

The Nexus between Economic Growth and Financial Development in the Case of Tajikistan

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ABSTRACT

This thesis investigates the nexus between the economic growth and financial development as well as banking development sectors for the Tajikistan Economy. ARDL bounds testing approaches are conducted for analyzing a growth model over the period 1991Q1- 2013Q4. The empirical results suggest that financial development is a very important driving force for the economic growth in both the long and the short-terms of Tajikistan's economy. This finding also shows that Capital does not have any impact on the output growth, whereas labor, money supply, and domestic credit provided by financial sector have a positive influence on economic growth in the case of Tajikistan's economy. However the results reveal that there is a positive relationship between the economic growth and the financial development sector. The empirical results confirm that there is also a relationship between the economic growth and the banking development sector in Tajikistan.

Keywords: Economic Growth, ARDL model, Bounds test, Tajikistan economy. Money supply, domestic credit, finance and banking sectors.

ÖZ

Bu tez ampirik olarak Tacikistan ekonomisindeki ekonomik büyüme ile finansal gelişimi arasındaki uzun ve kısa dönemli ilişkiyi otoregresif dağıtılmış gecikme test ile ölçer (ARDL). Otoregresif dağıtılmış gecikme testi kullanılarak 1991Q1 ile 2013Q4 yılları arasında Tacikistan'nın ekonomik büyümesi incelenmiştir. Ampirik bulguların finansal büyümede hem uzun hem de kısa dönemli ekonomik büyüme üzerinde etkili olduğu belirlenmiştir. Bulgular ayrıca fiziksel sermayenin ekonomik büyüme üzerinde hiçbir etkisi olmadığı ispatlamıştır. Bunun paralelinde Tacikistan ekonomisinde iş gücünün, para arzının ve yurtiçi kredinin ekonomik büyümeyi pozitif yönde etkilediği bulunmuştur.

Anahtar kelimeler: Ekonomik büyüme; otoregresif dağıtılmış gecikme testi (ARDL); para arzı, Tacikistan ekonomisi, yurtiçi kredisi, finansal ve bankacılık sektörü.

DEDICATION

Dedicated to my parents with love

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Chapter 1

INTRODUCTION

1.1 Introduction

Considering any country with a market economy, a large number of different aspects of its life can be seen, as well as many indicators for which there is an impression about its well-being, the level of development and life. Economic growth has a significant impact on the standard of living of all the strata of the population. The parameters of the economic growth and their dynamics are widely used to characterize the development of the national economy and the government regulation of the economy. Population estimates the activity of higher economic and political institutions of a country. First of all, it considers the dynamics of the economic growth and the dynamics in living standards. The nature and the dynamics of the economic development is a subject that receives close attention of the economists and politicians. Thus, the kind of processes that occur in the national economy depends highly upon the life style of the country and the prospects for its further development. Under the economic growth, it usually perceives the increase in the gross national product and the increase in the economic potential of the country. This is why the problem of economic growth is the focus of the governments of all states.

This research intends to investigate the economic growth for Tajikistan. Tajikistan is one of the poorest countries in the world with the lowest per capita GDP among the 15 former Soviet republics. When compared to the other Central Asian countries in

national rank, Tajikistan is one of the poorest and slowly developing countries. The economic conditions of the Republic of Tajikistan, after the collapse of the Soviet Union, led to a sharp socio-economic crisis. Hence, it denoted a drop in production, mass unemployment and increased migration. Tajikistan seems to be show perfect economic indicators after the collapse of the Soviet Union in 1991, but unfortunately it is far from those improvements. Undoubtedly, economic growth is one of the most important indicators if everything works appropriately. In the economic system gross domestic product (GDP) and gross national product (GNP) can be related to many other variables.

1.2 Aim of the Study

This thesis investigates the nexus between economic growth and financial development, as well as banking development sectors using annual data over the period of 1991-2014 for the case of Tajikistani economy conducted by ARDL bound testing approach of co-integration advanced by Pesaran et al (2001) to estimate the relationship. This study implies to explore Tajikistan's economic growth and how is it influenced by Financial and Banking development sectors.

1.3 Methodology and Data

ARDL (the autoregressive distributed lag) bound testing modeling approach has been employed for the case. ARDL bound testing approach of co-integration was advanced and introduced by Pesaran et al (2001) to estimate the relationship and it can be used irrespective of the order of integration of the variables (irrespective of whether regressors are purely I (0), purely I (1) or mutually co-integrated). The Data for this study used as quarterly between 1991Q1 and 2013Q4 and extracted from IMF statistics.

1.4 Findings of the Thesis

The empirical results suggest that financial development is very important for driving the economic growth in both the long and short-terms of Tajikistan's economy. These findings also show that Capital does not have any impact on output growth, whereas labor, money supply, and domestic credit provided by the financial sector have positive influence on economic growth in the case of the Tajikistan's Economy. However, the results reveal that there is a positive relationship between economic growth and financial development sector. Error-correction modelling is used to confirm the existence of a stable long-term relationship and approve a deviation from the long-term equilibrium following a short-term shock, which is corrected by almost 10 percent after each year.

The empirical results also confirmed the relationship between economic growth and banking development sector in Tajikistan. However, findings show that Capital, Labor and Domestic Bank Credit have positive impact on economic growth, whereas Domestic Credit to private sector by bank does not have any impacts on output growth in the case of the Tajikistan's Economy. Error-correction modelling is used to confirm the existence of a stable long-term relationship and approve a deviation from the long-term equilibrium following a short-term shock, which is corrected by almost 12 percent after each year.

1.5 Structure of the Study

Chapter one is the introductory chapter and it shows the variables and the nexus among those variables. Chapter Two represents the Literature Review of the relationship between the economic growth and financial development as well as the banking development sector in order to see how previous studies have been done.

Chapter Three provides general information regarding the history of economic conditions of the Republic of Tajikistan. Chapter Four describes the data and the methodology in the research. Since the data and the methodology have been introduced, Chapter Five will provide the empirical results. Finally, Chapter Six contains conclusions, recommendation and suggestions.

Chapter 2

LITERATURE REVIEW

The relationship between financial development and economic growth sectors are investigated in previous studies and have rekindled interest in recent theoretical and empirical literature. Among the economists, one of the important areas of discussion has been the relationship between the financial development and the economic growth. At the theoretical level, the earliest official basics associated with the assessment of the role of finance in economic development are the ones proposed by McKinnon (1973) and Shaw (1973), also known as M-S school of thought. McKinnon supposes that financial development positively affects the economic development rather than the other way around. Shaw's framework is also based upon the same issue.

Fethi et. al. (2013) investigated the relationship between the financial development and the economic growth for the case of the North Cyprus economy between the periods of 1977–2010. Due to the mixed-integration level of the variables (a mix of I (0) and I (1), which are found in the series), the ARDL approach has been employed to carry out this investigation. The empirical results suggest that investments in the financial and banking sectors are important drivers for real income growth in both the long and the short term period, of the North Cyprus economy. The findings also show that private credits in the financial sector do not cause output growth in either in the long or the short term periods. The impact of physical capital for real income

is not also found to be as strong as that of human capital in the case of the North Cyprus economy.

Atif et. al. (2010) measured the impact of financial development and trade openness on GDP growth in Pakistan. Using annual data over the period 1980-2009, they used the bound testing approach of co-integration advanced by Pesaran et al (2001). The empirical results show that there is a validity of trade led growth and financial led growth hypothesis. The long-run and short-run are observed in a co-integration relationship between economic growth, trade openness and financial development.

In studies of Jenkins and Katircioglu (2010) employ the bounds test for co-integration and Granger causality tests to investigate the long-run equilibrium relationship and the direction of causality between financial development, international trade and real income growth for the Cyprus economy. The results of the study reveal that financial development as measured by broad money (M2), international trade and real income growth are co-integrated; thus, a long-run equilibrium relationship can be inferred among these three variables. On the other hand, Granger causality test results suggest that in Cyprus, the growth in real income stimulates the growth of international trade (both exports and imports) and the growth of money supply. As a final point, the results of this study reveal that the supply-leading, export-led growth and import-led growth hypotheses are not confirmed by this study, whereas the demand-following hypothesis can be justified for the Cypriot economy when M2 measure of money supply is under consideration.

At the empirical level Patrick (1966), probably the earliest effort in examining the relationship between financial development and economic growth, - proposed that at the initial stage of the development the direction of causality runs from financial to economic development a supply-leading relationship. The supply-leading hypothesis postulates a causal relationship from financial development to economic growth, which means intentional development of financial institutions and increasing the supply of financial services in markets and thus leads to real economic growth. Yet, in the later stage, the direction of causality is reversed – demand-following relationship. Fritz (1984) also reached the same conclusion by utilising the “causality-testing framework”, proposed by Granger (1969), in the case of Philippines.

Kar and Pentecost (2000) investigated the direction of causation between financial development and economic growth in Turkey for the period between 1963 and 1995. Granger causality tests and afterwards vector error-correction mechanisms have been followed. The empirical results indicated that the direction of causality between financial development and economic growth is sensitive to the selection of the measurement for the financial development in Turkey. When financial development is considered by the money to income ratio, the direction of causality is managed from financial development to economic growth, but when the bank deposits, private credit and domestic credit ratios are used, the direction of causality runs from economic growth to financial development. However, the result implies that the strength of the causality between economic growth and financial development is much better than that between financial development and economic growth. Actually it will not be contradictory with the received results to discuss with

all intention and purposes, in terms of Turkey's economic growth leading to financial development.

An ingenious study on the issue of long-run causality between financial development and economic growth was produced by Luintel and Khan (1999). Utilising data from 10 sample countries in a multivariate time series framework they found bi-directional causality between financial development and economic growth in all the sample countries examined. The authors attribute their findings to examination of a higher dimensional system, a new approach to the identification of long-run associations, and a new approach to long-run causality testing. Their findings move along with the observation of Lewis (1955), Patrick (1966) and a number of endogenous growth models that offer two-way causality between financial development and long-run growth.

Over the last decade one of the most attractive countries in the literature is China. It has been experiencing a fast and stable economic growth. Liang and Teng (2006) tried to measure the relationship between financial development and economic growth on China. The data period in the study was from 1952–2001. The study contained the biggest data set available for 23 years. The study investigated the long-run relationship among the financial development, growth and estimated the causality between financial development and economy growth. Using various indicators, the study also tested the robustness of the relationship. The empirical results found that financial development, international trade, physical capital stock and real interest rate are all significantly and economically related to the economic growth. Yet, there exists a unidirectional causality from economic growth to financial development.

The existence of the relationship between banking sector and economic growth is described by Harrison et al. (1999). Their finding shows that, in case of the economic growth, the banking sector is the main factor and more cost effective, which consequently influences the capital accumulation and final growth. Economic growth increases bank's activity and profits and therefore, brings more banks to the financial market.

Dipendra and Joseph (2001), using time series and cross section data, examined the relationship between financial sector development and economic growth for the following eight Asian countries: India, Japan, Korea, Malaysia, Pakistan, Philippines, Sri Lanka and Thailand. First of all, they estimated augmented production functions and then they carried out multivariate causality tests between the growth rate of income and financial development sector. The regression results show that India, Pakistan and Sri Lanka have a positive and significant relationship between the income variables and financial variables. The multivariate result shows income variable to financial variables for India, Malaysia, Korea, Pakistan and Philippines. But the reverse causality result from financial variables to income variables, are obtained for Japan and Thailand. In conclusion, the study suggests that it does not support a common view of a positive relationship between financial development and economic growth.

Another time series technique study is carried out by Odedokun (1996). Odedokun carried out causality tests between financial development and the growth of real GDP in developing countries. Odedokun employed annual data for 71 countries over various periods usually between 1960s and 1980s. Finally, the empirical results

suggested that financial intermediation positively affects the economic growth in about 85% of the 71 countries.

Another study is done by Al-Yousif (2002) in which he investigated the relationship between financial development and economic growth. The study includes 30 developing countries and Granger-causality test within an EC framework, which have been followed. First of all, the empirical results indicated that the causality between financial development and economic growth is bidirectional and there is strong support from both panel data and time-series. Secondly, there is as well, some support for another point of the view involving the “supply-leading,” the “demand-leading,” and the point of view suggest that there is no relationship between the two variables. Though the “bidirectional” view is stronger than this support. Thirdly, the empirical findings show that the results are country specific and tend to change with the sort of proxies utilized to measure the financial development. Due to the differences in policies and institutions, this can be explained due to the fact that there is a difference in the level of financial development for these countries. World Bank accords these results with the view that economic policies are country specific, and their success depends on the institutions that implement them (World Bank, 1993). Other studies also illustrates those countries with specific high degree of variation across the measures of financial development (Darrat, 1999; Demetrides & Hussein, 1996).

In the study of Botrić and Slijepčević (2008), the model for financial efficiency estimation is used as indicators such as; the interest rate spread. The empirical results indicate that there is positive relationship between the increased banking sector efficiency and the economic growth for countries of Southeastern Europe during the

period of 1995-2005 by using the panel data model. Also (Schumpeter, 1934; Mckinnon and Shaw, 1973) studied the relationship between financial development and economic growth. Now, it is well recognized that financial development is very important for driving to the economic growth.

Thangavelu et. al (2004) measured the dynamic relationship between the financial development and the economic growth in Australia. They used quarterly data for all the variables involved from 1960 to 1999 and investigations were carried out in terms of bank-based and market-based financial structure. A time-series approach using the VAR Model is used to provide evidence on the causal impact of the financial market on the economic growth of the Australian economy. Results indicated that financial intermediaries and financial market have different influences on the economic growth given their diverse roles in the domestic economy.

Akinlo and Egbetunde (2010) examined the long run and causal relationship between the financial development and the economic growth for ten countries in sub-Saharan Africa. The study reveals that financial development is co-integrated with the economic growth and also there is a long-run relationship between the financial development and the economic growth in the ten sub-Saharan African countries. In the Central African Republic, Congo Republic, Gabon, and Nigeria, the results indicate that financial development causes economic growth, but in Zambia economic growth causes financial development. While in Kenya, Chad, South Africa, Sierra Leone and Swaziland the relationship between financial development and economic growth are bi-directional. The results indicate the necessity of developing the financial sector with appropriate regulatory and macroeconomic

policies. However, Zambia needs to pay attention on economic growth in order to stimulate financial development.

Another study by Jao (1976) used the two measures of the financial development, growth of per capita real money balances and ratio of wide money stock or M2 to GDP, in order to measure their influences on the economic growth. Using annual data over the period 1967-1972 he took 67 developed and developing countries into consideration. According to Jao's findings, both measures positively affected the economic growth as all the 67 countries are combined. Whereas only the growth rate of per capita real balances has effects on developing countries, as the countries are separated.

In another study by Beck (2002), he examined a possible link between the financial development and the structure of international trade in manufactures. A theoretical model indicates that there is a possible causal relationship from the level of financial development to the structure of international trade. The paper focuses on the role of financial intermediaries in contributing high-return projects, large-scale and reveals that economies with better-developed financial sectors have a relatively privileged chance in manufacturing industries. Kletzer and Bardhan (*Journal of Development Economics*, 1987) give support to the predictions of the model. The countries which have a higher degree of financial development have higher shares of manufactured exports in GDP and in total exports of goods and have a higher balance of trade in manufactured goods.

Katircioglu et. al (2007) examined the possible co-integration and the direction of causality between financial development, international trade and economic growth in

India using the annual data over the period of 1965-2004. Their findings reveal that there is a long-run equilibrium relationship between financial development, international trade and real income growth in the case of India. Furthermore, unidirectional causality is investigated and it is found that it runs from real income to exports and imports, from exports to imports, M2 and domestic credits, from M2 to imports, from imports to domestic credits. Bi-directional causality is also obtained between real income and M2, and between real income and domestic credits. Finally, no direction of causality is obtained between M2 and domestic credits.

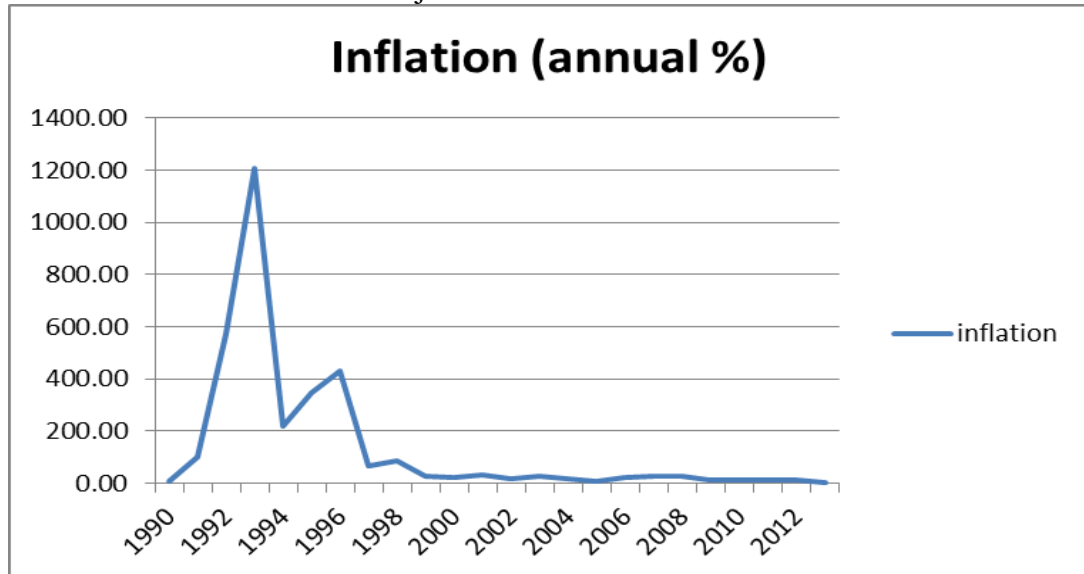
Chapter 3

ECONOMIC OVERVIEW: TAJIKISTAN

Until the early 1990s, of the last century, Tajikistan was one of the Member States of the former USSR and was developing on the basis of the centralized planning of the economy. In the Soviet period, Tajikistan's economy grew by contributing to centralized financing. After the collapse of the Soviet Union and due to termination of the centralized financing, the economy of Tajikistan faced numerous challenges, production facilities have been completely destroyed, the collapse of the economy led to a significant increase in the rate of inflation, budget deficit were huge, and the unemployment and poverty of the population reached colossal proportions.

The economic recovery begun in the second half of the 1990s of the last century. Since 1996, the budget deficit, funded by the government of the country has decreased from 11% (in 1995) to 3% within the last years of 1990s and up to 1% of the total GDP in the early 2000.

Table 1: The Inflation Rate of Tajikistan



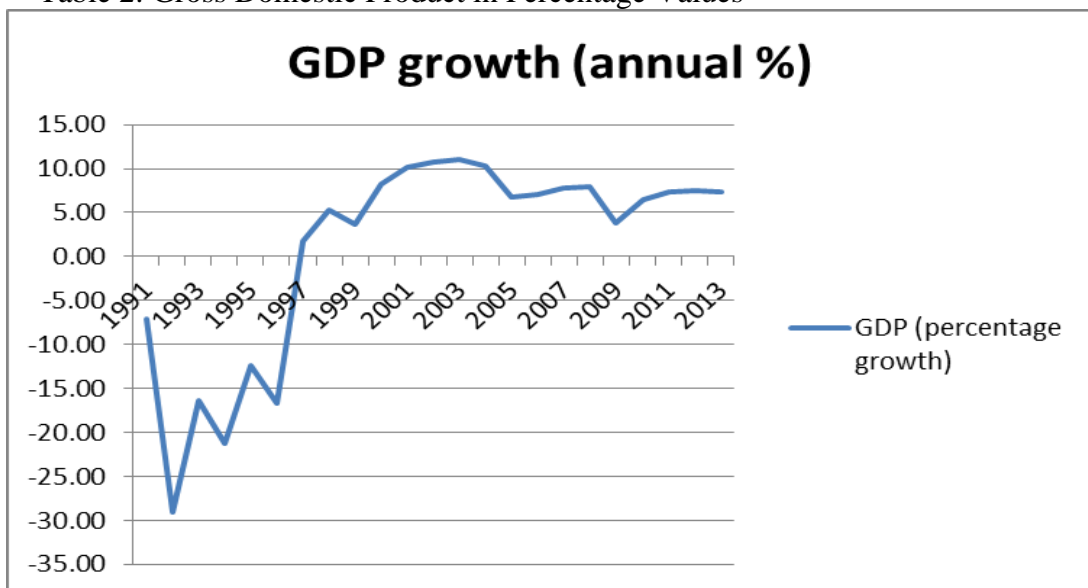
Source: worldbank.org

The inflation rate in Tajikistan is shown in the above chart. According to the graph, the rate of inflation in Tajikistan between 1990 and 1996 was very high, and in 1993 it reached the peak (1207%). Since 2000, inflation has become stable and went into decline.

One of the key indicators of the economic stability is a stable gross national and domestic product. As it was already mentioned, after the collapse of the USSR, Tajikistan's economy has faced numerous challenges, but nevertheless Tajikistan has achieved very high rates of economic growth after 2000. It was achieved by the stimulation of labor and labor-intensive manufacturing by the equal distribution of the financial and material resources. In the economic development of Tajikistan, labor force plays an important role, and therefore the creation of new jobs can lead to further growth of the economic capacity of the country.

Currently, Tajikistan is a member of the CIS (Commonwealth of Independent States) countries, and has a very capital-intensive economy. In Tajikistan, the private sector is underdeveloped, due to the fact that most of the national capital is created in the state sector, and the lack of normal conditions prevents the development of the private sector, and it is the biggest problem of the country. To resolve this issue, Tajikistan needs to make more contributions (financing) in the private sector, focusing on the export of non-traditional goods and services for the economy of the state. In Tajikistan, the contribution of private financing in the economy is the lowest when compared to the developing countries. The total amount of private sector financing in the economy of Tajikistan between 2003 and 2006 was only about 6% of the gross domestic product (GDP).

Table 2: Gross Domestic Product in Percentage Values



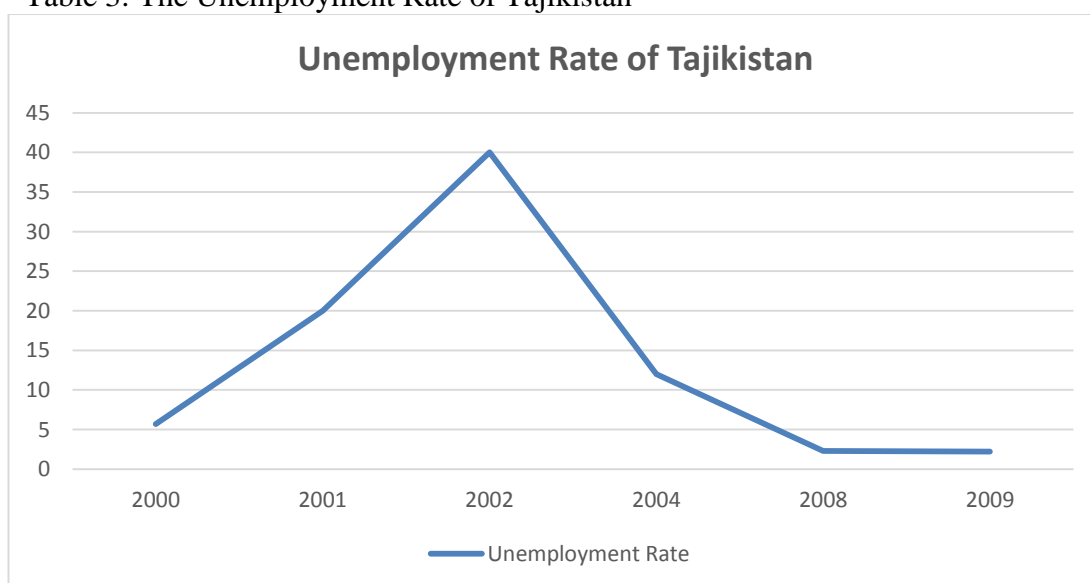
Source: worldbank.org

After the collapse of the Soviet Union, Tajikistan had begun the restoration of the national economy. However, the pace of growth in the economy over the past years

is not very stable. Tajikistan hardly manages maintaining a stable level of growth, as evidenced by the high swings in the graph above.

As it was already noted, the economic development of Tajikistan significantly depends on its labor resources. The total quantity of the employable population of Tajikistan in 2005 was about 3.6 million people, 70 percent of which were employed in the agricultural sector of the country, which is one of the main sources of livelihood of the people of the country. From the total number of employable population, 17 percent are employed in the service sector, while the remaining 13 percent-in the field of construction and industrial production. Due to the fact that the majority of industrial and agricultural enterprises and farms were in the state sector, there were problems with the employment of the population. Until the early 2000s, the wages of the working population of Tajikistan was too small, but since 2004 with an increase in economic growth, the rate of wages has increased several times.

Table 3: The Unemployment Rate of Tajikistan

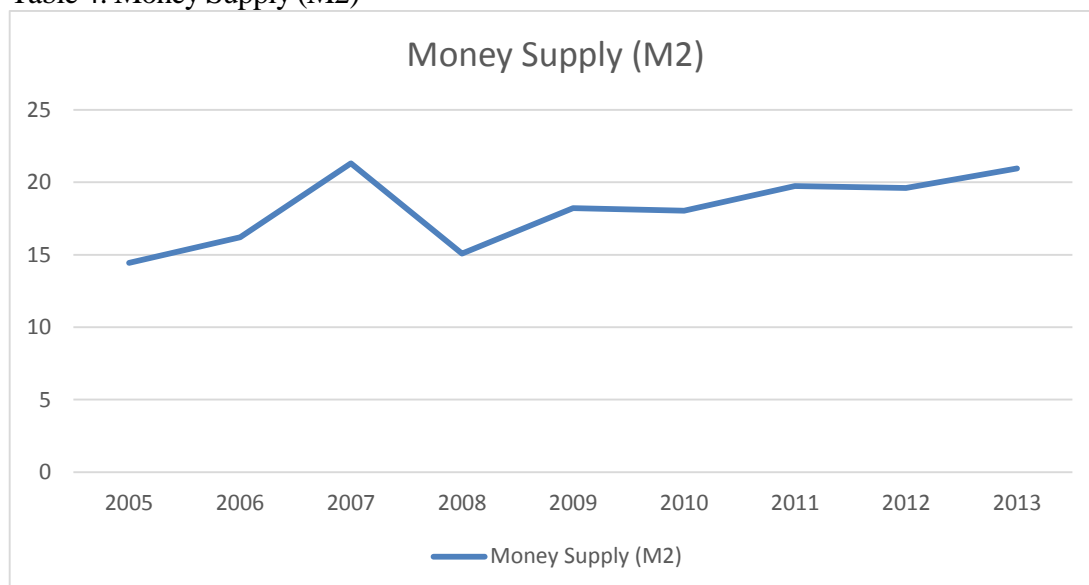


Source: worldbank.org

Tajikistan's unemployment rate was extremely high between 1999 and 2004. As a result of it, the majority of employable population had immigrated to Russia and other neighbor countries for permanent or seasonal employment. These labor migrants supported their families by remittances. This fact is confirmed by the fact that according to statistics in 2015 around 15% of households were dependent on remittances from labor migrants. Currently, Tajikistan needs more reforms new markets to get into as the level of economy income is too low.

A sound and efficient financial sector is a key for the economy of Tajikistan to mobilize saving, fostering productive investment, and improving the reliability of risk management. Currently, the Tajik financial sector needs positive changes, since it remains small and weak, though there are recent positive signs of improvement in the sector. The degree of monetization of the Tajik economy is the lowest in Central Asia. Although the ratio of the broad money supply (M2) to GDP which is shown in the table below had increased to 20.95 percent in 2013 from 18.95 percent in 2010, monetization remains below all the benchmarks. Therefore, the stabilization of the exchange rate has yet to increase into higher domestic confidence in the national currency, as more than 70 percent of bank deposits are made in dollars.

Table 4: Money Supply (M2)



Source: worldbank.org

At present, the Tajik financial sector, like other countries with economies in transition, is facing problems seriously, as it is still operating on the basis of institutions of the Soviet era. The National Bank of Tajikistan has outstanding loans from the private sector, the accounts of which are blocked and they do not have access to them. Many of these outstanding loans account for such strategically important sectors like energy, industry, agriculture, and too large sizes. Currently, one of the main tasks of the National Bank of Tajikistan is to carry out effective monetary-loan policy.

However, big outstanding loans, not only challenge the National Bank of Tajikistan by decreasing its independence, but it also creates unfair competition for private commercial banks. According to the International Monetary Fund (IMF), the National Bank of Tajikistan plans to stop giving the loans. It is necessary to increase the level of lending to the private sector to stimulate investment in the economy of the country, especially by developing small and medium businesses, i.e. to invest heavily for creation of small and medium-sized enterprises. Despite the difficulties in Tajikistan, the level of lending to the private sector is

growing faster in Tajikistan than in other former Soviet republics, thus it shows the improvement in the financial sector as one of the indicators of increased economic growth.

Tajikistan needs to consolidate the recent developments in the financial sector. According to a recent survey, as one of the most significant problems in the financial sector, the existing problems in funding were given. Therefore, the investment projects to strengthen the financial sector and improve its effectiveness, is a priority. In this direction, there are several options, including projects to promote and encourage the entry of foreign banks in the economic sector of Tajikistan; program to strengthen the guidelines and rules for the use of loans and investments; improving the availability of micro-finance, etc. In order Tajikistan to avoid the problems faced by other countries at a similar stage of transition of the financial sector; it is necessary that efforts to increase the availability of credit and investment for the private sector were accompanied by more effective use of monitoring and evaluation system of the credit quality.

Chapter 4

DATA, MODEL AND METHODOLOGY

4.1 Data

The “data” are collected from measurable division of Ministry of Finance of Tajikistan, from World Bank and IMF Databases. Data used in this study are annual figures and the time measurement of variables is 23 years, for the period of 1991 to 2013. It is focused on seven variables, which are:

LCAP - GDP per capita is the gross domestic product divided by midyear population. GDP is the sum of gross value added by all the resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

LKR – Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drain, and so on); plant, machinery and inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales.

LL – Labor is total labor force comprises people between the ages of 15 and older who meet the International Labor Organization definition of the economically active

population: all people who supply labor for the production of goods and services during a specified period. It includes both the employed and the unemployed.

LM2 - Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government.

LDBC- Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available.

LDCFINSEC- Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net.

LDCBANKSE - Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.

GDP figures are in constant 2005 US\$ and the other variables: LKR, LL, LM2, LDBC, LDCFINSEC, and LDCBANKSEC are in % of GDP. These variables are used to measure the nexus (relationship) between Economic Growth and Financial (Banking) development sectors and whether a long-term relationship exist between the variables or not.

4.2 Model

In this study, frameworks introduced by Sami Fethi et al. (2013) are adopted to investigate the role of the financial development on economic growth in the following way:

$$LCAP = a_0 + a_1 LKR_t + a_2 LL_t + a_3 LM2_t + a_4 LDCFINSEC_t + u_t$$

$$LCAP = a_0 + a_1 LKR_t + a_2 LL_t + a_3 LDBC_t + a_4 LDCBANKSEC_t + u_t$$

Where,

LCAP is GDP per capital, LKR is capital, and LL is labour, LM2 is money supply, LDBC is domestic bank credit, LDCFINSEC is Domestic credit provided by financial sector, and DCBANKSEC is Domestic credit provided by banking sector. a_0 , a_1 , a_2 , a_3 and a_4 are the estimated parameters, u_t is the serially uncorrelated random disturbance term; and L denotes the natural logarithm.

4.3 Methodology

Panel Unit Root Test are used for recognizing whether data are stationary or not. Many approaches exist to analyse the unit roots such as ADF –Augmented Dickey-Fuller, PP – Philips-Perron, Kwiatkowski-Philips-Schmidt-Shin for the benefit of variables. Here this test is employed to investigate whether a relationship exists between the variables or not. After the finding of panel unit root as well as co-

integration tests, error correction model test is applied to find out long-term co-efficient and short-term co-efficient.

The Panel Co-integration Tests are conducted for the sake of the non-stationary series. This focuses on three important points as such the stationary point, the spurious results and the error-correction model. If the Time-Series result is non-stationary, then a stationary issue has upsurge and this pattern may cause genuine issues (i.e. spurious brings about relapse). It is integrated with mix-ordered regressors, either I (1) or I (0). The Bounds test is run under the Auto Regressive Distribution Lag (ARDL) model. This study conducts the Bound test approach and ARDL is used to find the short-run dynamics.

Chapter 5

DATA ANALYSIS AND RESULTS

5.1 Correlation Matrix

Table 1 presents the correlation co-efficient of the variables at the natural logarithm. The pairwise correlations between GDP and the variables are reasonably high. It is worth emphasizing that it is expected to have low correlation among the explanatory variables, as well as high correlation between the dependent GDP (LCAP is GDP per capital), and the explanatory variables. One of the assumptions of the classical linear regression model is that no independent variable has a perfect linear relationship with any of the other independent variables.

Table 5.1: Estimated Correlation Matrix of Variables

	GDP	DKGDP	L	M2GDP	DCBGDP	DCFINSEC	DCBANKS
GDP	1.0000						
DKGDP	.75973	1.0000					
L	.61953	.14588	1.0000				
M2GDP	.92598	.15000	.62898	1.0000			
DCBGDP	.20605	-.029862	-.10309	.17071	1.0000		
DCFINS	.35869	-.016416	-.5525	-.33212	.54314	1.0000	
DCBANKS	.12364	-.018226	-.27766	-.20428	.79870	.79515	1.0000

5.2 Unit Root Test

Table 5.2 shows the results of ADF tests which reveal that LGDPC, KGDP, M2GDP, DBCGDP, DCFINSEC, DCBANKSEC are integrated of order I (1) and LGDP is integrated of order zero, I (0). The relevant critical values of the ADF test for 25 numbers of observations at the 5 percent significance levels are obtained from Mackinnon (2010) and by MFIT 4.1. It is worth nothing that the intercept and trend terms are added to the ADF equations. I have chosen the Schwarz Bayesian Criterion is chosen for optimum lags for the variables under inspection.

Table 5.2: Unit Root Tests

Variables	Test Statistics and Critical Values				Integration levels
	Levels		1 st differences		
	ADF	C.V. (5%)	ADF	C.V. (5%)	
LGDPC	-1.80 (0)	-2.91	-4.53 (0)	-2.91	I(1)
KGDP	-1.90 (0)	-2.91	-3.88 (2)	-2.91	I(1)
LGDP	-1.42(0)	-2.91	-2.76(3)	-2.91	I(0)
M2GDP	-1.58(3)	-2.91	-3.98(2)	-2.91	I(1)
DCBGDP	-2.19(3)	-2.91	-3.77(2)	-2.91	I(1)
DCFINSEC	-1.81(0)	-2.91	-3.57(2)	-2.91	I(1)
DCBANKSEC	-1.90(0)	-2.91	-3.91(2)	-2.91	I(1)

Table 5.3 shows that F-statistics exceed the upper bound of critical value band, so the null hypothesis of no long-term relationship between the variables in the model can be rejected. The F-statistics confirms that basing on the model, there exists an equilibrium relationship between GDP and its elements. Column F gives the critical value bounds for F-statistic version of the test. Column W provides the bounds for the W-statistic for the three cases based on whether the underlying regression contains an intercept or trend.

Table 5.3: F-Statistic-ARDL Models

F-Statistic Variables	F-Stat	Column F		Column W	
		I(0)	I(1)	I(0)	I(1)
F(GDPC,DKGDP,L,M2GDP,DCBGDP,DCFINSEC,BANKSEC)	10.68	2.85	4.05	14.2	20.24

In the next step, the coefficients of the long-term relationships are estimated and find their error-correction terms are found. Table; 5.4 and 5.5 present the long-run and short-run estimates for the nexus between Economy Growth and Financial Developing sectors. It also shows the error-correction coefficients respectively. Table 5.5 shows that the error-correction terms (coefficients) are statistically significant for the model. Its coefficient is almost -0.10 . This means that the disequilibrium occurring due to a shock is totally corrected in 1 year period at the rates of 10 percent.

Table 5.4: Estimation for Autoregressive Distributed Lag Estimates

Autoregressive Distributed Lag Estimates			
ARDL(1,0,0,1,1) selected based on Schwarz Bayesian Criterion			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
GDPC(-1)	.89316	.051929	17.1997[.000]
KGDP	1.0043	.81927	1.2259[.226]
L	9453E-5	.4155E-5	2.2750[.027]
M2GDP	7.5765	1.4733	5.1426[.000]
M2GDP(-1)	7.6666	1.4480	5.2947[.000]
DCFINSEC	3.6453	.98001	3.7197[.000]
DCFINSEC(-1)	3.8288	.99030	3.8663[.000]
R-Squared	.97576	R-Bar-Squared	.97296
Akaike Info. Criterion	-157.8268	Schwarz Bayesian Criterion	-165.0982
DW-statistic	1.2913	Durbin's h-statistic	2.9682[.003]

Notes: t-statistics are in parentheses and all diagnostic pass at the 5 percent, or 1 percent level of significance. It is worth stressing that reported diagnostic suggests that the evident misspecification do exist at the 5 percent level of significance for some criteria.

In the long-run period, labor, money supply, and domestic credit provided by financial sector are statistically significant at least 5% level. This means that labor, money supply, and domestic credit provided by financial sector have positive impact on economic growth of Tajikistan. Therefore, Capital should be definitely significant at least at 5% level in the model, but it is not significant. However, the results mean that the strength of the causality between economic growth and financial development is better. Now, it is well recognized that financial development is very important for driving economic growth. According to ARDL model, long-term and short-term equilibrium relationship has been confirmed between the economic growth and financial development sector in Tajikistan. This is also consistent with the result from the study of Odedokun (1996) which suggested that financial intermediation positively affects economic growth in about 85% of the 71 countries.

Table 5.5: Error Correction Representation for the Selected ARDL Model

ARDL(1,0,0,1,1) selected based on Schwarz Bayesian Criterion			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dKGDP	1.0043	.81927	1.2259[.226]
dL	.9453E-5	.4155E-5	2.2750[.027]
dM2GDP	7.5765	1.4733	5.1426[.000]
dDCFINSEC	3.6453	.98001	3.7197[.000]
ecm(-1)	-.10684	.051929	-2.0574[.044]
R-Squared	.64473	R-Bar-Squared	.60373
Akaike Info. Criterion	-157.8268	Schwarz Bayesian Criterion	-165.0982
DW-statistic	1.2913		

Table; 5.6 and 5.7 also present long-run and short-run estimates for the nexus between economy growth and banking developing sectors as well as the error-correction coefficients respectively. Table 5.7 shows that the error-correction terms (coefficients) are statistically significant for the model. Its coefficient is almost – 0.12. This means that the disequilibrium occurs due to a shock is totally corrected in 1 year period at the rates of 12 percent.

Table 5.6: Estimation for Autoregressive Distributed Lag Estimates

Autoregressive Distributed Lag Estimates			
ARDL(1,1,0,1,0) selected based on Schwarz Bayesian Criterion			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
GDPC(-1)	.87331	.036606	23.8568[.000]
KGDP	2.9370	1.2259	2.3958[.020]
KGDP(-1)	2.3969	1.2036	1.9915[.052]
L	.1495E-4	.4149E-5	3.6027[.001]
DCBGDP	8.8655	1.7073	5.1928[.000]
DCBGDP(-1)	8.4057	1.5736	5.3418[.000]
DCBANKSEC	.65450	.48614	1.3463[.184]
R-Squared	.97188	R-Bar-Squared	.96864
Akaike Info. Criterion	-162.1987	Schwarz Bayesian Criterion	-169.4701
DW-statistic	1.2321	Durbin's h-statistic	3.0732[.002]

Notes: t-statistics are in parentheses and all diagnostic pass at the 5 percent, or 1 percent level of significance. It is worth stressing that reported diagnostic suggests that the evident misspecification do exist at the 5 percent level of significance for some criteria.

In the long-run period, that estimates the relationship between economic growth and banking development sector, Capital, labor, and Domestic Bank credit are statistically significant at least 5% level. This means that Capital, labor, and Domestic Bank Credit have positive impact on the economic growth of Tajikistan. Therefore, Domestic Credit to private sector by bank should be definitely significant at least at 5% level in the model, but it is not significant. However, according to ARDL test model, long-term and short-term equilibrium relationship has been confirmed between the economic growth and the banking development sector in Tajikistan. The positive relationship between economic growth and banking development sector also confirm the suggestion of Harrison et al. (1999). His finding shows that in case of the economic growth, the banking sector is the main factor and more cost effective, which consequently influences capital accumulation and final growth. Economic growth increases bank's activity and profits and therefore, brings more banks to the financial market.

Table 5.7: Error Correction Representation for the Selected ARDL Model

ARDL(1,1,0,1,0) selected based on Schwarz Bayesian Criterion			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dKGDP	2.9370	1.2259	2.3958[.020]
dL	.1495E-4	.4149E-5	3.6027[.001]
dDCBGDP	8.8655	1.7073	5.1928[.000]
DCBANKSEC	.65450	.48614	1.3463[.184]
ecm(-1)	-.12669	.036606	-3.4609[.001]
R-Squared	.58797	R-Bar-Squared	.54043
Akaike Info. Criterion	-162.1987	Schwarz Bayesian Criterion	-169.4701
DW-statistic	1.2321		

Chapter 6

CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS

6.1 Conclusion

This thesis empirically investigates the nexus between economic growth and financial as well as banking development sectors for the case of the Tajikistani Economy over the period 1991–2013. Due to the mixed-integration level of the variables (a mix of $I(0)$ and $I(1)$, which are found in the series), the ARDL approach has been employed to carry out this investigation.

- i) The empirical results suggest that financial development is a very important driving force for the economic growth in both the long and short-term period of Tajikistan's economy. These findings also illustrate, that Capital does not have any impact on the output growth, whereas labor, money supply, and domestic credit provided by financial sector have positive influence on economic growth in the case of Tajikistan's economy. However, the results reveal that there is a positive relationship between the economic growth and financial development sector. Error-correction modeling was used to confirm the existence of a stable long-term relationship and approve a deviation from the long-term equilibrium following a short-term shock, which is corrected by almost 10 percent after each year.

- ii) The empirical results have also confirmed that there is a relationship between the economic growth and banking development sector in Tajikistan. However, the findings show that Capital, labor, and Domestic Bank Credit have positive impact on the economic growth, whereas Domestic Credit to private sector by bank does not have any impact on output growth in the case of Tajikistan's economy. Error-correction modeling was used to confirm the existence of a stable long-term relationship and approved a deviation from the long-term equilibrium following a short-term shock, which is corrected by almost 12 percent after each year.

The consistent relationship can be seen in other studies as well. For example, Odedokun (1996) analysed 71 countries over various periods usually between 1960s and 1980s and found that financial intermediation positively affects economic growth in about 85% of the 71 countries. The existence of relationship between banking sector and economy growth have been described by Harrison et al. (1999). Their finding shows that in case of economic growth, the banking sector is the main factor and more cost effective, which consequently influences the capital accumulation and final growth. Kar and Pentecost (2000) investigated the direction of causation between financial development and economic growth in Turkey for the period between 1963 and 1995. The empirical results indicated that the direction of causality between financial development and economic growth is sensitive to the selection of measurement for financial development in Turkey. When the financial development is considered by the money to income ratio the direction of causality manage from financial development to economic growth, but when the bank deposits, private credit and domestic credit ratios are used, the direction of causality

runs from the economic growth to financial development. However the results mean that the strength of the causality between economic growth and financial development is much better than that between the financial development and the economic growth.

It can be concluded that financial and banking development sectors do not only show positive impact on economic growth in the case of Tajikistan, but also other researchers have found the similar nexus by utilizing different approaches of analysing these relationship in other developing countries as well.

6.2 Recommendations and Suggestions

The brotherhood war that happened in Tajikistan after obtaining the independence from the Soviet Union left the country with unemployment, no growth, and high debt. More than 2 million citizens left the country and flew to Russia and nearby countries for seeking a job. Tajikistan's economy started to recover with the international credits given by IMF, World Bank and the money sent by migrants. As the facts show, fifty percent of domestic GDP was based on remittances on those years.

This research shows that Tajikistan should develop the financial sector, especially providing credits by depository institutions to the private sector. By providing the credits to the private sector, mainly agricultural sector and small business will induce economic growth. The main obstacle for improving providing credits and loans by depository and non-depository institutions is the cost of capital. Credits provided by institutions to the private sector are costly for them, which slows their intention to

borrow and invest. In the case of Tajikistan, finding the cheap sources of funds to credit the private sector will create new businesses; as a result new job opportunities will boost the economic growth.

The effective monetary policy carried by the Central Bank is another essential aspect that the government should take into consideration. As Tajikistan's economy is heavily dependent on Russian Federation's economic state, the improper way of conducting the monetary policy by Tajikistani Central Bank may result in excess of money in the economy, which may increase the inflation, and worsen the economy's state. That is, Tajikistan's economy is faced currently. As the majority of migrants are coming back home, because of unemployment in Russian Federation which is caused by the decrease in oil prices and western sanctions, and depreciation of Russian ruble, decreased the inflow of capital and resulted to high prices. In this case, Tajikistan's government should carefully decide about the money supply and try to seek for the cheap fund in order to keep the growth of the economy.

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