Financial Development and Economic Growth : The Case of Kazakhstan

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The study is emphasized on two types of research. The first is the effect of the economy on stock market development. And the second one is the effect of the stock market development on the economy. Stock investment tends to be pro-cyclical. And pro-cyclical investment behavior may accelerate the development in an economy. However, if investors behave in a counter-cyclical way to exploit the low price advantage during a recession, they may affect the economy in an opposite way, improving economic conditions. Therefore, the study attempts to discuss the effect of stock markets on and from the economy, and to compare the magnitudes of impacts for policy considerations. The results of the study confirm the one way influence to work between the equity market and the economy in Kazakhstan. The stock market does positively affect the economy. The view of one way causality was proved to work in Kazakhstan based on the results of the study.

JEL Codes: F34, G21 and G24

1. Introduction

The study explores the relationship between the economic growth and the stock market development. Financial impacts on the economy or vice versa may include both direct and indirect financial markets, and in this study, the effects of equity market on or from the economy are analyzed. Shortly, two types of research are discussed in the paper. The first is the effect of the economy on stock market development. And the second one is the effect of the stock market development on the economy. Stock investment tends to be pro-cyclical. And pro-cyclical investment behavior may accelerate the development in an economy. However, if investors behave in a counter-cyclical way to exploit the low price advantage during a recession, they may affect the economy in an opposite way, improving economic conditions. Therefore, the study attempts to discuss the effect of stock markets on and from the economy, and to compare the magnitudes of impacts for policy considerations.

The stock market is similar to banking industry in terms of facilitating transfer of funds from lenders to borrowers. The results may imply important policy recommendations on effective financial market monitoring either through direct market with emphasis on proper disclosures and investor protection or indirect, especially banking market with prudent banking regulations and depositor protection. Although there are many papers discussing relations between economic and stock market development variables, few research deals with CIS countries. Such reasons might be mentioned as underdeveloped stock market,

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lack of data, dependent market structure. However, Kazakhstan has its own well-functioning stock market, well-functioning financial system and developed banking system.

Hypothesis 1: There is mutual causality between stock market and the economy in Kazakhstan.

Hypothesis 2: There is one way causality running from the stock market to the economy.

Hypothesis 3: There is one way causality running from the economy to the stock market.

The rest of the paper is organized as follows. The second section is literature review and the third section is methodology. The last section is conclusion.

2. Literature Review

Macroeconomic factors and stock market development are connected with each other and have some correlations. A lot of work has been done so far and various results were obtained during numerous studies. Corporations and their stock prices in financial markets affect economies of whole countries and continents. For example, Nikkei 225, Dow Jones Industrial Average, FTSE affect economies of such developed countries as Japan, USA, and Great Britain. At the same time, economic growth may facilitate the development of stock market.

Today, there are over 200 stock exchanges in the world. Examples of the most large are London Stock Exchange, New York Stock Exchange and Tokyo Stock Exchange. There is causality between the stock market development and the economic growth. Stock market development and its growth may affect macroeconomic development of any country in the world. And, the economic growth may facilitate the stock market development as well. All developed countries in the world have strong financial markets with a solid amount of corporations and their stock prices affect overall economic health of those countries. Stock market development may affect economic development through an investment of funds and/or through an opportunity to issue securities for firms. As it was mentioned earlier, high economic growth may also affect stock market development.

The U.S. postwar experience provides strong and apparently robust support for the proposition that the output effects of money shocks are about twice as large when recent monetary policy has been "tight" as when recent monetary policy has been "loose." For example, Mc Callum (1991) mentioned that certainly consistent with credit rationing, and the fact that tests based on the Eckstein/Sinai and King indicators produce similar results lends further support to that hypothesis. The results suggest not only that the credit-rationing mechanism exists, but also that it is important, accounting for about half of the total contribution of monetary shocks to fluctuations in Gross National Product.

To prove the fact that stock market development affects the economy, Rashid (2008) discussed the idea of dynamic interaction between macroeconomic variables and stock prices in Pakistan. The author used cointegration technique to test long-term relationship between macroeconomic variables and stock market indicators. The results strongly suggest cointegartion between the stock prices and macroeconomic variables. The author mentioned the fact that an efficient and well functioning stock market may facilitate economic growth in a country. If stock market is efficient, firms can easily issue stock when

necessity arises. The stock market encourages individuals and firms to save money and at the same time, it gives an opportunity for firms to raise funds

Such authors as Dimitrova (2005), Hsing (2004), Ibragim and Aziz (2003) and Hondroyiannis and Papapetrou (2001) studied relationships between macroeconomic variables and stock market performance. The results of those authors' studies' absolutely differ from each other. For example, Dimitrova (2005) found stock prices and output have negative relationships in the short run but positive in the long run. Ibrahim and Aziz (2003) concluded that stock market is playing predictive role for macroeconomic variables. Hondroyiannis and Papapetrou (2001) have concluded that domestic economic activity positively affects performance of stock market.

The macroeconomic variables may affect the stock market performance in several ways. As an example, Arbitrage Pricing Theory can be mentioned. Economic forces influence discount rates, the ability of firms to generate cash flows and future dividend payments. It is through this mechanism that macroeconomic variables become part of risk factors in equity market. An increase in output gives a signal of booming economy and tends to boost the investment. A higher demand for loanable funds results in a rise in the real interest rate, which reduces the present value of a firm's future cash flow and causes stock prices to fall. Rashid (2008)

As Bayramova (2010) mentioned in her study that such authors as Humpe and Macmillan (2007) compared US and Japanese stock markets' reaction to the changes in such macroeconomic factors as industrial production, inflation and long run interest rate. Although there are some differences in market responses to the same variables, the evidence shows that in both samples there exists cointegrating vector between stock market returns and economic evidence. The study proved the fact that money supply is insignificant in the US, but significant for Japan.

As it was mentioned by Bayramova (2010) such authors as Mohammed and Shaheen (2004) analyzed long term equilibrium relationship between Karachi Stock Exchange index and macroeconomic variables presented by the industrial production index, the consumer price index, M1, and the value of an investment earning the money market rate. Another research was done on the same market again in 2009. It's results are slightly different from previous one in terms of the influence of industrial production on the stock returns.

Mohammad et al. (2009) used quarterly data on macroeconomic factors as foreign exchange rate, foreign exchange reserve, gross fixed capital formation, M2, call money rate (interest rate proxy), Industrial production index and whole sales price index (proxy of inflation) and analyzed their relationship with Karachi stock market. The result was different for applied factors; exchange rate and exchange reserve influenced market, however industrial production changes does not affect stock prices. M2 and Interest rate concluded to be significant in explanation of stock market returns.

Maysami and Koh (2000) detected that Singapore market is influenced more by the exchange rate and interest rate, which shows its sensitiveness to external factors, however; internal factors as money supply and inflation insignificantly affect the market. It is explained by small size and high global integration of Singapore market. Paper uses M2 for money supply and CPI as a proxy of inflation. Later, Maysami et al. (2004) made research on Singapore All-S indexes which represented various sector indexes and used

macroeconomic variables to test sectoral response to the macroeconomic changes. Results differ from sector to sector, giving additional questions to explore.

Nasseh and Strauss (2000) examined six countries consisting of Germany, Italy, France, Netherlands and the UK in their long run relationship with external and internal economic changes. Evidence supports that the macroeconomic variables as CPI, production, interest rates and business expectations can be considered as influential sources of stock prices. However, implemented variance decomposition methods shows that the forecast power of local and international variables' changes between 37% and 82%, depending on which country is tested. That is important factor in interpretation of the results. One more interesting point is that Nasseh and Strauss show that results can also change by influence of the model employed. They conclude that the explanatory power of variables is higher in VECM models than in unrestricted VAR model.

Table 1: Literature Review

Tested variables	Some previous papers
Industrial Production Index	Bayramova (2010), Fama (1981), Chen, Roll and Ross (1986), Maysami and Koh (2000), Humpe and Macmillan (2007), Mohammad et al. (2009), Maysami et al.(2004), Nasseh and Strauss (2000)
KASE index	Bayramova (2010), Humpe and Macmillan (2007), Maysami and Koh (2000), Maysami et al.(2004), Nasseh and Strauss (2000)

3. Methodology

This study empirically explores the causal relationship between the stock market development and the economic growth in Kazakhstan. The specific objective of this study is to investigate whether the causality direction between the stock market and the economic growth in Kazakhstan does in fact apply. With this aim, the data between 2006 and 2015 was used. This data was obtained from the National Bank of Kazakhstan Statistical Bulletin. Monthly observations are collected in aggregate form during 1Q 2006 – 4Q 2015 for Industrial Production Index in level and stock market index value during 1Q 2006 – 4Q 2015. These monthly data are employed in Vector Autoregressive Model. These observations were transformed to assure the stationarity of the data set. The Industrial Production Index and stock market index data are first taken in log form to reduce the impact of heteroscadasticity, and then taken as the first difference between the current and one lagged observations to remove time trend in the data. In addition, some data sets are further differenced in order to eliminate seasonal trends. Nasseh and Strauss (2000) mentioned that taking logs and differences was an important step in order to obtain stationary time series. The authors mentioned that it helps to avoid the complications associated with unit roots and spurious regressions. The research employs a unit root test as a mandatory procedure to check for stationarity.

There are no previous studies on this issue in Kazakhstan. The paper attempts to prove that there is mutual dependence of stock market and macroeconomic conditions in Kazakhstan. This study employs several macroeconomic variables and one stock market development variable. The macroeconomic variables include Money supply (M2),

Industrial Production Index. Stock market variable is KASE Index. Additional variables employed are Oil price and the Exchange rate. The main idea of this study is to find correlation between economic growth and stock market performance in Kazakhstan. The main methodology includes Vector Auto Regressive model. VAR model is suitable because it shows dynamic short run relationships among variables studied. The results of unit root test are provided below. The results show that data suffers from being non stationary in levels but is stationary in the first difference. Therefore, differenced data is employed in the study.

Table 2: Unit Root Test

Unit root and stationarity	ADF (1%)	ADF (5%)	PP (1%)	PP (5%)
Critical values	-3.48	-2.88	-3.48	-2.88
IPI	1.29		1.09	
Money Supply	-1.19		1.36	
RTS Index	-1.55		1.69	
Oil price	-1.99		-1.94	
Exchange rate	1.45		1.29	

Table 3: Unit Root Test

Unit root test	ADF (1%)	ADF (5%)	PP (1%)	PP (5%)
Critical values	- 3.48	-2.88	-3,48	-2,88
IPI	-6.98		-6.99	
Money Supply	-9.78		-9.62	
RTS Index	-11.96		-12.04	
Oil price	10.65		10.76	
Exchange rate	11.24		11.30	

Table 4: Residuals' correlation (from VAR model)

Dependent variables are listed in the left column and independent variables are listed in the top row. Standard errors in ( ) and t-statistics in { }

	IPI	Money Supply	KASE Index	Oil price	Exchange rate
IPI	1				
Money Supply	0,09	1			
KASE Index	0,11	-0,07	1		
Oil price	0,03	-0,04	0,02	1	
Exchange rate	0,05	0,04	0,01	0,06	1

There are 120 monthly observations, which cover a ten-year period of time starting in January 2006 and finishing in December 2015. First of all, overall Industrial Production Index was employed with overall aggregate M2, (money supply), oil price per barrel, KASE

Index and the exchange rate between United States dollar and Kazakhstani tenge. The aggregate monthly data was employed in the study.

From the results below, it is obvious that all coefficients mostly are insignificant and only KASE Index can be considered significant in 1% level that has some impact on Industrial Production Index. The results show that the influence is positive. Industrial Production Index in Kazakhstan is positively but insignificantly affected by KASE Index. Taking into consideration monthly aggregate data, the result prove the fact of a one way influence between stock market development (KASE Index) and the economy (Industrial Production Index). The results support the view of the influence of stock market on the economy in Kazakhstan.

Table 5: VAR Estimation Output

Dependent variables are listed in the left column and independent variables are listed in the top row. Standard errors in ( ) and t-statistics in { }

	IPI	MS	KASE Index	Oil Price	ER
IPI	-0.11827 (0.09394) {-1.258995}	0.092835 (0.09865) {0.9410}	0.1192932 (0.0206543) **{5.775708}**	0.0276565 (0.0276565) {1.00}	0.0765435 (0.075162) 1.018380
MS	0.1328765 (0.128726) {1.03224}	0.165765 (0.12982) {1.27688}	-0.143654 (0.117655) {-1.220976}	0.129876 (0.117267) {1.107524}	0.082738 (0.052672) 1.5708156
KASE Index	0.027654 (0.027432) {1.008092}	-0.10765 (0.09654) {1.11508}	0.197627 (0.117526) {1.681559}	0.099876 (0.097982) {1.019330}	0.116754 (0.08276) 1.410754
Oil Price	0.165436 (0.109827) {1.506333}	0.178765 (0.12736) {1.40362}	0.176273 (0.0953627) {1.848448}	0.0989786 (0.0967897) {1.022615}	0.10654 (0.0829) 1.28396
ER	-0.072837 (0.05267) {-1.382893}	0.016727 (0.01629) {1.02682}	0.017283 (0.012165) {1.420715}	-0.0237654 (0.027656) {-0.859321}	0.01726 (0.0143) {1.2029}

4. Conclusion

Two links have been emphasized: the mutual relationships between stock market performance and economic growth in Kazakhstan. The main research focus is whether the stock market affects the economy or the economy affects the stock market. The results of the study confirm the one way influence to work between the equity market and the economy in Kazakhstan. The stock market does positively affect the economy in Kazakhstan. The view of one way causality was proved to work in Kazakhstan based on the results of the study.

Based on the results of the study, hypothesis 1 is rejected, hypothesis 3 is rejected and hypothesis 2 is accepted. Findings of this study are unique. Oil price was employed in the study because Kazakhstan is oil exporting country. The past studies on this topic did not address the mutual causality issue between stock market and the economy. Many studies took place in European countries and in the USA, in Pakistan, in Japan, in Singapore. But there were no any study about mutual causality between the economy and the stock

market in CIS region, and especially in Kazakhstan. However, previous studies have greater sample in comparison with this particular study. The limitation of all past studies is that the data employed was much earlier than 2015. This study improved previous studies by addressing the issue of mutual causality between the stock market and the economy in emerging CIS country. The results agree with Rashid (2008) and disagree with many other authors mentioned in literature review.

The following limitations deserve particular attention. Only VAR model was employed as a central model of the study. There is a limitation that only ten year period was studied between 2006 and 2015 on a monthly basis for VAR model. Only five variables were employed in the study: Industrial Production Index, Money Supply (M2), KASE Index, Oil price and Exchange rate. The practical implication is the fact that stock market does affect the economy in Kazakhstan. There is a link between these two spheres, which might be interesting and useful for policy makers. Stock market development may possibly facilitate economic growth in Kazakhstan. The theoretical implication is the fact that new models and approaches may be employed in the study such as panel study, ordinary least squares and generalized method of moments. Some new variables can possibly be employed such as Gross Domestic Product, Consumer Price Index, Stock prices of specific listed companies, Volume of securities traded. The same type of study can take place in other CIS countries such as Russia, Belarus, and Kyrgyzstan. This new topic of interest is a promising avenue for further research.

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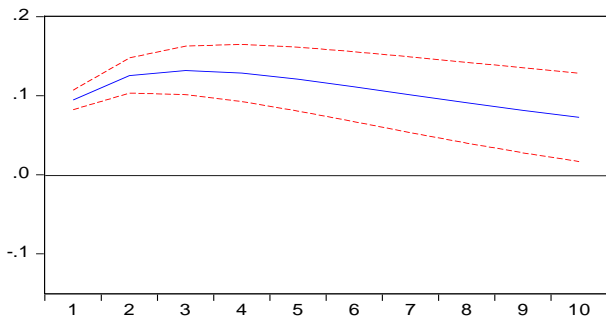
Appendix 1: Impulse Response

Response to Cholesky One S.D. Innovations ± 2 S.E.
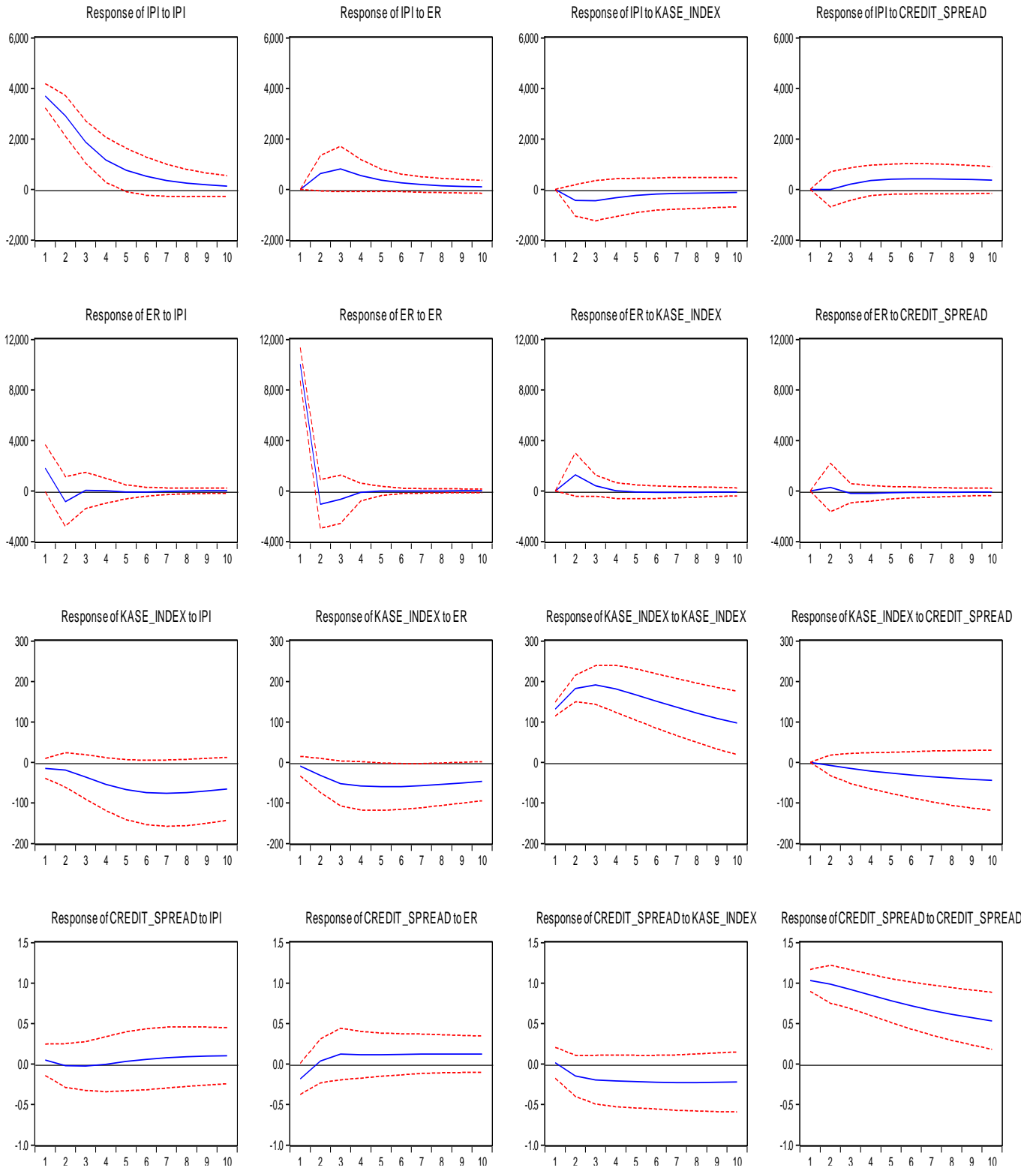
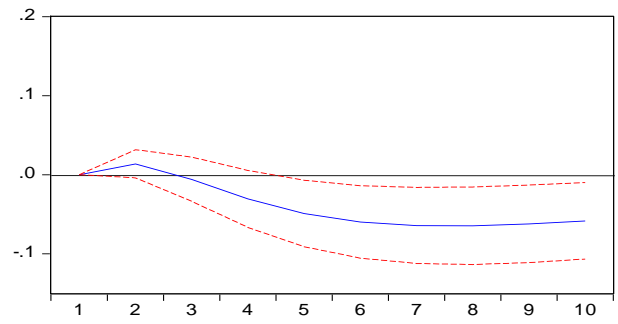## Appendix 2: Impulse Response

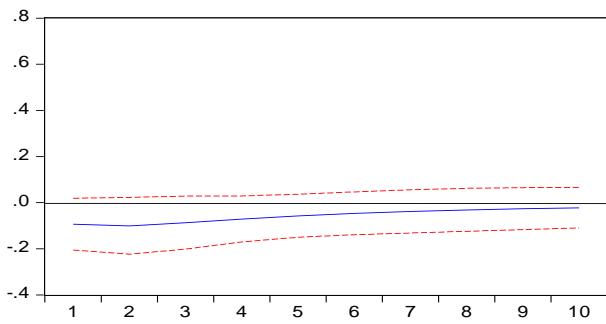Response to Cholesky One S.D. Innovations ± 2 S.E.

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