and policymakers.

Referring to the Kyrgyz Republic (KR), being one of the Commonwealth of Independent States formed following the collapse of the USSR in 1991, the country implemented market-oriented reforms under the triple arrangements: privatize, liberalize, and stabilize. The KR followed the waves of reforms, modeled by the World Bank, the so-called Washington Consensus¹³, but given its limited political power and economic resources only a few of these reforms were successfully implemented. Since becoming independent in the 1990s, the country became a leading reformer compared to the other former Soviet Union economies and the first country in the region that joined the WTO in 1998. As a result,

¹² The approach proposed by Hausmann et al (2005) is known as the growth diagnostics approach or also as the HRV approach using the capital letters of the authors surnames (**H**ausmann, **R**odrik and **V**elasco).

¹³ Similar set of reforms was adopted in Latin American countries and in many Sub-Saharan African countries. For more discussion see Rodrik, 2004; 2006a.

currently the country is the most open and liberalized economy among the CIS. Nevertheless, the KR's experience in establishing the Washington Consensus reform package did not bring the expected results. The country experienced a strong decline in GDP growth, faced hyperinflation, high unemployment rates and an extreme increase in the poverty during the 1990s. The country's growth performance has varied from a strong declining phase in the beginning of the 1990s, a relative stabilization and a gradual accelerating phase in the first half of the 2000s, followed by another declining phase after 2005. Though the adopted reforms helped the KR to achieve a relative macroeconomic stabilization and some positive impact on the growth, it appears that the reforms have not contributed to a sustained growth path. This leads us to the question of as to what kind of reforms (or conditions) are required to ignite a sustained economic growth in the KR.

Therefore, under the concept of the growth diagnostics approach, this paper attempts to identify the existing binding constraints to growth in the country by applying the mentioned framework. The identification of the factors that restrict growth allows the government to develop a well-focused growth policy and, by doing so, contributes to the '*biggest bang for reform buck*' (Hausmann et al., 2005). Therefore, the key objective of this paper is to build a plausible hypothesis on the most binding constraints in the KR.

The rest of the paper is organized as follows: the next section provides theoretical foundations of the growth diagnostics approach; section three describes the framework and its methodology. In the fourth section we discuss the KR's growth performance since the collapse of the USSR till the present time (1991-2015). Finally, the fifth section attempts to identify the constraints to the country's economic growth, and the last section provides our conclusions.

3.2. Literature Review

There is an extensive literature providing an advanced understanding of the nature of economic growth and the fundamental factors accelerating growth. For many decades economists and policymakers have been debating on what should developing countries do to promote growth and eventually converge with developed countries. By the end of the 1980s there was a general consensus in the literature that emphasized a set of required reforms to ignite growth in developing countries. This led to the implementation of the Washington Consensus being promoted as the most relevant market-oriented reforms for developing economies, which in the general sense recommended to perform reforms towards '*privatization, liberalization and stabilization*' of economies (Rodrik, 2006a). However, by the

end of the 1990s, it had become obvious that this 'one size fits all approach' was not successful, and it was suggested to implement a second generation of reforms more focused on the role of institutions and the government. Thus, the original Washington Consensus has widened to include much more reforms. This broadening is known as the Augmented Washington Consensus¹⁴. Nevertheless, neither the original Washington Consensus nor the Augmented Washington Consensus did work. The enlarged set of reforms was impossible to accomplish for developing countries due to their limited financial resources and capacity¹⁵.

In this context, Rodrik (2006a) argues that '*the question now is not whether the Washington Consensus is dead or alive, it is what will replace it*' (p.2). The experience from the decades of reforms shows that there is no unique set of reforms (or rules) for all countries in all times, indeed, growth policies should be country-specific and well-targeted based on the specific circumstances of an economy. Each country has its own way of solving their problems of economic underdevelopment, and increasing the level of private investment may require different measures depending on the stage of development and specific constraints of the given country.

Thus, Hausmann et al. (2005) proposed a new tool addressed to identifying the problems that restrain growth in a particular economy, so that the constraints can be properly accounted for designing the right set of policy reforms. The growth diagnostics approach allows to perform different fixes to different countries depending on their country-specific problems, but at the same time it ensures a very unified methodology to identify these problems. It is fundamentally based on the proper diagnostics - on the ability and capacity to figure out the problematic areas with the greatest return to reform. As Hausmann et al. (2005) indicate, the developing countries are poor because they have many wrong things, but an appropriate diagnosis would help them to identify where the most binding obstacles are at a particular point of time. The identification of these obstacles may allow the government to develop context-specific policies because it is based on the argument that the binding constraints differ from country to country and from setting to setting. In this, unlike the Washington Consensus that suggests to each country a typical package of reforms, the growth diagnostics gives country-specific solutions.

¹⁴ The distinction between the original and the Augmented Washington Consensus is important to mention. If the former is mainly addressed to 'stabilize, privatize, liberalize' economies, the latter is focused on the establishing secure property rights, strengthening institutions and governance (Rodrik, 2006a).

¹⁵ The investigation of the failure of the Washington Consensus is beyond our research, for the more discussion on the Washington Consensus, see Rodrik, 2004; 2006a; 2006b;

The HRV approach proposes a methodology based on the decision tree, where low level of private investment and entrepreneurship are considered as the key factor of low economic performance in developing countries (we describe the decision tree in the methodology section). According to the authors, the framework is focused on the level of investment considering that many developing countries' main problem is the scarcity of capital equipment and productive capacity. Under the consideration that developing countries operate below the full employment, it is more likely that they face difficulties related to the lack of productive capacity and its underutilization (Felipe et al., 2011). A large body of literature on economic growth highlighted the key role of investment in the context of accelerating economic growth. However, Rodrik (2006a) argues that the issue is not about the relevance of investment for growth, but why investment and capital formation are low in the most developing economies.

Yet regardless of increasing interest in the growth diagnostics approach, it also caused many debates and critiques. Sartor (2007) argues that the approach does not contain any scientific formula in its application; indeed it gives only a framework to build some hypotheses on critical constraints rather than tools to test binding constraints. Therefore, identification of the critical constraints within the approach mostly depends on the person who applies this approach. Similarly, Leipziger and Zagha (2006) criticize that the results of application mostly rely on the abilities and points of view of the analyst, thus potential scenarios of economic reforms may differ depending on analysts' creativity. Felipe and Usui (2008) consider that the analyst may accept one constraint as a binding one for which data is available, and reject others due to the lack of data. Furthermore, Felipe and Usui (2008) criticize the starting point of the decision tree, as they consider that low private investment and entrepreneurship are not crucial for all countries, and there are some countries that have different causes of low economic performance. In response to the criticism, Hausmann et al (2008) state that the most developing economies aim to increase productive capacities, and the framework is mainly proposed for the countries with low level of investment and low growth performance. In regard to the imperfect data used by the analysts, the authors indicate that the only way is to take into account these limitations when analyzing the signals.

Nevertheless, despite its criticism, the framework achieved a relative high acceptance due to its systematic approach in problem conceptualization. Thus, Temple (2009) emphasizes that the growth diagnostics framework allows identification of clear policy priorities focusing on country-specific conditions and therefore becomes relevant for policy design in practice. In spite of their criticism, Felipe and Usui (2008) also agree that the

approach could be helpful for policymakers to build a growth strategy in terms of limited resources. In addition, the growth diagnostics framework is widely used by the international institutions and researchers for the identification of policy priorities in many developing countries, and it became a key analytical tool for donor agencies to develop their operational strategies.

Resuming, to date, the growth diagnostics approach has become a widely implemented analytical tool that is based on an economic theory and focused on the country-specific circumstances. It assumes that growth can be restricted by many different obstacles varying from country to country and, as we mentioned before, the poor countries are poor because they have many wrong things. However, most of these problems are not binding, in the sense that not all of them have direct impact on growth. This argument is consistent with the experience of many developing economies following the ‘standard’ growth policies that recommended a similar set of required reforms (we are referring to the Washington Consensus) for all countries. Yet, the growth diagnostics approach is not a panacea, it needs a very precise analysis, and we do presume that the application of the framework depends on the abilities and knowledge of the analyst, the answers sometimes might not be obvious and the constraints will not be figured out convincingly. Nevertheless, the approach has the advantage that it may allow countries to perform their own analysis focused on binding constraints and to build context-specific policies, instead of ‘copying’ successful policies of other countries or expecting international institutions to present ready-made policies.

3.3. Methodology and data

So far we have provided a brief overview of the theoretical background of the growth diagnostics approach. In this section, following the main idea of the framework, we aim to figure out the key binding constraints of growth in the KR. We apply the methodology tree provided by Hausmann et al. (2005). The decision tree starts by assuming that a low level of private investment and entrepreneurship are the key problems in developing countries and different branches of the tree represent various constraints. The right-side branch represents high costs of finance, which could be caused by either a low level of saving or a weak financial intermediation. If it is the latter, that could be due to the lack of competition or high risks. The right-side branch explores different factors of low returns to investment. This can be determined by the social factors (such as a lack of human capital, a bad infrastructure or a poor geography), or by government or market failures (at micro and macro levels). Therefore,

by moving downwards in the decision tree, we attempt to evaluate along the way the relevance of each potential constraint for the country.

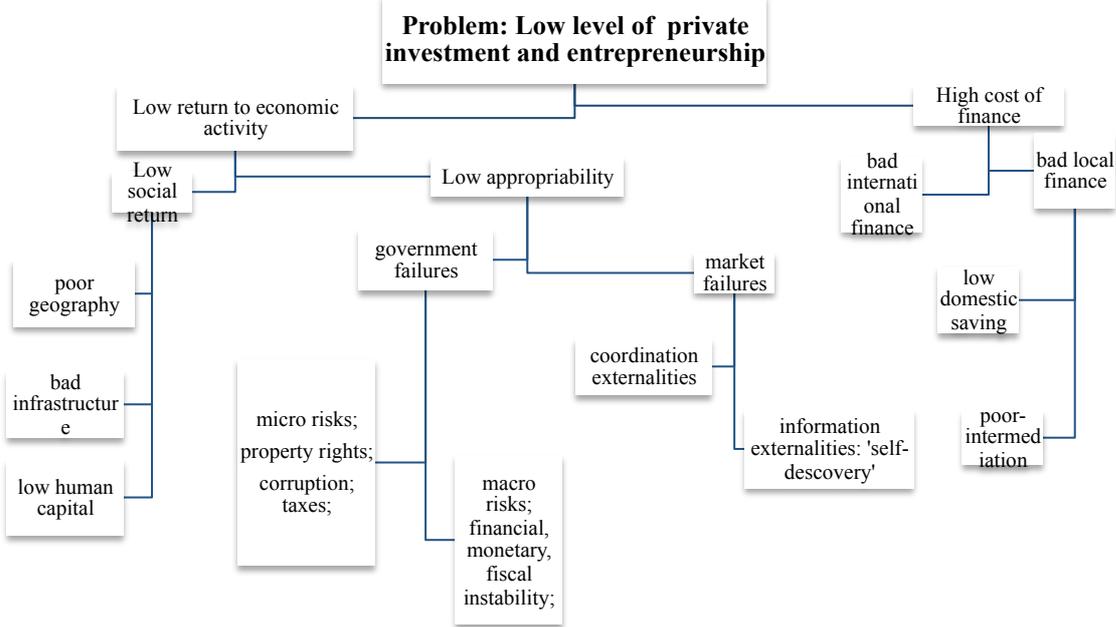


Fig. 1. The decision tree
 Source: Hausmann et al., 2005

Hausmann et al. (2008) recommend several techniques to perform a proper analysis. In this context, the first technique is to observe the actions of firms and entrepreneurs. The attempts of firms and entrepreneurs to overcome the binding obstacle can help create ‘tell tale’ signs that are observable to the analyst. The second technique is using international benchmarking. Hausmann et al. (2008) state that using international rankings allows assessing the country’s performance what seems feasible. Thirdly, the authors recommend performing growth accounting and country regression techniques for a deeper analysis of the constraints.

Therefore, based on these recommendations, the current analysis is carried out by using a combination of econometric, graphical and cross-country comparison techniques. Nevertheless, our assessment is mainly relied on the international benchmarking to perform a comparative analysis using qualitative and quantitative data at national and international levels. Data for this study was collected from research papers, publications, reports of the National Bank of the Kyrgyz Republic and statistical data published by the World Bank, IMF’s World Economic Outlook, UNdata, Economic Freedom Network, Global Economic Forum, the Heritage Foundation, etc.

The following CIS countries such as Armenia, Azerbaijan, Georgia, Belarus, Kazakhstan, Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan were chosen as a

comparator group of countries in order to formulate a plausible hypothesis about the binding constraints. These countries were chosen based on the following several criteria: (a) level of economic development: they belong to the group of developing economies; (b) landlocked countries; (c) Former Soviet Union Republics, which implies that they have a common historical, economic and political background.

3.4. The KR's growth performance after independence (1991-2015): Brief Overview

Before 1991, the KR was a country with a centrally planned economy operated within the Soviet Union economic system and following the collapse of the USSR, the country started a rapid transition towards a market-based economy and improving the overall economic performance. The country was seen as one of the most dynamic reformers comparing to the other Former Soviet Union countries and international institutions such as the World Bank and the International Monetary Fund have been guiding and providing significant financial support in forming a market-oriented economy in the KR. The reforms were undertaken on a wide front, including a rapid privatization, liberalization, and stabilization of the economy¹⁶. However, regardless of its success in transforming its economy, the outcomes have not been all positive: the country still remains one of the low growing economies among the other CIS countries and over the world.

The economic growth of the KR after its independence (1991) can be divided into three periods¹⁷. The first period (1991-1995) replicates the economic growth pattern of the other CIS countries (see fig. 2). This period was marked by a strong decline in output¹⁸, driven by a sharp decrease in industrial production. The industrial production decreased by 55.2 percent in 1995 compared to its level in 1991 (see fig. 3)¹⁹. The main factors resulted in the industrial output decline where the loss of markets (due to the disintegration of the Former Soviet economy), increased input prices, decreased demand and the weakening of former soviet economies. At the same time, the additional impact of the economic reforms during the early transition period led to hyperinflation, high unemployment rates, and higher inequality in income distribution²⁰. Therefore, the macroeconomic stabilization was the only priority of the economic policy of the KR, and in 1992 the country implemented a macroeconomic

¹⁶ For more discussion on the reforms and transition period in the KR see Torm (2003).

¹⁷ First period of active reforms during 1991-1995; the second period 1996-2005, when the KR accomplished the reforms and maintained economic stability; the third period 2005-2015 of gradual economic growth;

¹⁸ The country's GDP growth extremely declined from -7.8 percent in 1991 to - 20.1 percent in 1994.

¹⁹ Olcott (1997)

²⁰ Inflation rate reached 200 percent in 1991, 900 percent in 1992, 929 percent in 1993 and 62 percent in 1994 (Huseynov and Jamilov, 2014). For more details about poverty and unemployment trends see ILO (2008).

stabilization program, which tightened monetary and fiscal policies, limited the credit expansion of the state enterprises and the newly established private companies. As a result, the country achieved a relative macroeconomic stability and the output recovered 5.4 percent in 1995 (from - 20.1 percent level in 1994), and inflation significantly decreased (from 62 percent in 1994 to 31.1 percent in 1995)²¹.

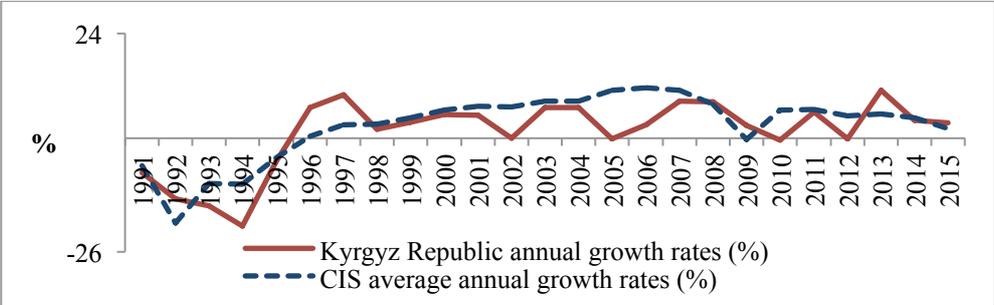
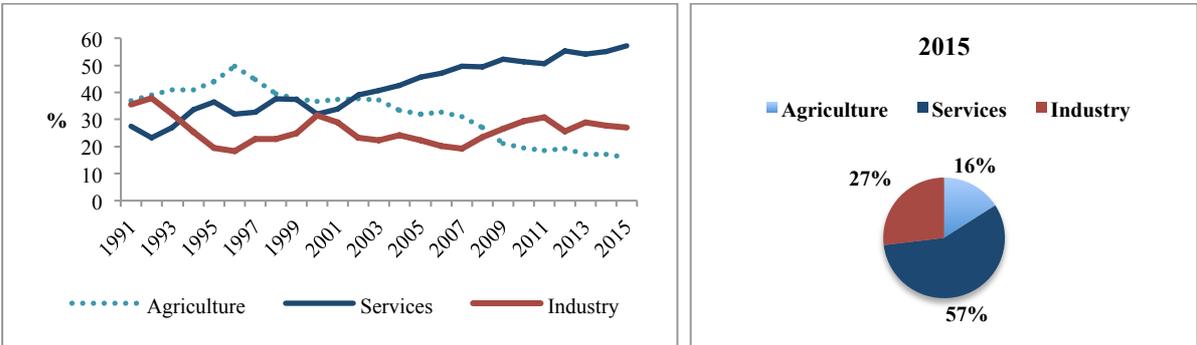


Fig.2. GDP growth rates in the Kyrgyz Republic and the average of CIS countries (1991-2015)
Source: World Bank (2016a)

After a constant decline in output during the first half of the 1990s, since 1996 the output has gradually resumed. During the second period (1996-2005) the economy grew at an average of 4.7 percent annual growth rate and the average GDP per capita growth rate was 3.4 percent. The growth was driven by output growth in industry sectors and services, which accounted for 39 percent of GDP²². In regard to services, the liberalization of custom regulations and favorable taxation regime for firms involved in international trade, resulted in a rapid growth of commercial, trade and re-exporting services²³. However, the growth performance of the KR was hampered by external and internal shocks that led to high output fluctuations between 1996-2005: (i) the Russian financial crisis of 1998; (ii) a strong decline at Kumtor; (iii) the antigovernment protest that overthrew the president of the KR and the subsequent political turmoil in 2005.



²¹ For more details see Mogilevsky and Omorova (2011); Atayev (2012).

²² A moderate recovery of industry since 1997 (fig.3) has been attributed to the beginning of a gold mining industry ‘Kumtor’, which is the gold mining industry and it generates more than half of industrial output of the KR (see Mogilevskii et al., 2015)

²³ In terms of re-exporting services, commodities are mainly brought from Turkey, China and then redistributed in Russia, Kazakhstan, Uzbekistan and the other CIS.

Fig.3. Composition of GDP growth in the KR (%)
Source: World Bank Indicators (2016a)

Referring to the economic growth path during 2005 till 2015, it has remained volatile and the average rate of GDP growth is at 4.7 percent. An increase in the GDP to 8.5 percent in 2007 and 8.4 percent in 2008 was mainly determined by higher international prices for gold and a considerable increase in services. The share of the service sector in GDP increased from 45.6 percent in 2005 to 57 percent in 2015. The output growth has remained volatile and responsive to shocks, such as the consequences of the world financial crisis of 2009; the second government overthrow in 2010; the subsequent ethnic violence in the south of the country in 2011; and a strong economic slowdown in Russia and Kazakhstan (the country's main trade and strategic partners) respectively in 2014 and 2015. Thus, a continuing political uncertainty (the revolutions of 2005 and 2010)²⁴ and the ethnic violence (2011), followed by the embargo on trade by the neighboring countries (namely Kazakhstan, Uzbekistan and Tajikistan) resulted in low growth rates and high output fluctuations during the second period.

Resuming, the KR's growth performance after its independence has been volatile and below the CIS countries on average. In particular, growth rates became negative in the post-revolutionary periods, accompanied by destroying and closing of companies, the local enterprises were not able to recover and had to close, international investors had to relocate their finance to the countries with more secure and stable economies.

3.5. Identification of the binding constraints for the Kyrgyz Republic.

The applicability of the growth diagnostics approach for the Kyrgyz economy?

So far we have briefly discussed the country's growth performance over the period after its independence (from 1991), however our interest is to identify the binding constraints for the recent years, thus we are referring to the period between 2005-2015. As we mentioned before, the growth diagnostics approach starts with the assumption that low economic growth in developing countries is caused by a low level of investment and entrepreneurship. In this context, Felipe et al. (2011) divide developing countries in four groups based on the average

²⁴The main causes of both revolutions were a strong dissatisfaction of people with the government regimes of Presidents as Akaev and Bakiev. Many observers believed that the government crisis in the KR in 2005 was caused by the following factors: the difficult economic situation of the population, and conflicts between the 'wealthier north' and the 'poor south' exacerbated the dominance of 'northerners' in power and control. The causes of the second revolution were the very low standards of living, the ongoing struggle for power between the Kyrgyz clans of the north and south of the country, and the increase in the prices of some goods and services, such as electricity, gas and mobile services.

share of investment in GDP and the average GDP growth rates²⁵. They argue that the approach should be applied only to the countries in the third group. Therefore, before proceeding to the diagnosis constraints in the KR following Felipe et al. (2011), we aim to clarify the applicability of the approach for the country. Thus, we attempt to build a scatterplot of the average GDP growth rates and investment share in GDP for the KR and the comparator group of countries (see fig.4).

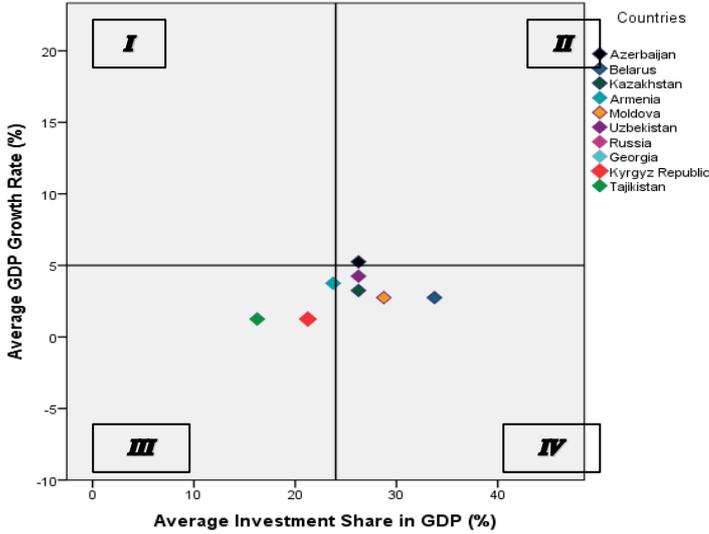


Fig.4. Growth and Investment for the KR and the comparator group of countries. Pooled data: the comparator group of countries and the KR, period 2005-2015. Source: Authors estimates based on the data from World Bank (2016a) and the IMF (2016)

According to fig.4, Tajikistan, Armenia and the KR are in the third group. They represent the GDP growth rates and the investment share in GDP below the world average, while others belong to the fourth group having lower growth rates than the world average, but the investment rates are above the world average. Furthermore, the results of a correlation analysis (see annex 1, table 1) indicate a strong positive and significant relationship between the GDP growth and the investment only for the KR (0.65) and Georgia (0.73). However, the results for the comparator countries are less encouraging: the coefficients are positive and significant for Armenia (0.41), Azerbaijan (0.42); no correlation in the cases of Uzbekistan (0.09) and Kazakhstan (0.02); a negative and significant correlation in Russia, Belarus and Tajikistan²⁶.

²⁵ By building a scatter plot of the average GDP growth and the investment share in GDP during the period of 1960-2004 (divided in five sub-periods), Felipe et al. (2011) classify four country groups: (i) countries with both above-average growth rates and investment share; (ii) countries with growth rates above the world average, but investment share below the average; (iii) countries with both growth rates and investment share below the average; and (iv) countries with growth rates below the world average, but investment share above the average;

²⁶ A more detailed analysis of economic growth in the CIS countries is beyond of the current analysis, therefore we provide an interpretation of the results only for the KR.

Thus, the results we discussed above confirm that the approach is applicable for the KR, and our further analysis is addressed to identifying what are the key factors causing low investment, thereby weak growth performance in the country. In this regard, following the decision tree, we firstly determine which of the two ‘general’ constraints (high costs of financing or low rates of returns) could be a constraint for the KR. In other words, whether investment is constrained because firms and investors cannot get the financing that they need to start a business (or expand it), or investors do not want to invest as they do not expect to retain a sufficient share of returns of their efforts.

Is access to finance a binding constraint to economic growth in the Kyrgyz Republic?

The high cost of finance can be a potential obstacle for private investments in the country, and the costs of finance can be observed by real interest rates and domestic credit to the private sector. The financial constraint, when it exists, can arise both from domestic or/and international sources. In this part, we firstly aim to identify if the costs of finance are high in the country, and if that is the case, we will proceed to the analysis of the sources (as indicated in the decision tree).

Regarding the costs of funds, the real interest rates in the country are the highest comparing to its regional peers and it remains to be high in 2015 (see fig.5). Furthermore, the availability of domestic credit to the private sector is also below the regional average, and regardless of considerable increase from 7.9 percent of GDP in 2005 to 23 percent of GDP in 2015, the domestic credit to the private sector remains below the average level of the CIS countries (35 percent to GDP) in 2015.

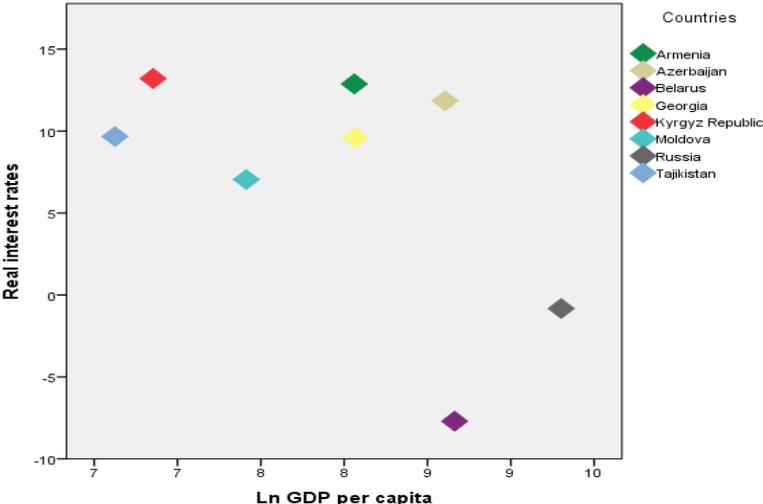


Fig. 5. Real interest rates vs. GDP per capita in the KR and comparator countries (average 2005-2015)
 Note: real interest rate is taken as the lending interest rate minus inflation (change in consumer price index).
 Source: World Bank (2016a)

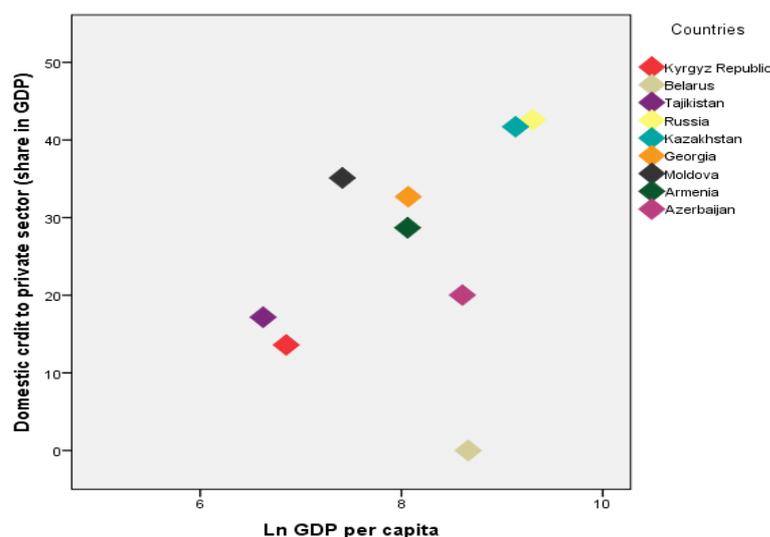


Fig.6. Domestic credit to private sector vs. GDP per capita in the KR and comparator countries (average 2005-2015)

Source: World Bank (2016a)

Thus, the current trend of the high real interest rates and the low share of domestic credit to private sector are indicative of high costs of funds in the country. According to Hausmann et al. (2008), the lack of availability of domestic credit accompanied with the high real interest rate represents that the high cost of financing is rather caused by the scarcity of resource rather than low demand for credit. Having identified that the costs of funds are high in the KR, we aim to analyze if it is caused by limited access to international or domestic financing.

International financing

Many developing countries face difficulties attributed to the access to international credit markets due to either adverse international credit market conditions or country-specific problems. The latter does not necessarily refer that bad international financing is a binding constraint, indeed, this would rather signal about the country's macroeconomic or political risk problems. In the case of the KR, an access to international financing is not a binding constraint to growth at the present moment. The KR's attractiveness for foreign direct investment (FDI) is increasing year by year and it represents the second highest position among the countries considered (see table 1). The average rate of FDI is 7.5 as the share of GDP during 2005-2015, a significant increase in FDI inflows has been made in 2011-2015. Its average share is two times higher than the average of the CIS countries (4.8) for the same period. Furthermore, the country receives a significant amount of official development assistance (8.9 percentage of GDP, the average for 2005–2015) and remittances (24.4 percentage of GDP, the average for 2005–2015). Considerable share of remittance inflows is

used for a residential investment and for the purchase of imported consumer goods. If an access to international financing would be a constraint to growth, we would expect that the increase in remittance inflows that occurred over the 2000s would have gone into a productive investment, but this is not the case of the KR. Furthermore, the average external debt accounts 94.3 percentage of GNI for the period of 2005–2015, and 42.7 percent of all external debt was concessional and long-term (95.5 percent). Interest rates and maturities are more favorable than for other comparator countries, as the interest rate on external debt commitments is at 1.3 percent, which is one of the lowest comparing to the CIS countries (see table 1).

Table 1. International financing

Country	Foreign direct investment, net inflows (% of GDP)		Net ODA received (% of GNI)		Remittances received (% of GDP)		External debt stocks (% of GNI)		Average interest on new external debt commitments (%)	
	2005-2010	2011-2015	2005-2010	2011-2015	2005-2010	2011-2015	2005-2010	2011-2015	2005	2015
Armenia	7.2	3.9	3.7	2.8	17.6	17.5	41.8	73.1	0.8	2.2
Azerbaijan	15.0	6.3	0.9	0.3	3.5	2.6	14.1	17.0	2.9	1.0
Belarus	2.7	3.5	0.2	0.2	0.8	1.6	31.2	59.0	5.3	3.9
Georgia	11.1	8.1	5.6	3.8	8.8	11.3	53.9	88.1	0.8	1.8
Kazakhstan	9.2	4.9	0.3	0.1	0.1	0.1	97.7	75.8	5.0	4.7
Kyrgyz Republic	5.6	9.4	8.8	9.0	19.8	29.0	87.0	101.6	1.0	1.3
Moldova	7.4	4.1	5.5	5.2	30.9	26.0	66.8	76.0	1.5	1.4
Russia	3.4	1.9	n/a	n/a	0.4	0.3	31.2	30.2	5.2	3.5
Tajikistan	5.5	3.2	7.7	3.8	37.0	38.6	48.9	55.8	0.7	0.9
Turkmenistan	10.7	10.3	0.3	0.1	0.2	0.1	7.0	1.4	1.4	n/a
Uzbekistan	2.4	1.7	0.7	0.5	7.3	9.2	22.7	19.0	1.9	1.9
CIS average	7.5	4.8	2.5	1.7	10.6	10.7	41.5	49.5	2.6	2.1

Source: World Bank (2016a)

Based on the discussion above, we consider that the access to international financing is not a binding constraint for the country, as the country is able to borrow from international financial market, and relatively low interest rates are indicative of low country risk comparing to the comparator countries. If the problem of high costs of finance is not caused by international source of financing, this could be related to bad local financing, thereby making domestic financing to be further analyzed.

Domestic financing

According to the decision tree, the difficulties with inadequate access to domestic financing can be attributed to low savings or/and a poor financial intermediation. Therefore,

moving downwards the right branch of the tree, we aim to identify if the high costs of financing are determined by either low savings or poor intermediation.

Referring to the savings rates, likewise many low-income countries, the KR's savings have been low and even negative almost all the analyzed period (see fig.7). The average level of gross domestic savings between 2005-2015 was negative (- 7.02) and below the CIS countries, excluding Tajikistan (-24.3) and Moldova (-13) for the same period, while Turkmenistan (65.9), Azerbaijan (50.4), Kazakhstan (40.9) and Belarus (31.5) had the highest gross domestic saving levels.

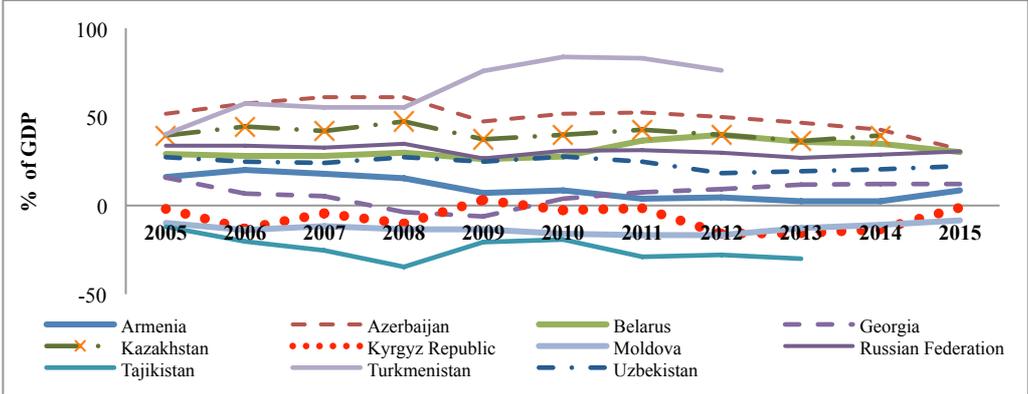


Figure 7 Gross Domestic Savings in the KR and comparator countries (percentage of GDP). Source: World Bank (2016a)

Not surprisingly, the KR's trade and current account deficits have been high, implying that the country is borrowing mainly from abroad to help sustain the current investment rates. The country's current account deficit has been volatile, nevertheless it has been gradually increasing from 1.5 percent of GDP in 2005, - 4.3 percent of GDP in 2009 to 14.9 percent in 2015 (see fig.8).

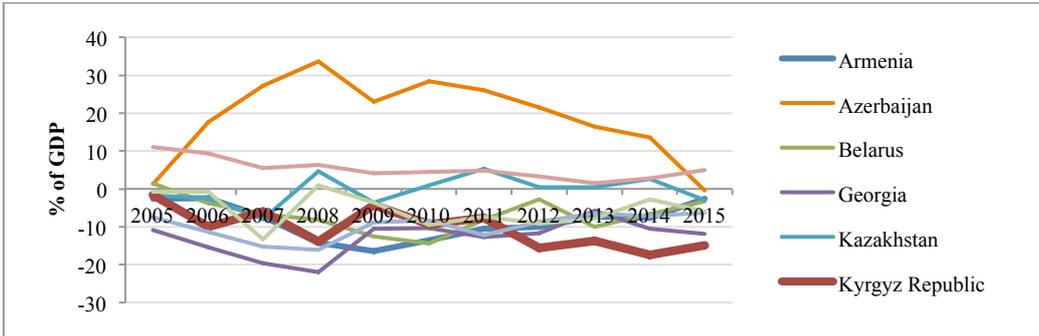


Figure 8 Current account deficits in the KR and comparator countries (percentage of GDP). Source: World Bank (2016a)

If a low level of domestic savings is a binding obstacle, then we expect that it can be caused by inability of profitable investment projects to find financing. In such case, we would observe relatively high deposit interest rates, caused by bank competition to fund profitable

investment projects. During the period of 2005–2015 the average deposit interest rate is 2.4 percent, representing one of the lowest rates among the CIS countries and it has increased only by 1 percent over the last decade and remains to be the lowest in the region. In regard to the lending interest rates, the average rate is the second highest among the comparator countries, and it has decreased only by 2.4 percent. Consequently, the interest spread is the highest in the region and it remains to be the highest in 2015.

Table 2. Financial intermediation indicators in the KR and CIS countries

Countries	Bank deposits as % of GDP		Money and quasi money (M2) as % of GDP		Deposit interest rates		Lending interest rates		Interest rate spread (lending rate minus deposit rate %)	
	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015
Armenia	9.1	28.1	16.3	36.9	5.8	14.1	18.0	17.6	12.2	3.4
Azerbaijan	8.9	24.8	14.7	39.2	8.5	9.0	17.0	17.5	8.5	8.5
Belarus	13.8	29.4	0.002	0.004	9.2	18.6*	11.4	18.7*	2.1	0.2*
Georgia	8.9	32.5	16.9	42.1	7.5	8.9	17.6	12.5	10.1	3.6
Kazakhstan	18.0	33.5	27.2	42.1	n/a	n/a	n/a	n/a	n/a	n/a
Kyrgyz Republic	8.2	19.1	21.1	33.8	1.7	2.7	26.6	24.2	24.9	21.6
Moldova	25.5	40.1	42.0	52.4	13.2	12.0	19.3	14.1	6.0	2.2
Russia	20.7	49.5	33.4	61.7	4.0	9.2	10.7	15.7	6.7	6.5
Tajikistan	4.5	11.4	14.4	22.3	10.2	4.2	23.3	25.8	13.1	21.6

Note: * data for 2014

Source: World Bank (2016a)

However, private banks in the KR are well capitalized, with the capital to assets ratio averaging about 31.3 percent, whereas the average for the comparable group of countries is about 19.7 percent (fig.9).

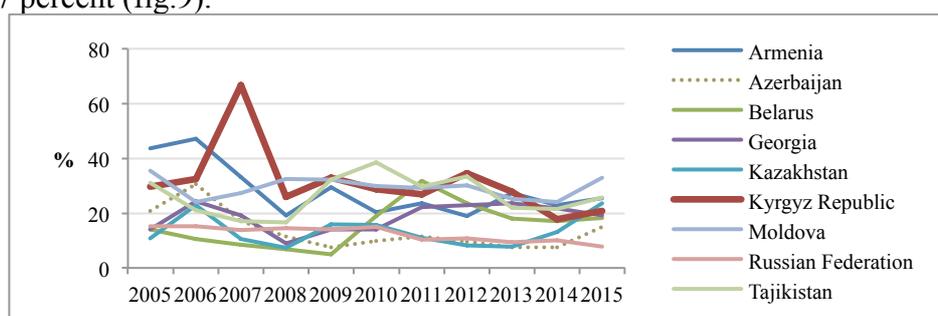


Figure 9. Bank liquid reserves to bank assets ratio in the KR and comparator countries (%)

Source: World Bank (2016a)

The discussion above indicates that the KR's savings have been the lowest comparing regionally, yet this does not imply that it is a binding constraint due to the following reasons: firstly, the data on saving rates may underestimate the true amount of savings because many people prefer to save their money abroad as they consider that it is safer than the KR; secondly, in theory (as stated by Hausmann et al, 2008), if inadequate access is a constraint, then changes in the interest rates should result in a substantial increase in investment.

However, in the case of the KR, there is no meaningful relationship between the real interest rates and investment shares in GDP over the last decade (the coefficient is small and statistically not significant, see annex 1, table 2). Thirdly, we do not observe high deposit rates driven by bank competition for deposits in order to fund profitable investment projects. However, the alternative explanation of high interest rate spread (as argued by Hausmann et al, 2008) could be high reserves ratio requirements. In the KR the required sum was 10 percent for liabilities in all currencies. Since 2015, the reserve requirements on liabilities in national currency is set at 4 percent and 12 percent on liabilities in foreign currencies, although this ratio is much higher than the corresponding 1 percent reserve ratio in developed countries.

Referring to the actions of firms assessed by the World Bank (2013), 40 percent of firms answered that they did not need loans and only 3.9 percent of firms were denied credit. However, 26.1 percent of surveyed firms identified access to finance as a major obstacle to growth, which is significantly higher than the average of the CIS countries (17.1).

Table 3. Access to finance as a constraint on firm growth in 2013 (percentage of firms)

<i>Countries</i>	<i>Proportion of loans requiring collateral (%)</i>	<i>Proportion funds financed internally (%)</i>	<i>Proportion of funds financed by banks (%)</i>	<i>Percent of firms identifying access to finance as a major constraint</i>	<i>Percent of firms not needing a loan</i>
<i>Armenia</i>	88.7	72.7	9.5	25.9	45.3
<i>Azerbaijan</i>	85.5	77.4	21.9	22.1	51.4
<i>Belarus</i>	84.6	78.2	14.3	16.3	41.5
<i>Georgia</i>	95.6	75.2	12.1	18.3	59.8
<i>Kazakhstan</i>	86.7	83.4	8.8	8.8	52.7
<i>Kyrgyz Republic</i>	89.5	80.1	8.7	26.1	40
<i>Moldova</i>	95.0	80.0	7.7	7.2	63.4
<i>Russia</i>	84.2	84.3	6.3	28.0	43.1
<i>Tajikistan</i>	91.8	73.9	5.1	22.6	56.1
<i>Uzbekistan</i>	96.5	82.3	12.0	5.2	74.7

Note: the latest available data for 2013

Source: the World Bank Enterprise Surveys (2013)

Perhaps, the most serious constraint to access to bank loans is the strictness of collateral requirements in the KR. As it is shown in the table above (see table 3), 89.5 percent of the firms that obtained loans from banks had to provide collateral, and as a result banks provided only 8.7 percent of funds (still remains lower than the average of the CIS countries 11

percent). Instead, most of the country's funds are provided by the internal sources of firms and individual entrepreneurs, which account for 80 percent.

Resuming, as we discussed before, the analysis shows that the savings are not considered as the binding constraint to growth in the KR. However, the high costs of finance in the country are driven by the lack of domestic funds, and the majority of loans require collateral, which makes it difficult to get financing from banks. Furthermore, the interest rate spread is a reliable indicator of financial intermediation, with high spreads indicating a less efficient financial system. The KR's interest has been the highest during the whole analyzing period. These facts do not reject the possibility that financial intermediation in line with the strict rules to get loans by firms are the binding constraint for the KR.

Is low social returns on economic activity a binding constraint to growth in the KR?

Following the structure we indicated before, that is moving downward the decision tree, we now proceed to analyze the social returns to economic activity in the KR, which could occur due to the poor geography (including natural resources), the lack of human capital or bad appropriate infrastructure. In regard to the geography and natural resources, they are not considered as binding constraints of growth for the country. As the country's central location makes it a major transportation corridor between Russia, China and other Central Asian countries and therefore its proximity to a neighboring market means that geography is not a major constraint for growth. Referring to the KR's natural resources, the country has significant fields of gold, coal, mercury and bismuth as well as small deposits of oil and gas resources. Therefore, the lack of natural resources cannot be considered as a binding constraint for the country. Nevertheless, the quality of services provided by transport and energy infrastructure might be binding constraints for growth, thus we further aim to assess quality and capacity of the country's infrastructure.

Transport infrastructure

Upon gaining independence, the KR's infrastructures have been considered positively, comparing to the other Former Soviet Union counties. Furthermore, several measures have been carried out regarding the quality of the roads. As for the quality of transport infrastructures, the KR was ranked in 122nd position out of 144 in 2009 and increased to 113th position out of 144 countries in 2015 (table 4). The quality of overall infrastructures is assessed at 96th position out of 144 in 2015, yet this rank is below the majority of comparator countries.

Table 4. *Quality of transport infrastructure*

Country	Quality of overall infrastructure		Quality of roads		Quality of railway infrastructure		Quality of air transport infrastructure	
	index	rank	index	rank	index	rank	index	Rank
Armenia	61	4.4	80	3.7	68	2.6	72	4.3
Azerbaijan	47	4.8	69	4	37	3.8	44	5
Georgia	54	4.6	65	4	33	3.9	84	4.1
Kazakhstan	62	4.4	113	3	28	4.2	85	4
Kyrgyz Republic	96	3.6	123	2.7	67	2.6	123	3.2
Moldova	86	3.8	140	2.1	61	2.8	102	3.7
Russia	74	4.1	124	2.7	26	4.3	79	4.1
Tajikistan	107	3.4	109	3	53	3	91	4

Source: *Global Competitiveness Report (2016)*

In addition, several projects have been funded by the international and donor organizations. One of the most important and still active projects is CAREC, which aims to improve main regional roads and build an international transport corridor connecting with China and other Central Asian countries. It is expected that the realization of transport infrastructure projects will facilitate domestic and international trade and reduce transportation costs in the country. A good transport infrastructure may contribute to strengthen a regional cooperation, increasing the competitiveness of the country and facilitating the access to international markets. However, it does not mean that these improvements will bring good enough conditions for economic growth, as it needs a complex approach, and other measures should be taken. Thus, bearing in mind the KR's excess capacity at present and the country's tendency to improve the quality of roads according to the international ranking of the Global Economic Forum and the results of BEEPS surveys, transport infrastructures do not appear as a binding constraint of growth for the KR.

In regard to the energy infrastructures, the KR has the second richest hydro resources in Central Asia (followed Tajikistan), with a high hydro energy potential. Yet, the KR's energy sector faces difficulties related to its low productivity and efficiency. The low productivity of the energy sector is driven by the lack of investment in the sector and ineffective management rather than the deficit of water resources. In this context, ADB (2014) reports that the KR's hydropower potential is estimated to be 150.000 mln kWh, but the country uses only 10 percent of its potential. The KR has one of the lowest electricity output (15 billion kWh) comparing to the average of the CIS countries (21 billion kWh) The electricity output is

slightly higher than that of Armenia, Georgia and Moldova, but significantly lower than that of Kazakhstan, Belarus and Azerbaijan (Index Mundi, 2014).

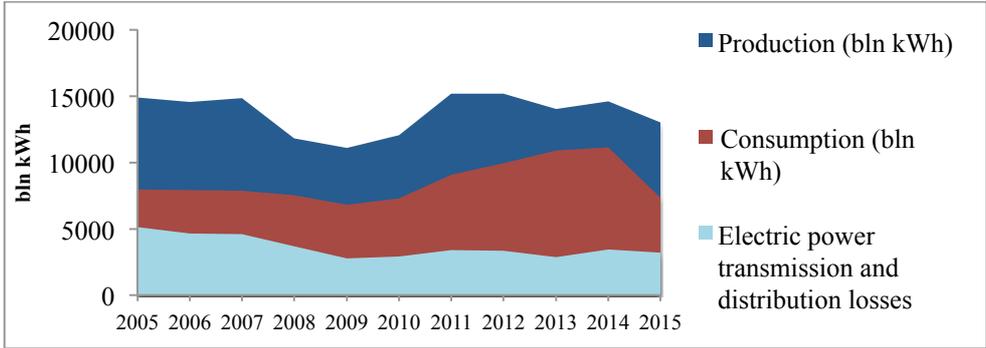


Figure 10. Electricity production, consumption, losses in the KR
 Source: World Bank (2016a); Index Mundi (2014)

Inefficient use of its hydro potential is caused by two factors: firstly, as the only (documented) source of electricity production are hydro resources, and the level of water in Toktogul Reservoir (main electricity production station in the KR) varies significantly from season to season, year to year, depending on weather conditions. Therefore, during the wintertime, water releases are low and demand is high, and the country has to import coal, oil and gas to sustain the power supply²⁷. Secondly, the key constraint to productivity and efficiency of the sector is the existing outdated generation assets that have not been changed since the Soviet period. The average age of generation equipment was estimated at 35 years in 2015, and only 11 percent of the equipment has been in use for less than 20 years. More than half of the transmission equipment is aged 20 years, and more than 5 percent is aged 45 years (ADB, 2014). The outdated generation assets and long years of exploitation have resulted in very high technical losses (see fig. 10). The losses of the energy sector comprise more than a fourth of its production (2005-2015) and it is the highest comparing to the comparator countries. For instance, Russia shows 10.9 percent for the same period, Kazakhstan 8.9 percent and Tajikistan 16.5 percent.

Furthermore, as it can be seen in table 5, the percentage of firms that identified electricity as a major constraint for the business is the highest (34.9), comparing with the CIS countries. The duration of the electricity outages is significantly high (2.1 hours), and the number of electrical outages per month (0.9) is two times higher than in the comparator countries (except Tajikistan and Uzbekistan). In addition, the quality of electricity supply is also low, scoring 2.9 out of 7, leaving it in the 115th position out of 144 countries (Global

²⁷ For more discussion see ADB (2014)

Competitiveness Report, 2016). In a comparison with the chosen comparator countries, the KR has a very low score, while others reach 4.9 on average (except Tajikistan).

Table 5. Energy sector as a constraint on firm growth (percentage of firms)

	<i>Number of electrical outages in a typical month</i>	<i>Duration of a typical electrical outage (hours)</i>	<i>Losses due to electrical outages (% of annual sales)</i>	<i>Percent of firms owning or sharing a generator</i>	<i>Days to obtain an electrical connection (upon application)</i>	<i>Percent of firms identifying electricity as a major constraint</i>	<i>Quality of electricity supply (1–7 (best))</i>
<i>Armenia</i>	0.3	0.3	0.1	9.7	4.8	7.9	5.1
<i>Azerbaijan</i>	0.6	0.4	0.1	22.9	4.0	0.7	4.9
<i>Belarus</i>	0.1	0.2	0.1	7.0	21.6	13.4	n/a
<i>Georgia</i>	1.0	0.7	0.5	28.6	8.7	31.1	5.2
<i>Kazakhstan</i>	0.5	1.0	0.4	15.7	31.6	14.7	4.7
<i>Kyrgyz Republic</i>	0.9	2.1	2.3	39.1	54.6	34.9	2.9
<i>Moldova</i>	0.3	1.3	0.2	7.5	10.5	19.7	4.4
<i>Russia*</i>	0.3	0.9	0.2	8.9	120.4	23.1	4.8
<i>Tajikistan</i>	6.1	3.9	4.4	33.3	19.2	26.8	2.6
<i>Uzbekistan</i>	5.7	1.8	2.2	5.1	6.2	11.8	n/a

*Note: *survey results for Russia is available only for 2012*

Source: The World Bank (2013)

The results of international assessments of the energy sector can be explained by the lack of technical support of the generation assets since the country's independence. The latest reports of the World Bank estimated that an investment of 865 million US dollars is needed to rehabilitate the assets and increase the capacity and reduce the losses of the energy sector in the KR. The energy sector's financial performance remains poor including its accumulated debts over the last periods. There is a high risk of collapse of the existing outdated equipment, and if this takes place there could be strong negative consequences for the country. In order to prevent the collapse and to increase the efficiency of the sector, a considerable amount of physical and financial capital is urgently needed. Therefore, based on the discussion above, which presents the unreliability of the sector and its importance for the businesses of the KR, we consider that it is a binding constraint of growth in the KR.

Human capital

The availability of qualified human resources is one of the key components of any growing economy. In the case of the KR, the lack of skilled human capital could be a possible constraint of growth. According to the estimations of ADB (2014), the country's labor productivity is one of the lowest in comparison with the CIS countries. The low labor productivity of the country is determined by numerous factors. Firstly, the majority of labor force is concentrated in low-productivity sectors. This is a general pattern in the CIS

countries, where agriculture and services are considered to have lower labor productivity than manufacturing²⁸. Secondly, it is caused by the lack of skilled labor force, despite the fact that more than 70 percent of the working-age population has a secondary education, and only 19 percent has a tertiary education. (see fig.11).

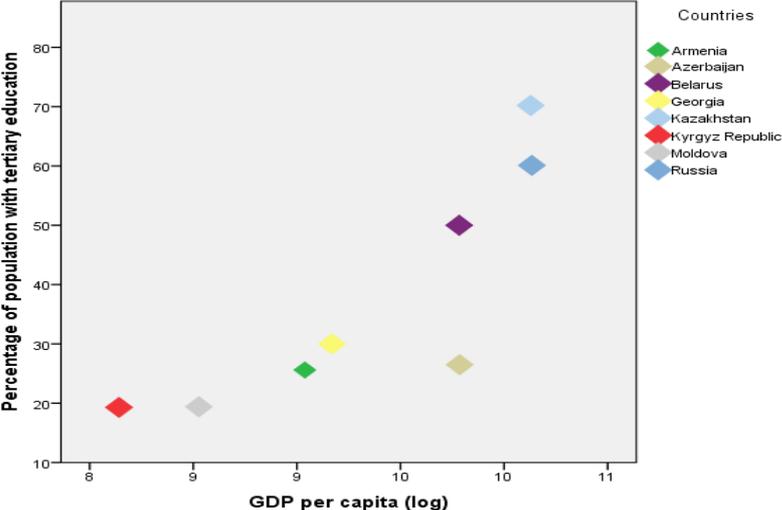


Figure 11. Tertiary education levels vs GDP per capita in the KR and comparator countries
 Note: data on the share of population with tertiary education for Tajikistan, Turkmenistan and Uzbekistan is not available.
 Source: ILO (2016); World Bank Indicators (2016a)

Although the share of labor force with tertiary education is the lowest among the comparator countries, it is significantly lower than that in Russia (60.1 percent), Kazakhstan (70.2 percent) and Belarus (50 percent). The shortage of qualified workers is consistent with the trends in the employment and wages. The employment levels for the people with complete secondary education is low (4.5 percent), with tertiary education (5.2 percent), and the overall level is 8.6 percent. Furthermore, the KR’s average monthly wage of labor force with a tertiary education is 2.4 times higher than that with only a primary education, and 2.1 times higher than those with only a secondary education²⁹. The gaps between salaries due to the level of education are significantly higher than in Armenia and Russia. These results are also in line with the World Bank’s (2013) survey results, indicating 'inadequately educated workforce' as one of the binding constraints for local firms. 33.5 percent of firms identified the lack of qualified workers as a major constraint, and this percentage is the highest compared with the comparator group of countries (see Figure 12).

²⁸ For more details see Mitra. (2008)
²⁹ ADB (2014) provides the estimation results for the KR. The estimated the Mincerian earning equation which provides an explanation for the differences in earning levels by the number of years of schooling, work experience.

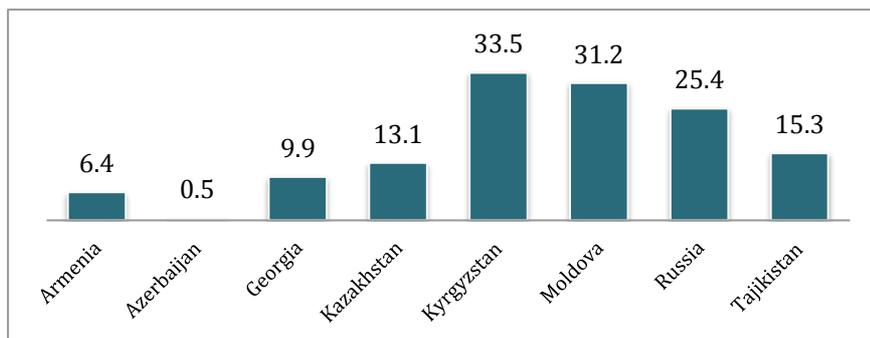


Figure 12 'Inadequately educated workforce' as a constraint on firm growth in the KR and comparator countries (percentage of firms).

Source: World Bank (2013)

As it can be observed from table 6, in comparison with the comparator group of countries, enrolment in primary school is at the average level, while enrolment in secondary level is slightly lower. Enrolment in tertiary education level is not the worst in the region, but it is still lower than the enrolment rates in Russia and Armenia. This implies that the KR has a sufficient number of labor force, and it is higher than Azerbaijan, Georgia and Tajikistan, but significantly smaller than Russia, Kazakhstan and Armenia. Thus, the enrolment rate is not binding for the country, as it has a sufficient number of skilled workers. The problem is related to its quality and the qualification of workers.

Table 6. Quantitative and qualitative assessment of the education system in the Kyrgyz Republic and CIS countries

Country	Quality			Enrolment rate, gross %		
	Primary education	The educational system	Maths and science education	Primary	Secondary	Tertiary
Armenia	3.7	3.5	4.2	84.1	95.9	46
Azerbaijan	3.1	3.1	3.3	89.1	100.3	20.4
Georgia	3.5	3.2	3.4	98.3	86.8	27.9
Kazakhstan	4.1	3.6	4.1	85.6	97.7	44.5
The Kyrgyz Republic	3	2.9	3	90.5	88.2	41.3
Moldova	3.8	3.2	4	87.9	88.2	40.1
Russia	4.2	3.5	4.3	96.2	95.3	76.1
Tajikistan	3.7	3.8	3.8	98.4	87	20.5

Source: Global Competitiveness Report (2016)

In accordance with the reports of the Global Competitive Forum (2016), the quality of the educational system of the KR is weak, with the country's ranking 123rd out of 144 countries. Furthermore, the country's educational system is low when compared internationally. The country has the lowest score (2.9 out of 7) among the comparator countries; this score is significantly lower than the scores of the CIS countries, e.g. Kazakhstan 3.6; Russia 3.5 and

Armenia 3.5 (see table 6). Furthermore, the other comparator countries demonstrate better quality of primary education, math and science education and the overall educational system. The interpretation is that the country has a sufficient number of qualified workers, but they are not satisfied with the quality of their education level. This could explain the higher level of investment in staff and training in the country. The KR's score on the local availability of specialized research and extent training services is at the average level compared to comparator countries and the country is ranked 110 out of 144 countries (see figure 13).

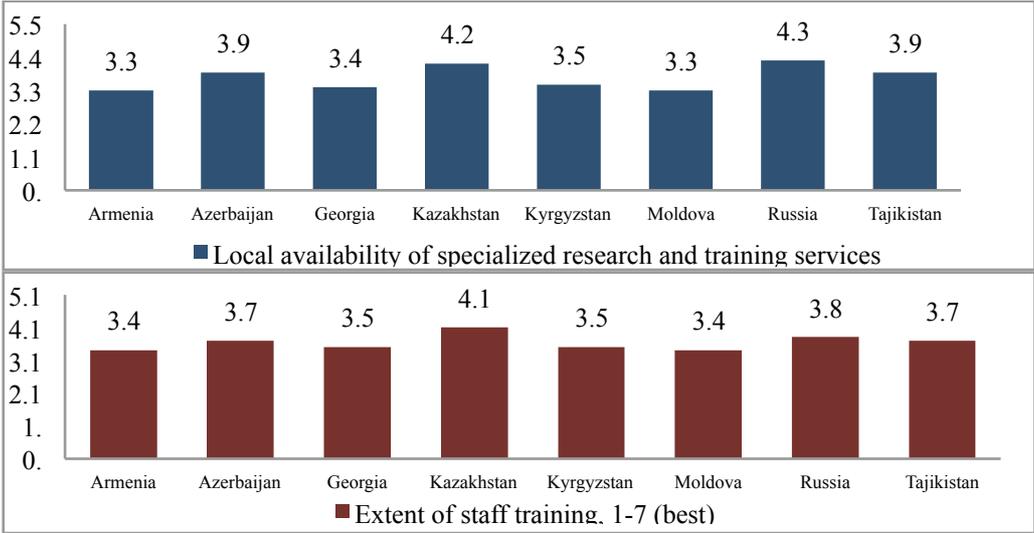


Figure 13. Research and training services in the KR and comparator countries
 Source: Global Competitiveness Report (2014)

The third (possible) explanation for low labor productivity could be the preferences in study programs of the youth in the KR. As the youth in the country prefer to study economics, law, commerce and business, there is a significant lack of students who are willing to study technical professions, mechanics, engineering etc. Therefore, there is a big mismatch between the available labor force and the required labor force with particular qualifications.

Summing up, the KR's labor productivity has been the lowest comparing to its regional peers, a low labor productivity is caused by a variety of factors: low productivity of the sectors, where the majority of the labor force is engaged (agriculture and services); low quality of overall education system; a large mismatch between the labor supply and demand; However, bearing in mind that the country shows the enrolment rates above the comparator countries, the highest level of investment in training, and a relatively good score in the availability of research and trainings we conclude that the lack of human capital is not a

binding constraint at the current time. Yet, if the required measures to increase the quality of education will not be taken, it can become a critical constraint in the future.

Is government failure a binding constraint to growth in the KR?

Macro risks

Macro risks matter when the government's ineffective macro policy leads to enhanced probability that the country will face macro instability and macro crisis in the long term. If potential future macro risks are considerable, this may depress private investment, as investors are unwilling to invest in the economy. In this regard, Hausmann et al (2005) argue that macroeconomic instability is caused by high fiscal deficit, high volatility of inflation and exchange rates. Following their arguments, we review the fiscal account and monetary stability in the KR and make a comparison with its regional peers.

In the fiscal front, fig.14 shows the difference between the government revenue/expenditure of the country and the fiscal balances in the comparator countries. The government's revenue has been between 14-17 percent as a share of GDP over the analyzing period (except 9 percent in 2010 caused by political instability). Since 2010 the government revenue has increased due to the improved tax administration in the country and the expansion of international trade. At the same time, after the overthrow of the previous government in 2010, the country performed fiscal adjustments through across-the-board expenditure cuts. The government reduced spending on strategic priorities such as irrigation networks, energy and transport infrastructures, education, and health services (ADB, 2014). These adjustments lead to the small improvements in fiscal deficit over the last years (see fig. 14). Nevertheless, the KR's fiscal deficit level over the analyzing period has been higher than those in the majority of comparator countries, except Georgia and Armenia during 2005-2010. Yet, the country has a sustainable tendency to decrease its deficit, and much of it is associated with the decreased expenditure rather than the increased revenue. Regardless of the higher level of fiscal deficit comparing regionally, given the criteria of stability, the KR's fiscal balance does not appear volatile over the period, its volatility is at the average of its regional peers³⁰.

³⁰ We calculated relative volatility (measured by the coefficient of variance) of fiscal balance of the countries presented in fig. 14, the results are following: Armenia 0.38; Azerbaijan 2.35; Georgia 0.16; Kazakhstan 0.81; the KR 0.45; and Uzbekistan 0.39;

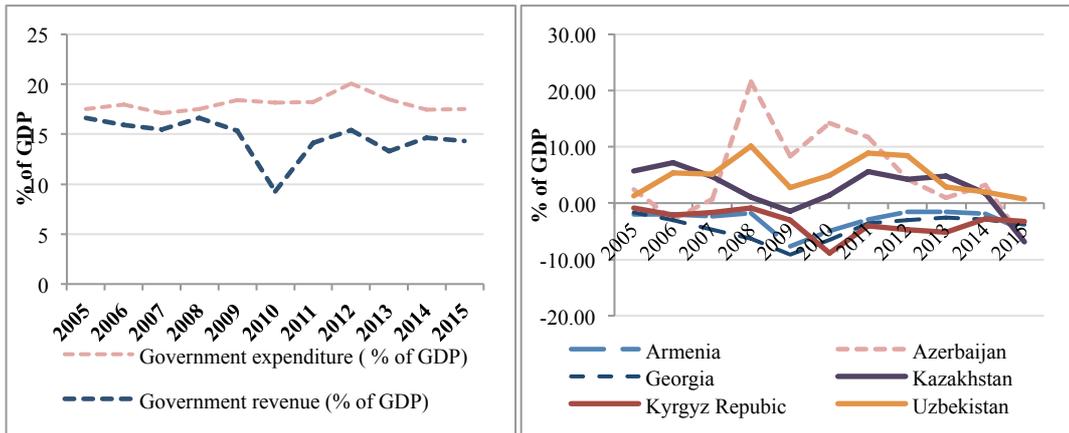


Figure 14 Fiscal balance of the KR and comparator countries

Note: data on fiscal balance with respect to the CIS countries is available only to the countries presented in the figure

Source: IMF (2016)

In the monetary and exchange rate side, fig. 15 shows that the inflation rate in the country during the analyzing period has been at the average level of the comparator countries (9.01 percent in the KR and 9.19 percent the CIS countries). Bursts of inflation in 2008 and 2011 were attributed to the adverse effect of the world’s financial crisis of 2008 and the presence of high political instability, as we mentioned several times before. Furthermore, the domestic price level is highly responsive to external shocks and monetary trends in Russia and Kazakhstan. Fig. 15 shows that the inflation rates path of the KR replicates inflation trends of Russia and Kazakhstan³¹. Lastly, our assessment is consistent with the analysis of ADB (2014) which reports that monetary trends in the KR remain relatively stable comparing to the CIS countries and close to the level of its regional peers.

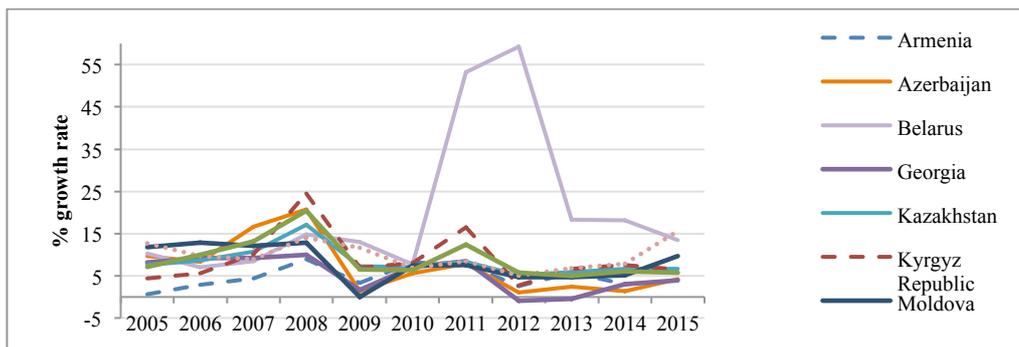


Figure 15. Inflation rates % change to the previous year in the KR and comparator countries (LCU per US\$, monthly 2005-2015)

Source: World Bank (2016a)

³¹ Firstly, both countries are main trade partners and share of trade consists about 47 percent of total trade operations. Secondly, due to remittances inflows’ the NBKR (2016) reported that by the end of 2015, 95.8 percent of all migrants work in Russia and Kazakhstan; and personal remittance inflows to the KR reached 25.7 percent of GDP in 2015 (nominal values 1,987,703.92 USD (World Bank, 2016a).

Regarding the exchange rate volatility comparing with the comparator countries, it does not appear to be excessive in the KR (see fig.16, and for the exchange rate volatility in the CIS countries see annex 2). The main contribution to the exchange rate increase in 2009 was driven by the consequences of the world’s financial crisis and 2015 was determined by the appreciation of the US dollar against the world currencies, and extreme devaluation of the ruble (Russian currency) and the tenge (Kazakhstan’s currency). Therefore, in terms of stability criteria, the monetary and exchange rates are not considered to be a binding to growth in the KR.

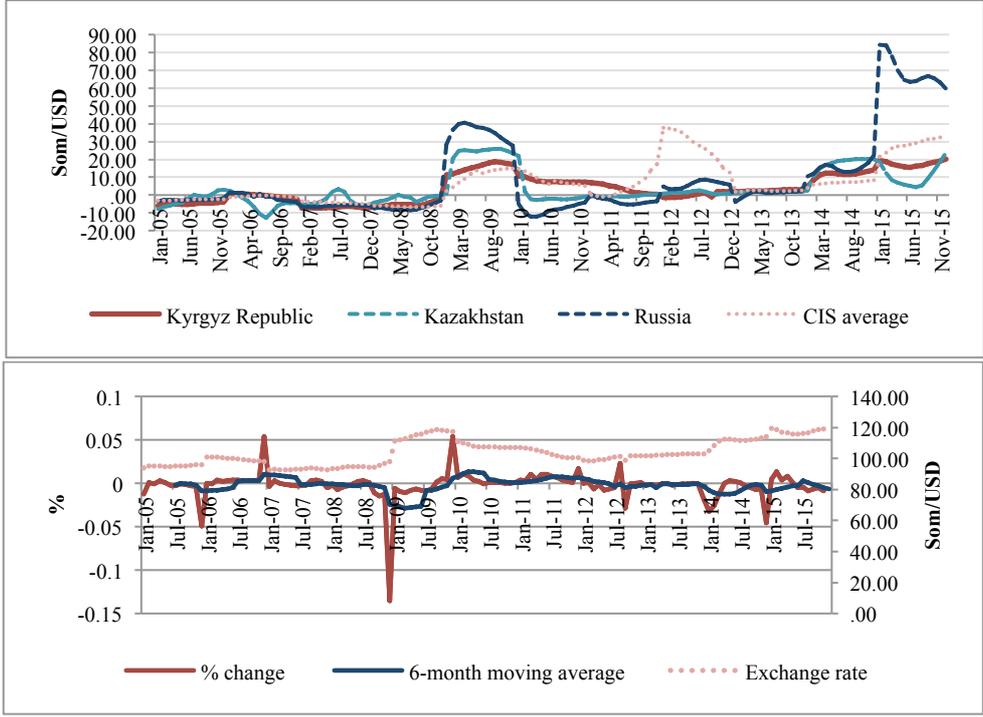


Figure 16. Exchange rate, as % of the corresponding period of the previous year in the KR (LCU per US\$, monthly 2005-2015)
 Exchange rate volatility in the KR (2005-2015)
 Source: CIS statistics (2016)

Summing up, following the criteria of stability in fiscal and monetary areas, based on the brief discussion above, we consider that macroeconomic instability does not appear to be the most binding constraints of growth in the KR. Nevertheless, the in the fiscal area, the allocation of government spending and its quality is not satisfactory. By saying this we are referring to the fact that the government considerably declined the spending in strategically priority sectors: energy sector and education system. Therefore, we suggest that more fiscal adjustments are needed to increase the allocative quality and efficiency of the government expenditure. In the monetary area, despite a relative stability of prices and exchange rate, it is important to highlight a high sensitivity of domestic prices to external shocks signals about

the fragility of monetary sector, the government should focus its policy in enhancing the resilience of its financial sector to external shocks.

Micro risks

Microeconomic risks may occur due to high taxation rates, ineffective tax management, difficulties in obtaining licenses and permissions, high corruption or weak protected property rights. In the case of the KR, some of these micro-risks are potential binding constraints of growth. The first risk attributed to the taxes can be excluded from the list of potential constraints; we argue that the tax rates are not likely to be a binding constraint to growth for the KR. As it is seen in table 7, tax rates in the country are low comparing to its regional peers. Tariff rates (percentage) are considerably lower than the average of the CIS countries. Income tax rates are the lowest in the region, the same as in Kazakhstan and Turkmenistan, while the highest rate is 26 percent in Armenia. Corporate tax rate is the third lowest compared to other comparator countries.

Table 7. Tax rates in the Kyrgyz Republic and CIS countries, 2015

<i>Countries</i>	<i>Profit tax (%)</i>	<i>Labour tax and other contributions (%)</i>	<i>Other taxes (%)</i>	<i>Total taxes (%)</i>	<i>Tariff rate (%)</i>	<i>Income tax rate (%)</i>	<i>Corporate tax rate (%)</i>
<i>Armenia</i>	19.5	0	0.8	20.4	2.3	26	20
<i>Azerbaijan</i>	12.9	24.8	2.1	39.8	4.5	25	20
<i>Belarus</i>	11.9	39	1	52	2	12	18
<i>Georgia</i>	14.3	0	2.1	16.4	0.7	20	15
<i>Kazakhstan</i>	15.9	11.2	1.5	28.6	3	10	20
<i>Kyrgyz Republic</i>	6.4	19.5	3.1	29	2.4	10	10
<i>Moldova</i>	9.3	30.2	0.2	39.7	2.6	18	12
<i>Russia</i>	8.4	35.4	5.1	48.9	5	13	20
<i>Tajikistan</i>	17.7	28.5	34.8	80.9	5.2	13	15
<i>Uzbekistan</i>	12.1	28.2	1.9	42.2	5.1	22	9

Source: The World Bank (2013)

In a comparison with the comparator countries, the KR demonstrates the lowest profit tax rates in 2015; with respect to labor tax rate it is the second lowest (19.5 percent), followed by Kazakhstan (11.2 percent). The overall tax rate, as indicated above, is the fourth lowest out of the given CIS economies; the rate is considerably lower than the average tax rate (39.8 percent) of the comparator group of countries. Furthermore, the share of firms identified high tax rates as a major constraint to growth is 28.9 percent, while in Armenia (36.9 percent), Russia (59.1 percent) and Tajikistan (31 percent), this number is considerably higher. Thus, it is considered that taxes are not likely to be a restricting factor to growth in the KR.

Furthermore, the several aspects of the regulatory apparatus, namely tax administration, customs and trade regulations, business licensing and permits are not identified as a major constraint of growth. According to the World Bank’s survey (2013), 0.5 percent of firms identified tax administration, 1.6 percent identified customs and trade regulations, and 1 percent identified business licensing as major constraints to growth (see fig. 17).

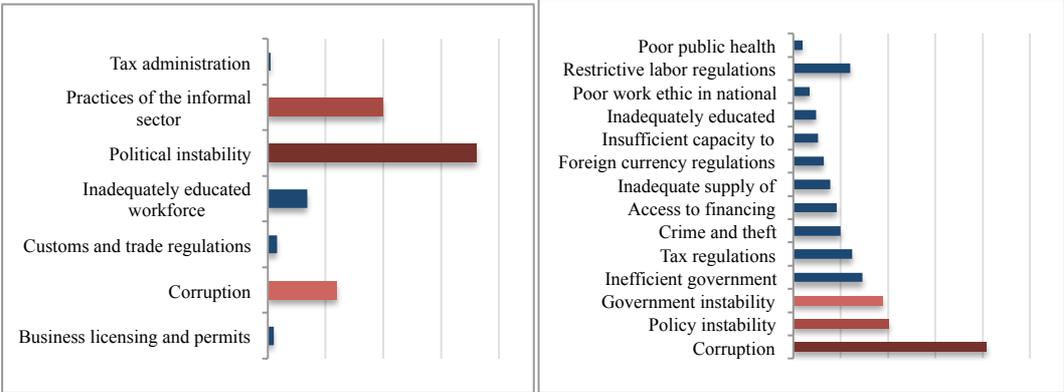


Figure 17. Binding micro-risks constraints to growth in the KR
 Source: World Bank (2013)

Referring to the most problematic factors for firms’ growth in the KR, 36.1 percent of firms identified political instability, 20 percent identified practices of the informal sector, and 12 percent identified corruption as a major obstacle to growth. These three constraints together present the institutional framework and functioning of the law system in the KR and in total 68.1 percent of firms. We review each constraint in our further discussion.

In regard to political instability, there are two aspects. Firstly, frequent changes in law and bylaw. The law system is experiencing considerable changes every time with the change in the government, this was the case after political overthrows in 2005 and 2010, when the KR’s government made changes in the constitution. Furthermore, the KR frequently amends the important economic laws (for instance the frequent changes in the Law for Value added taxes, Profit taxes), which demonstrates the unpredictability and uncertainty in the law. Secondly, the political revolutions of the 2000s³² mentioned above, resulted in destroying and closing of companies operating in the country, and a majority of enterprises were not able to recover and had to close. These results could be also confirmed by the assessment of the World Bank, the political stability and absence of violence index ranked the KR as the lowest

³²The main causes of both revolutions were a strong dissatisfaction of people with the government regimes of Presidents as Akaev and Bakiev. Many observers believed that the government crisis in the Kyrgyz Republic in 2005 was caused by the following factors: the difficult economic situation of the population, and conflicts between the 'wealthier north' and the 'poor south' exacerbated the dominance of 'northerners' in power and control. The causes of the second revolution were the very low standard of living, the ongoing struggle for power between the Kyrgyz clans of the north and south of the country, and the increase in the prices of some goods and services, such as electricity, gas and mobile services.

during the period of 2005-2015 (18.7), and it remains the lowest comparing to its regional peers having the value 18.6 in 2015 (see fig. 18)

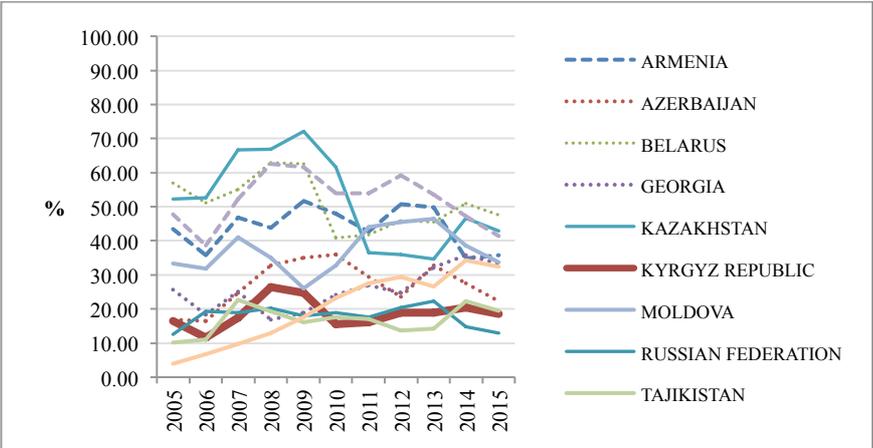


Figure 18 Political Stability, No violence indicator *in the KR and comparator countries* (percentage ranges from 0 (lowest) to 100 (highest) rank)
 Source: World Bank (2016b)

In terms of the second major constraint for firms – widespread practices of the informal sector (20 percent of firms). Different sources of estimates provide different values, for instance, the official statistics of the KR estimates the size of the informal sector, excluding agriculture at 19.9 percent of the GDP in 2012. However, ADB (2014) assessed the KR’s informal sector at 50-80 percent of the GDP, another estimates indicate that the informal economy accounts for more than 50 percent of the country’s GDP³³. Such a high share of the informal economy in the country’s GDP is determined by the difficulties in registering and measuring economic activity and tax evasion. Furthermore, according to ADB (2014) informal activities are common in cross-border trade, as it is evidenced by the large mismatch between the official statistics of the KR and the ‘mirror statistics’ reported by China³⁴. Furthermore, the informal businesses have the lowest productivity rates; as these small-size firms prefer to stay ‘invisible’ to avoid the attention of the government bodies and therefore limiting their abilities to implement new technologies and new business practices; the labor force engaged in the informal sector is paid considerably less, and they work in poor working conditions.

³³ Due to the lack of recent data on the size of informal sector in the KR, we analyze it based on the recent available data and qualitative assessment of the ADB (2014) and Central for International private Enterprises (2011)

³⁴ As it was mentioned before, import and reexport operations are the most increasing sector of services in the KR. Trade liberalization make the country a major ‘corridor’ of trade between China and other Central Asian countries.

In regard to the third obstacle, a large body of international assessments supports a point of view that, the KR's economy is hampered by widespread corruption. According to Business Environment and Enterprise Performance Survey (2013), 61.2 percent of respondents identified corruption as a major constraint for business, which is the highest percentage compared to its regional peers (Georgia - 2.9 percent, Kazakhstan - 19.6 percent, Russia - 33.1percent). Furthermore, 51.3 percent of firms identified that they expect to give gifts to public officials 'to get things done', while the average of the CIS countries is 13.8 percent. According to the same survey, 59.6 percent of the firms identified that bribes are required to obtain operating licences from the government, while the average of the CIS countries is 15.7 percent (see table below).

Table 8. Corruption as a constraint on firm growth (percentage of firms)

Country	Bribery incidence (% of firms experiencing at least one bribe payment request)	Bribery depth (% of public transactions where a gift or informal payment was requested)	% of firms expected to give gifts in meetings with tax officials	% of firms expected to give gifts to secure government contract	% of firms expected to give gifts to get an operating licence	% of firms expected to give gifts to public officials 'to get things done'	% of firms identifying corruption as a major constraint
Armenia	7.1	6.1	4.6	2.7	10.6	4.6	13.5
Azerbaijan	15.3	13.2	11.8	49.9	38.8	6.8	4.7
Belarus	8.9	4.4	3.4	17	1.4	13.2	10.2
Georgia	2.2	1.3	0.2	1.1	0	1.9	2.9
Kazakhstan	26.7	22	22.3	19.1	15.8	20.4	19.6
Kyrgyz Republic	59.8	53.6	54.8	55.1	59.6	51.3	60.2
Moldova	30.9	22.2	13.5	10.8	22.1	16.4	37.8
Russia	14.2	9.7	7.3	30.9	12.6	20.5	33.1
Tajikistan	36.3	29.6	31.9	33.6	28.7	37.2	23.7
Uzbekistan	7	4.5	2.4	8	11.3	3.5	6.1

Source: The World Bank (2013)

Similarly, the Transparency International's Corruption Perceptions Index (2016) ranked the KR 136th out of the 176 countries and territories assessed. Corruption in the country is widespread and the KR's score on corruption index is the fourth highest in the region and slightly lower comparing to Turkmenistan and Uzbekistan (see figure 19).

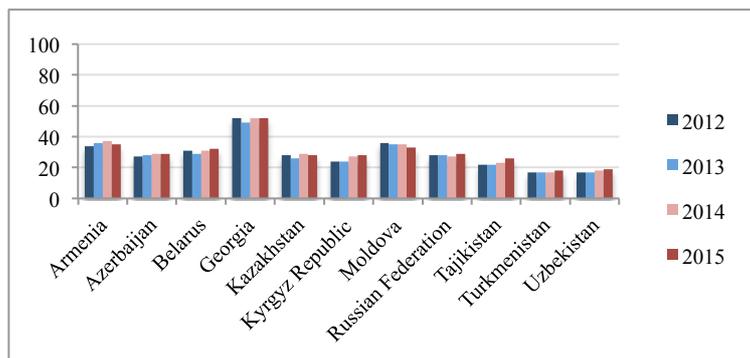


Figure 19. Corruption Perception Index in the KR and comparator countries, 2015 (1–100 (less corrupted)).
Source: Transparency International (2016)

Likewise the previous assessments of corruption in the country, the World Bank (2016b) scored the KR at 11.5 for control of corruption in 2015, which is still one of the lowest scores among the CIS countries (see fig. 20). Comparing the current score to its level in 2005 (10.8), the country has not made any meaningful progress against corruption.

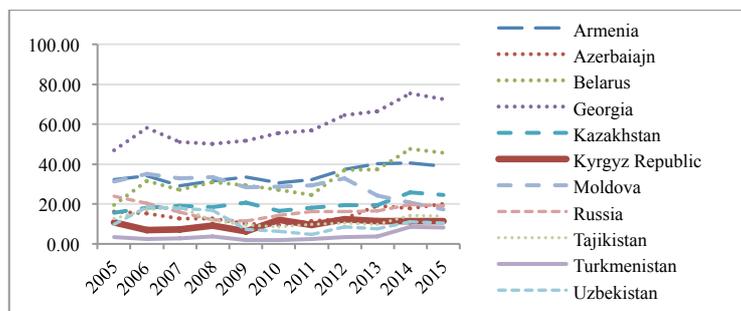


Figure 20. Control of corruption in the KR and comparator countries
Source: World Bank (2016b)

Furthermore, the Transparency International (2014) reported that the judiciary system and law institutions are highly corrupt and not independent. It assesses the judiciary system as the weakest and the most corrupt state institution of the country. According to the Economic Freedom Network, the country has the second lowest judicial independence in a comparison with other comparator countries in the region. ADB (2014) reports that the efficiency of the judicial system has worsened the public trust in it and more than 30 percent of respondents identified that the judiciary system is a problem for their business and 35 percent indicated that they were ready to bribe the judge if it is necessary. The weak and corrupt judiciary system and the results of surveys indicate that firms in the country without political protection are forced to sell their business at a very low price to the politically connected.

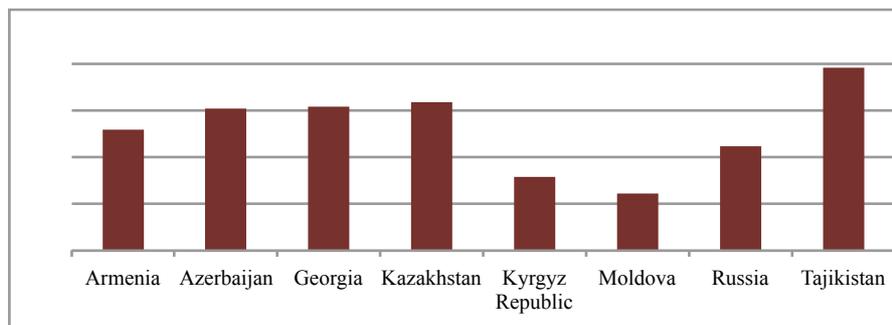


Figure 21 Juridical independence, the KR and comparator countries
Source: Transparency International (2015)

In addition to the corrupt judiciary institutions, poor protected property rights significantly hamper investment climate of the country, as local and international firms are not willing to invest in the conditions of insecure property rights. According to the latest data of the Global Competitiveness Report, the country's property right protection is scored at 3.2, ranking 125th out of 144 economies, and the intellectual property protection for the same period of time is 2.6, ranking 130th out of 144 countries. Both indicators are the lowest compared to the comparator countries, with the exception of Moldova (table 9). Corresponding to the data of the World Bank, the KR scored as one of the lowest on CPIA property rights and the rule-based governance rating over the 10 years from 2005 until 2014, achieving 2.5 out of 6, while Armenia and Georgia scored 3.5 for the same period. The same results give the latest data of the Heritage Foundation, and the KR obtained 20 out of 100 scores, and still has the lowest score.

Table 9. Property rights

Country	Intellectual property rights		Property rights		
	score	rank	score	rank	(1-100 (best))
Armenia	3.5	84	4.2	67	20
Azerbaijan	3.5	80	3.8	91	20
Georgia	3	106	3.9	85	40
Kazakhstan	3.7	74	4.1	70	25
Kyrgyz Republic	2.6	130	3.2	125	30
Moldova	2.8	118	3.2	126	40
Russia	3	107	3.3	120	20
Tajikistan	3.7	67	3.9	87	20

Source: Global Competitiveness Reports (2016), The Heritage Foundation (2014)

Resuming, based on the international assessment of micro risks in the country, we consider that the KR shows relatively good results only in tax management and tax rates, and consequently they are not considered as binding constraints for the KR. However, the results represents that the most problematic factors are a widespread practice of the informal sector,

high corruption, poorly protected property rights, low judicial independence. Thus, based on the discussion above, we consider that the micro risks (except taxes) are likely to be the most binding constraints of growth in the KR.

3.6. Conclusions

The purpose of this paper has been to identify the binding constraints to economic growth in the KR by applying the growth diagnostic framework. The approach is contrary to the prevailing Washington Consensus approach that the KR implemented after its independence. In order to identify the country-specific constraints to growth, a comparison has been made with the other CIS countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan) and the analysis focuses on the period of 2005-2015.

In general, our assessment indicates that the functioning of the legal and regulatory institutions are the most binding constraints to growth. The failure of well functioning institutions affect every part, as any economy, without required protection and well functioning system cannot ignite growth. The majority of firms point out that the widespread practices of the informal sector, the insufficient independence of court system, high corruption as well as political uncertainty are the major constraints of growth. Therefore, from the general point of view, the institutional failure of the government is considered as a key constraint in the KR.

Furthermore, a limited access to domestic financing is considered as a second binding constraint to growth. The costs of domestic funds are identified as very high due to the lack of domestic financing. In addition, the international surveys represent similar results, as more than a quarter of firms identified access to finance as the major constraint for their businesses. The results show that obtaining finance is complicated not only due to the high lending rates and scarcity of financial resources, but also due to the collateral needs and other regulations that make difficult for firms to get financing from the banks.

Lastly, despite the fact that the KR is marked by the presence of rich water resources and high hydro potential, the energy sector faces a number of difficulties related to the low productivity, outdated equipment from the Soviet Union period, a shortage of qualified workers. These difficulties resulted in increased electricity losses with a strong negative impact on business. The estimates of international surveys show that an unreliable electricity supply is a strong obstacle for firms' growth.

Concluding, we argue that the implementation of only a legal framework by adopting new laws to change the existing ones is not a sufficient measure; the legal framework must be consistent with the actual situation and should be proceeded in line with an enhancement of independent courts and effective regulatory institutions. The independent and credible institutions will increase public trust in the government, may promote incentives for long-term private investment, and also may create incentives for the informal firms to operate legally.

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Annex 1

Table 1. Correlation between GDP annual growth (%) and Total Investment Share in GDP (%)

Countries	1991-2015
Armenia	0.41*
Azerbaijan	0.42*
Belarus	-0.52**
Georgia	0.73**
Kazakhstan	0.02
Kyrgyz Republic	0.65*
Moldova	-0.05
Russian Federation	-0.52**
Tajikistan	-0.55*
Uzbekistan	0.09

Note: the coefficients of correlation for Moldova and Georgia are calculated since 1996 due to data availability.

** and * denote to the 1% and 5% level of significance, respectively

Source: the World Bank (2016); the IMF Cross Country Macroeconomic Statistics

Table 2. Correlation between real interest rates (%) and total investment share in GDP (%)

Countries	2005-2015
Armenia	-0.34
Azerbaijan	-0.19
Belarus	-0.02
Georgia	-0.65*
Kyrgyz Republic	0.46
Moldova	-0.10
Russian Federation	-0.64*
Tajikistan	-0.29

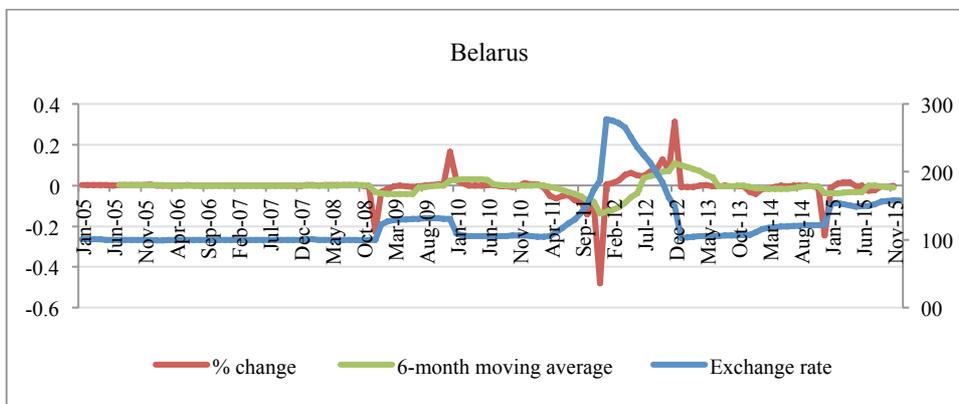
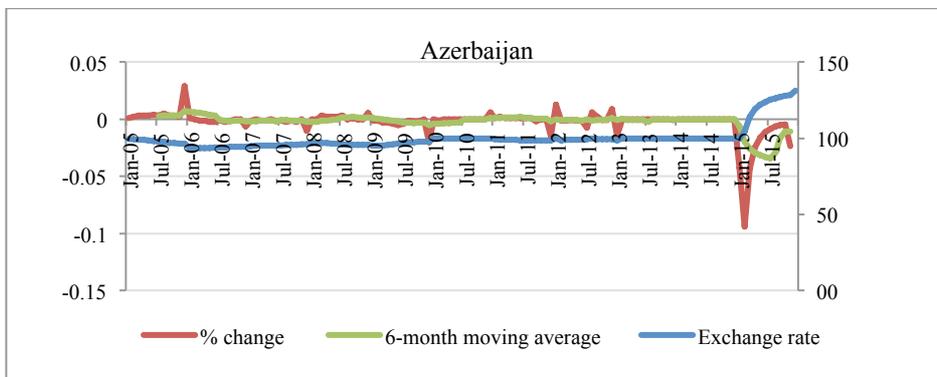
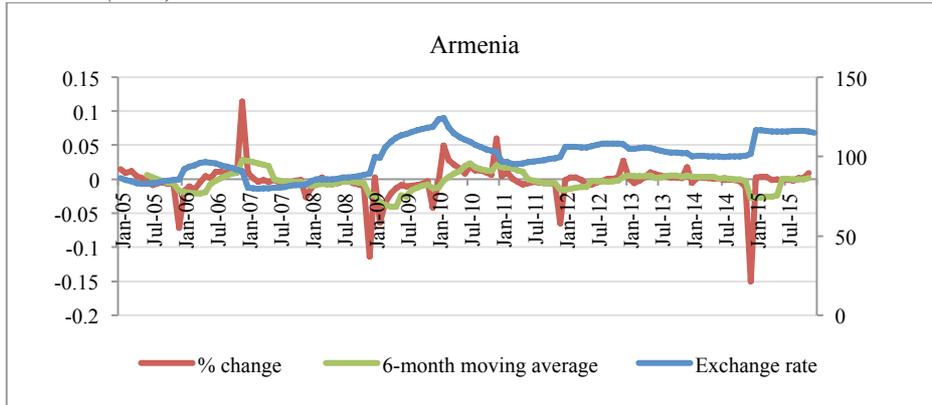
Note: ** and * denote to the 1% and 5% level of significance, respectively

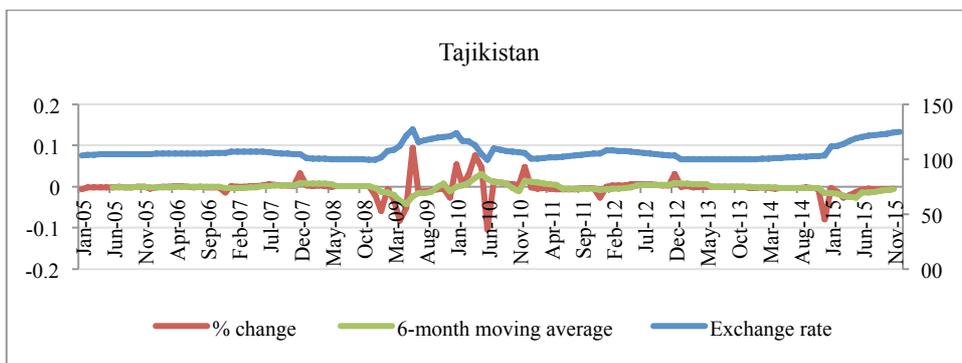
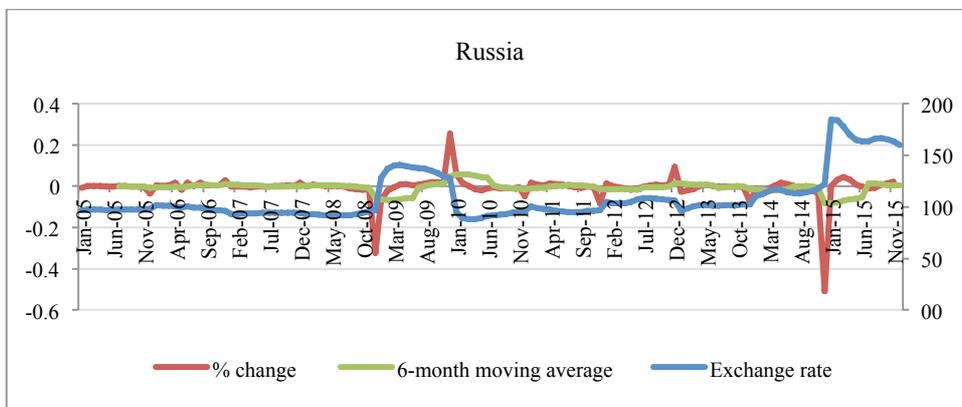
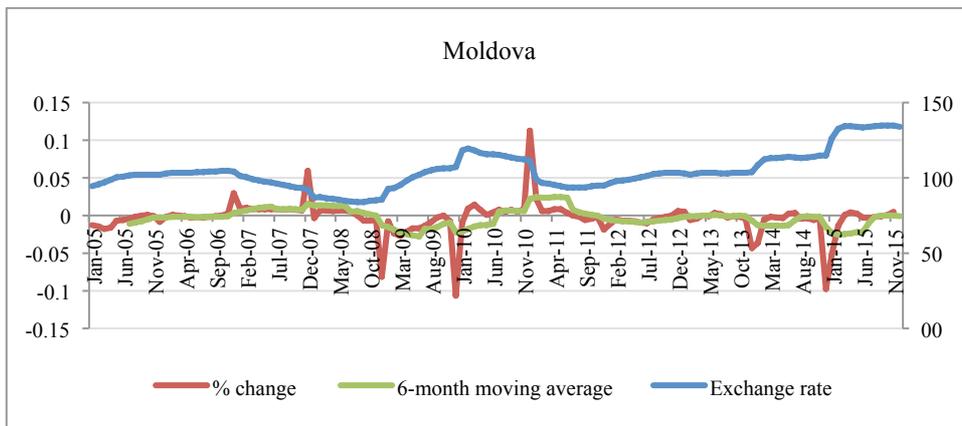
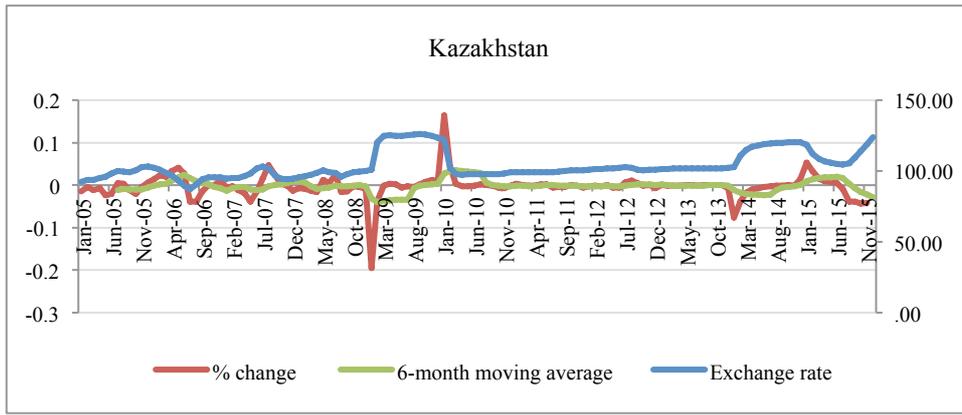
Source: the World Bank (2016); the IMF Cross Country Macroeconomic Statistics

Annex 2

Exchange rate volatility in the comparator countries

Source: CIS statistics (2016)





CHAPTER III

4. MONETARY POLICY FRAMEWORK OF THE KYRGYZ REPUBLIC

Abstract

This paper analyses monetary policy of the National Bank of the Kyrgyz Republic since the country has become independent (1991-2015). After a review of the theoretical and empirical literature on monetary policy in developing countries, we provide an overview of the launch and evolution of monetary policy frameworks of the KR. Aiming to evaluate the behavior of monetary policy of the NBKR; we apply the Taylor rule for the period of 2005-2015. The results provide evidence of strict monetary policy stance with respect to inflation and exchange rate, but it counter-cyclically reacts to output growth.

Keywords: monetary policy, Taylor rule, interest rate, exchange rate, and economic growth.

4.1. Introduction

Monetary policy is one of the main macro policy tools and its effective implementation might be a key ‘driver’ for a sustainable economic growth. Indeed, monetary policy has been the principal macro instrument used to manage the economy during the last decades in almost all developed countries and in most of the developing ones.

Rule-based monetary policies have become popular after the publication of the seminal paper by Taylor (1993), which explained the interest rate setting behavior of the Federal Reserves. Considerable number of research estimated Taylor-type rules to explain policy rate setting behavior of many developed countries. However, very little work has been done on developing economies, and this might be due to the hurdles their CBs face by operating in conditions of less developed financial markets and high vulnerability of the economy to external shocks. This makes it difficult for them to follow any rule-based policy. Nonetheless, it is reasonable to expect developing countries to have defined policy preferences, and therefore to follow some policy rules.

In this regard, the general objective of this study is to contribute to the understanding of monetary policy behavior in the Kyrgyz Republic (KR) by estimating Taylor-type rules. Nonetheless, before proceeding to the empirical estimation, it is worthy to provide an overview of the KR’s monetary policy since the establishment of the National Bank of the Kyrgyz Republic (NBKR). Therefore, we determine two specific objectives: the first objective is to review the launch and the evolution of monetary policy starting from the establishment of the NBKR (1991-2015). The second objective is to identify if the NBKR follows any rule-based monetary policy and if yes, which variables are the main concern of its policy (2005-2015).

The rest of the paper is organized as follows: the section two reviews the literature on monetary policy in developing countries and reviews the studies assessing monetary policy in the CIS (Commonwealth of Independent States) countries and in the KR, in particular. Section three gives a brief overview of the launch of monetary policy during the transition period (1991-2005). The fourth section discusses the evolution of the NBKR’s monetary policy framework after the transition with more emphasis on the current choice of its policy framework (2005-2015). The fifth section presents the estimation methodology and the interpretation of the results. Lastly, the sixth section provides conclusions.

4.2. Review of the literature on monetary policy in developing countries

The literature on monetary policy indicates that the principles of central banking in developing and developed countries are not completely different (Goodhart et al., 1998). Nevertheless, there is no a general monetary policy framework, which is appropriate for all countries. One size does not fit all. The choice of monetary policy framework depends on the goals it aims to achieve, on the difficulties that the economy faces, and on the structure of financial market in which it operates. It is more likely that the choice of monetary policy framework in developing countries is more complex due to specific challenges these economies face and the problems related to their relatively weak financial market (Fischer, 2015). Of course, developed countries are not “immune” to the problems related to financial markets, but there is a key difference in the degree of these problems in developing economies³⁵. Thereby, we will review the literature and try to outline what makes monetary policy framework in developing countries different from that in developed ones.

There is a general consensus in the literature and in practice that price stability is the primary objective of monetary policy in developed economies. Central bank seeks to maintain price stability in the interest of sustainable economic growth, as high and unstable inflation rates negatively affect savings and investment, becoming a constraint to economic growth. An efficient monetary policy mitigates economic disturbances and ensures favorable conditions for economic growth and employment over the long term (Choi at al, 1996, Bernanke et al., 1999). Price stability is considered as important in developing countries too, but some CBs may pursue other additional objectives, including promotion of output growth, employment growth or reduce poverty. For instance, Bhattacharyya (2012) distinguishes monetary policies in developing economies in two main categories: (a) price-stability focused monetary policy or (b) dual-mandate monetary policy. A price stability-focused policy has a commitment to keep inflation low and to ensure that neither external nor domestic shocks lead to bursts of inflation. This policy implies that other goals such as an enhancement of financial market and output growth are shifted to the government. During the last two decades, many CBs have switched toward removing other goals and making price stability a primary objective of monetary policy. This can be observed by evidence that an increasing number of developing economies have shifted to inflation targeting framework (this framework will be discussed later). Referring to a dual mandate monetary policy, which pursues price stability and other development goals (promotion goals), such as economic

³⁵ Mishkin (2005), Mishkin (2002), Dutt and Ross (2008) and Bhattacharyya (2012)

growth, higher employment or lower poverty. Bhattacharyya (2012) considers that in developing countries, with widespread poverty and high unemployment, monetary policy should be also addressed to solve these problems. Theoretically, CBs that perform a dual mandate monetary policy do not prioritize their objectives, but in practice, price stability is considered as a priority objective of any central bank. Similarly, Epstein (2005) considers that developing countries address their policies (in addition to price stability) to reduce poverty, or promote output or employment growth. He states that the choice of specific goals of monetary policy should be consistent with the economic situation in a country. A dual-mandate monetary policy requires a close and coordinated relationship of CB with other government authorities as monetary policy affects the economy at the aggregate level, while obtaining output growth and higher employment needs policies that addressed to specific sectors and regions. For instance, in order to direct credits to particular sectors or regions, CBs can use lending quotas on commercial banks, maintain interest rate control or create schemes to promote lending to particular sector. Bhattacharyya (2012) notes that number of CBs in developed countries successfully used credit allocation during their development phase³⁶, but many developing countries have not succeeded in attempts to perform promotional policies³⁷. Instead of acting as a promoter of financial development and economic growth, CBs of developing countries (most of them) became instruments of financial repression by constraining competition in the financial sector and hampering the flows of savings away from where they would bring the highest outcomes. Similarly, ADB (2000) states that (in practice) interest rate control and credit allocation are inadequate to achieve development goals in developing countries.

As it is generally known, monetary policy transmits to economy through different transmission channels, usually classified as the interest rate channel, the exchange rate channel, the credit channel and the assets price channel³⁸. The literature does not emphasize

³⁶ CBs in Italy, Japan, the Netherlands, Sweden, the United States, and West Germany (Bhattacharyya, 2012);

³⁷ CB in East Asia and the Western Hemisphere (Bhattacharyya, 2012);

³⁸ The most conventional channel is *the interest rate channel*. Through regulating nominal interest rates, CBs can affect costs of borrowing and lending, which in turn influence the level of consumption, and hence leads to changes in investment and thereby real GDP (Taylor, 1995). *The exchange rate channel* influences prices through prices of imported goods and net exports. The effect of the channel depends on the volume of import, magnitude of currency depreciation and as well as structure of an economy. *The credit channel* affects the real economy through regulating volumes of credit provided by commercial banks. This channel arises when economic activity is not heavily dependent on the variations of price for credit (interest rates), but it is responsive to changes in availability of credit. This channel influences the aggregate demand through direct regulations of credit availability. The use of the *assets price channel* allows CBs influence prices of bonds, shares and other assets. Higher assets prices influence investment and consumption and thus increase aggregate demand (Loayza and Schmidt-Hebbel, 2002). However, an interesting classification of transmission channels is mentioned by Boivin et al. (2010), who classified monetary transmission channels into two main types (both for

specific transmission channels in developing economies different from those in developed ones. However, there are some difficulties related to the proper functioning of transmission mechanism in those economies. Monetary policy in these economies are frequently hampered by weak transmission mechanism caused by underdeveloped financial market (Bhattacharya et al., 2010; Moreno, 2008). The interest rate channel is less effective in conditions of less developed financial markets, as a transmission of changes in the short-term policy rate to real economic variables tends to be weak (Hammond et al., 2009). Similarly, the assets price channel is not effective in generating wealth effects in developing countries with small and underdeveloped securities market. The credit channel might be relatively more important in developing economies, where commercial banks play an important role in financial intermediation and there is a small number of alternative sources of finance (Crocket, 2000). But in contrast, the exchange rate channel plays an important role in provision of price stability in developing economies (Adolfson, 2001). Crocket (2000) considers that the exchange rate channel is the most effective channel, which affects both import and export prices. In addition, for countries with historically high inflation, the exchange rate fluctuations have a significant effect on inflation expectations, and the exchange rate channel influences inflation via inflation expectations. Hammond et al. (2009) emphasizes that the formulation of monetary policy has become even more complex in developing economies, due to the increase in worldwide energy and food prices, creating a dilemma for their CB to manage inflationary expectations and respond to commodity price shocks³⁹. Likewise, Fischer (2015) considers that the exchange rate stability is a key consideration of developing countries, particularly in conditions of increasing openness of the capital account and integration into the world economy. In a long run, this will help them to attract considerable external finance for private and public sectors, but greater integration and external financial inflows might lead

developed and developing economies): (a) neoclassical channels in which financial markets are perfect and (b) non-neoclassical channels which implies financial market imperfections; the first type is distinguished by affecting directly to investment, consumption or international trade. Investment channels are direct interest rate channels regulating through the costs of capital; Consumption channels operate by wealth effect and substitution effects; lastly, international trade channel functions through the exchange rate. The authors consider that non-neoclassical channels arise due to market imperfections, for instance, they arise due to government interventions or imperfections in private markets; Non-neoclassical channels categorized into three basic types: (i) credit supply channel which arise from government interference in credit markets, it is aimed to obtain particular monetary policy goal such as allocating certain types of investment (ii) the bank-based channels regulating through lending and bank capital, decrease in banks' capacity of lending effect spending, (iii) balance-sheet channel influencing firms and households.

³⁹ In particular when the theoretical models suggest CBs to target only core component of inflation and let food and energy prices adopt to market conditions. For CBs in those economies it is difficult to leave prices to market conditions, as the large share of total consumption expenditure takes expenditures on food (Hammond et al., 2009).

to more complicated monetary policy in the economies with large external shocks and high exchange rate volatility. Thereby many central banks in developing economies remain to manage their exchange rate to varying degree.

The main conclusion from the aforementioned discussion is that the choice of monetary policy framework in developing economies is affected by: the objectives they pursue; the level of financial market development, where they operate; the effect of the exchange rate on domestic economy. As we mentioned at the beginning, one size does not fit all. Nevertheless, based on the past experience of both developed and developing economies, the mainstream literature provides a set of monetary policy frameworks: exchange rate targeting, monetary aggregates targeting and inflation targeting.

It has been discussed before that the exchange rate has a crucial importance in developing economies. The exchange rate could be a good nominal anchor for some developing countries, which economies are characterized by low financial development, weak institutions or lack of CB's credibility (Husain et al. 2005). In most developing countries, a large share of domestic output is affected by international prices, and inflationary expectations are determined by exchange rate. In such conditions, many developing countries are likely to manage the exchange rate by performing the exchange rate targeting framework, which allows leveraging the exchange rate to varying degree. However, a strict version of exchange targeting "hard peg" ,eventually results in the loss of monetary independence and the transmission of monetary policy of the CB to which it is pegged. Fischer (2015) considers that nowadays the exchange rate peg has become an "impossible triad" (or "impossible duo"), a pegged exchange rate together with open capital account. This combination makes it complicated for monetary policy to be implemented independently to achieve price stability. Nonetheless, flexible, but properly managed, exchange rate (for instance against a major foreign currency or a number of currencies), can help economies mitigate some external shocks such as an increase in the world commodity prices to which developing economies are still exposed (Fischer, 2015; Hammond et al. 2009, Gray 2006). Along with the development of international financial system, greater capital mobility and increasing integration of world economies, targeting of exchange rate became more complicated for CBs of developing countries.

Since the 1980s, along with the increase in the international capital flows and the difficulties to maintain the parity of changes, the exchange targeting became less effective in ensuring price stability. Thereby many central banks moved toward targeting monetary aggregates. In this regard, Crocket (2000) considers that monetary targets might be a good

proxy for the credit growth in developing countries. In particular, if the financial market is dominated by commercial banks and initial inflation was high, then it could be more preferable to target monetary aggregates. But since the end of 1980s most of developing economies had been implementing monetary policy to control inflation through targeting monetary aggregates. But this approach has become less effective along with development of financial markets as it is known from the experience of developed countries during the 1980/90s. Money demand become quite volatile because of financial innovation made assets highly liquid and substitutive of narrow monetary aggregates. This made targeting monetary aggregates a complicated strategy for CBs. For this reason many countries with developed financial system moved toward an inflation-targeting framework.

Nowadays, inflation targeting has attracted increasing attention of both researchers and policymakers since 1990s, and the literature evidences that this framework seems to deliver better outcomes in terms of output growth, low inflation compared to other frameworks. Mishkin (2008) states that developing economies face strong challenges for inflation targeting. These obstacles occur due to high exchange rate volatility and weak financial markets. The possibility that high exchange rate depreciation may result in a burst of inflation rates provides a reason for developing economies not to ignore exchange rates. In order to preclude extreme depreciation, which can destroy balance sheets and cause financial crisis, their CBs have to smooth exchange rate fluctuations. Yet, they need to avoid over smoothing, as this may result in counterproductive effect to their economies (Mishkin, 2008). In this regard, Hammond et al. (2009) also state that many developing countries have adopted “inflation targeting with managed float” to smooth high exchange rate volatility. This option may involve significant interventions in the exchange market, as developing countries have a fear of letting their exchange rate to float freely. Most apparently, the interventions give them a certain degree of freedom to perform inflation targeting effectively. However, in practice, it becomes apparent necessity to switch from managed exchange rate to a floating exchange rate. An increasing openness of capital accounts makes more difficult for them to control exchange rate (in a long term) without exposing it to external shocks (Prasad, 2007). Therefore, an adoption of inflation targeting ensures an explicit anchor for monetary policy, while a floating exchange rate gives more independence for monetary policy and a certain degree of protection against external shocks (Hammond et al., 2009). Nevertheless, Mishkin (2005) emphasizes that the framework cannot be a “universal tool” for all developing countries, yet it may be appropriate and useful for some of them, which provide sufficient level of institutional development, increased transparency and accountability of their central

banks'. Despite the hurdles that developing countries face in implementing inflation targeting, there are many researches arguing that the framework is yet favorable for them. Inflation targeting enhances the credibility of CBs, the anchoring of inflation expectations and provision of low inflation even when energy prices and exchange rate shocks occur (Mishkin and Schmidt-Hebbel 2007). Furthermore, Batini and Laxton (2007) argue that inflation targeting provides better inflation performance even when financial reforms are not yet completed. It is mainly because inflation targeting commits the government to keep inflation low and to complete required reforms. The government's commitment to achieve inflation targets makes more difficult for the government to explain loose and procyclical policy. Thus, it becomes explicit that the government must support and work on implementation of financial and fiscal reforms if it aims to sustain successful inflation targeting framework (Bernanke et al. 1999; Brash 2000; Batini and Laxton, 2007). Many developing economies have benefited abovementioned macroeconomic outcomes by adopting inflation targeting. However, the framework should not be seen as a "panacea" for all developing economies. These economies have succeed only because they have used it to support institutional reforms required to enable inflation targeting work and achieve its objective (Mishkin 2005; 2008).

Lastly, referring to the previous research papers, there are only few works investigating monetary policy framework in the Kyrgyz Republic and more papers examined monetary policy in the CIS (Commonwealth of Independent States). The results of empirical studies show that inflation in the KR is very responsive to the exchange rate fluctuations and the exchange rate channel is the most important channel, while other channels are less effective. In general, monetary policy is hampered by underdeveloped financial market, large informal sector and high vulnerability to external shocks. Pypko (2009) investigated the relationship between economic growth and inflation (CPI) in the CIS countries for the period of 2001-2008. Core findings of the study indicate that if inflation is higher than 8 percent, output growth decreases. Therefore, the author considers that inflation must be lower than 8 percent in the CIS countries in order to promote economic growth. Huseynov and Jamilov (2014) examined four transmission channels: the interest rate channel (refinancing rates), the exchange rate channel (real exchange rate and remittances), the bank lending channel (lending and deposit rates), and monetary channel (M2 and wages) in nine member-countries of the CIS for the period of 2000-2009 by employing VAR framework and Auto Regressive Distributed Lag Models (ARDL) for each CIS country. The research shows heterogeneous results, however general conclusion is that the exchange rate channel affects both output and inflation in all CIS countries. Broad money highly influences output, while refinancing rate

and remittances have significant effect on inflation. Isakova (2008) assessed the efficiency of monetary policy in the KR, Kazakhstan and Tajikistan by applying VAR framework. The empirical findings state that domestic prices are highly responsive to the changes in exchange rates, money supply including foreign currency deposits, while the credit channel affects output growth. The interest rate channel has been identified as statistically insignificant. The study recommends deepening local financial market to achieve efficiency of monetary transmission and to improve the resilience to external shocks. Nurbek Jenish and Kyrgyzbaeva (2012) examined the possibility of adoption of inflation targeting framework in the KR by building a small open economy dynamic stochastic general equilibrium model (DSGE). The study identified the lack of CB independence and low credibility of NBKR, inefficient transmission mechanism, the existence of large informal sector, underdeveloped financial market and high vulnerability of economy to external shocks as the key obstacles to targeting inflation. Atabaev and Ganiyev (2013) analyzed the impact of monetary transmission on real output and prices in the KR. The relationship between money supply, real output, inflation, interest rate and exchange rate were analyzed by using VAR model for the period of 2003-2011. The empirical results show that the credit channel affects the real output and the exchange rate affects inflation. The authors identified the exchange rate channel as the most effective channel in the KR.

Resuming, the fundamentals of monetary policy in developing countries are not different from those in advanced countries. Yet there are key challenges that developing economies face due the presence of weak financial market and external shocks. Both developed and developing countries have a priority objective to maintain price-stability. However, CBs of developing economies had been pursuing multiple objectives addressed to promote economic growth and employment (in addition to price stability). As it has been discussed above, the attempts of CBs to adopt a promotional policy didn't bring expected results, and during the last two decades CBs in developing countries have switched toward having price stability as a primary objective by adopting inflation targeting framework. However, the inflation in developing countries is very responsive to fluctuations in exchange rate, and exchange rate is considered as a major determinant of inflation there. In particular, when developing countries are opening their capital accounts and integrating to the world economy, it becomes more difficult for them to keep inflation low. Nevertheless, an increasing number of developing countries have successfully adopted inflation targeting frameworks and this evidences that they are making success in evolving their monetary policy frameworks by adapting monetary policies to the hurdles they face. Nevertheless, developing

economies still have to make steps toward development of financial markets and overall effectiveness of monetary policy. For this purpose complex measures are required to make monetary policy achieve its objectives and this should be done with a broader context as to monetary policy.

4.3. The launch of the banking system of the Kyrgyz Republic (1991-2005)

Before the independence, the KR was a part of the USSR and therefore a member of political, economic and monetary union of the USSR. After the collapse of the USSR, the KR started its transition towards the path of gradual liberalization and democratization to form a market economy. New realities of independence created a need for new institutions and monetary policy capable to provide price stability in particular. Hence, the modern banking system of the KR was formed during the economic transformations within the banking system reforms in the 1990s. The transition period was characterized by the symbiosis of the old (Soviet) and the new banking structures, and it was accomplished in the following three stages.

During the early transition period (*1991-1995*), the KR transformed the old system into the new two-tier banking system⁴⁰, which included the National Bank of the Kyrgyz Republic (NBKR) and commercial banks. Three largest former state banks such as the Industrial and Construction Bank (Kyrgyzprostroybank), “Kyrgyzstan”, the Agricultural and Industrial Bank (Agroprombank) were converted into joint-stock companies in 1992. It was also permitted to establish private commercial banks, owned by individuals or enterprises, in order to mobilize resources in addition to the newly established state banks. This resulted in the rapid growth in the number of commercial banks. By the end of 1994, 29 banks were operating in the country in the form of joint-stock companies⁴¹. At the same time, i.e. the immediate period after the establishment of the NBKR was marked by hyperinflation and the absence of own currency limited the capacity of the NBKR to manage hyperinflation⁴². Thus, since May of 1993, with

⁴⁰ Two-tiered banking system was established, with the NBKR as the regulatory authority (the law of the KR on the National Bank of the Kyrgyz Republic) and a network of commercial banks originating from the privatization of State banks.

⁴¹ Newly formed commercial banks provided 85% of the value of credits and loans disseminated through their branches in all regions of the country. Besides these banks, 16 non-bank microcredit companies had been created.

⁴² The rates of inflation reached extremely high levels; it was 200% in 1991, 900% in 1992, 929% in 1993 and 62% in 1994. The core factors causing hyperinflation were repressed inflation that had been during the pre-independence period, which became explicit through the shock of price liberalization in 1992 and attempts of the government to finance its budget deficit. The country's debt and backward wage-indexation during the Soviet Union governance made additional contribution to increase inflation during this period. In order to pay its debt back, the national bank was obligated to issue more money, thus with the lapse of time resulted in depreciation of the national currency. In the beginning of 1990s the country had not implemented an effective system of

the introduction of national currency the Som⁴³, the NBKR was given the right for emission of money and it started a restrictive monetary policy (Akmatalieva, 2007).

During the period from 1996 to 1999, the government was mainly focused on the accomplishment of macroeconomic stabilization reforms and establishing institutions of a market economy⁴⁴. One of the main achievements of the reforms in the banking system was the adoption of the Law in July 1997, 'On the National Bank of the Kyrgyz Republic'. The adoption of the law put in place coordination between the NBKR and the Ministry of Finance in the field of financial policy, stipulated the rights of the NBKR to supervise and regulate the business of commercial banks. According to the paragraphs 3 and 4 of the Article 59: *"The main objective of the National Bank of the Kyrgyz Republic's monetary policy is to maintain price stability. The primary task of the NBKR is facilitating the achievement of the main objective by supporting the purchasing power of the national currency, ensuring effectiveness, safety and soundness of the banking and payment system of the republic to promote long-term economic growth of the country"*. As it is defined in the law, the main objectives of the NBKR were the provision of price and exchange rate stability. In order to promote price stability and to cut continuing bursts of inflation, the NBKR tightened its monetary policy and took anti-inflationary measures. This led to a sharp decrease in inflation and strengthening of the som by the end of 1998.

Dabrowski (1994) mentioned that the KR showed significant results in transforming its economy (comparing to other Central Asian economies), including the achievements in liberalization and stabilization of its economy. However, successful implementation of structural reforms and the KR's rapid progress in macroeconomic stabilization were accomplished mainly due to the significant borrowings and financial aid by donor countries and other international institutions. By the end of 1990s the amount of received loans, grants and financial aid reached 10 percent of the country's GDP (Baum, 2007). Nonetheless, the economy had not been prepared for occurring external shocks such as the financial crisis in

managing wages and extremely rapid growth of wages resulted in individual's income growth. Thus high budget deficit, government's debt, higher wages, individual's income growth and excess money supply led to increase in inflation (Huseynov and Jamilov, 2014).

⁴³ The word "Som" has a Turkish origin, and in all Turkish languages (even in tajik, which is the Persian language). In all Soviet Union banknotes the meaning of "the ruble" appeared as "som". The word "som" is translated as "pure", which implies "the pure gold". Thus, the national currency of Uzbekistan is "Soum" (introduced in July, 1994), Tajikistan's currency is "the somoni" (introduced in May, 1995). Differently, the Turkmen "manat" is from the Russian word "moneta" meaning "coin" (introduced in October, 1993). The Kazakh "tenge" is borrowed from Russian word "den'gi", which implies "money" (introduced in November, 1993).

⁴⁴ The country set up its main state institutions such as the Ministry of Justice, Ministry of economy, Ministry of Finance, State Fiscal Authority, State Authority for regulation and supervision of financial market, State Authority to regulate financial crime, State Authority of financial intelligence service and etc.

Russia (1998-1999) and other Former Soviet Union economies. The immediate period before the Russian crisis, the KR was recovering its economy, achieved relative price and exchange rate stability. But the Russian crisis of 1998 became another challenge for the economy and the depreciation of the Russian ruble by almost 70 percent worsened the competitiveness of kyrgyz tradable sector, the balance of payments, putting more pressure on the som.

In July of 2000, the NBKR declared the adoption of a partial monetary targeting framework, which was coherent with the financial programming framework used by the IMF programs (the evolution and changes in monetary policy framework of the NBKR will be discussed more in the next section). Further, following the recommendations of the IMF, the NBKR moved towards a much more conservative monetary policy aimed to cut inflation (Dabrowski, 2013). Due to the policy shift and the restrictive monetary policy inflation was significantly decreased from 18,7 percent in 2000 to 3,4 percent in 2005 and the exchange rate was stabilized comparing to the previous years (NBKR, 2005). Hence, the main achievements of the third period (2000-2005) were the shift in the monetary policy framework and appropriate measures of the NBKR to stabilize prices and exchange rate volatility.

Resuming, achieving price stability has become a serious challenge for the KR during its 15 years of transition. In the first half of the 1990s, the country faced hyperinflation, which came as a consequence of the so-called 'perestroika' (restructuring) following the collapse of the USSR. After the implementation of the som and stabilization programs during the 1990s, the country recovered its economy after hyperinflation and extreme depreciation, however it did not succeed in preventing the consequences of the financial crisis of 1998. In general, during the 1990s, the institutional and operational framework of the banking system was successfully reconstructed; the legal and institutional bases were established in order to implement an independent monetary policy. This allowed the country for a return to macroeconomic stability with stronger fundamentals by the end of 2005, but nevertheless it was still premature to consider that the country achieved sustaining price stability and economic growth.

4.4. The choice of the current monetary policy framework (2005-2015)

So far we provided a brief background on the launch of monetary policy of the KR, after the collapse of the USSR, over the first 15 years of transition. In this section we aim to review the choice of monetary policy framework of the NBKR during the period of 2005-2015. In this regard, we proceed as follows: firstly, we briefly discuss the evolution of monetary policy

framework of the NBKR in 2005-2015; secondly, we provide an overview of the current monetary policy framework of the NBKR with more focus on the objectives and operational framework.

Referring to the development of monetary policy framework of the country over the period of 2005-2015, we follow the assessment of monetary policy frameworks of the CIS countries by Dabrowski (2013), and we attempt to give more insights to monetary policy conducted by the NBKR by comparing the legal and the actual frameworks of the NBKR. Our comparison is based on the classification provided by Dabrowski (2013) and the IMF (2011)⁴⁵; we intentionally use this classification in order to show substantial differences between the actual and the legal frameworks of the KR.

In many CIS countries, the *de jure* framework (i.e. officially declared by the monetary authorities of a country) differs from the *de facto* framework (i.e. declared by the IMF reports)⁴⁶. As well as in the KR, since the implementation of independent monetary policy in 1992, the legal framework was announced as monetary targeting until July 2014. However, the actual framework has been changed several times (see the fig. 1).

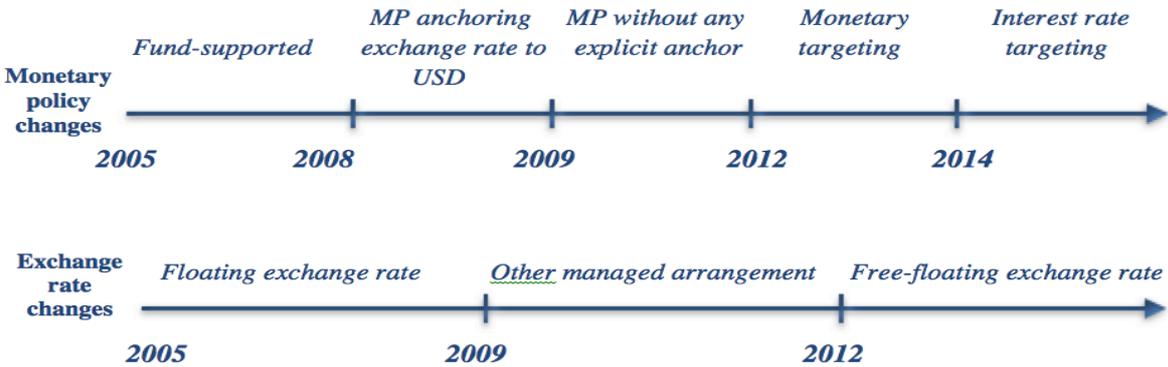


Fig. 1. The evolution of monetary policy framework of the KR
 Source: Dabrowski (2013); IMF (2011); (NBKR, 2014a)

According to fig.1, in 2005-2008 the NBKR performed the so-called '*Fund-supported or other monetary program*' (Dabrowski, 2013) following the recommendations the IMF. This, in fact, was a form of partial monetary targeting framework in a compliance with the

⁴⁵ Every year the IMF publishes Annual Report on Exchange Arrangements and Exchange restrictions, which compares monetary policy frameworks of all IMF member states. It is based on the IMF's classification using a two-dimensional description of the framework, i.e. distinguishing between exchange rate regime/ arrangement and monetary policy framework. Furthermore, it proposes more detail and slightly different typology of exchange rate arrangements. For more detailed classification see Habermeier et al (2009), Dabrowski (2013) or the Annual IMF Reports on Exchange Arrangements and Exchange Restrictions.

⁴⁶ See IMF (2011), Habermeier et al (2009), Dabrowski (2013)

IMF criteria, which set a ceiling on the NBKR's net domestic assets and a minimum level of net foreign assets. During the same period, the NBKR officially declared free-floating exchange rate from 2005 till 2009, but in practice it switched to anchoring its currency to the US dollar in 2008 (see fig.1). The combination of monetary policy anchoring its currency to the US dollar and the announcement of free-floating exchange rate (2008-2009) does not actually represent floating exchange rate. This is rather a hidden form of currency peg. Such contradictory characteristics may reflect either the inconsistent monetary policy of the NBKR or the monetary policy framework was disrupted by the global financial crisis of 2008-2009.

The following period of 2009-2012 is more difficult to explain, as no explicit anchor for monetary policy was declared and the exchange rate was announced as '*other management arrangement*' (Dabrowski, 2013). Previous research considers that this actually was a soft peg, i.e. when the NBKR implemented flexible exchange rate with some degree of exchange rate control (or flexible exchange rate targeting), while monetary policy was switched again to partial monetary targeting framework.

Since 2012 the KR's monetary policy has become more specified and the legal monetary policy framework declared by the NBKR was consistent with the actual framework. Thus, during 2012-2014 the NBKR adopted a full-fledged monetary targeting framework using M2 as an intermediate target and reserve money as an operational target⁴⁷. Nevertheless, the difference between the legal exchange rate arrangement and the actual arrangement still remained. Regardless of announcing free-floating exchange rate, the NBKR used to intervene in foreign exchange market to smooth the high fluctuations of exchange rate (exchange rate operations of the NBKR will be discussed later).

According to the reports of the NBKR (2014a), since the march of 2014 it has been implementing interest rate targeting framework using the short-term interest rate as an intermediate target of its monetary policy. However, it is generally known from the mainstream literature and as well as we mentioned in the literature review section that interest rate targeting is not a generally accepted framework. We consider that the framework announced by the NBKR is rather a version close to flexible inflation targeting⁴⁸ or this is an attempt of the NBKR to implement an intermediate (transitional) framework from monetary targeting to inflation targeting. This consideration is supported by Bernard et al. (2015), they

⁴⁷ The NBKR did not provide data on the targets for M2 during the analysed period. According to IMF (2012) targets for M2 in 2012 was announced at 18,3%, however the actual rate of M2 reached 23,8%

⁴⁸ Hammond et al., 2009, Svensson 1997, 2009;

entitle the current framework of the NBKR as '*the journey to inflation targeting*' or '*interest-rate focused*' framework⁴⁹. This is in line with the following changes in the operational framework of the NBKR monetary policy: firstly, along with the implementation of the interest rate targeting framework, the NBKR has set a numerical inflation target as an explicit monetary policy objective and it has started publicly announcing its inflation targets, this was not the case before. Secondly, the NBKR set the so-called “corridor” for short-term policy rate, where the upper-limit of the corridor - “ceiling” is determined by the “overnight” loan rate, and the floor-limit of the corridor is determined by “overnight” deposit rate. The values of the upper-limit and the floor-limit of the corridor are the indicators of rate limits for commercial banks and other participants of money market; this allows them making transactions within the interest rate corridor (the values and dynamics of the corridor will be discussed later in detail). Lastly, as it has been previously investigated by Nurbek and Kyrgyzbaeva (2012)⁵⁰ and Sydykova and Rodriguez (2015) whether the KR is capable to adopt a full-fledged inflation targeting. Both papers conclude that the country does not fulfill the economic and institutional preconditions for the successful implementation of inflation targeting and stressed that the KR could benefit either from implementing a more flexible inflation targeting or a stronger response to inflation and less control on exchange rate.

As we stressed at the beginning of this section, our discussion of the choice of monetary policy framework is more focused on the current choice, now we proceed to analysing the so-called '*interest rate targeting*' framework with emphasis on objectives and operational framework.

Regarding the main objective of the current monetary policy, it remains unchanged and the NBKR's primary objective is to maintain price stability, as a necessary condition to contribute to economic growth of the KR. The NBKR carries out the following tasks to maintain price stability: supporting the purchasing power of the som, provision of the efficiency, safety and reliability of the banking and payment systems (NBKR, 2014). The NBKR defines price stability as year-on-year increase in the CPI and the quantitative target of the monetary policy is maintaining inflation within the range of 5-7 percent over the medium term (NBKR, 2014a). Hence, price stability is defined as the primary objective of the NBKR, this is coherent with the evolving monetary policy frameworks over the world, as both

⁴⁹ Argentina, Belarus, Haiti, Lao P.D.R., Costa Rica, Malaysia, Mauritania, Pakistan, Sudan, Tunisia, Vanuatu are considered as the countries that implement '*interest rate focused*' or the so-called '*the journey to inflation targeting*' framework (see Bernard et al., 2015)

⁵⁰ Nurbek Jenish is the actual Deputy Chairman of the National Bank of the Kyrgyz Republic.

developing and developed countries have moving towards making price stability an unique goal of their monetary policies.

To achieve price stability objective, the NBKR uses a combination of monetary policy instruments and we proceed to reviewing the NBKR's monetary instruments following the scheme presented in fig.2. The NBKR established the interest rate corridor in July 2014, the main objective of establishing the corridor is to minimize the volatility of the money market rates by ensuring the movement of the short-term interest rates within a reasonable range. In this regard, open market operations play an important role in steering interest rates and signaling the monetary stance of the NBKR. The NBKR states that the actual price of borrowed resources are reflected by repo rates (weighted average rates of repo operations with maturity of up to 7 days).

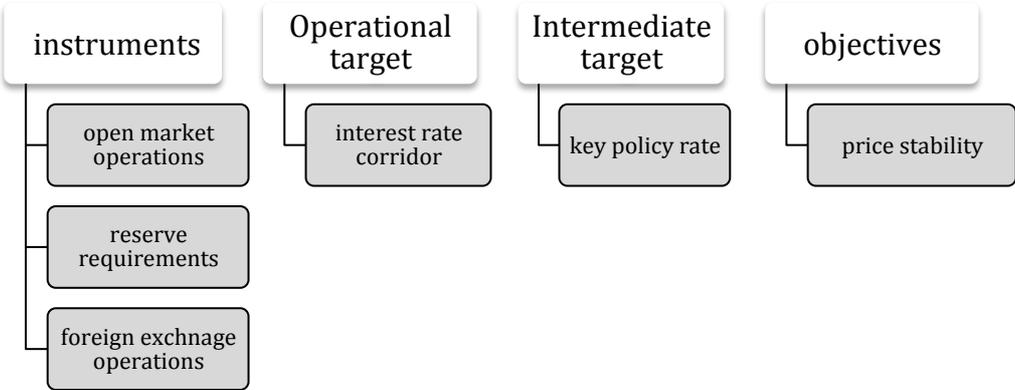


Fig.2. Monetary policy objectives and instruments of the NBKR
 Source: NBKR (2014a, 2016)

According to the NBKR (2014b, 2015), the width of the corridor was initially set at 770 bps (7.7 percent) and it has been gradually increasing, while the overnight deposit rate (the floor) increased from 1.3 percent to 4 percent, and the overnight loan rate (the ceiling) increased from 9 percent to 12 percent. At the same time the policy rate was increased from 6 percent to 10 percent (see fig.3)

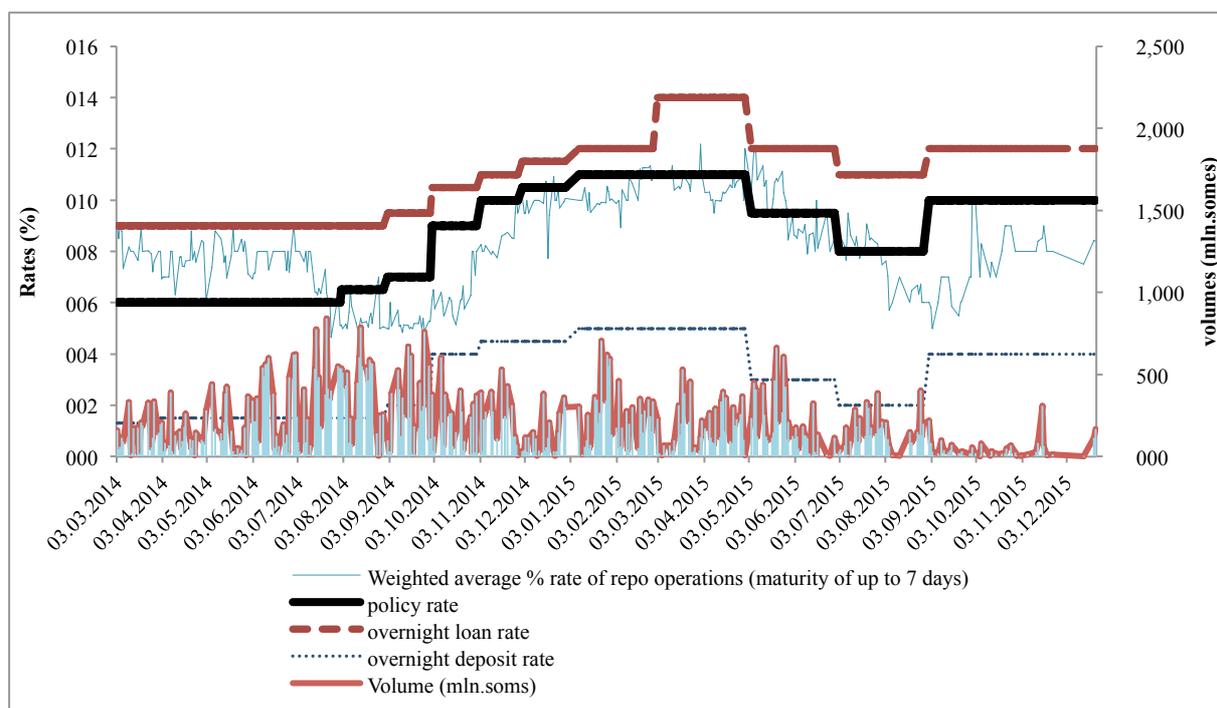


Figure 3. Changes in Rates of National Bank and Interbank Repo Operations
 * repo rates - weighted average % rate of repo operations (maturity of up to 7 days)
 Source: NBKR (2014b, 2015, 2016)

From fig. 3, it is quite evident that the corridor adopted by the NBKR has several discrepancies from a conventional corridor system. Firstly, corridor should be considerably narrower than the one adopted by the NBKR. Since the establishment of the corridor, its width has been fluctuated between 650 – 900 bps. By the end of 2015, the width of the corridor was 800bps, whereas in developed countries this number does not exceed 100 bps and in developing countries 500bps. If the corridor is too wide, which is the case of the NBKR, this gives a scope for a greater volatility in the short-term market rates, which in turn impairs the transmission of monetary policy. Secondly, the NBKR’s interest rate corridor tends to widen over the time (see fig.3). In international practice, the corridor tends to narrow over time as the central bank gains experience and this allows the central bank to better stabilize the interbank rates and enhance the price signal. In regard to the NBKR’s policy, the dynamic of its corridor represent an opposite trend, giving possibility for even greater volatility for the market rates. In addition, the changes in the width of the corridor fluctuate within 100-200 bps, whereas in developed countries this value is kept within 10-25 bps. Thereby, by frequently changing the width of its corridor at very large bounds, the NBKR is unlikely to be able to ensure stability of rates. These actions create even more uncertainty and volatility in the market. Thirdly, unlike the conventional corridor where interbank rate is close to the policy rate, the NBKR’s corridor exhibits systematically large divergence between the

interbank rates (repo rates⁵¹) and the policy rate, which signals about relatively weak transmission of the policy changes to the real economy.

Following the scheme presented in fig.2, another instrument of the NBKR's monetary policy is a ratio of required reserves, which implies that commercial banks are required to hold a certain amount of funds as reserves at the correspondent account of the NBKR. In practice, the ratio of reserve requirements is a monetary tool used by both developed and developing countries mainly to stabilize money market interest rates and to manage liquidity in the market. However, many developing countries use required reserves also as a tool to achieve financial stability and to control credit fluctuations⁵². This could be the case of the KR, as it is stated by the NBKR that: *'the required reserves – is the instrument used as a regulator of monetary aggregates volume, banking credit and demand for liquidity and as the means for risk reduction of the banking system insolvency'* (NBKR, 2015). In this context, the NBKR adjusts the reserve requirements also for financial stability purpose, which is the case of some developing countries such as Argentina, Chile, China, Indonesia, Peru, Russia, Serbia, and Turkey⁵³. Furthermore, the NBKR takes also a different approach using the reserve requirements for distributional purposes, as the NBKR differentiates the required reserves ratios for liabilities in national and foreign liabilities starting from the end of 2015. For instance, the ratio of required reserves for the banks remained between 8-10 percent during the period from 2005 till 2014 for liabilities in all currencies, but in 2015 the NBKR has introduced differentiated norms of the reserve requirements on liabilities in national and foreign currencies aiming to reduce dollarization in the economy and promote savings in national currency. The ratio of required reserves on liabilities in national currency was set at 4 percent⁵⁴, and on liabilities in foreign currencies 12 percent (NBKR, 2015). This implies that the NBKR adjusts reserve requirements not only to manage the liquidity and availability of credits in the economy, but also it uses the reserves as a tool for macroprudential and distributional goals.

⁵¹ The main open market operations are repo operations of the NBKR. In this regard, weekly auctions are held for buying/selling the NBKR's notes with maturity of 7, 14 and 28 days. The yields of notes are set according to the NBKR's policy rate at the issuance date. Other government securities issued by the Ministry of Finance such as state treasury bills/bonds, government securities, treasury obligations are conducted through the NBKR's electronic trading system. This allows the primary dealers and their clients to conduct purchases or sales from their offices.

⁵² For more discussion see Glocker and Towbin (2011)

⁵³ see Lim et al.,2011 for more detailed discussion.

⁵⁴ The same percentage (4%) was fixed for liabilities in Armenian drams, Belarusian rubles, Chinese Yuans Renminbi, Kazakhstan tenges, Russian rubles amounts taking into account close trade relations of the KR with China and the countries of the EEU.

The next monetary instrument that we aim to review is exchange rate operations (following the scheme in fig.2). As we stated in the literature review, the exchange rate has a special importance for developing countries, and in the case of the KR, we discussed in the previous section that the NBKR officially performs floating exchange rate, but in fact, it has been managing the exchange rate to varying degree. For this purpose, the NBKR intervenes in foreign exchange market not to target a certain level but to limit the exchange rate volatility and to smooth the trend path of the exchange rate. In this context, it uses several foreign exchange operations: (a) foreign exchange interventions by buying/selling of foreign currency in interbank foreign exchange market (spot operations); and (b) it carries out foreign exchange swap operations which involve spot purchase (sale) of the som against foreign currency and simultaneous resell (or repurchase) them forward on predetermined date and exchange rate. The operation aims to provide liquidity in the som (direct swap) or to withdraw excessive liquidity (reverse swap) from the banking system.

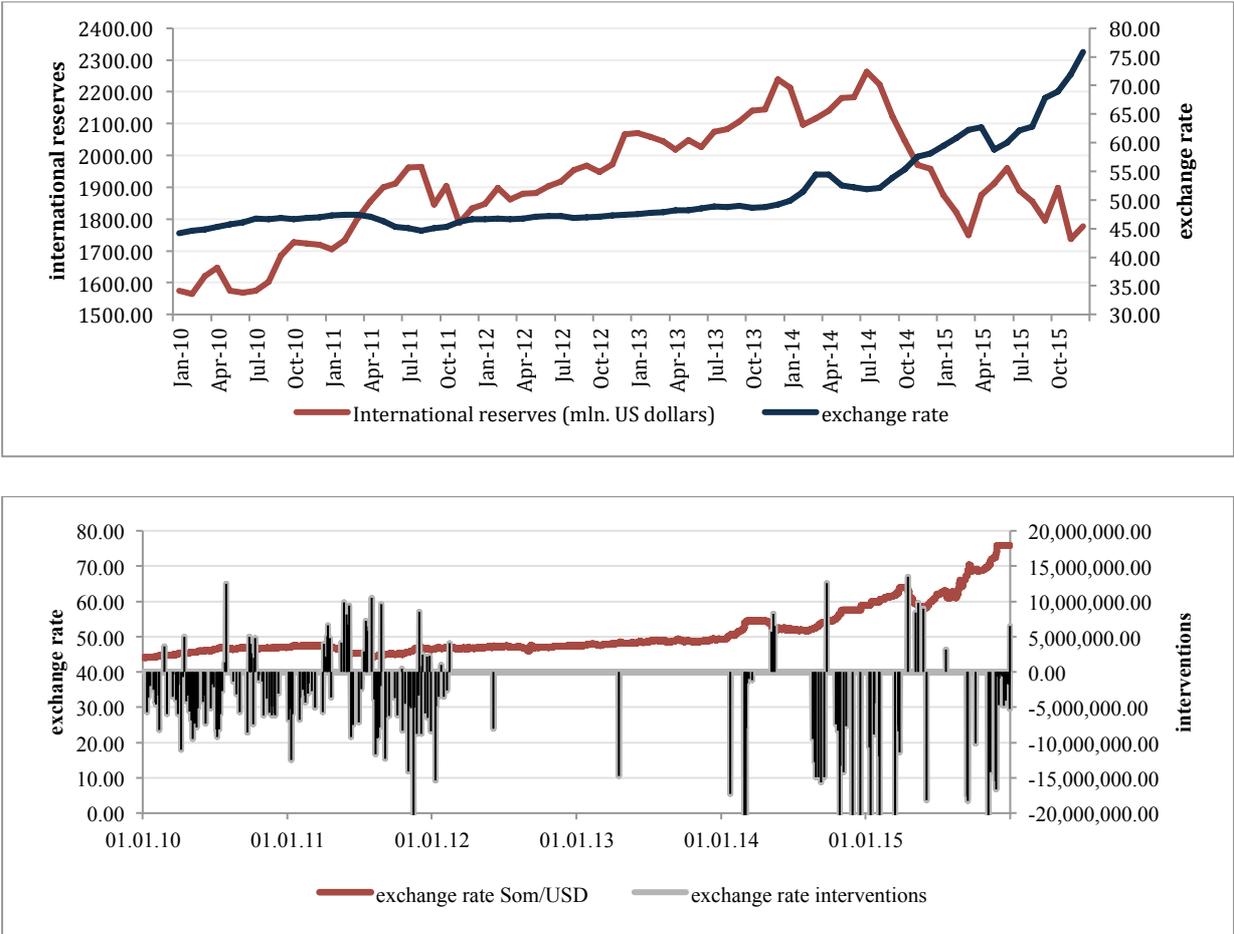


Fig4. Foreign exchange market interventions, international reserves and exchange rate fluctuations
 *data on the NBKR's interventions is available only from 2010. Positive values indicate a purchase of USD, while a negative value indicate a sale of USD
 Source: NBKR (2016)

As it can be seen in the fig.4, during the analyzing period the NBKR performed very frequent and significant foreign exchange market interventions. The NBKR intensively intervened in the foreign exchange market, with the exception of years 2012-2013 (considerably less). The interventions de facto mostly concerned sales of the US dollar in order to slow down the depreciation of the som. Two periods occurred in (i) january 2010-january 2012; (ii) august 2014- december 2015, the period of first intervention was followed by quite long period of no interventions.

Comparing the exchange rate development in both cases, the first period (2010-2011) was less intense than the second period (2014-2015), however there were strong pressures against the som. These pressures came not only from the post-financial crisis period, but were also reinforced by the further weakening of the som (by nearly 7 percent), which followed the political revolution of 2010 and the Civil War of 2011. Concerning about the effectiveness of the interventions, after the first period of active interventions, the exchange rate appreciated by 1 percent in the beginning of 2012 and the following year was marked by relative stable exchange rate. This might be two-sight effect: the role of active interventions and also the fact that the NBKR switched from the managed exchange rate to free floating rate, allowing market forces define its exchange rate. This intervention period was consistent with the actual managed exchange rate arrangement that the NBKR performed during this period. In contrast, the second period was more intense caused by the strong appreciation of the US dollar over the world and as well as rapid devaluation of the currencies and economic slowdown in the Russian Federation and Kazakhstan (which are the main strategic and trade partners of the KR). Moreover, much more intense interventions during the second period did not lead to the stabilization (the som appreciated by 19.3 percent in 2014 and 27.5 percent in 2015). As something that worked in one case, may have a little effect in another.

Concluding, monetary policy framework of the NBKR has been frequently changed over the period of 2005-2015. This could be either the result of lack of full consensus between the government and the NBKR regarding price stability; or the result of a burdening of monetary policy with too many obligations: a provision of low inflation, exchange rate control, output growth and etc. This is a sort of the list which is “impossible to accomplish” only with monetary policy, particularly for the country, which has just completed its transition to a market economy. In regard with the current stance of monetary policy of the NBKR, the KR stands to benefit from moving towards a standard practice in advanced and other developing countries. In these countries, active open market operations by the central bank contribute to ensure that key interbank rates are anchored around the policy rate, and where

the market rates fluctuate between the two standing facility rates (in the case of the NBKR these are overnight loan and deposit rates, see fig. 4). Even if the anchoring is not ‘perfect’, which is the case of the NBKR; active open market operations might allow the NBKR to align market rates with the policy rate if appropriate measure will be taken. However, the notable differences between the KR and other developed countries that implement interest rate corridor system is the extent of exchange rate management and the use of reserve requirements. The latter is a common monetary tool used by many central banks in developed and developing countries. However, in the case of the NBKR, it gives too much role to reserve requirements including macroprudential and distributional roles. Nevertheless, relying on the aforementioned discussion, it is more likely that the NBKR’s monetary policy framework is evolving over time in line with the frameworks of the CIS and other developing countries, but there are many discrepancies from developed ones.

4.5. Rules-based analysis of the monetary policy of the NBKR during 2005-2015

Following our structure that we indicated at the introduction, this section is devoted to a rule-based analysis of monetary policy of the NBKR. It is observed that the NBKR’s priority objective is to maintain price stability as a necessary condition to achieve economic growth. As well as exchange rate dynamic is important for the Kyrgyz economy and the NBKR frequently intervenes in foreign exchange market aiming to smooth the exchange rate volatility. Thereby, by estimating different version of the Taylor-type rule we aim to define if the NBKR follows any rule-based policy and particularly to identify which indicators are the main policy concern.

As it was mentioned in the literature review, developing countries face different challenges in implementing their monetary policies, and it is likely that it is difficult for their CBs to follow any explicitly formulated monetary policy rules. However, it is still worth empirically analyzing the behavior of their monetary policy. For this purpose we apply the Taylor rule (1993). Since Taylor (1993) presented his seminal work, monetary policy rules have gained an increasing attention of policymakers and researchers, and considerable research has been done to examine the validity of Taylor principle in different countries. Taylor rule has been widely applied as the standard by many central banks and it has been used to explain the behavior of monetary policy in the past and as a reference for CB in setting its future policy. Taylor principle suggests that interest rate should respond to the deviation of inflation from its target level and to the deviation of output from its trend level.

The original work of Taylor (1993) proposed the following equation:

$$i_t = \bar{r} + p_t + \alpha(p_t - p_t^*) + \beta(y_t - y_t^*) \quad (1)$$

where i_t is the nominal interest rate (Taylor rate) set by the CB, \bar{r} is the long-run equilibrium real interest rate (usually assumed to be constant). Current rate of inflation is denoted by p_t , while p_t^* is the target for inflation set by CB, $(p_t - p_t^*)$ is the deviation of inflation rate from its target level p_t^* . Finally, y_t is the real GDP, while y_t^* is the trend of real GDP, thus $(y_t - y_t^*)$ represents the output gap. The weights α and β indicate the reaction of CB's nominal interest rate to the changes in inflation gap $(p_t - p_t^*)$ and output gap $(y_t - y_t^*)$.

This formulation of the principle (equation 1) has been modified by later research in order to be implemented in open economies and developing countries. Considerable research shows that the monetary policy behavior of developed countries can be explained by Taylor policy reaction function (Clarida et.al 1998). However, the relevance of Taylor rule for monetary policy in developing countries has been less investigated. An important finding is that CBs in developing countries tend to respond not only to inflation and output, but most apparently to the exchange rate fluctuations. In this regard, Taylor (2000) and Garcia et al. (2011) argue that including the exchange rate in the equation does not bring significant benefit for developed countries, but it is effective for developing ones. Additionally, Taylor (2000) emphasizes the possible changes in the rule for developing countries. These changes could be in terms of the choice of instrument (to use monetary aggregates instead of short-term interest rate as it is more appropriate for developing economies due to the difficulties to measure the equilibrium real interest rate), including the exchange rate variable in the rule (or other variables) or in the response coefficients " α " and " β ".

The theoretical literature mainly emphasizes several explanations in regard to the importance of the exchange rate in CB's policy reaction function, particularly in developing economies: the first explanation is related to the need to keep CB's credibility. Mohanty and Klau (2004) consider that in developing countries the exchange rate shocks tend to be larger and more persistent compared to developed ones. Hence, there is a higher probability of missing their inflation targets. Therefore, in order to maintain their credibility, the CBs of those economies may have to react to the exchange rate fluctuations. Another explanation is the presence of a high path-through of the exchange rate into inflation (through import prices) in developing countries. Thus, Svensson (2000) and Ball (2000) suggest that their CBs might intensively use the direct exchange rate channel to affect inflation more rapidly and to keep its

inflation close to their targets. Furthermore, there is an implicit assumption about weak monetary transmission mechanism; hence relying on the interest rate channel is insufficient in the case of developing countries. Given the importance of exchange rate as a main determinant of inflation, developing countries may take an advantage of the exchange rate channel which might be faster and more effective than the traditional interest rate channel (Benlialper et al., 2017).

The empirical studies suggest including the exchange rate variable in Taylor rule to be implemented in small open economies⁵⁵. As these economies, which participate in international trade, but there are small compared to the world markets, that's their policies do not alter the world prices, interest rates or incomes. Countries with small open economies are therefore price takers. The empirical papers, which estimated the monetary policy in emerging and transition economies, find that CBs respond to exchange rate more than to inflation and output gap. The same results were found by the research of Edwards (2006) who indicates that economies, which faced historically high inflation and the real exchange rate volatility, tend to have a higher response coefficient to the the exchange rate in Taylor rule. Other papers examined Taylor type principles in developing economies⁵⁶ and found a high responsiveness of their policy rates to the changes in exchange rate⁵⁷.

Model specification and data description

Following the arguments and the empirical results of previous research (cited above) in regard to add the exchange rate in the rule, we analyze the behavior of monetary policy of the NBKR by estimating Taylor rules. For a computation of Taylor rates we run an OLS regression of original Taylor rule and its modified versions. The original principle (Taylor, 1993) is consistent with the following OLS formulation:

$$i_t = \beta_0 + \beta_1 P_t + \beta_2 Y_t + \varepsilon_t \quad (2)$$

where $\beta_0 = \bar{r} - \alpha p_t^*$ (see equation 1), P_t is the inflation deviation term ($p_t - p_t^*$) which is determined as the growth of consumer price index over the inflation target determined by the NBKR⁵⁸. Y_t is denoted to output gap ($y_t - y_t^*$); ε_t is an error.

⁵⁵ Sensson (2000; 2003); Ball, (2000); Clarida et al. (1998); Obstfel and Rogoff (2000); Froyen and Guender (2016);

⁵⁶ Emerging Asian and Latin American Countries;

⁵⁷ Filosa (2001); Corbo (2002); Alper and Ozan (2006); Moura and De Carvalho (2010);

⁵⁸ We use the inflation target observed at the beginning of the analyzed year, as this should be the most appropriate. Due to the fact that when it became clear that the target for inflation (set in the beginning of the year) could not be achieved, the NBKR changed its inflation target at the end of the year (the study does not

In regard to open economy versions of Taylor rule, which takes into account the role of exchange rate (e_t), we add the exchange rate according to the following formulations:

The first formulation suggests CB to react to the current exchange rate (for all measures related to exchange rates (e_t), an increase means a depreciation):

$$i_t = \beta_0 + \beta_1 P_t + \beta_2 Y_t + \beta_3 e_t + \varepsilon_t \quad (3)$$

this is the simplest and most direct way to add the exchange rate to the rule. In this case, a positive response weight on the exchange rate ($\beta_3 > 0$) tends to reduce the exchange rate volatility. If exchange rate depreciates then interest rate should be increased⁵⁹.

In the second formulation, the current exchange rate is replaced by the exchange rate gap, which is measured as the difference between current exchange rate and its equilibrium level ($e_t - e_t^*$) or the lagged level ($e_t - e_{t-1}$).

$$i_t = \beta_0 + \beta_1 P_t + \beta_2 Y_t + \beta_3 (e_t - e_t^*) + \varepsilon_t \quad (4a)$$

$$i_t = \beta_0 + \beta_1 P_t + \beta_2 Y_t + \beta_3 (e_t - e_{t-1}) + \varepsilon_t \quad (4b)$$

where CB aims to keep the exchange rate close to its equilibrium level (equation 4a), this is expected to prevent the negative effect of exchange rate fluctuations on the balance of payment and international competitiveness of the country⁶⁰. If CB reacts to the deviation of the exchange rate from its lagged level, it aims to adjust the exchange rate smoothly to its lagged level⁶¹. In case if the exchange rate is depreciating above its equilibrium e_t^* or its lagged level e_{t-1} ($\beta_3 > 0$), then CB will increase its policy rate.

And the last formulation was emphasized by Taylor (2001), he suggested adding the current exchange rate and the lagged exchange rate. Adding the lagged exchange rate is more

consider these changes). Additionally, in some years the inflation target was set with its upper and lower limits, and we take only upper limit of the target.

⁵⁹ see Aizenman et. al (2011); Elshamy (2012); Froyen and Guender (2016);

⁶⁰ An appreciation (higher than normal) has a contractionary effect on aggregate demand; the appreciation makes imports cheaper and exports more expensive (decreasing the competitiveness of the country), therefore decreasing exports (negative effect on the balance of payment). A depreciation might improve the situation, however, on the other hand depreciation (higher than a “normal” level) is expected to lower export prices and increase import prices. If the increase in the nominal value of imports exceeds the increase in the nominal value of exports, then the exchange rate depreciation worsens the trade balance.

⁶¹ see Korbonen and Nuutilainen (2016); Leitimo (2001); Benlialper et. al (2017); Frömmel et al. (2011); Helmi (2011).

complicated dynamics than simply reacting to the current exchange rate or the exchange rate gap (as in equation 3, 4a and 4b):

$$i_t = \beta_0 + \beta_1 P_t + \beta_2 Y_t + \beta_3 e_t + \beta_4 e_{t-1} + \varepsilon_t \quad (5)$$

when $\beta_3 < 0$ and $\beta_4 = 0$ then the currency appreciates and this would call CB to decrease its nominal interest rate, which would represent a “relaxing of monetary policy”; if $\beta_3 > 0$ and $\beta_4 < 0$, but absolute value ($\beta_3 + \beta_4 > 0$) is more than zero, the initial interest rate reaction is partially offset in the next period. In case if $\beta_3 > 0$ and $\beta_4 > 0$, then CB gives high weights to the exchange rate stability, when shocks to the exchange rate are large and persistent. Taylor (2001) argues that the partial interest rate offset is due to the lagged impact of the depreciated exchange rate on inflation. Inflation rate is temporarily high because of the depreciation, however, the increase in inflation might be temporary, thus it is not appropriate for a CB to over-tighten its monetary policy, because the higher inflation that would otherwise occur using the equation (1 or 2), the negative coefficient of β_4 prevents additional tightening.

So far we have identified our estimation models (equation 2-5). In the OLS regression estimation, we use monthly data for CPI (p_t), GDP (y_t), REER (e_t) and the NBKR’s key policy rate (i_t) that covers the period between January 2005 and December 2015. Our sample includes data from the NBKR official statistics, the National Statistical Committee of the Kyrgyz Republic (NSCKR) database and Interstat Statistical Committee of the Commonwealth of Independent States (CIS STAT) (see in Annex 1).

We use the key policy rate of NBKR as the policy interest rate (i_t). The actual inflation rate is measured in CPI (p_t). Output gap is calculated as the difference between GDP growth rate (y_t) and the potential rate of output (y_t^*), which is calculated by using Hodrick –Prescott filtering (HP)⁶². The exchange rate (e_t) is the real effective exchange rate, which is calculated as the weighted average of the KR’s currency relative to its major trade-partners adjusted for the effects of inflation (extracted from the NSCKR). The exchange rate gap ($e_t - e_t^*$) is calculated as the difference between (e_t) the real effective exchange rate and HP trend value (e_t^*).

⁶² Hodrick –Prescott filter applied to the data series from 01/2005 to 12/2015. Smoothing parameter $\lambda = 14400$.

Output gap = $\left(\frac{y_t - y_t^*}{y_t^*} \right) * 100\%$

Results and discussion

Now we proceed to the estimation results of the following policy reaction functions for the NBKR: (a) an original Taylor rule (equation 2) and its open economy versions (equation 3, 4a, 4b, 5). The estimates of response coefficients for the whole samples are reported in *Table 1*.

The findings about monetary policy in the KR state that the NBKR follows the Taylor rule marginally during the analyzed period. The response coefficient on the inflation gap is positive, statistically significant and close to 0.5 in all the specifications (as recommended by Taylor). This result implies that the NBKR performs the “active” monetary policy by increasing its policy rate in response of increase in inflation.

Taylor type rules estimations for the NBKR

	<i>Taylor rule (1)</i>	<i>Taylor rule (2)</i>	<i>Taylor rule (3a)</i>	<i>Taylor rule (3b)</i>	<i>Taylor rule (4)</i>
β_0 (Constant)	6.40** (0.22)	5.22** (0.18)	6.46** (0.20)	6.40** (0.22)	5.51** (0.18)
$(p_t - p_t^*)$	0.50** (0.05)	0.40** (0.05)	0.40** (0.05)	0.50** (0.05)	0.40** (0.05)
$(y_t - y_t^*)$	- 0.31** (0.07)	- 0.22* (0.06)	- 0.20* (0.07)	- 0.31** (0.07)	- 0.22* (0.06)
e_t	-	0.23** (0.02)	-	-	0.11 (0.08)
$(e_t - e_t^*)$	-	-	0.30** (0.06)	-	-
$(e_t - e_{t-1})$	-	-	-	0.03 (0.12)	-
e_{t-1}	-	-	-	-	0.012 (0.08)
R² adj.	0.49	0.68	0.57	0.49	0.68

Note: Number of observations 132 (for each specification). In parentheses are given robust standard errors (the errors were corrected for heteroscedasticity using the Huber-Eicker-White Procedure).

*** and * denote the 1%, 5% level of significance level, respectively.*

However, in the case of output gap, the coefficient is negative and significant in all the samples. According to the results, the NBKR reacts counter-cyclically to output growth deviation, which implies that the NBKR follows pro-cyclical monetary policy⁶³. This finding is not surprising for a developing economy, a number of previous researches that assessed monetary policy behavior of developing countries by estimating Taylor type rules, presented similar results. This is in line with the researches of Frommel and Schobert (2006), Saiful

⁶³ Additionally, a correlation analysis proves that the key policy rate of the NBKR has not a strong relation to the output gap. The degree of correlation of the policy rate with respect to inflation rate and the real exchange rate is strong and positive (0.62 with inflation and 0.63 with the exchange rate). However there is no meaningful correlation with output gap (see annex 2).

(2009), Korbonen and Nuutilainen (2016), the response coefficient on inflation is consistent with Taylor rule, but the negative value of output gap is not.

The coefficient of the exchange rate is of special interest in the case of a developing country with a small open economy. Regarding the effect of the exchange rate in the policy reaction function of the NBKR, the results do not provide a clear picture, which of these rules is pursued by the NBKR. According to the estimation results, it is more likely that the exchange rate is included to the policy reaction function, as two specifications (3 and 4a) have higher values of $Adj.R^2$ (0.68 and 0.57) and provide positive and statistically significant coefficients for all variables (the inflation gap, the output gap and the exchange rate). These results imply two possible scenarios: one might conclude that the NBKR follows the equation (3), assuming that the NBKR aims to reduce the exchange rate volatility by reacting to any fluctuations of the actual exchange rate (without any implicit target for the exchange rate). Another scenario is that the NBKR follows the equation (4a), assuming that it aims to keep the exchange rate close to its equilibrium level. This means that the NBKR aims to prevent the problems related to the balance of payments and low competitiveness of the country (as discussed before), which may occur due to the high fluctuations in the exchange rate. Hence, it is clear that either the NBKR reacts to any depreciation (appreciation) of the exchange rate following the Taylor rule (3) or it response to the deviation of exchange rate from its equilibrium level (Taylor rate (4a)). The results for the last two specifications (4b and 5), however, are less encouraging, as they are statistically insignificant. In this regard, we consider that the NBKR adds the exchange rate variable to its policy reaction without taking into consideration the lagged exchange rate.

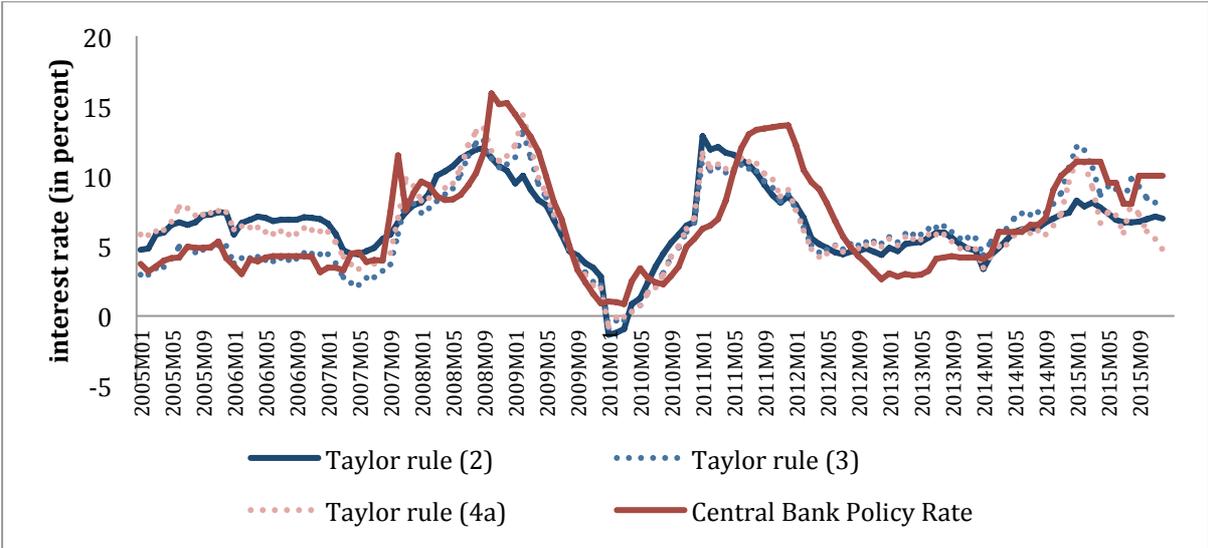


Fig. 5 Actual policy rate versus estimated rates
 Note: the Authors' own calculations

Figure 5 above demonstrates a graphical comparison of the rules that we found the most appropriate to explain the monetary behavior of the NBKR. The baseline Taylor rule (2) does not provide a satisfactory explanation for the policy reaction of the NBKR, as it shows significantly different dynamic than the policy rate. This also corresponds with the low value of R^2 , which proves that the inflation gap and the output gap explain only a half of the overall variation in interest rate reaction function ($R^2 = 0.50$). According to the estimations and its graphical illustration, it seems that the Taylor rule described by equation (3) better characterize the behavior of the NBKR's key policy rate. The movement of the Taylor rate (3) is in line with the key policy rate of the NBKR almost during the whole analyzing period (except the time lapse from the beginning of 2010 till the end of 2013). If the NBKR follows the rule (3), this could suggest that it performs a pro-cyclical monetary policy. The rule (3) reflects the dominance of the inflation and the exchange rate stability objective over the output stability. Another interesting finding concerns the dynamics of the Taylor rate described by the equation (4a), when the NBKR responds to the deviation of the exchange rate from its equilibrium level. This rule displays less encouraging results, the graph shows that its dynamics is noticeably different from the NBKR's rate almost in all analyzed period, however it gives some signs of convergence with the NBKR policy rate at the end of analyzing period (from the beginning of 2014). This could be more appropriate for the NBKR, if it has started following the rule (4a). As maintaining the exchange rate close to its equilibrium level and preventing too high appreciation (or depreciation) would allow the KR to avoid problems with the negative trade balance and low international competitiveness.

4.6. Conclusions

In this paper we aimed to make a contribution to the understanding of monetary policy in developing economies by analyzing the NBKR's monetary policy. During the transition period of 1991-2005, the country rapidly accomplished the list of exhaustive reforms to establish a market economy and reconstructed its banking system following the recommendations of the IMF. By the middle of 2000s the economy was recovered after hyperinflation of 1990s, the Russian financial crisis of 1998 and achieved relative price stability and economic growth. However, this did not necessarily lead to the functioning of effective monetary policy.

As for the second period of our analysis, during the period of 2005-2015 in order to define at what extent the NBKR responds to the changes in inflation, exchange rate and output growth, we estimated the variety of Taylor-type rules for the KR. By using different

specifications for the NBKR we obtained some interesting results that give good insights into monetary policy of the NBKR. The estimation results provide a general picture of the NBKR's behavior including the magnitudes of its reaction. Firstly, the paper provides an evidence of a strong policy reaction on inflation, as the NBKR responds significantly and positively to inflation in all our specifications, and the coefficient is very close to the recommended one. This suggests that inflation is the primary concern of the NBKR and this is coherent with the NBKR's official announcements. Secondly, based on the theoretical implications and taking into account the actual exchange rate arrangement of the NBKR regarding the exchange rate, we added the real exchange rate variable to our specifications of the Taylor rule. According to the results, it is clear that the NBKR strongly reacts to the movements in the exchange rate (most close to the values recommended by Taylor). Nevertheless, the problem related to the negative sign of the output gap remains in all our specifications, leading to a conclusion that the NBKR follows an open economy Taylor rule marginally. It is mainly concerned with the price stability and the exchange rate stability, but reacting counter-cyclically to output gap fluctuations. Thereby, the rule-based estimation results indicate that the traditional Taylor rule cannot describe reasonably well monetary policy of the NBKR. However, the results of the modified versions suggest that the NBKR follows either procyclical policy or stabilizing policy. Yet, both possible policies cannot provide a plausible explanation for opposite response on output growth deviation.

Concluding, the paper contributes to the body of knowledge about monetary policy in developing countries and the CIS countries in particular. In general, the NBKR has been evolving its monetary policy framework in line with other emerging and developing countries. This is evident from its current interest rate focused monetary policy framework the so-called 'the journey to inflation targeting'. This implies that the NBKR has been gradually moving from a partial monetary targeting to inflation targeting, but it still has not moved beyond the preliminary stage. Apart from this, the exchange rate arrangement remains as the important policy concern; the NBKR, in practice, continues intervening in foreign exchange market.

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Annex 1

Variables	Measure	Source	Availability
Key policy rate	Monthly rate in % (end of period)	NBKR	1/2005-12/2015
Consumer price index	Year-on-year CPI (%)	NSCKR	1/2005-12/2015
Inflation target	Annual target range for CPI inflation in %	NBKR	1/2005-12/2015
GDP growth rate	Year-on-year change in GDP growth in %	CIS STAT	1/2005-12/2015
Real effective exchange rate	REER index in % (2010 = 100)	NBKR	1/2005-12/2015

NBKR – the National Bank of the Kyrgyz Republic

NSCKR – the National Statistical Committee of the Kyrgyz Republic

CIS STAT – Internstat Statistical Committee of the Commonwealth of Independent States

Annex 2

Correlation of the NBKR's key policy rate

Inflation gap	0.67**
GDP gap	-0.15*
Real effective exchange rate	0.63**

*Note: ** and * denote the 1%, 5% level of significance, respectively.*

5. CONCLUSIONS AND OUTLOOK FOR THE FUTURE RESEARCH

As it is said in the beginning of the thesis, the main concern of growth economics has been understanding of causes of economic growth. In this regard, the current thesis, in a broad context, is devoted to contribute to the body of knowledge about economic growth in developing economies. Our objective is to analyze economic growth in the KR by different perspectives: the cluster theory, the growth diagnostics framework and the performance of the National Bank of the KR. In general, achieving economic growth in developing countries is more complex than those in developed countries due to the specific challenges these economies face. Therefore it is important to integrate and reconcile the aspects within a holistic sustainable growth concept. Both theoretical and empirical background of growth theories highlight its advantages and drawbacks, underlining the fact that there is no a general concept that can provide a sustainable growth for all.

The empirical analysis presented here attempts to test the applicability of three theories of mainstream growth economics that we consider would be relevant for a developing economy such as the KR. Firstly, the growth theory argues that location matters for growth, and there are considerable theoretical and empirical evidence for that. However, our objective is to check the relevance and applicability of the cluster approach in the Kyrgyz economy as one of the forces that could foster economic growth. Secondly, economic growth is country-specific and that growth policies should be designed based on the uniqueness of a country; thus, we apply the growth diagnostics approach. Thirdly, the most recent growth theory evidences that ‘institutions matter’, following this idea we analyze the performance of the main financial institution of the country and its role in promoting price stability as an essential condition for economic growth. For this reason, we developed three papers aiming to respond these questions and as each chapter is developed as a self-contained unit, a summary and results of each chapter is presented separately.

In the first chapter, we attempt to answer the question: “if the Kyrgyz Republic has strong economic opportunities and prerequisites in agriculture in order to implement an effective agro cluster in the livestock sector?” A summary of the main findings is as follows:

- As for the KR, agriculture is one of the prioritized sectors of its economy due the several facts. Firstly, agricultural sector is a main part of national production and income. Secondly, the poverty in rural areas is very high, where more than a half of the

population lives below the poverty line and agriculture is the main sector providing employment opportunities there. Thirdly, being a major source of income and employment, this sector uses only 2 percent of all its production capacity.

- Historically, Kyrgyz people were nomads and they have been engaged in cattle breeding for centuries, and up to now they could preserve traditional ways of livestock breeding, this gives them additional opportunities and advantages to provide “bio” meat products in the region. As well as the country was known as the main meat-supplier during the USSR period and therefore the KR has a good reputation of the supplier of high-quality meat among the former soviet countries. Furthermore, our research identified that the KR has advantageous natural and climatic conditions to provide farmers and processors with required inputs of production.
- Having identified that the country possesses necessary climatic and other natural preconditions to implement livestock cluster, we proposed a detailed model of livestock cluster in the KR. We recommend implementing a cluster in Chui region as a pilot cluster with a possibility to expand it over time as the country creates background and gains experience. This region is found as the most relevant in terms of its location and access to international markets, mainly Kazakhstan and Russia, which are the main foreign markets of meat; the presence of labor resources (internal labor migration to Chui region) and agricultural educational institutions that provide skilled labor force.
- Regardless of advantages we mentioned above, the impediments to implement an effective livestock cluster remain. The obstacles are mainly in terms of institutional conditions, as the institutions that control the compliance with food quality and safety, as well as organizations that assess veterinary and sanitary conditions are weak. Most of them belong to the ministries or the other government bodies and operate in conditions of poorly equipped laboratories from the Soviet era. In such conditions, the country would not be able to reach international markets that require compliance with a certain level of quality and sanitary standards. Thereby, the costs of compliance with these standards can be high and additional funding and support from the government is highly important at least at the initial stages. Furthermore, the government involvement is essential for the success of livestock cluster and requires its active involvement in creating and supporting networks and knowledge exchange structures for all involved parties in the cluster.

- Concluding, we assert that implementation of successful cluster in the livestock sector could result in agricultural production growth, thus the country could provide with meat products its domestic market; higher income of farmers, which is more than a half of the population; alignment of regional economic development and reduction of migration. Thereby, this could become a key measure to overcome the poverty in rural areas and enhance regional growth, consequently economic growth of the country.

Outlook for future research, the analysis could be extended in several directions. One possibility is to conduct analysis by using Porter's Diamond analysis, which could be useful to make a deeper analysis and to identify possible drawbacks and risks of a cluster. Another possible extension could be an application of principal component analysis and cluster analysis in order to assess the potential economic performance of farms and their possibility to be involved in livestock cluster in the KR. However, this is rather complicated due to the shortage of data at national and regional level. Finally, it would be also interesting to study clustering possibilities in other sectors of the Kyrgyz economy and their performance on economic growth.

The second chapter is an attempt to identify the most binding constraints to economic growth of the KR by applying the Growth Diagnostics approach. In order to build a plausible hypothesis on obstacles to growth, we selected a comparator group of countries that are at the same stage of economic development, with similar geographical, historical and political background. It is worthy to mention that there has been done only little research that employed this approach with respect to the CIS countries, and current research, therefore, provides a country specific research on the KR's economy and the main findings are as follows:

- Given the KR's long history of successful accomplishment of the reforms in democracy and rules of law following the recommendations of international organizations, it is reasonable to expect significant improvements in institutions that ensure rule of law and secure property rights. Certainly, the KR has made considerable progress in modernizing its legal and economic institutions since its independence, nevertheless, our study identified that corruption index is one of the highest in the KR and it is assessed as the major constraint for business. The judiciary system and law institutions are considered as the most corrupt and weak institutions of the country. So it is appropriate to stress that our results indicate that property rights

protection is the lowest comparing internationally and the weakest comparing to the comparator group of countries. The country with highly corrupt legal institutions is not capable to ensure clearly defined property rights secured by the rule of law. Thereby, instead of playing a major role in safeguarding the rule of law, access to justice and secure property rights, it is impeding the ability of individuals and businesses to optimally contribute to growth of the economy.

- Furthermore, our findings indicate that the economy and its agents are hampered by the existing high costs of domestic funds, which limits the capacity of the country to promote new businesses and invest in profitable projects. The high costs of credit (measured by the real rates of interest) resulted in extremely low level of domestic credit and low savings rate. The results of the World Bank's surveys are consistent with our findings, indicating that almost a half of local firms identified access to finance as a major constraint for their business.
- We have stated in the beginning, that the KR has rich natural resources and it is the country with the second richest hydro resources in Central Asia. Therefore, being predetermined by climatic and natural conditions, water resources are only source of energy supply in the KR. The country's energy production does not allow the KR to provide with water and energy resources even its domestic market and its energy supply is the lowest compared to the comparator countries. Assessment of the sector indicates that energy sector faces number of difficulties related to low productivity, outdated equipment from the USSR period, high level of electricity outages and a shortage of qualified labor force. Unreliable electricity supply and low efficiency of the sector has a strong negative impact on business and it is identified as a binding constraint to economic growth of the country. These results of the research are also supported by the reports of international organizations.
- Lastly, the country characterized by the lowest educational quality. Educational quality matters for growth; firstly, what people know has powerful effects on their earnings, on the distribution of income, consequently on economic growth. From another perspective, the lack of skilled labor force can become a constraint for firms, limiting their capacity to growth. As for the KR, almost half of firms consider that they suffer from the lack of qualified labor force. Our study defined that the lack of labor force is determined by the shortage of higher educational institutions that could educate graduates with required skills. Furthermore, the lack of qualified labor force is partly caused by low wages in the country, which leads to the migration of graduates

abroad for better conditions. Yet, at the current point of time, the lack of human capital is not considered as the binding constraint, but might become in the future if required measure will not be done.

As an outlook for future research, as our research is mainly based on the qualitative data, therefore it would be useful to perform a statistical analysis by employing a standard Euler equation. Furthermore, the growth diagnostics approach has not been applied for other Central Asian countries, and it could be interesting to extend the analysis at regional level. Both extensions could face difficulties in collecting statistical data, as the data provided at national level, are on yearly basis or some data is not available.

In chapter three, we analyzed monetary policy of the NBKR since independence in 1991 till the present. We aim to assess if the NBKR follows any rule-based policy and to identify its concern with respect to price and exchange rate stability, as well as economic growth. A summary of results are presented below:

- After the collapse of the USSR, the Kyrgyz government, with the aim to form a market economy began carrying out the structural reforms, including rapid privatization, liberalization and democratization in the 1990s. By the end of 1990s, the country successfully accomplished its reforms and the modern banking system was formed. The KR could overcome hyperinflation and rapid depreciation of its currency followed by the structural adjustments and financial crisis of 1998. Thus, in the first half of 2000s, having stronger fundamentals the country reached relative price stability and moderate economic growth.
- As for monetary policy of the NBKR during the period of 2005-2015, we found inconsistency between the legal and the actual frameworks. In practice, the NBKR has frequently changed its monetary policy framework without providing any plausible explanations for the shifts in its policy. We assume that this could be either a result of lack coordination (or consensus) between the government and the NBKR with respect to price stability; or the result of aiming to achieve too many objectives only with monetary policy.
- In order to analyze the behavior of the NBKR's policy for the period of 2005-2015 we applied the traditional Taylor rule and its modified versions including exchange rate. As based on the theoretical implications on the importance of exchange rate in

developing countries and as well as the NBKR's statements on the importance of exchange rate for price stability.

- Referring to inflation concerns, the NBKR declares that maintaining price stability is the main objective of its monetary policy. Our results of rule-based analysis confirm that the NBKR strongly reacts to the changes in inflation and the response coefficient is very close to that recommended by the Taylor rule in all our specifications.
- The empirical estimation results indicate that NBKR strongly reacts both to inflation and exchange rate, but it seems that output fluctuations are not the main policy concern. As in all our specifications we obtained counter-cyclical reaction. However, this is not surprising as the previous studies that applied the Taylor-type rules give very similar outcome, where their central banks react to inflation and exchange rate according to the Taylor rule, but oppositely to output.
- Main insight from the estimation results is that the traditional Taylor rule cannot describe the behavior of monetary policy of the KR. However, the modified versions including the exchange rate variable provide useful insights, as two specifications lead to a conclusion that the NBKR performs either a countercyclical monetary policy if it responds to fluctuations of the current exchange rate; or it performs a stabilization monetary policy if it responds to the exchange rate gap aiming to smooth its volatility.
- To conclude, our research shows that the NBKR's monetary policy has a priority objective to maintain price stability and the estimation results confirm its legal statement. The exchange rate has a special importance to achieve price stability in the KR, as it is the case in many other developing countries. Hence, the NBKR concerns about price stability as an essential condition for economic growth, but its reverse reaction to output growth signals about countercyclical monetary policy rather than stabilizing.

Outlook for the future research, there are many relevant research areas on the effectiveness of monetary policy of the NBKR and its impact on the Kyrgyz economy. From our perspective, there is particularly one issue needing more focused analysis: investigation of the legal and the actual independence of monetary policy of the NBKR. This aspect is important for any central bank both in developed and developing economies. However, literature highlights that central bank independence is critical in developing economies, as the effectiveness of monetary policy is frequently hampered by the actions of fiscal authorities.

Regardless of the few papers investigating the legal independence of the NBKR, there is a lack of research on the actual independence of the NBKR.

Concluding, we started the thesis by emphasizing that *'one size does not fit all'*, and aimed to understand economic growth features of the KR. Analyzing economic growth by different approaches of growth economics and by providing findings related to each approach, from our point of view, three chapters in a broad context signal about one key binding obstacle. Thus, we are referring to the institutional weakness (certainly it is not the only, but the main). The findings of first chapter indicate the role of market-regulating institutions as for effectiveness and success of cluster implementation; the Growth Diagnostics approach indicates market-creating institutions (financial institutions, rule of law and property rights); and lastly, the third chapter stressed market-stabilizing institutions.

Actually, the recent literature on growth economics asserts that institutions are a fundamental cause of growth and a right set of institutions stands for a catalyst for growth. This is an evidence of the institutional arrangement of an economy, yet defining the right set of institutions that matter for the KR needs to be investigated. Yet, the current analysis contributed to the body of knowledge in economic growth in developing countries and in the CIS countries in particular.