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**KIMEP UNIVERSITY**

**Proceedings of the 13<sup>th</sup> KIMEP  
International Research Conference**

Bang College of Business

Almaty, Kazakhstan

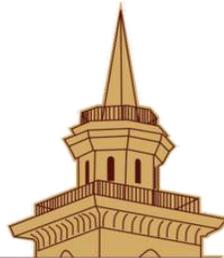
April 8-9, 2016

Conference Theme:

***Economic integration along the New Silk Road  
Opportunities and Challenges***

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## **13<sup>th</sup> KIMEP International Research Conference 2016 Conference Outline**

<b>Friday 8<sup>th</sup> April, 2016</b>	
<b>13:00 - 14:00</b>	<b>Registration &amp; Reception</b>
<b>14:00 – 15:00</b>	<b>Inaugural Ceremony &amp; Keynote Speech Hall 1/ New Building</b>
<b>15: 00 – 15:15</b>	<b>TEA BREAK</b>
<b>15:15 – 16:15</b>	<b>Hall 1/New Building Special Session- Economic Integration along the Silk Road</b>
<b>16:15- 17: 15</b>	<b>Concurrent Research Group Presentations</b>
<b>17:15 – 17:30</b>	<b>TEA BREAK</b>
<b>17:30 – 18:30</b>	<b>Concurrent Research Group Presentations</b>
<b>Saturday 9<sup>th</sup> April, 2016</b>	
<b>09:30 – 10:30</b>	<b>Concurrent Research Group Presentations</b>
<b>10: 30 – 10:45</b>	<b>TEA BREAK</b>
<b>10:45 – 11:45</b>	<b>Hall 1/New Building A Round-Table Session on Business School Accreditation: Challenges and Opportunities</b>
<b>11: 45 – 12:00</b>	<b>Closing Ceremony</b>
<b>12:00 – 12:30</b>	<b>TEA REFRESHMENT</b>

# **KIRC 2016 Organizing Committee**

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Жаңа Жібек жолы бойындағы экономикалық интеграция:  
Қиындықтар және Мүмкіндіктер  
XIII-шы Халықаралық ғылыми-зерттеу конференциясы (KIRC-2016, 8-9 сәуір 2016 ж.)  
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Трудности и Возможности  
Материалы конференции

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Бұл кітап 2016 жылдың 8-9-ші сәуірінде КИМЭП университеті (Алматы, Қазақстан) өткізген халықаралық ғылыми-зерттеу конференциясының материалдарын ұсынады. Конференцияда «Жаңа Жібек жолы бойындағы экономикалық интеграция: Қиындықтар және Мүмкіндіктер» тақырыбы бойынша ғылыми баяндамалар, презентациялар және сарапшы пікірі ұсынылды.

Данная книга содержит материалы международной научно-исследовательской конференции (KIRC- 2016), проведенной Университетом КИМЭП (Алматы, Казахстан) 8-9 апреля, 2016 г. На конференции были представлены научные доклады, презентации и мнения экспертов на тему: «Жаңа Жібек жолы бойындағы экономикалық интеграция: Проблемы и Возможности».

This book represents the Official Proceedings of the KIMEP International Research Conference (KIRC- 2016) held 8-9 April 2016 at KIMEP University in Almaty, Kazakhstan. This KIRC featured scientific papers, professional presentations and expert panel discussions on topics related to the theme of “Economic Integration along the New Silk Road: Challenges and Opportunities”.

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## **Empowering the New Silk Road: The European ‘Fast Corridors’**

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### **Abstract**

The new ambitious and strategic project aimed at revamping the mighty Silk Road is developing fast. While most of the Governments in Central Asia (and beyond) are focusing on the physical infrastructures needed to make this ancient trail fully functional and operative according to the new logistics standards in the common interest of the Countries involved, and of the business as well, legal and fiscal features should be considered by the stakeholders too.

In particular, the appropriate development of an easy, lightweight tax system should be a priority in developing the new Silk road preventing international double taxation and excessive and cumbersome formal duties. Customs clearance, import taxes and alike might jeopardize the most robust and reliable projects of goods mobility in this respect.

Europe has quite an experience in this respect, particularly for what concerns Customs clearance. The European project started as a Common market with free mobility of goods within it, and later it stepped up to a Customs union, with uniform fees, rules, procedures for importation and exportation of goods. Yet the very same customs taxes are attributed directly to the EU central bodies. In some respects, the economic area that Kazakhstan, Russian and Belarus started years ago, and that now is expanding, could be seen as the first steps in the same direction, but clearly it does not overlap with the Silk road trail (at least not entirely).

The making of a Common customs area is not however built only on policy decision and strategies, but also on technical rules applicable to the businesses which are capable of facilitating economic activities easing most of the constraints and limitations while guaranteeing at the same time safety of the state and preventing tax evasion.

The latest development in this direction is the very recent implementation of the so-called “Fast Corridors” in Europe. The fast corridors are special legal protocols and procedures through which goods may be imported in Europe from abroad and have all the check and controls processed not in the place where they physically arrive (an airport, a logistic deposit) but elsewhere.

In this way the business may proceed seamlessly in delivering goods where they are needed without wasting time at the border or at the Customs agency premises. They are, to some extent, a mixture of physical and legal infrastructures that working together may dramatically speed up the business and enhance the performance of the delivery company and of the business in general. Even if they are not a unique experience in Europe, nonetheless it is the EU the place where they flourished and made the most.

If the paper is accepted, it will be devoted to a technical analysis of the Corridors, the way in which they operate and the possibility to transplant this experience in Central Asia in

general and in Kazakhstan in particular assessing the possible improvement of the new Silk Road performances in the interest of the local and international business.

Experience reached in this respect qualified Italian ports, airports and logistic deposits will be considered as possible examples of fast corridors to be implemented along the silk road to speed up the delivery of goods and to improve the services in connection with them (transport, warehousing, etc.)

## **The New Silk Road and its impacts on regional integration in Eurasia**

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### **Abstract**

Although the detailed of the New Silk Road proposed by China is not yet worked, all indications show that it will be a grand project linking 3 continents, consisting of two elements; Silk Road Economic Belt which will start in central China, pass through Eastern China, Central Asia to northern Iran before swinging west through Iraq, Syria, and Turkey. From Istanbul, the Silk Road crosses the Bosphorus Strait and heads northwest through Europe, including Bulgaria, Romania, the Czech Republic, and Germany. The Second one is the Maritime Silk Road that will start in South China, link Malaysia, cross Malacca Strait, link India then crosses the rest of the Indian Ocean to Nairobi, Kenya, then goes north around the Horn of Africa and moves through the Red Sea into the Mediterranean, with a stop in Athens before meeting the land-based Silk Road in Venice.

The Silk Road represents China's visions for an interdependent economic and political community stretching from East Asia to Western Europe. In addition to economic and business interests China hopes to gain closer cultural and political ties with each of the countries along the Silk Road.

The purpose of the paper, however, is not the Silk Road by itself rather to assess and analyze its impacts on regional integration process in Eurasia, particularly on the Eurasian Economic Union (EEU).

The EEU was created in January 2015 as a successor of the Customs Union and Single Economic Space created in 2010 and 2012 respectively by Belarus, Kazakhstan and Russia. Kyrgyzstan and Armenia joined the EEU later on. The Eurasian integration process was always initiated and dominated by Russia and member countries viewed Moscow's roles and activities with doubts and suspicions and it became more obvious after the occupation of Crimea and supports of separatist movements in Eastern Ukraine. There were continuous disputes on customs duties and tariffs among the member states as Russia often created import barriers for goods from other states by creating barriers and excuses at the same time wanted to keep its oil

and gas sector out of customs duties. The EEU suffered further setbacks as Russia suffered economic crisis as a result of war with Ukraine, economic sanctions by the West and lost the value of ruble, which had spiral effects on other member states, particularly to Kazakhstan.

The future of the EEU is bleak and the prospect seems to be not bright at all, so any alternative option for regional integration will be welcomed by the member states. During his visit to Kazakhstan in 2013, the Chinese leader Xi Jinping declared to create a “Silk Road Economic Belt” by involving Central Asian states for connecting China to Europe. Economic, trade, investment and other bilateral relations of Central Asian states with China are developing faster and closer than those with Russia.

The paper will conclude that;

- a) Current regional integration process under Russian control and leadership is in trouble and has hardly any prospect for future success
- b) Central Asian (Post-Soviet) states may find the New Silk Road project led by China more attractive, economically beneficial, and politically neutral and want to join it.
- c) Regional integration in Eurasia may not succeed independently rather turn into a broader part of integration based on the New Silk Road

### **An Overview of Silk Road Collaborative Initiatives: Tourism Perspective**

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#### **Abstract**

The United Nations World Tourism Organization (UNWTO) Silk Road Programme is a collaborative initiative designed to enhance sustainable tourism development along the historic Silk Road routes. It aims to maximize the benefits of tourism development for local Silk Road communities, while stimulating investment and promoting the conservation of the route's natural and cultural heritage. The 6th Silk Road Ministers Meeting held at ITB Berlin on 9 March 2016 focused on the role of public and private sector partnerships (PPPs) in the development of tourism along the Silk Road. Participants discussed how PPPs can advance the issues of infrastructure, product development and marketing.

**Key Words:** *Silk Road, tourism development, Silk Road Programme, Silk Road Heritage Corridors project.*

#### **1. Background on the Silk Road**

Acclaimed as the ‘greatest route in the history of mankind’, the ancient Silk Road formed the first bridge between the East and West and was an important vehicle for trade between ancient empires of China, India, Persia and Rome. Dating back to 200BC, the route was a channel for contact between people and cultures, inspiring the exchange of dialogue, art, religion ideas and technology. With its richly diverse cultural heritage and its wealth of natural attractions

spanning across 12,000 kilometres of ancient routes, the Silk Road today offers visitors the opportunity to experience a unique network of destinations, following the footsteps of some of the world's most famed explorers such as Alexander the Great and Marco Polo.

The United Nations World Tourism Organization (UNWTO) established the Silk Road Programme designed to enhance sustainable tourism development along the historic Silk Road routes.

Currently the Silk Road Programme engages 33 UNWTO Members States, UN agencies such as UNESCO and UNCTAD (UN Conference on Trade and Development) as well as an extensive network of private sector stakeholders.

The Silk Road Member States are in a unique position to leverage from each other by collaborating on a number of areas, such as marketing, product development, tourism route development, cross border initiatives, and particularly, travel facilitation. This Programme is designed to enhance sustainable tourism development along the historic Silk Road routes. It aims to maximize the benefits of tourism development for local Silk Road communities, while stimulating investment and promoting the conservation of the route's natural and cultural heritage.

## **2. Looking Ahead: Global Trends Impacting Silk Road Tourism**

While significant progress has been made in terms of raising the profile of Silk Road tourism since the launch of the first Action Plan in 2010, much work remains to be done to achieve the ultimate vision for Silk Road tourism.

Looking ahead, there are a number of global trends that demonstrate the potential for tourism. Success will rely on the ability of stakeholders to embrace these opportunities.

- International tourist arrivals are forecast to reach 1.8 billion by 2030 which means that 5 million people will be crossing international borders for leisure, business or other purposes every day
- Asia and the Pacific will be the fastest growing outbound region between 2010-2030
- Advances in technology, such as increased internet accessibility and the expansion of smartphone usage and technology, will continue to impact tourism trends
- Improved connectivity on the Silk Road via new transnational rail links and air route expansion will change the way people travel across the regions
- The rising affluence of Asia's middle class will create huge potential for tourism growth
- Social media and user-generated content are influencing consumers' travel decisions like never before, creating herewith new opportunities and risks
- Cruise tourism continues to grow, with increasing demand from source markets Australia, Scandinavia and Finland, Germany and Brazil
- Young travellers represent one of the fastest growing segments of the tourism sector accounting for 20% of all international arrivals, generating an estimated 160 million visitors and a global market worth US\$182 billion per year
- Increasing demand for cultural tourism

- Culinary tourism is an increasing motivation to travel with tourists seeking local, authentic experiences linked intrinsically to the places they visit. Accounting for 30% or more of tourist expenditure, food plays an important role in the development of tourism services
- Heightened consumer sensitivity to climate and sustainability issues has increased the demand for responsible business practices and corporate social responsibility in tourism.

The first Action Plan has been developed in 2010. At the recently held meeting (The 6th Silk Road Ministers Meeting, Berlin, 9 March 2016), UNWTO launched the Silk Road Action Plan for 2016/2017. The Programme includes marketing and promotion, capacity building and travel facilitation initiatives. In terms of marketing and promotion it is planned to engage with the industry and strengthen the Silk Road's presence at major international fairs such as ITB Berlin and WTM London, while expanding activity into other regions. It is pointed out that to create an effective Silk Road brand strategy it is necessary to develop data, research and intelligence between Silk Road destinations as well as increase the online profile of Silk Road tourism through an established destination website and industry marketing portal. It is also suggested to enhance international Silk Road festivals and events by increasing international participation in existing events.

For capacity building the Program aims to facilitate industry engagement for decision-making and strategy development through established forums, such as Silk Road Ministers Meetings and Task Force Meetings as well as to promote community engagement in sustainable tourism development projects, such as the UNESCO/UNWTO Silk Road Heritage Corridors project. Travel facilitation is another focus of the Silk Road Program. A lot of emphasis is put into visa policy improvement and visa facilitation as well as into enhancing connectivity through increased collaboration between airlines and aviation ministries. Research on travelers' attitudes towards the Silk Road indicated that the biggest perceived challenge is absence of a single Silk Road visa.

Kazakhstan has an opportunity to promote Silk Road at the upcoming Expo Astana 2017. Participation in the Silk Road Program is considered to be vital for tourism development in the country.

### **3. Conclusions**

These priority actions at the same time represent challenges as well. As an example we can mention the research conducted under the umbrella of UNWTO. UNWTO Affiliate Member TripAdvisor presented the TripAdvisor 2016 Travel Trends for the Silk Road.

The research based on a survey of 10,678 travellers shows that 8 in 10 travellers have heard of the Silk Road and that the top ten countries associated with the Silk Road are China, Mongolia, Kazakhstan, Uzbekistan, Iran, Turkey, Turkmenistan, Kyrgyzstan, Tajikistan and Azerbaijan. The research, conducted in collaboration with UNWTO, also found that travellers would be 41% more likely to travel to the Silk Road if they could obtain a single Silk Road visa.

Visa facilitation is central to stimulating growth and job creation through tourism. In spite of the great strides made in recent decades to facilitate tourist travel, there are still important areas of opportunities to improve visa procedures. Kazakhstan has an opportunity to promote Silk Road at the upcoming Expo Astana 2017. Participation in the Silk Road Program is considered to be vital for tourism development in the country.

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## **THE REGIONAL IDENTITY OF CENTRAL ASIA FROM MULTIPLE PERSPECTIVES: A RETROSPECTIVE WITH RECOMMENDATIONS FOR FUTURE RESEARCH**

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### **Abstract**

This paper characterizes the regional identity of Central Asia from diverse perspectives including historical, cultural, political, economic, and ethnic characteristics. It further summarizes the current state of empirical research on Central Asia in the literature of International Business, with a particular focus on Intercultural Management and Business Ethics.

Major gaps in the International Business literature with respect to Central Asia are identified with suggestions for future research.

### **Does Price-Earnings Multiple Model of Valuation Work in Kazakhstan?**

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#### **Abstract**

Recently, increasing attention is paid on the quality of earnings for a company since it is an indicator of the health of the company and one of the widely watched variables by investors and lenders alike. On this other hand, earnings are frequently managed by the management of a company to normalize the continuous fluctuations of financial results. In practice, Price-Earnings Ratio (PER) is still a key determinant among common valuation multiples generated from comparable companies and used as a practical tool for forecasting stock price. In this study, the historical PER along with other multiples are used to forecast stock prices of five highly liquid Kazakh companies. And, based on the learning of past performance of PER, an adaptive PER is created to see if it can improve the predictability of the future stock price. Simulation method is used to test whether the adaptive PER model generates less forecasting errors than a simple autoregressive model.

### **Testing the Money Multiplier Model and its Stability in a Small Open Economy:**

#### **The Case of Kazakhstan**

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#### **Abstract**

This paper examines the existence of the money multiplier model in the long-run for Kazakhstan using the monthly observations on three monetary aggregates (M1, M2, M3) and the monetary base over the period 2000m1-2015m12. Results based on Engle-Granger (1987) and Phillips-Ouliaris (1990) tests for cointegration and coefficient restrictions tests based on West's (1988) corrected t-statistic are consistent with the money multiplier model when the broad money (M1 and M2) is used rather than when the narrow money is used. The structural stability

is also tested based a static as well as a dynamic model. Results are supportive of the structural stability of the money multiplier model when examined on the basis of the latter model rather than the former model. One important conclusion that emerges from these results is that National Bank of Kazakhstan can control the broad money supply by controlling the monetary base.

## **1.Introduction**

The objective of this paper is to test the “mechanistic” version of the money multiplier model<sup>1</sup> as applied to the small open economy of Kazakhstan. The money multiplier model postulates that there is a stable, statistical and predictable relationship between the monetary aggregates (e.g. M1, M2 and M3) and the monetary base (the reserve money), and that central bank can set unilaterally the behavior of the latter to affect the behavior of the former. The feasibility to control the behavior of the former depends on authorities being able to control the behavior of the latter and to predict behavioral relations of the components of the multiplier (the bank and non-bank private sector). The monetarists argue that the money multiplier is stable and predictable, and, therefore, authorities can control the money supply by controlling the monetary base fairly accurately and consequently run the monetary policy effectively to stabilize economic activities in an economy.

Since independence of Kazakhstan in December 16, 1991, monetary history provides ample evidence on the role the monetary policy has played in stabilizing economic activities. The transition of the economy in early 1992 from a centrally planned economic system to the one based on the price mechanism, especially in the absence of competitive economic environment, resulted in hyperinflation and a decline in national output. By implementing tight monetary policy aimed at targeting the monetary aggregates and using other market-based instruments (e.g. the official financing rate, minimum reserve requirement as well as open market operations in short-term notes and foreign exchange), National Bank of Kazakhstan (NBK) was able to reduce inflation significantly from 3060% in 1992 to 2265% in 1993 to 1258% in 1994 to 60.30% in 1995 and to 1.9% in 1998. Since its independence in November 1993, the NBK has switched the monetary policy from targeting monetary aggregates aimed at containing inflation with floating exchange rates (November 1993-mid 1995)<sup>2</sup> to targeting inflation aimed at stabilizing exchange rates (mid 1995-August 1998) to targeting inflation aimed at maintaining flexibility in the exchange rate within currency corridors (April 1999-February 2014) and to targeting inflation aimed at exchange rate flexibility without currency corridors (August 2015). In short, the NBK has practiced monetary policy with an eclectic mix of exchange rate regimes and intermediate targets.

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<sup>1</sup> Al-Loughani and Moosa (1996) argue that the “mechanistic” money multiplier postulates the relationship between the money supply and the monetary base without assigning any behavioral content to the multiplier of its components.

<sup>2</sup> Initially, the Kazakh government had officially pegged its national currency against the dollar but subsequently it had to permit the tenge to be freely traded against the dollar upon advice from U.S. officials and international observers (see, U.S. Department of State, 1994)..

A need, therefore, has arisen to test the controllability of the monetary aggregates in Kazakhstan, as embedded in the mechanistic money multiplier model. Testing whether a stable and predictable money multiplier model exists in Kazakhstan is highly important because an evidence supportive of it would provide the NBK a reasonable theoretical basis as well as a sound empirical rationale for the reliance on the monetary policy to stabilize economic activities. While the massive amount of work exists on the money multiplier model for other countries, no attempt has yet been made for Kazakhstan in this direction. The rest of the paper is structured as follows. Section 2 provides a brief description of the mechanistic money multiplier model. While Section 3 discusses the data source, explains the methodology and presents empirical results, Section 4 explains the methodology for testing the structural stability and presents results of structural stability based on a static and a dynamic model. Section 5 concludes and discusses implications.

## 2. The Money Multiplier Model

The monetary model, which was developed Brunner and Meltzer (1964), postulates that because the desired structures of portfolios held by economic agents (the public and banking sector) remain unaffected of changes in the monetary base made by authorities' actions<sup>3</sup>, and that economic agents' actual asset holdings are always equal to the desired one<sup>4</sup>, the money supply tends to be determined typically by the monetary base and as such authorities are able to control the behavior of the former on the basis of the later and hence influence the level of economic activity by their policy actions aimed at altering market interest rates and prices that are consistent with changes in the money supply. In a mechanistic form the money multiplier model may be written as

$$M = kB \tag{1}$$

where M is the money supply (defined in a narrow sense (M1) or in a broad sense (M2, M3), B is the monetary base and k is the money multiplier (i.e. the ratio of money to the monetary base). As the monetarists argue, the multiplier is stable and independent of policy actions, and, as such, its impact can be predicated fairly accurately. Some economists (e.g. Garfinkel and Thornton, 1991; Bernanke, 1988) argue that the multiplier is unstable and its instability may be attributed to the instability of its components, such as the behavior of public and banks.

In a testable stochastic form, equation (6) can be written as

$$m_t = h + \beta b_t + u_t \tag{2}$$

where m, h and b are the natural logarithmic values of M, k and B respectively. For the money multiplier to be a valid and a stable long-run relation, m, b must be cointegrated such that  $h > 0$  and  $b = 1$ . The cointegration requirement is a necessary condition, whereas the coefficient

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<sup>3</sup> Garfinkel and Thornton (1991) argue that the empirical evidence that the multiplier is not independent of policy actions raises some questions about the appropriateness of using the monetary base as an indicator of the monetary policy to affect the money supply.

<sup>4</sup> See Rasche (1993; p.31).

restriction is the sufficient condition. For the stability of the multiplier in the long run, tests have been employed to examine if the coefficients of the money multiplier are insensitive to structural changes.

### 3.Data, Methodology and Empirical Results

The empirical testing of the money multiplier model is conducted for Kazakhstan on the basis of Equation (2) using monthly observations on M1, M2, M3, and the reserve money covering the period January 2000-December 2015.

The methodology employed in the paper is cointegration analysis in that a necessary condition for the monetary multiplier model to exist in the long-run requires the monetary aggregates (M1, M2 and M3) and the monetary base to be I(1) in level and the linear combination of them to be I(0). Thus, prior testing whether a long-run relationship exists between the variable – the money supply (M1, M2 and M3) and the monetary base – underlying equation (2), tests are carried out first to determine if the underlying time series are I(1) in level and I(0) in first difference. Tests are also conducted to check if the money monetary multipliers ( $k_1$ ,  $k_2$  and  $k_3$ ) based on M1, M2 and M3 respectively, are stationary. To this end, two tests of unit root are applied: the Dickey-Fuller (1979) test and the Phillips-Ouliaris (1990) test.

Results based on the two tests, as reported in Table 1, show that all the variables – such as the monetary base ( $b$ ), the narrow money supply (M1), the broad money (both M2 and M1), and the multipliers based on the narrow money ( $k_1$ ) and the broad money ( $k_2$  and  $k_3$ ) – are I(1) in levels but I(0) in first difference, except for the two money multiplier based on the broad money supply (M2 and M1). This implies that the money multiplier based on the broad money supply is stable (that is mean reverting) over the sample period.

**Table 1: Testing for Unit Root**

Variable	ADF		PP	
	Level	First Difference	Level	First Difference
$k_{1t}$	-1.30	-16.22*	-0.79	-16.65*
$k_{2t}$	-3.36*		-3.23*	
$k_{3t}$	-3.87*		-3.73*	
$m_{1t}$	-1.47	-2.38	-2.18	-16.07*
$m_{2t}$	-2.55	-15.71*	-2.40	-16.43*
$m_{3t}$	-2.79	-16.70*	-2.85	-16.21*
$b_t$	-1.10	-16.61*	-1.15	-16.61*

Testing for cointegration is conducted on the basis of two tests: the Engle-Granger (1987) test and the Phillips-Ouliaris test. Two test statistics are used in conjunction with both the tests of cointegration:  $EG_{\tau}$  and  $EG_{\mu}$  in the former case and  $Z_{\tau}$  and  $Z_{\mu}$  in the latter. Results based on cointegration and coefficient restrictions tests, as reported in Table 2, show that the money multiplier model based on the broad money supply does exist in Kazakhstan over the sample period under investigation. This is because not only is the monetary base cointegrated strongly with the broad money supply, M1 and M2, but also are coefficient restrictions underlying the money multiplier model,  $h>0$  and  $b=1$ , well are satisfied. Thus, the results are strongly supportive of the money multiplier model for Kazakhstan.

**Table 2: Testing for Cointegration and Coefficient Restrictions**

	M1	M2	M3
$\beta_0$	1.46 (0.224)	0.457 (0.218)	0.982 (0.228)
$\beta_1$	0.910 (0.016)	1.029 (0.016)	1.014 (0.016)
$R^2$	0.99	0.99	0.99
CRDW	0.17	0.26	0.22
$EG_{\tau}$	-2.06	-3.13**	-3.58*
$EG_{\mu}$	-12.16	-20.56*	-22.73*
$Z_{\tau}$	-1.71	-3.13**	-3.40*
$Z_{\mu}$	-9.25	-20.56*	-20.14*
$t_{k=0}^*$	6.518*	2.096*	4.307*
$t_{\beta_1=1}^*$	-5.652*	1.813	0.875

\*(\*\*) Significant at the 5% (10%) level.  $t^*$  is the West corrected statistic.

#### 4. Testing for Structural Stability

As pointed out earlier, the stability of the money multiplier model is important if the authorities want to use changes in the monetary base to accurately predict changes in the money supply necessary to stabilize economic activities and run the monetary policy effectively. The Chow and the predictive failure tests are employed in order to test the stability of the money multiplier model on the basis a static model that represents a long-run relationship and a dynamic model that represents an error-correction representation of the long-run relationship. The results of the static model based on by equation (1) are reported in table (3) for five different periods that mark the significant currency events in Kazakhstan: (i) February 2009 when tenge was devalued by 22% to make exports competitive, (ii) March 2011 when the currency corridor

mechanism was abolished and a management float was adopted, (iii) September 2013 when the pegging of the tenge solely to the U.S. dollar was abolished to adopt the pegging of the basket of the U.S. dollar, the Russian ruble and the euro, (iv) February 2014 when the tenge was floated, and (v) August 20, 2015 when the tenge plunged to its record low losing 23% against the US dollar after the government floated its currency renouncing the previously set corridor and pursuing inflation targeting monetary policies. Overall, the results of the stability tests based on the static model indicate lack of structural stability.

**Table 3: Testing Multiplier Stability (Static Model)**

Break points	Chow test	Predictive failure test
<b>Narrow Money (M1)</b>		
2009m2	34.94 (2, 188)	4.14 (82, 108)
2011m3	115.25 (2, 188)	4.44 (57, 133)
2013m9	38.07 (2, 188)	3.09 (28, 162)
2014m2	33.48 (2, 188)	3.57 (22, 168)
<b>Broad Money (M2)</b>		
2009m2	9.23 (2,188)	3.06 (82, 108)
2011m3	96.31 (2,188)	3.26 (57,133)
2013m9	25.49 (2,188)	1.96 (28,162)
2014m2	12.38 (2,188)	1.38 (22, 168)
<b>Broad Money (M3)</b>		
2009m2	15.83 (2,188)	1.06 (82,108)
2011m3	33.42 (2,188)	1.54 (57,133)
2013m9	22.47 (2,188)	1.49 (28, 162)
2014m2	7.12 (2,188)	0.66 (22, 168)

Testing the structural stability of the money multiplier model on the basis of the dynamic model is based on the error-correction model given as follow

$$\Delta m_t = \alpha + \sum_{i=1}^n \beta_i \Delta m_{t-i} + \sum_{i=0}^n \gamma_i \Delta b_{t-i} + \theta \hat{u}_{t-1} + v_t \quad (3)$$

where the lagged value of the error term,  $\hat{u}_t$ , which is extracted from the OLS estimate of the long-run money multiplier model, as represented by equation (7), reflects the speed of adjustment towards the long-run equilibrium. Because all the variables underlying the error-correction model are stationary, the conventional t-statistic and F-statistic can be used to make inference on the magnitudes of the estimated coefficients of the error-correction model. Using the general to specific modeling approach of Hendry (starting with n=12), the OLS estimates of the three parsimonious error-correction models normalized on M1, M2 and M3, together with t-statistics in parenthesis, goodness of fit and diagnostic test statistics, are given as follows.

$$\Delta m_{1t} = 0.01 + 0.20\Delta m_{1t-3} + 0.17\Delta m_{1t-9} + 0.26\Delta m_{1t-12} + 0.29b_t - 0.12\Delta b_{t-3} - 0.10\Delta b_{t-7} + 0.10\Delta b_{t-8} - 0.05u_{t-1}$$

(1.62) (3.22)      (3.47)      (5.12)      (7.75) (-3.01)      (-2.93)  
(-1.99)      (-2.93)

$R^2 = 0.54$

$DW = 2.12$

$SC(12) = 9.64$

$FF(1) = 5.69$

$NT(2) = 1.85$

$HT(1) = 0.16$

$$0\Delta m_{2t} = 0.01 + 0.140\Delta m_{2t-3} + 0.21\Delta m_{2t-12} + 0.22\Delta b_t - 0.05u_{t-1}$$

(2.55) (2.56)      (3.72)      (6.40)      (-2.53)

$R^2 = 0.32$

$DW = 1.96$

$SC(12) = 7.54$

$FF(1) = 1.74$

$NT(2) = 25.58$

$HT(1) = 0.74$

$$\Delta m_{3t} = 0.03 + 0.16\Delta m_{3t-3} + 0.26\Delta b_t - 0.05u_{t-1}$$

(5.49) (2.88)      (9.39)      (-3.07)

$R^2 = 0.36$

$DW = 2.14$

$SC(12) = 8.22$

$FF(1) = 2.84$

$NT(2) = 34.10$

$HT(1) = 11.95$

**Table 4: Testing Money Multiplier Stability (Dynamic Model)**

Break points	Chow test	Predictive failure test
<b>Narrow Money (M1)</b>		
2009m2	1.50 (9,173)	1.22 (82,100)
2011m3	1.56 (9,173)	1.47 (57, 25)
2013m8	1.02 (9,173)	1.69 (28, 154)
2014m2	1.11 (9,173)	1.91 (22,160)
<b>Broad Money (M2)</b>		
2009m2	0.85 (5,181)	0.52 (82, 104)
2011m3	0.67 (5,181)	0.54 (57, 129)
2013m8	0.94 (5,181)	0.75 (28,158)

<b>Broad Money (M3)</b>		
2009m2	1.52 (4,183)	0.42 (82,105)
2011m3	0.83 (4,183)	0.45 (57,130)
2013m8	0.99 (4,183)	0.44 (28,159)
2014m2	1.61 (4,183)	0.52 (22,165)

The following observations can be made about the error-correction models. First, the error-correction model using the narrow definition of money (M1) passes all diagnostic tests: serial correlation (SC), function form (FF), normality (NO) and homoscedasticity (HS) tests. Second, short-run dynamics in the error-correction models are dominated by autoregressive process of both money supply and monetary base. Third, the error-correction models normalized on the broad definitions of money (M2 and M3) do not pass the normality test because of outliers in the sample. Fourth, the adjustment process is rather slow as only 5% of the deviations from the long-run relationship are corrected each month, implying that it takes around 20 months (1 year and 8 months) to restore the equilibrium relationship between the money supply and the monetary base. Five, it is interesting to note that introducing short-run dynamics to the relationship reinstates the structural stability of the money multiplier model, since the dynamic model passes the Chow and predictive failure tests, as shown in Table 4.

## **5. Conclusion and Implications**

This paper has tested whether a stable money multiplier model exists in Kazakhstan. For this purpose, monthly data are used on the reserve money (monetary base), the narrow money supply (M1) and broad money supply (M2 and M3) over the period 2000m1-2015m12. Two cointegration tests – Engle-Granger (1987) and Phillips-Ouliaris (1990) – are employed to test the long-run relationship between the money supply and the monetary base. The coefficient restrictions of the model are tested on the basis West’s (1988) corrected t-statistic.

Results based on the two tests of cointegration are supportive of the money multiplier model when the broad money supply is used rather than when the narrow money supply is used. Not only is the null of no cointegration between the money supply and the monetary base rejected on the basis of the both tests of cointegration but also are the coefficient restrictions, ( $h > 0$  and  $\beta = 1$ ), not rejected on the basis of the adjusted t-statistic. The structural stability of the model is also tested on the long-run relationship and the error-correction model. The results obtained show that when dynamics are introduced to the money multiplier model the structural stability is reinstated.

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### **The Effect of Regulation on Performance of Microfinance Institutions**

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### **Abstract**

Microfinance Institutions (MFIs) offer banking services to poor customers who have no access to the traditional financial sector. Recently, developments in the microfinance industry have increased focus on financial sustainability and efficiency of MFIs therefore shifting focus

from their social mission (outreach). Previous studies that examine the factors affecting both financial sustainability and outreach of MFIs consider these two challenges for MFI without taking into account the possible link between them. On this basis we propose a model which views both ‘outreach’ and ‘financial sustainability’ as being endogenous. We also explore the impact of regulation on MFI’s performance. Our results show that focusing on financial sustainability does not necessarily hurt the depth and breadth of outreach. As for the effect of regulation on MFIs performance, our results show that regulation might improve the financial performance of MFIs while decreasing its outreach. Additionally, following questions are of primary interest when evaluating the impact of regulation: (1) what is the effect of regulation on performance of actually regulated MFI? and (2) what is the effect of regulation on performance of MFIs that opt for regulation once they start taking deposits? In a new contribution to existing literature, our results show that the impacts of regulation on performance of actually regulated MFIs and MFIs that opt for regulation once they start taking deposits are different from the effect of regulation on randomly chosen MFI. For regulated MFIs the impact of regulation on financial performance is negative and is positive for those MFIs which become regulated once they start accepting deposits from clients. Thus, any policy with the intent of keeping MFIs regulated to improve their financial performance is perhaps questionable while any intervention with the intent of making MFIs regulated once they start accepting deposits from clients is financially feasible.

Keywords: Microfinance, Outreach, Financial Sustainability, Regulation

JEL: G21,G28, C11, C34, C51

## **1. Introduction**

An access to formal financial services allows progress for families and for the economy as a whole, therefore, access to banking services plays a vital role for the development of every economy. Still, an estimated 2.7 billion people in the world have no access to formal financial services (World-Bank, 2012). Microfinance institutions (MFIs) have evolved as a result of the efforts of individuals and assistance agencies to reduce rural poverty by promoting self-employment and entrepreneurship. MFIs offer banking services to poor customers who have no access to the traditional financial sector. These institutions make loans to borrowers who seek relatively small amounts and who may be viewed as too risky by larger conventional lenders. In the literature, this focus is generally described as outreach.

Microfinance has attracted much attention in the recent years, especially after the UN Year of Microcredit in 2005 and Nobel Peace Prize to Grameen Bank and Mohamed Yunus in 2006 (Mersland and Strøm, 2009). MFIs were reported to manage 86.2 million borrowers worldwide in 2008 (World-Bank, 2009). Although microfinance operations have seen considerable growth in recent years as the number of customers seeking MFI services has grown in average by 21% annually during the last 5 years (World-Bank, 2009), the potential market of

such activity is still below the actual needs to finance small projects and people under financial necessity. Therefore, the initial objective of these financial institutions which is the outreach is not well achieved (Honohan, 2004). This phenomenon is the core of the debate between two opponent approaches: welfare and financial sustainability approaches (Robinson, 2001).

Although both approaches on running microfinance activities agree on the ultimate goal of reducing poverty level, the means of achieving this goal differ between these approaches. The welfare approach claims that microfinance is meant to help poverty alleviation, therefore, MFIs should focus on poverty reduction and empowerment of women in rural areas. The financial sustainability approach claims that without achieving financial sustainability it is impossible to deliver services over the long-run. Thus, it requires scaling up of MFI to be able to stay competitive and face new challenges. As a result, while welfare approach favors the depth of outreach, financial sustainability approach stresses more the importance of financial self-sustainability. As it turns out, balancing sustainability with poverty alleviation is problematic. Moreover, recent financial regulation policies of the government have increased focus on financial sustainability and efficiency (Rhyne and Otero, 2006; Hermes et al., 2011; Armendariz de Aghion and Labie, 2012) possibly diverting MFIs from their outreach mission.

The need of regulation in microfinance industry is driven by increased attention to MFIs financial services beyond microcredit; increased funding from the private sector and quasi-commercial public investors; increased transformation of microfinance institutions from nonprofit to for-profit; and integration of microfinance into mainstream finance institutions and markets.<sup>5</sup> Appropriate regulation and supervision of financial service providers is therefore critically important in bringing to poor and low-income people the financial services they need.

It is argued that regulation has contributed to the growth of the microfinance sector by broadening the access of MFIs to funds and capital, and strengthening their risk management and internal control systems. Still, financial regulation might entail significant financial and economic issues as costs of complying with prudential regulation and corresponding supervision are particularly high for MFIs.<sup>6</sup>

As a result, effect of regulation on MFI's performance is controversial and Christen et al. (2012) caution that even microfinance must end up in regulated sector, rushing to regulate might

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<sup>5</sup> Christen et al. (2012) provide several reasons for a need of regulation in microfinance industry: (1) desire of microcredit NGOs to capture deposits or apex funds; (2) desire of governments to control growth and entrance into sector; (3) desire to protect poor against high interest rates, other unhealthy practices; and (4) desire to stimulate growth of non-bank intermediaries as policy to deepen financial sector.

<sup>6</sup> Cull et al. (2011), for example, provide following reasons why costs of complying with prudential regulation are higher for MFIs: (1) regulatory costs exhibit economies of scale; (2) high share of skilled labor force involved; and (3) higher administrative costs for small loans than for larger ones.

outstrip performance of MFI. Researching the nature of the relationship between regulation and performance of MFIs is extremely important since there are more countries that have extended experience with microfinance and microfinance regulation and supervision and, as a result, there is a focus of international financial standard-setting bodies on the need for proportionate regulation and supervision that does not result in the exclusion of low-income customers. Still, the empirical research on this issue is scarce and is limited to the investigation of a mean effect of regulation on performance of randomly chosen MFI.

Unlike financial institutions which could be subject to entry and prudential regulation, MFIs could be regulated or unregulated or, in some countries, can choose between being regulated and being unregulated (Hartarska and Nadolnyak, 2007; Cull et al., 2011).<sup>7</sup> It is obvious that MFIs outreach and financial sustainability performance then are affected by the regulation status of MFI, and the model of investigating the effect of regulation on MFI's performance falls into the category of treatment effect models. Previous research on microfinance regulation and prudential supervision mostly focused on the effect of regulation on either financial performance or outreach treating regulation as an exogenous variable. However, Cull et al. (2011) argue for the non-random assignment of supervision as within the same country they find that some MFIs face onsite supervision while others do not, depending on their ownership structure, funding sources, activities, and organizational charter. Because the selection of MFIs for supervision is not random (subjects might self-select into treatment), endogeneity bias is likely. This study aims at contributing to closing this gap in the literature. On this basis we propose a model which views 'regulation' as endogenous assuming that regulation status of MFI is a function of institutional environment. In our analysis, we assume that the level of financial sustainability of MFI affects its outreach; therefore, it is used as an explanatory variable in equation for outreach. Additionally, our analysis treats both financial sustainability and outreach as endogenous variables. On one hand, financial sustainability is argued to be a function of macroeconomic environment and MFIs characteristics (Cull et al., 2011; Hartarska and Nadolnyak, 2007; Mersland and Strøm, 2009). On the other hand, outreach, is considered to be a function of macroeconomic environment and MFIs characteristics as well as its financial sustainability status. Moreover, to allow for possible link between regulation, outreach, and financial sustainability all equations are estimated as a system.

Knowledge of the joint distribution of outcomes affords the estimation of interesting and policy-relevant parameters that cannot be determined from only mean effects. Specifically, from policy decision making perspective following questions seem to be of primary interest when evaluating the impact of regulation: (1) what is the effect of regulation on performance of actually regulated MFI? and (2) what is the effect of regulation on performance of MFIs that opt for regulation once they start taking deposits? In a new contribution to the literature, our model

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<sup>7</sup> Overall, MFIs can be subject to either mandatory entry regulation, prudential regulation, or some sort of entry regulation and consequent monitoring (tiered regulation).

allows estimation of effect of regulation on performance of different types of MFI: randomly chosen MFI, actually regulated MFIs and MFIs that opt for regulation once they start taking deposits. To our knowledge, no existing empirical research addresses these issues.

The aims of this research, therefore, are three-fold. First, we analyze determinants of MFIs financial and social performance, second, we investigate the nature of a trade-off in MFIs performance, and third, we examine the effect of regulation on performance of different types of MFIs. The rest of the article is organized as following: Section 2 provides brief overview of existing literature, Section 3 describes the empirical model, Section 4 describes the data used in analysis, Section 5 discusses the results, Section 6 considers the implications of estimated model, and Section 7 concludes.

## **2. Previous Literature**

In the 1990s, the issue of financial sustainability of microfinance institutions gave rise to an important debate between two approaches: financial system approach and welfare approach (Robinson, 2001). Defenders of the first approach (institutionalists) stress the importance of MFIs sustainability through reducing operational cost and covering the cost of lending money out of the income generated from the outstanding loan portfolio (Hermes and Lensink, 2011). Achieving self-financial sustainability by abjuring subsidies will enable MFIs to serve poor entrepreneurs without the constraints imposed by donors' budgets (Morduch, 2000). Defenders of the second approach (welfarists) reckon that poor people cannot pay high interest rate. Therefore, aiming at financial sustainability leads ultimately to the exclusion of poor from microfinance programs, and consequently to MFIs mission drift (Bhatt and Tang, 2001; Woller, Dunford, and Warner, 1999).

Considering the two approaches, there may be a trade-off between sustainability and outreach, implying that the shifting focus towards increasing sustainability and efficiency reduces the scope for the more traditional aim of MFIs, which is lending to the poor. Although this issue is the subject of a heated debate, there is a lack of systematic empirical analyses on the nature and determinants of the trade-off. The review of literature shows that there are two types of researches related to the empirical analysis of trade-off between sustainability and outreach.

One strand of literature evaluated the impact of outreach on financial sustainability of microfinance institutions. Hermes et al. (2011) use data for 435 MFIs over the period 1997-2007 to assess this impact. Sustainability is measured by cost of efficiency and outreach by the size of loan (log of the average loan balance per borrower) and the percentage of female borrowers in the total loan portfolio of the MFI. Using stochastic frontier analysis (SFA), they find that outreach is negatively correlated to efficiency, and then to sustainability of MFI. Therefore, the study suggests that there is a trade-off between outreach and sustainability. These results are confirmed by Thaw (2011) who assessed the profitability and self-sufficiency of 705 MFIs from

95 countries over the period 1998-2006. His results indicate that serving the poor (depth of outreach) is negatively correlated to both profitability and sustainability. However, the breadth of outreach (volume of MFI's clientele) has a positive impact on sustainability. This last result is also highlighted by Kar (2013) who concludes that MFIs can improve their performance through scaling-up (increasing breadth of outreach).

Cull et al. (2007) examine the relationship between financial performance and outreach (individual versus group). Using a dataset of 124 MFIs in 49 countries over the period 1999-2002, their study suggests that MFIs that focus on providing loans to individuals perform better in terms of profitability. Yet, the fraction of poor borrowers and female borrowers in the loan portfolio of these MFIs is lower than for MFIs that focus on lending to groups. It also suggests that individual-based MFIs, especially if they grow larger, focus increasingly on wealthier clients, a phenomenon termed as "mission drift". Thus, Cull et al. (2007) do find evidence for a trade-off between efficiency and outreach.

On the other hand, other studies suggest that there is no trade-off between outreach and sustainability. Ayayi and Sene (2010) use financial self-sufficiency as a measure to assess the sustainability of 217 MFIs in 101 countries distributed by region and type of MFIs over the period of 1998-2006. Their results indicate that the coefficient of the percentage of women in portfolio (defined as a measure of depth of outreach) is negative but statistically non-significant. This means that there is no trade-off between sustainability and delivering loans to poor.

Kar (2011) explores why some MFIs perform better than others. He uses data obtained from MIX dataset on 426 institutions in 81 countries during the year 2007. He shows that the size of loan does not affect profitability and, therefore, MFI can focus simultaneously on serving the poor and sustainability. He explains that MFIs can increase their profitability and self-sufficiency through improving productivity and breadth of outreach as well as implementing solidarity-group loan method and a better interest rate policy. Almost the same findings are highlighted by Crombrughe et al. (2008) who use regression analysis to study the determinants of self-sustainability of a sample of MFIs in India. Their results suggest that the challenge of covering costs on small and partly unsecured loans can be met, without necessarily increasing the size of the loan or raising the monitoring costs, i.e. MFIs can ensure sustainability while keeping the focus on the poor.

Imposing regulation to control and supervise MFIs was considered to improve MFIs financial sustainability. However, empirical research has not endorsed such instrument. Pati (2012) and Cull et al. (2011) focus on the impact of regulation on the sustainability of MFIs. Pati (2012) uses data on 40 MFIs, for the years 2005-2006 and 2009-2010, to analyze the effect of regulatory status (dummy variable) on operational self-sufficiency and profitability. He concludes that contrary to the expectation, regulation has failed to make any impact on

sustainability as well as on profitability. Also, Cull et al. (2011) using data from 346 MFIs in 67 developing countries conclude that there is no significant relationship between regulation, measured by four level of supervision, and financial self-sufficiency.

Besides outreach and regulation, other micro-institutional variables such as firm size, expenditure control, mode of governance of MFIs and loan portfolio status have been employed to explain financial sustainability. Pati (2012), Mersland and Strøm (2009), Cull et al. (2007), and Honohan (2004) conclude that firm size has a positive impact on MFIs self-sufficiency. On another ground, Pati (2012), Cull et al. (2011), Ayayi and Sene (2010) state that controlling operating expenditure improve financial profitability and financial sustainability. In addition, Kar (2011), Ayayi and Sene (2010) stipulate that by increasing the number of borrowers per loan officer, MFIs will scale up and increase productivity which affects, in turn, positively financial sustainability. The way in which MFI is governed also impacts its performance and, notably, sustainability. Indeed, according to Mersland and Strøm (2009), the percentage of female in the board increases sustainability while the presence of international director has a contrary effect. Ayayi and Sene (2010) found that portfolio at risk (loan overdue 30 days) affect negatively financial sustainability.

Another strand of research examines the effect of macroeconomic indicators such as degree of competition in financial intermediation, inflation status, economic growth per capita and human capital development on financial sustainability. Cull et al. (2009) show that the penetration of larger bank in the overall economy has no impact on the profitability of the MFIs. This finding is similar to the one of Kai (2009). Using a panel data of 450 MFIs in 71 countries, the author shows that intensification of competition does not impact financial self-sufficiency and therefore sustainability of MFIs. On the contrary, Assefa et al. (2010) conclude that competition is negatively correlated to financial performance, including efficiency, as well as to social performance, outreach. Cull et al. (2011) indicate that inflation has a negative impact on sustainability while Thaw (2011) shows that this effect is negligible. Even though theory indicates the positive effect of economic growth and GDP per capita on sustainability, Mersland and Strøm (2009), using panel data of 278 MFIs from 60 countries, conclude that development, measured by Human Development Index, has no effect on MFIs sustainability.

The impact of other macroeconomic variables has been also assessed. Cull et al. (2011) indicate that inflation has a negative impact on sustainability while Thaw (2011) shows that this effect is negligible. Even though theory indicates the positive effect of economic growth and GDP per capita on sustainability, Mersland and Strøm (2009), using panel data of 278 MFIs from 60 countries, conclude that development, measured by Human Development Index, has no effect on MFIs sustainability.

Another strand of literature examines the determinants of MFIs outreach. Since the scaling up of MFIs usually creates a disagreement between institutionalists and welfarists, few empirical studies analyze the effect of firm size on outreach. Hartarska (2005) examines the effect of size on both depth and breadth of outreach. She uses data for 140 MFIs operating in Central and East Europe countries. Results indicate that there is no significant relationship between the size of an MFI and its outreach. This finding is contrary to the one of Mersland and Strøm (2009) who show that size has positive effect on breadth of outreach and negative on the depth, which confirms that aiming at sustainability through scaling up would generate mission drift. In addition to the size, Hartarska (2005) argues that governance and management quality affect the outreach. She shows that MFIs with more experienced managers reach poorer borrowers. Moreover, the presence of donors and women in the board support MFI to focus on this target. These results are, however, mitigated by those of Mersland and Strøm (2009). Authors demonstrate that governance mechanisms generally have no impact on the depth of outreach. Only the breadth of outreach could be impacted by CEO/chairman duality. As an interaction variable of the duality dummy with firm size is positive and significant, they argue that, by instituting duality, the MFI presumably pursues a managerial goal of firm size maximization.

Trade-off between sustainability and outreach is also analyzed when measures of efficiency and profitability are introduced as explanatory variables of outreach. Mersland and Strom (2009) employ panel data of rated MFIs from 74 countries in order to examine the effect of sustainability on depth of outreach. Results indicate that both profit per loan client and costs per loan client increase the average loan size. This suggests the existence of trade-off between financial performance and serving poor. However, authors attenuate this evidence and argue that the effect of cost per loan is higher than the effect of profit on outreach. So, they explain that when an MFI is run more efficiently (through increasing cost efficiency more than average profit), the MFI is able to reduce average loan size and to prevent mission drift.

Makame and Murinde (2007) use panel dataset for 33 MFIs in five East African countries for the period 2000-2005 to analyze the trade-off between financial performance and outreach. Results indicate that higher ratio of operating expense to loan portfolio will result in lower average loan and vice versa, meaning that in order for MFIs to attain a deep outreach, the costs of operations have to be higher than if it was not aiming for greater outreach. Moreover, it appears that breadth of outreach has negative relationship with average loan. In other words, scaling up and aiming at sustainability would lead to a mission drift. Contrary to Mersland and Strøm (2009), the study suggests that partial subsidization of MFI operating costs deepens outreach.

Olivares-Polanco (2005) investigates the effect of sustainability on depth of outreach, using data for 28 MFIs in Latin America for the years 1999-2001. Sustainability is measured by

ROA whereas depth of outreach is measured by different loan size's measures. Results indicate negative correlation between sustainability and outreach which confirms MFIs mission drift and a trade-off between the two objectives.

On another ground, it has been argued that financial regulation of microfinance may generate mission drift. In fact, rigorous financial regulation may shift MFIs' target from outreach to meeting financial requirements. Hartarska and Nadolnyak (2007) show that there is no evidence that regulated MFIs perform better in terms of breadth of outreach. However, they indicate that MFIs with higher proportion of savings reach more borrowers. Cull et al. (2011) examine the effect of regulation on the depth of outreach. Their findings suggest that profit-oriented MFIs respond to supervision by maintaining profit rates but curtailing outreach to women and customers that are costly to reach. This confirms the results of Makame and Murinde (2007) indicating that regulation leads to higher average loans and decreases the depth of outreach. This trade-off evidence is mitigated by Pati (2012) who argues that regulation does affect neither the breadth nor the depth of outreach. However, Pati (2012) results remain limited as the scope of study is limited to only Indian MFIs.

Few studies analyze the impact of macro-economic variables on outreach. Kai (2009) investigates the impact of competition on depth of outreach. He shows that intense competition results in deterioration of outreach, which supports the findings of McIntosh and Wydick (2004) as well as those of Olivares-Polanco (2005) who demonstrate that competition adversely affects the depth of outreach. Hartarska and Nadolnyak (2007) use a panel data of 114 MFIs in 62 countries and demonstrate that there is a significant positive correlation between competition and breadth of outreach. Moreover, McIntosh et al. (2005) use the biggest MFI (Village Bank in Uganda) data from December 1998 to August 2002 and prove that competition does not have a significant impact on the outreach.

Honohan (2004) examines the effect of poverty rate and quality of institutions on outreach. Results indicate that a high rate of poverty and a good quality of institutions are associated with a higher microcredit penetration. Vanroose and D'Espallier (2013) analyze the relationships between outreach and financial sector development. Results indicate that MFIs reach more clients and are more profitable in countries where access to the traditional financial system is low. Ahlin and al. (2011) use data of 373 MFIs from 74 countries to assess MFIs performance in macroeconomic context. Results indicate that more manufacturing and higher workforce participation are associated with slower growth in MFI outreach. However, contrary to Honohan (2004), the level of income does not seem to have impact on serving poor borrowers.

To conclude, the literature review shows that there is only limited empirical evidence on the compatibility or trade-off between sustainability and outreach of MFIs. The few studies available suggest that there is a trade-off, while some studies do not find the trade-off between

these two goals. This heterogeneity of results raises a need for more empirical evidence on a compatibility of financial sustainability and outreach of MFIs.

Our study aims at going beyond the existing empirical analyses. Most of existing empirical studies use the simple regression model treating either financial sustainability or outreach as a dependent variable and the other one as an explanatory variable. Our analysis treats both financial sustainability and outreach as dependent variables. Secondly, instead of estimating single equations, we make use of a simultaneous-equations model, to take account of a possible dependence between regulation, outreach and sustainability. Moreover, in our analysis we assume that the level of financial sustainability of MFI can affect its outreach, therefore, it is used as an explanatory variable in equation for outreach.

### 3. The Model

As a provider of banking services, the MFI is subject to adverse selection and moral hazard from credit clients. As a result, both financial sustainability and outreach of MFI are functions of some characteristics related to MFI and its clients. The important feature of the decision-making process is that each MFI may have the unobserved by the researcher propensity to perform well, which would, obviously, influence both the outreach decision and resulting performance (e.g., financial sustainability) of the MFI.

Decisions on outreach and financial sustainability are assumed to be made by MFI simultaneously. Both of these decisions are assumed to be affected by the regulation status of MFI so the model to investigate this problem falls into the category of treatment effect models. In order to test for the effect of regulation on financial sustainability and outreach of MFIs we extend the standard two-equation endogenous treatment model. The endogenous treatment model has been used intensively in the literature and it consists of outcome equation (financial sustainability and outreach of MFIs) and a treatment (regulation) equation. The decision on choice of regulation status is included in the mean function of financial sustainability and outreach so the coefficient of it is referred to as the causal impact of the treatment on outcome. We estimate the resulting system of equations jointly using Markov Chain Monte Carlo (MCMC) methods. The choice of methodology is strongly motivated by the computational advantages of Bayesian methods over classical procedures in related models.<sup>8</sup>

Individual observations for MFI are denoted with subscript  $i$ . Let  $R_i^*$  be the latent variable for the choice of regulation status. The binary observed outcome variable  $R_i$  is obtained from the latent variable in the following way:

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<sup>8</sup> See Munkin and Trivedi (2003)

$$R_i = \begin{cases} 1, & R_i^* > 0 \\ 0, & R_i^* \leq 0 \end{cases}$$

We denote by  $F_i^*$  and  $O_i^*$  two latent indexes governing the choice of financial sustainability and outreach, respectively. The observed outcomes  $F_i$  of MFI's financial sustainability and  $O_i$  of its outreach are obtained from the latent indexes associated with each choice in the following matter:

$$F_i = F_i^* \times I(F_i^* > 0)$$

$$O_i = O_i^* \times I(O_i^* > 0)$$

where  $I(\cdot)$  is an indicator function taking value 1 if the expression in brackets is true and value 0 otherwise. We also assume that financial sustainability affects the outreach of MFI, therefore observed outcome  $F_i$  is included as an explanatory variable in outreach equation.

The latent index governing the choice of regulation status is assumed to be equal to:

$$R_i^* = x_{1i}\beta_1 + z_{1i}\alpha + \varepsilon_{1i} \quad (3.1)$$

while latent indexes governing the two performance measures are assumed to be equal to:

$$F_i^* = x_{2i}\beta_2 + \gamma_1 R_i + \varepsilon_{2i} \quad (3.2)$$

$$O_i^* = x_{3i}\beta_3 + \gamma_2 R_i + \gamma_3 F_i + \varepsilon_{3i}$$

(3.3)

where  $x_{1i}$ ,  $x_{2i}$  and  $x_{3i}$  are  $1 \times k1$ ,  $1 \times k2$ , and  $1 \times k3$  vectors of exogenous variables;  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  are  $k1 \times 1$ ,  $k2 \times 1$ , and  $k3 \times 1$  vectors of parameters,  $\gamma_1$  and  $\gamma_2$  are scalar parameters measuring the effect of endogenous regulation on outreach and financial sustainability, and  $\gamma_3$  measures the impact of financial sustainability on outreach. Putting regulation and performance equations together (3.1)-(3.3) we get the three equation system:

$$R_i^* = x_{1i}\beta_1 + z_{1i}\alpha + \varepsilon_{1i}$$

$$F_i^* = x_{2i}\beta_2 + \gamma_1 R_i + \varepsilon_{2i} \quad (3.4)$$

$$O_i^* = x_{3i}\beta_3 + \gamma_2 R_i + \gamma_3 F_i + \varepsilon_{3i}$$

The vector of error terms of the system  $\varepsilon_i = (\varepsilon_{1i}, \varepsilon_{2i}, \varepsilon_{3i})'$  then is assumed to be normally distributed, allowing for possible correlations among the unobservables driving the regulation, financial sustainability and outreach decisions; i.e.,  $\varepsilon_i \sim N(0, \Sigma)$  with

$$\Sigma = \begin{bmatrix} \sigma_1^2 & \rho_{12}\sigma_1\sigma_2 & \rho_{13}\sigma_1\sigma_3 \\ \rho_{12}\sigma_1\sigma_2 & \sigma_2^2 & \rho_{23}\sigma_2\sigma_3 \\ \rho_{13}\sigma_1\sigma_3 & \rho_{23}\sigma_2\sigma_3 & \sigma_3^2 \end{bmatrix} \quad (3.5)$$

These possible correlations imply that instrumental variables are required for identification of the parameters in the full model. These are labeled as  $z_{1i}$  in the regulation latent variable equation.

Importantly to the analysis, the error terms of all three equations are allowed to be correlated with each other. The correlation term  $\rho_{23}$  is designed to capture unobserved private information on MFI (for example managerial quality or MFI's ability to perform well) which influences the financial sustainability of the MFI  $F_{it}$  and also affects the outreach decision  $O_{it}$  of each MFI. The sign of this covariance term is very important to our analysis. In the presence of trade-off between financial sustainability and outreach missions of MFI we expect the negative value of this covariance term.

### 3.1 Posterior Distribution

To estimate the system of equations (3.4) jointly the Bayesian framework, combining data augmentation and Gibbs sampling procedures, are used. The choice of methodology is motivated by the superiority of Bayesian methods over Maximum Simulated Likelihood (MSL) in this type of endogenous treatment models.<sup>9</sup> The basic idea is to obtain posterior distribution of the parameters of the model. The posterior distribution is proportional to the product of the likelihood of the observed data and prior distribution of the parameters:

$$p(\text{parameters}|\text{data}) \propto p(\text{data}|\text{parameters})p(\text{parameters})$$

The joint posterior distribution of the parameters of the model has to be simulated because it does not have a convenient analytical form. The parameter set is split into blocks and a variant of Gibbs sampling algorithm<sup>10</sup> is used to iteratively draw values from the posterior distribution of each block of parameters conditional on other parameters of the model. The posterior output of this Markov Chain is used to make inferences about the parameters of the interest. Because the conditional posterior distribution is not of a standard form, a tailored Metropolis-Hastings algorithm is used to sample from it.<sup>11</sup> Lastly, we follow Albert and Chib (1993) by augmenting the parameter set with the latent data. The details of the algorithm are following.

The three equations for each individual MFI are stacked in the following manner:

$$y_i^* = \begin{pmatrix} R_i^* \\ F_i^* \\ O_i^* \end{pmatrix}_{3 \times 1} \quad y_i = \begin{pmatrix} R_i \\ F_i \\ O_i \end{pmatrix}_{3 \times 1} \quad \varepsilon_i = \begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \\ \varepsilon_{3i} \end{pmatrix}_{3 \times 1}$$

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<sup>9</sup> Munkin and Trivedi (2003).

<sup>10</sup> See, for example, Tierney (1994)

<sup>11</sup> Metropolis et al. (1953), Hastings (1970)

$$X_{it} = \begin{pmatrix} x_{1i} & z_{1i} & 0_{1 \times k_2} & 0 & 0_{1 \times k_3} & 0 & 0 \\ 0_{1 \times k_1} & 0_{1 \times k_4} & x_{2i} & \gamma_1 & 0_{1 \times k_3} & 0 & 0 \\ 0_{1 \times k_1} & 0_{1 \times k_4} & 0_{1 \times k_2} & 0 & x_{3i} & \gamma_2 & \gamma_3 \end{pmatrix}_{3 \times k} ; \beta = \begin{pmatrix} \beta_1 \\ \alpha \\ \beta_2 \\ \gamma_1 \\ \beta_3 \\ \gamma_2 \\ \gamma_3 \end{pmatrix}_{k \times 1} ;$$

where  $k = k_1 + k_2 + k_3 + k_4 + 3$  is the total number of explanatory variables in all three equations. The system can be expressed then as

$$y_i^* = X_i \beta + \varepsilon_i, \varepsilon_i \sim N(0, \Sigma)$$

Then all the observations are stacked together over individual MFIs as

$$y^* = X\beta + \varepsilon \sim N(X\beta, I_n \otimes \Sigma)$$

where

$$y^* = \begin{pmatrix} y_1^* \\ y_2^* \\ \vdots \\ y_n^* \end{pmatrix}_{3n \times 1} ; \quad X = \begin{pmatrix} X_1 \\ X_2 \\ \vdots \\ X_n \end{pmatrix}_{3n \times k} ; \quad \varepsilon = \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{pmatrix}_{3n \times 1}$$

The covariance matrix for  $y^*$  then could be expressed as:

$$\Omega = \begin{pmatrix} \Sigma & 0 & \dots & 0 \\ 0 & \Sigma & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & \Sigma \end{pmatrix}_{2n \times 2n} = I_n \otimes \Sigma.$$

For computational simplicity, we use data augmentation approach (Tanner and Wong, 1987; Albert and Chib, 1993) and treat the latent data  $y^*$  as additional parameters of the model, thus making it a part of posterior. The appropriate steps are added to the Gibbs algorithm to draw these latent variables conditional on realized values of the main parameters of the model. The latent data then integrated out to obtain the posterior distribution of the main parameters. The augmented posterior  $p(y^*, \beta, \Sigma | y)$ , which also contains the latent data, is proportional to

$$p(y^*, \beta, \Sigma | y) \propto p(y | y^*) p(y^* | \beta, \Sigma) p(\beta, \Sigma),$$

where  $p(y | y^*)$  is the distribution of the observed data conditional on the latent data,  $p(y^* | \beta, \Sigma)$  is the augmented likelihood, and  $p(\beta, \Sigma)$  is the prior distribution of the main parameters. The augmented posterior is given by

$$\begin{aligned}
p(y^*, \beta, \Sigma | y) &\propto p(y | y^*, \beta, \Sigma) p(y^* | \beta, \Sigma) p(\beta, \Sigma) \\
&\propto p(\beta, \Sigma) \prod_{i=1}^n p(y_i | y_i^*) p(y_i^* | \beta, \Sigma) \\
&\propto p(\beta, \Sigma) \prod_{i=1}^n \left[ I(R_i = 1) I(R_i^* > 0) + I(R_i = 0) I(R_i^* \leq 0) \right] \times \\
&\quad \left[ R_i \times I(F_i = F_i^*) + (1 - R_i) \times I(F_i = 0) \right] \times \\
&\quad \left[ R_i \times I(O_i = O_i^*) + (1 - R_i) \times I(O_i = 0) \right] \times p(y^* | \beta, \Sigma)
\end{aligned} \tag{3.6}$$

where the second line follows from the assumed independence across individual MFIs and  $I$  denotes an indicator function taking on the value one if the statement in the parenthesis is true, and is zero otherwise. Conditional on the parameters of the model, the augmented likelihood can be expressed as:<sup>12</sup>

$$\begin{aligned}
p(y^* | \beta, \Sigma) &= (2\pi)^{-\frac{3n}{2}} |I_n \otimes \Sigma|^{-\frac{1}{2}} \exp\left(-\frac{1}{2} (y^* - X\beta)' (I_n \otimes \Sigma)^{-1} (y^* - X\beta)\right) \\
&\propto \left(|I_n|^3 |\Sigma^n|\right)^{-\frac{1}{2}} \exp\left(-\frac{1}{2} (y^* - X\beta)' (I_n \otimes \Sigma)^{-1} (y^* - X\beta)\right) \\
&\propto |\Sigma|^{-\frac{n}{2}} \exp\left(-\frac{1}{2} \left[ \sum_{i=1}^n \left( (y_i^* - X_i \beta)' \Sigma^{-1} (y_i^* - X_i \beta) \right) \right]\right) \\
&\propto |\Sigma|^{-\frac{n}{2}} \exp\left(-\frac{1}{2} \sum_{i=1}^n \varepsilon_i' \Sigma^{-1} \varepsilon_i\right)
\end{aligned} \tag{3.7}$$

Since  $R_i^*$  in the regulation equation is unobservable, only the ratios  $\beta_1/\sigma_1$  and  $\alpha_1/\sigma_1$  are identified. One way to deal with identification problem is to restrict the error variances in participation equations to unity (McCulloch, Polson and Rossi, 2000). We use approach of Nobile (2000) who proposes way to generate Wishart and inverted Wishart random matrices conditional on one of the diagonal elements.

Priors for  $\beta$  and  $\Sigma$  are specified independently. The prior for  $\beta$  is normal and given by:

$$\beta \sim N(\mu_{\beta_0}, V_{\beta_0}). \tag{3.8}$$

where  $\mu_{\beta_0}$  and  $V_{\beta_0}$  denote the prior mean and covariance matrix of  $\beta$ . We set all elements of prior mean vector  $\beta$  to zero. The employed prior is quite diffuse as we set the prior standard deviation of each element equal to 2, so that the data information is predominant.

The prior distribution of the covariance matrix  $\Sigma$  is assumed to be inverse Wishart subject to the normalization that the scale parameter in the regulation selection equation is unity:

$$\Sigma | \Gamma_{-\Sigma}, Data \sim G^{-1} \tag{3.9}$$

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<sup>12</sup> See appendix for details.

where  $\Gamma_{-\Sigma}$  denotes all parameters other than  $\Sigma$  and

$$G \sim \text{Wishart}(n + \rho, S + \rho R)$$

with prior  $p(G) \sim \text{Wishart}(\rho, \rho R)$  and  $S = \sum_{i=1}^n (y_i^* - X_i \beta)(y_i^* - X_i \beta)^T$

All correlation parameters in  $R$  are set equal to zero so that our prior ‘centers’ our model over one where selection bias is not important, though our prior is diffuse enough to let the data revise our beliefs and reveal to us the importance of unobservable selectivity.

### 3.2 Posterior Simulation

The conditional posteriors of both  $\beta$  and  $\Sigma$  are proportional to the product of likelihood and the respective prior distribution. The conditional posterior of  $\beta$  can be shown to be also normal:<sup>13</sup>

$$p(\beta | y^*, \Sigma) \sim N(\mu_{\beta_1}, V_{\beta_1})$$

where

$$\begin{aligned} \mu_{\beta_1} &= V_{\beta_1} \left( \sum_{i=1}^n X_i' \Sigma^{-1} y_i^* + V_{\beta_0}^{-1} \mu_{\beta_0} \right)^{-1} \\ V_{\beta_1} &= \left( \sum_{i=1}^n X_i' \Sigma^{-1} X_i + V_{\beta_0}^{-1} \right)^{-1} \end{aligned} \tag{3.10}$$

As for conditional posterior distribution of  $\Sigma$ , recall,  $\sigma_{R^*}^2 = 1$  is normalized to one. This creates a slight complication as the conditional posterior is no longer inverse Wishart. We thus use the results of Nobile (2000) who provides a convenient algorithm for random Wishart (multivariate  $\chi^2$ ) draws with a restricted element.<sup>14</sup>

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<sup>13</sup> See Appendix A1 for details.

<sup>14</sup> The algorithm applied to the current setting results in the following steps:

1. Exchange rows and columns one and three in  $S + \rho R$ , call this matrix  $V$ .
2. Find  $L$  such that  $V = (L^{-1})^T L^{-1}$
3. Construct a lower triangular matrix  $A$  with
  - a.  $a_{ii}$  equal to the square root of  $\chi^2$  random variates,  $i = 1, 2$ .
  - b.  $a_{33} = \frac{1}{l_{33}}$  where  $l_{33}$  is the third row-column element of  $L$ .
  - c.  $a_{ij}$  equal to  $N(0, 1)$  random variates,  $i > j$ .
4. Set  $V' = (L^{-1})^T (A^{-1})^T A^{-1} L^{-1}$ .
5. Exchange rows and columns one and three in  $V'$  and denote this draw  $\Sigma$ .

Finally, the data augmentation step draws the values of latent variables  $R_i^*$ ,  $F_i^*$  and  $O_i^*$  conditional on the observed data  $y_i^*$  and parameters of the model  $\beta$  and  $\Sigma$ . The distribution of latent variable  $R_i^*$  is truncated normal:

$$R_i^* | y_i, \beta, \Sigma \sim TN_{RG(R_i^*)}^*(\mu_{R^*}, \sigma_{R^*}^2)$$

where  $TN_{RG}^*(\mu, \sigma^2)$  denotes normal distribution with mean  $\mu$  and variance  $\sigma^2$  truncated to the region  $RG$ . For each individual MFI  $i$  this distribution is truncated to the region:

$$R(F_i^*) = \begin{cases} [0, \infty) & \text{if } R_i = 1 \\ (-\infty, \infty) & \text{if } R_i = 0 \end{cases}$$

We follow Geweke (1991) to draw values from these truncated normal distributions. Each latent index is sampled from a univariate truncated normal density conditional on the current values of other latent indices using the inverse distribution function method. The latent variables  $F_i^*$  and  $O_i^*$  are drawn only for those observations for which  $F_i = 0$  and  $O_i = 0$  respectively.  $F_i^*$  and  $O_i^*$  are drawn from the truncated normal distribution:

$$F_i^* | y_i, \beta, \Sigma \sim TN_{(-\infty, 0)}^*(\mu_{F^*}, \sigma_{F^*}^2)$$

$$O_i^* | y_i, \beta, \Sigma \sim TN_{(-\infty, 0)}^*(\mu_{O^*}, \sigma_{O^*}^2)$$

Again, each latent index is sampled from a univariate normal density and univariate truncated normal density conditional on the current values of other latent indices using the inverse distribution function method. In case if  $F_i > 0$  or  $O_i > 0$  then  $F_i^* = F_i$  and  $O_i^* = O_i$ , respectively.<sup>15</sup>

## 4. Data

This section describes data, sample, two dependent variables, and set of independent variables used for estimation purposes.

### 4.1. Sample

The empirical analysis utilizes data collected by the MIX MARKET information platform ([www.mixmarket.org](http://www.mixmarket.org)). To date, MIX MARKET contains the best publicly available cross-country data of individual microfinance institutions/ financial indicators. Additional information on MFIs characteristics is also available through Microbanking Bulletin (MBB). The analysis is carried out using 1347 observations for 450 MFIs from 71 countries over period 2006- 2008. Even though, most of MFIs are reluctant to provide their performance information, lately, higher competition for donor funds has changed the situation and more MFIs are revealing

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<sup>15</sup> See Appendix A2 for details of Posterior Simulator.

it. Through this information exchange platform individual MFIs provide their information on financial and outreach indicators.

#### **4.2. Dependent Variables**

MFI has dual objectives: to cover its costs (financial sustainability or self-sufficiency) and reach many poor people (outreach). Attaining sustainability means delivering microfinance services to the clients in a profitable manner without depending on subsidies. A sustainable MFI, therefore, is the one which operates profitably and does not require subsidies to succeed. Hence, MFI's performance in terms of financial sustainability is measured by operational self-sufficiency (OSS). The OSS measures how well an MFI can cover its costs through operating revenues. There are other possible measures of financial self-sustainability such as return to equity (ROE) and return to assets (ROA) but the use of these measures is more difficult due to institutional diversity and industry accounting practices. The OSS does not account for the level of subsidies for operating expenses but rather measures the managers' ability to cover operating costs. Still, The OSS could serve as a reasonable approximation of financial performance of MFI (Hartarska and Nadolnyak, 2007).

There are two dimensions of outreach, depth and breadth, former referring to the poverty level of MFI clients and the latter one to the volume of MFI clientele. As a result, there are several proposed measures for outreach such as MFI's average outstanding loan, number of female borrowers, and the number of credit clients served. The average outstanding loan is a measure of the depth of microfinance while number of female borrowers and the number of credit clients are measures of its breadth (Mersland and Strøm, 2009). Even though MIX MARKET contains information on the scale of outreach (Small, Medium, Large), which is measured as the total number of borrowers served, we use data in MIX MARKET to construct all three different measures of outreach. To measure the depth of outreach we use the data on average loan balance per borrower per GDI per capita, whereas, the higher the average loan the lower the outreach and vice versa (Olivares-Polanco, 2005; Luzzi and Weber, 2007). For measuring the breadth of outreach we use the percentage of female borrowers and the logarithm of number of active borrowers. The higher the percentage of female borrowers or number of active borrowers the broader is the outreach (Mersland, Strøm, 2009; Hartarska and Nadolnyak, 2007).

Unlike financial institutions, MFIs can be regulated or unregulated (Hartarska and Nadolnyak, 2007; Cull et al., 2011). Cull et al. (2011) argue that complying with prudential regulation could be very costly for microfinance institutions. As a result, these additional expenses could negatively influence the financial performance of MFI. However, more stringent regulation could also have a positive effect on financial sustainability of MFI as it protects the

safety of small deposits and, therefore, reduces the risks. To cope with extra costs imposed by regulation, some MFI, especially the profit-oriented ones, might choose to alternate their business orientation. As a result, the outreach could be affected as this alternation could lead to lower amount of poor or female borrowers or to larger loans lent out. Since regulatory status can affect both the financial performance and outreach of MFI, the variable REGULATION is included as an explanatory variable in both equations for outreach and financial sustainability.

### **4.3. Independent Variables**

As a provider of financial services, MFI is a subject to adverse selection and moral hazard from credit clients since MFI does not have enough information to differentiate good and bad clients lending (Armendariz de Aghion and Labie, 2012). Successful governance alleviates adverse selection and moral hazard problems associated with lending process (Mersland and Strøm, 2009). Therefore, in an attempt to explain differences in performance of MFIs, some studies have focused on governance (Hartarska and Nadolnyak, 2007; Ahlin et al., 2011; Cull et al., 2011; Hermes et al., 2009). To take into account the relationship between governance mechanisms and financial performance and outreach, ownership structure, charter type, lending methodology, and regulation are included into analysis.

As for the effect of ownership structure on financial performance of MFI, non-profit organizations are considered to be weaker than shareholder firms since they lack owners with a financial stake in the operations. Moreover, most of non-profit organizations have objectives and funding structure which are different from those of commercially-oriented MFIs. As a result, this leads to their lower financial performance. However, Besley and Ghatak (2004) argue that non-profit status alone can positively affect the performance of MFI since donors would be more willing to support non-profit MFIs as they guarantee the outreach mission. As for the effect of ownership on the outreach, Non-profit Organizations are supposed to better reach poor clients than shareholder firms. Dummy variable PROFIT is included into analysis to take into account the effect of MFI ownership structure on its performance. It takes value of zero if MFI is a non-profit organization and one otherwise.

In order to control for the fact that different MFIs may have different cost structures due to differences in the level of subsidies they receive from outside (Hermes et al., 2009), there is a need for controlling MFIs charter type. MFITYPE is a vector of dummy variables for different charter types: BANK, RURAL BANK, NBF, OTHER, AND CREDIT UNION with NGO as omitted type. All former dummies are included as independent variables in both equations for outreach and financial sustainability.

Lending methodology is quite important aspect in reducing the asymmetric information problem associated with credit clients. There are three basic models of lending employed by MFIs. Solidarity involves 5-person solidarity groups, in which each group member guarantees

the other members' repayment. If any of the group members fail to repay their loans, the other group members must repay for them or face losing access to future credit. Village banking expands the solidarity group concept to a larger group of 15–30 people who are responsible for managing the loan provided by the MFI, as well as making and collecting loans to and from each other. Individual lending is simply the provision of microfinance services to individuals instead of groups. Guaranteed repayment of every other member's portion creates social pressures within the group to avoid the default. Hence, it is expected that group lending (both solidarity and village banking) improves the financial performance of the MFI. As for the effect of lending methodology on the outreach, the result is ambiguous. From the one hand, group lending might help to widen the scope of microlending by offering service to larger amount of clients. From the other hand however, since the group lending assumes joint liability for loan repayment, the very poor might be excluded from these groups as being considered too risky by other members of the group. In this case, group lending leads to less very poor people served by MFI. MIX MARKET contains data on lending methodology as one of four types: individual, individual/solidarity, solidarity, and village. Three dummy variables are included into analysis to capture the effect of lending methodology: INDIVIDUAL/SOLIDARITY and SOLIDARITY that capture the effect of solidarity type of lending on financial sustainability and outreach, and VILLAGE that looks at how village banking affects the performance of MFI with INDIVIDUAL as an omitted type.

Following Hartarska and Nadolnyak (2007) we include several control variables that affect both financial sustainability and outreach of MFI. Cebenoyan and Strahan (2004) have shown that risk management objectives influence the capital structure of lending institutions. Moreover, results of Kar (2012) and Bogan (2012) show that higher leverage raises profit-efficiency in MFIs while cost efficiency deteriorates with decreasing leverage. Additionally, the study finds negative impact of leverage on depth of outreach. However, Kar (2012) finds that capital structure does not have any noticeable impact on breadth of outreach and women's participation as loan clients. Therefore, variable CAPITAL, calculated as a capital/asset ratio, is included into analysis to measure the impact of financial leverage on MFI's performance.

One of factors that are found to affect the performance of MFI is its age. Utilizing data from Eastern Europe and Central Asia, Caudill et al. (2009) found that MFIs generally operate with lower costs the longer they are in operation. However, Hermes et al. (2009) results suggest that older MFIs are less efficient. Bogan (2012) employs the institutional life cycle theory of MFI development as one of alternative theories regarding MFI funding processes. According to this theory, most MFIs start out as NGOs with a social mission, mostly getting funding from grants and concessional loans from donors. However, as MFIs mature, private debt capital becomes available, with traditional equity financing available at the last stage of MFIs evolution. Therefore, age of MFI could be included as an explanatory variable into equations for financial sustainability and outreach. MIX MARKET classifies MFIs into three categories (new, young and mature) based on the maturity of their microfinance operations. This is calculated as the

difference between the year they started their microfinance operations and the year of data submitted by the institutions. Therefore, two dummy variables, YOUNG and MATURE, are included into analysis to assess the impact of MFI's age on its performance with NEW as an omitted category.

Whether MFI is focused on lending might affect its performance (Hartarska and Nadolnyak, 2007). To control for focus on lending variable LOANS is included into analysis which is calculated as loans-to-assets.

Size of MFI is found to have an impact on MFI's performance. D'Espallier et al. (2011) argue larger MFIs are associated with higher repayment in terms of the portfolio at risk and write-off rate. This higher repayment in turn could result in higher financial sustainability and outreach of MFI. Therefore, variable SIZE which is calculated as a logarithm of total assets is included into analysis to measure the effect of size MFI's performance.

Caudill et al. (2009) and argue that whether MFI takes deposits as well as a volume of deposits are important for its performance. Variable DEPOSIT is calculated as deposits to total assets to control the difference in deposit-taking practices among MFIs.

Ahlin et al. (2010) argue that success of MFIs depends on the country-level context. To take into account the effect of macroeconomic factors on performance of MFIs the following list of variables is employed in the analysis: per capita income and inflation. Data on these variables comes from International Monetary Fund. Finally, MFI efficiency and outreach may be different in different regions due to differences in culture, political environment, human development, etc. To incorporate this regional diversity into our analysis, we include a matrix of dummy variables REGION for each main region of the developing world, with "Latin America and the Caribbean" as the omitted category.

Because the selection of MFIs for supervision is not random (Cull et al., 2011; Hartarska, 2005), we include several independent variables that govern the supervisory choice. First variable that might explain the choice of prudential regulation indicates whether large and medium-sized banks have annual or more frequent onsite supervision. Cull et al. (2011) view this variable as a measure of country's propensity to regulate the banking industry. This variable is based on survey responses from bank supervisors in more than hundred countries collected by Barth, Caprio, and Levine (2012). Other exogenous factors that capture the effect of the institutional environment are indices developed by Heritage Foundation. Specifically, they are property rights, financial freedom, business freedom, economic freedom, and investment freedom. The property rights measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. Business freedom is a quantitative measure of the ability to start, operate, and close a business that represents the

overall burden of regulation as well as the efficiency of government in the regulatory process. Investment Freedom measures whether there are constraints on the flow of investment capital. Financial freedom is a measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector. Finally, economic freedom is the fundamental right of every human to control his or her own labor and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please, with that freedom both protected by the state and unconstrained by the state. Variables PROPERTY RIGHTS, BUSINESS FREEDOM, INVESTMENT FREEDOM, FINANCIAL FREEDOM, and ECONOMIC FREEDOM are included as explanatory variables into the supervision choice equation.

To explain sufficient variation in the assignment of supervision we need also MFI specific variables. As noted by Christen et al. (2012) one of primary reasons for prudential regulation of depository institutions is to protect small depositors who are not well-positioned to monitor the institution's financial soundness themselves. Therefore, the dummy DEPOSIT indicating whether an MFI accepts retail deposits is used to estimate the supervisory selection equation. Another MFI-level variable that explains the assignment of supervision is whether MFI is organized as a non-government organization (NGO) or non-bank financial institution (NBFI). As Cull et al. (2011) argue MFIs with NGO/NBFI charters tend to have funding arrangements and objectives different from those of commercially oriented MFIs. As a result, there would be less need for supervision to ensure the quality of their asset portfolios. Therefore, dummy variable NGO/NBFI is included as an explanatory variable into the supervision choice equation.

Model parameters identification usually requires use of instrumental variables. However, in this model identification can be achieved via the nonlinear functional form of the model.

The definitions of variables used in estimation are given in Table A1. Mean values and standard deviations of all variables are given in Table A2. Table A3 provides results of multicollinearity diagnostics: Variance Inflation Factor, Eigenvalues, Tolerance, and Condition Index. Examining the tolerances or VIFs is superior to examining the bivariate correlations among explanatory variables to check for multicollinearity problem. A commonly given rule of thumb is that VIFs of 10 or higher (or equivalently, tolerances of .10 or less) may be reason for concern. As for eigenvalues and condition indices, then an informal rule of thumb is that if the condition number is greater than 30, multicollinearity is a very serious concern. Based on these rules of thumb, we do not have concern for multicollinearity problem among explanatory variables.

## **5. Results**

Tables C2, C5, and C8 present estimation results where regulation is the dependent variable for each measure of outreach, namely, number of outstanding loans, number of active borrowers and number of female borrowers. Estimation results are robust across all

specifications of outreach. As expected, deposit taking MFIs are more likely to be supervised while NGO/NBFI charters are associated with lower likelihood of supervision. MFIs in countries with higher property rights, business freedom, investment freedom, and financial freedom are less likely to be supervised while countries with higher economic freedom and banking supervision are associated with higher probability of MFI supervision.

Tables C1, C4, and C7 present estimation results where financial sustainability and outreach are dependent variables for each measure of outreach. Directions of the effects suggested by these tables are highly consistent with our prior expectations. Results of these tables reveal some interesting relationships. Our results show no indication of a trade-off in case when average outstanding loan and percentage of female borrowers are used as a measure of outreach. On a contrary, MFIs that serve more clients tend to be more financially sustainable due to, probably, economies of scale. This implies that focusing on financial sustainability does not necessarily hurt the depth and breadth of outreach. This finding empirically supports the financial system approach that emphasizes the financial sustainability of microfinance programs. We find strong relationship between lending methodology and outreach, individual lending is found to be associated with lower outreach. Our results are in line with findings of Mersland and Strom (2009), Cull (2011), and Bogan (2012). This finding is not surprising since group lending is considered as a tool of default risk mitigation. Size of MFIs assets is found to be associated with higher MFI's outreach performance. Bigger MFIs are more likely to serve more wealthy clients and have overall more clients. However, MFIs with larger assets are less likely to serve female clients. Our results support findings of Bogan (2012), Kar (2013), Mersland and Strom (2009), and Hartarska and Nadolnyak (2007) who found that relationship between assets size and outreach measures increases concerns for mission drift. As for the effect of MFI's age on its outreach performance, more mature and experienced MFIs tend to have more clients, including female clients, and deal with more wealthy clientele. Our results support results obtained by Hartarska and Nadolnyak (2007), Mersland and Strom (2009) who found positive relationship between age of MFI and its outreach performance. Financial leverage seems to have no effect on outreach of MFIs. This result complies with results of Kar (2012) who found that capital structure does not have any noticeable impact on breadth of outreach and neither is it significantly related with women's participation as loan clients. Microfinance institutions involved in deposit-taking tend to serve more borrowers including female borrowers, and are more likely to have larger loan amounts. Higher GDP growth is associated with higher outreach level, as measured by average loan size and proportion of female borrowers, at the same time the total number of borrowers tends to go down when economy experiences expansion. Inflation is negatively related to outreach. A similar negative link between inflation and outreach is found by Mersland and Strom (2009). As for the impact of regulation on outreach, the effect of regulation on percentage of female borrowers is insignificant. However, MFIs regulation reduces the total amount of borrowers but at the same time regulated MFIs tend to lend smaller loans. This result contradicts result of Hartarska and Nadolnyak (2007) who did not find any impact of regulation

on number of active borrowers. MFI type is found to be strongly associated with breadth of MFI outreach, NGOs tend to serve wider group of borrowers as well as females.

As for the relationship between the operational self-sufficiency and explanatory variables, among all outreach specifications we find that age positively affects financial sustainability in early years of MFI operation. This result confirms results obtained by Caudill et al. (2009) who found that MFIs generally operate with lower costs the longer they are in operation, which in turn improves their efficiency. However, as MFIs mature the nature of relationship changes and more matured MFIs tend to be less financially sustainable. This result is in line with results of Hartarska and Nadolnyak (2007) who found increasing and then decreasing effect of MFI age on its financial sustainability. We find a negative relationship between the financial sustainability and group type of lending, indicating that MFIs focusing on group lending (solitary or village banking) are less efficient. Our results contradict findings of Hermes et al. (2009) and Hermes et al. (2011) who found that providing group loans is positively associated with MFI efficiency. Contrary, our results do not support supposed comparative efficiency of group lending and are in line with results of Mersland and Strom (2009). This result is not surprising in light of ongoing tendency in the industry to shift attention from group to individual lending (Armendariz de Aghion and Labie, 2012). Mersland and Strom (2009) explain it by higher focus on cost argument (lower operational costs associated with individual lending) rather than the repayment argument when it comes to group lending. As for the effect of the MFI's charter on its performance, NGOs are more likely to be financially sustainable than commercially-oriented MFIs. Our results are in line with results of Bogan (2012) who found that NGOs are positively related to financial sustainability and contradict results of Cull et al. (2011), Mersland and Strom (2009) and Hartarska and Nadolnyak (2007) who found that ownership type does not differentiate between MFIs. Our results imply that Non-profit organizations are as well in providing financial services as For-profit organizations. We find strong empirical evidence of positive relationship between size of assets and financial sustainability. This indicates that larger institutions, as measured by assets, have increased self-sufficiency that might be associated with delivering services to a larger group of clients or larger loans to clients. Our results comply with results of Bogan (2012) who found that larger asset size is associated with financial sustainability. Our results indicate that capital structure affects the performance of MFI. This result contradicts results of Kar (2012) and Bogan (2012) who found a positive effect of leverage on financial performance of MFIs. On contrary, our results indicate that MFIs with higher equity tend to be more financially sustainable. This result supports result obtained by Hartarska and Nadolnyak (2007) who found that financial performance is positively affected by capital ratio. This result conforms to the notions that MFIs with bigger endowments would be more efficient as they do not need to adjust their mission in order to get additional capital. We do find the significant effect of MFI's deposit-taking practice on its financial sustainability, deposit taking MFIs tend to be less financially sustainable. Our results contradict results of Caudill et al. (2009) and Hartarska and Nadolnyak (2007) who found that better performing MFIs are much more

heavily involved with demand and time deposits. As for the effect of lending practice, we find a strong positive relationship between loans and financial sustainability. This result confirms results of Caudill et al. (2009) and Hartarska and Nadolnyak (2007) who found that lending policy is important for MFIs financial performance. Asset size is found to be positively related to the financial sustainability. This result complies with results of Bogan (2012) who also found positive relationship between asset size and financial sustainability. Finally, regulation plays an important role in defining financial sustainability of MFIs, regulated MFIs tend to be more financially sustainable. However, the correlation coefficient  $\rho_{RF}$  which captures unobserved MFI characteristics that affect both the choice of prudential regulation and financial sustainability of MFI is negative implying that unobservable MFI characteristics making it more likely to be regulated also make it less likely to be financially sustainable. This result might explain differences between results of Hartarska and Nadolnyak (2007) and Mersland and Strom (2009) who did not find significant impact of regulation on financial sustainability of MFIs and findings of Cull et al. (2011) and Hartarska (2005) who found that regulation hinders financial sustainability.

Among macroeconomic factors, we find positive relationship between inflation and financial sustainability. This result confirms result obtained by Hartarska and Nadolnyak (2007) who explain it by MFIs have been developing safeguards to perform successfully in inflationary environment. Our results suggest that per capita income is not significant for financial sustainability. We find a high significance of regional dummies, providing additional empirical evidence for strong diversification in MFIs performance by region.

Inspection of the elements of the covariance matrix reveals some very important results. Posterior means of the correlation  $\rho_{RO}$  is positive in cases when average loan amount and number of active borrowers are used as a measure of outreach and negative for case when percentage of female borrowers is employed as a measure of outreach. This implies that unobservable MFI characteristics making MFI more likely to be regulated also make it more likely to serve bigger loans, increase its clientele and reduce percentage of female clients. As for posterior mean of the correlation  $\rho_{FO}$ , it is negative in cases when average loan amount and number of active borrowers are used as a measure of outreach and positive for case when percentage of female borrowers is employed as a measure of outreach. These coefficient estimates indicate that unobservable MFI characteristics making MFI more likely to be financially sustainable also make it more likely to serve smaller loans, decrease its clientele and have more female clients. Thus, in order to accurately characterize the impact of regulation on MFI's performance, one needs to estimate model like this one which accounts for both the endogeneity of regulation and a link between financial sustainability of MFI and its outreach, and features the role of the unobservables.

## 6. Implications

Knowledge of the joint distribution of outcomes affords the estimation of interesting and policy-relevant parameters that cannot be determined from only mean effects. In this section, we consider the implications of estimated model, both in terms of the potential impacts of policies to improve financial stability and outreach of MFI.

### **6.1. Prudential Regulation**

Currently, MFIs can operate as regulated or nonregulated or, in some countries, can choose between being regulated and being unregulated. Overall, MFIs can be subject to either mandatory entry regulation, prudential regulation, or some sort of entry regulation and consequent monitoring (tiered regulation). Hartarska and Nadolnyak (2007) provide four lists of countries by the state of their MFI regulation – countries where MFI can be regulated or nonregulated, countries where regulated MFIs collect deposits, countries where unregulated MFIs can collect savings and a list of countries where MFIs are regulated but do not necessarily collect deposits. According to this list not all MFIs collecting savings are regulated and not all regulated MFIs collect savings: 38% are regulated but do not have savings and around 15% of the MFIs have savings although they are not regulated possibly because in some MFIs savings may be part of group lending technology.

In discussing tradeoffs in regulation of microfinance, Christen et al. (2012) draw an important distinction between prudential and non-prudential regulation. According to their definition, regulation is prudential when “it is aimed specifically at protecting the financial system as a whole as well as protecting the safety of small deposits in individual institutions.”

The assets of microfinance institutions remain substantially less than those of formal providers of financial services, most notably banks, and thus they do not yet pose a risk to the stability of the overall financial system in most countries. However, an increasing share of microfinance institutions take deposits from the public, and many of the depositors are relatively poor. Protecting the safety of those deposits provides a rationale for improved regulation and supervision of microfinance institutions, and thus prudential regulations should generally be triggered when an MFI accepts retail deposits from the general public. The question then is how this regulation affects the MFI’s financial and social performance and, specifically, it is of interest to investigate the impact of regulation on those MFIs that opt for regulation once they start taking deposits.

### **6.2. Performance Gains**

The estimated model is used to derive the distributions of implied gains from prudential regulation for financial sustainability and outreach of MFI. Specifically, the outreach gain is given by  $\Delta_i^o = O_{li} - O_{0i}$ , where  $O_{li}$  corresponds to the outreach level with regulation and  $O_{0i}$  corresponds to the outreach level without regulation. Similarly, the financial sustainability gain is

given by  $\Delta_i^f = F_{1i} - F_{0i}$ , where  $F_{1i}$  corresponds to the level of financial sustainability of regulated MFI and  $F_{0i}$  corresponds to the financial sustainability level without regulation. Gain distribution then is analyzed to check whether regulation affects financial sustainability.

Literature on the treatment effect focuses primarily on methods for estimating various average returns to the receipt of treatment. Particularly, it focuses on: (1) the average treatment effect **Error! Objects cannot be created from editing field codes.**, (2) the effect of treatment on treated **Error! Objects cannot be created from editing field codes.**, and (3) Local Average Treatment Effect (LATE) (Heckman et al., 2001; Tobias, 2006).

Heckman et al. (2001) show that in a treatment model even if the average treatment effect is large and positive, it is still possible that a substantial fraction of individuals receive negative effects from the treatment. Therefore, following questions seem to be of primary interest when evaluating the impact of regulation: (1) what is the effect of regulation on performance of randomly chosen MFI? (2) what is the effect of regulation on performance of actually regulated MFI? (3) what is the effect of regulation on performance of MFI that opt for regulation once they start taking deposits? To address question (1) we use *ATE*, for question (2) we use *TT*, and for the last question (3) we employ the *LATE*.

For the current research, **Error! Objects cannot be created from editing field codes.** is defined as the expected financial sustainability or outreach gain for a randomly chosen MFI. Formally,

**Error! Objects cannot be created from editing field codes.**,

where  $Y_1$  and  $Y_0$  stand for MFI's performance (financial sustainability or outreach) with and without regulation .

A conceptually different parameter is the performance gain by MFIs that are actually regulated. In this case **Error! Objects cannot be created from editing field codes.** represents the average performance gain by MFI that is actually regulated and is referred to in the literature as the Treatment on the Treated **Error! Objects cannot be created from editing field codes.**. Formally,

$$TT(X, R=1) \equiv TT(\Delta|X, R=1) = TT(Y_1 - Y_0|X, R=1).$$

Finally, the Local Average Treatment Effect (LATE) of Imbens and Angrist (1994) is defined as the expected outcome gain for those MFIs induced to receive treatment through a change in the factor that affects the treatment assignment. Formally,

$$TT(X, R(z)=0, R(z')=1) \equiv TT(\Delta|X, R(z)=0, R(z')=1) = TT(Y_1 - Y_0|X, R(z)=0, R(z')=1)$$

Given notation and assuming that covariates **Error! Objects cannot be created from editing field codes.** are known, we characterize the following out-of-sample sampling distributions, given  $\beta$  and  $\Sigma$ , as follows:

$$p(\Delta|\beta, \Sigma) \tag{6.1}$$

$$p(\Delta|\beta, \Sigma, R=1). \quad (6.2)$$

$$p(\Delta|\beta, \Sigma, R(z)=0, R(z')=1) \quad (6.3)$$

The first density in (6.1) gives the distribution of performance gain for the MFI selected at random, the density in (6.2) gives the performance gain for those MFI that are actually regulated (for those taking the treatment), whereas the density in (6.3) gives the performance gain for those regulated (taking the treatment) at  $z'$  but not at  $z$ .

We can define the predictive distribution for the performance gain of regulated MFIs (treatment effect on the treated), conditional on model parameters,  $\beta, \Sigma$ , and MFI's regulation status as

$$\begin{aligned} P(\Delta|R=1, \beta, \Sigma) &= P(\Delta|R^* > 0, \beta, \Sigma) \\ &= \left[ P(R^* > 0|\beta, \Sigma) \right]^{-1} \int_0^\infty (\Delta, R^*|\beta, \Sigma) dR^* \\ &= \left[ P(R^* > 0|\beta, \Sigma) \right]^{-1} \times P(\Delta|\beta, \Sigma) \times P(R^*|\Delta, \beta, \Sigma) \end{aligned}$$

Also, the predictive distribution for the local treatment effect is

$$\begin{aligned} P(\Delta|R_i(z)=0, R(z')=1, \beta, \Sigma) &= P(\Delta|R^*(z) < 0, R^*(z') > 0, \beta, \Sigma) \\ &= \left[ P(R^*(z) < 0, R^*(z') > 0|\beta, \Sigma) \right]^{-1} \times P(\Delta|\beta, \Sigma) \\ &\quad \times \left[ P(R^*(z') > 0|\Delta, \beta, \Sigma) - P(R^*(z) < 0|\Delta, \beta, \Sigma) \right] \end{aligned}$$

Expressions (6.1), (6.2), and (6.3) for *ATE*, *TT*, and *LATE* predictive distributions are conditioned on the parameters  $\beta$ . A proper Bayesian approach to characterize the posterior predictive distributions of the performance gain is to integrate out the parameters  $\beta$  from the densities (6.1), (6.2), and (6.3). Formally,

$$(ATE): \quad p(\Delta|x_i, Data) = \int_{\beta} p(\Delta|\beta, x_i, Data) p(\beta|Data) d\beta,$$

$$(TT): \quad p(\Delta|x_i, R_i=1, Data) = \int_{\beta} p(\Delta|\beta, x_i, R_i=1, Data) p(\beta|Data) d\beta,$$

$$(LATE): \quad p(\Delta|x_i, R(z)=0, R(z')=1, Data) = \int_{\beta} p(\Delta|\beta, x_i, R(z)=0, R(z')=1, Data) p(\beta|Data) d\beta$$

where *TT* is shown for those MFIs who are subject to some regulation and *LATE* is the average of the treatment effect over the MFIs whose regulation status would be different if the factor affecting it were changed.

Since these conditional predictives have above closed-form solutions, the unconditional (on the parameters  $\beta$ ) predictive can be obtained via ‘‘Rao-Blackwellization’’ (Li, Poirier, and Tobias, 2004; Tobias, 2006) by averaging them over the posterior distribution of those parameters:

$$(ATE): \quad \hat{p}(\Delta|x_i, Data) = \frac{1}{K} \sum_{k=1}^K p(\Delta|\beta = \beta^k, x_i, Data)$$

and

$$(TT): \hat{p}(\Delta|x_i, R_i = 1, Data) = \frac{1}{K} \sum_{k=1}^K p(\Delta|\beta = \beta^k, x_i, R_i = 1, Data)$$

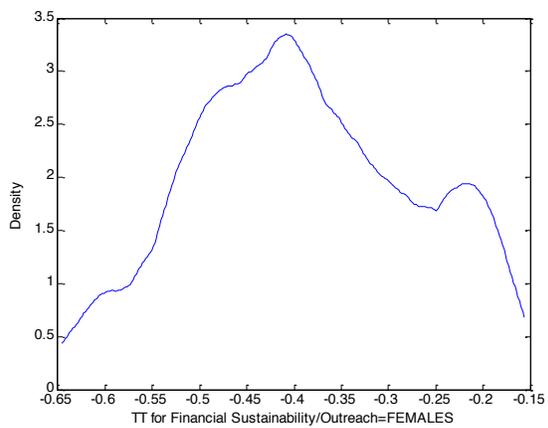
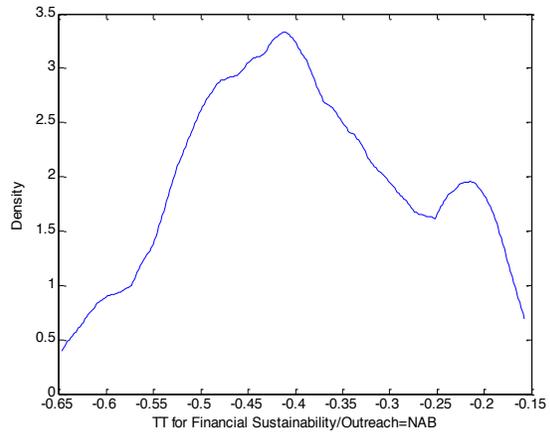
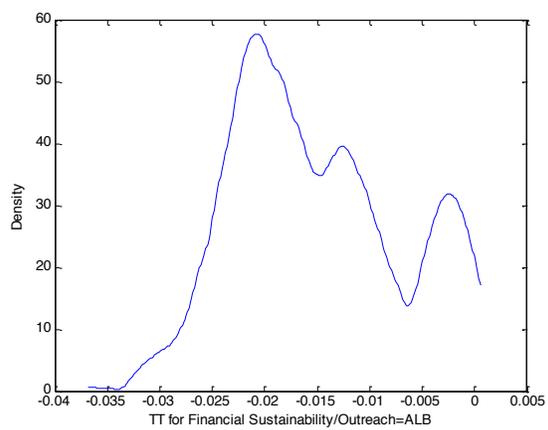
$$(LATE): p(\Delta|x_i, R(z) = 0, R(z') = 1, Data) = \frac{1}{K} \sum_{k=1}^K p(\Delta|\beta, x_i, R(z) = 0, R(z') = 1, Data)$$

where **Error! Objects cannot be created from editing field codes.** denotes number of draws of parameters.

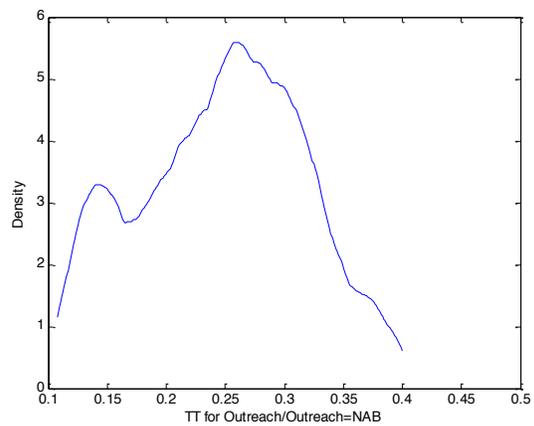
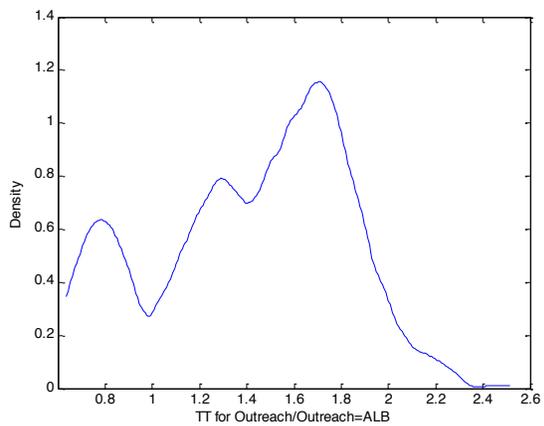
### 6.3. Results

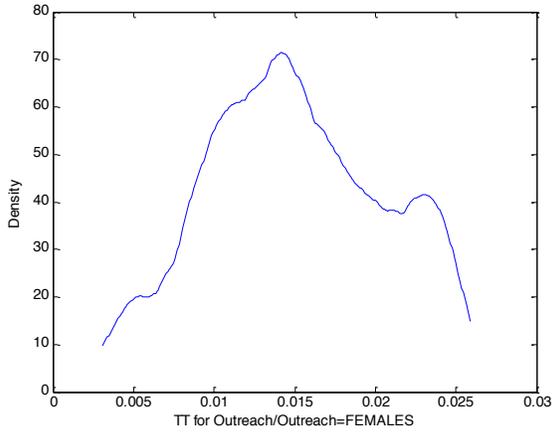
Average effect of regulation on randomly chosen MFI is given by its parameter estimate. Based on results of model estimation the impact of regulation on financial sustainability is negligible when average outstanding loan are is as a measure of outreach and positive for cases where number of active borrowers negative and percentage of female borrowers are used as measures for outreach. It means that overall regulation improves financial performance of randomly chosen MFI. As for the effect of regulation on outreach of randomly chosen MFI, then our results show that regulation induces MFI to reduce the number of active clients as well as to cut the size of the loan while it does not effectively change the percentage of female borrowers. This means that the impact of regulation on outreach of randomly chosen MFI depends on the measure of outreach: regulation improves its depth while hurts its breadth. Two types of distributions for performance gains were additionally constructed to get an insight into the nature of relationship between regulation and MFI's performance: (1) gains by MFIs that are actually regulated **Error! Objects cannot be created from editing field codes.**, and (2) the expected outcome gain for MFIs that become a subject to regulation once they start taking deposits from clients (*LATE*). Not surprisingly, those posterior *TT* and *LATE* predictive distributions are different. Specifically, figures 1 and 2 present the *TT* posterior predictive distributions of financial sustainability and outreach gains. Treatment on treated (*TT*) shows the impact of regulation based on performance of MFIs that are actually regulated. Financial sustainability gain for regulated MFIs is negative implying that financial performance of regulated MFIs gets worse. As for the effect of regulation on outreach of actually regulated MFI, they tend to have larger loan size and serve more clients including female clientele, however the effect of regulation on percentage of female clients is quite small. Said differently, our results suggest that the impact of regulation on performance of actually regulated MFIs is different from the effect of regulation on randomly chosen MFI. As financial performance of regulated MFIs worsens as a result of regulation, any intervention with the intent of keeping MFIs regulated to improve their financial performance is perhaps questionable.

**Figure 1. *TT* posterior predictive distributions of financial sustainability gain.**

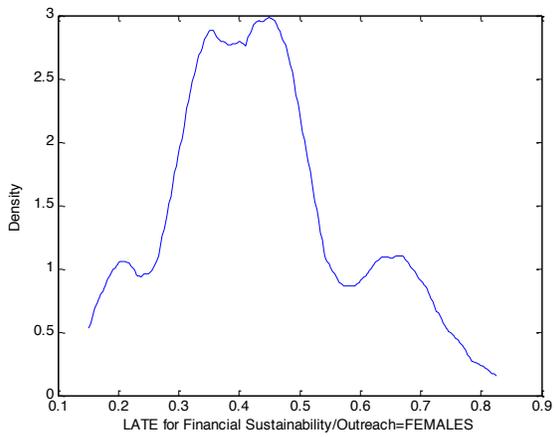
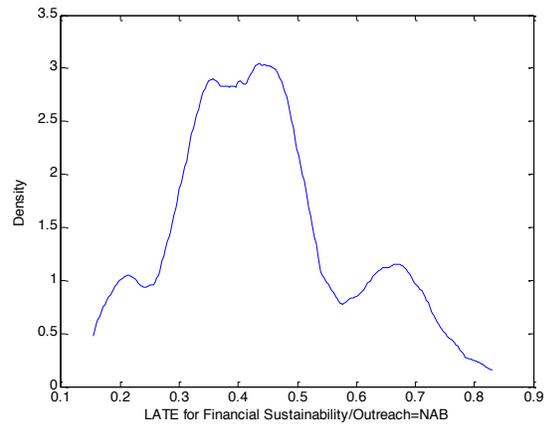
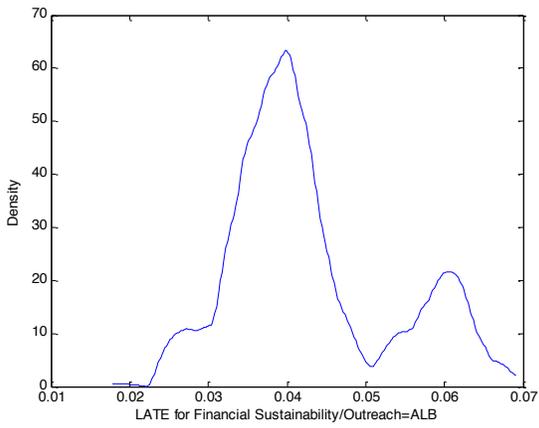


**Figure 2. TT posterior predictive distributions of outreach gain.**

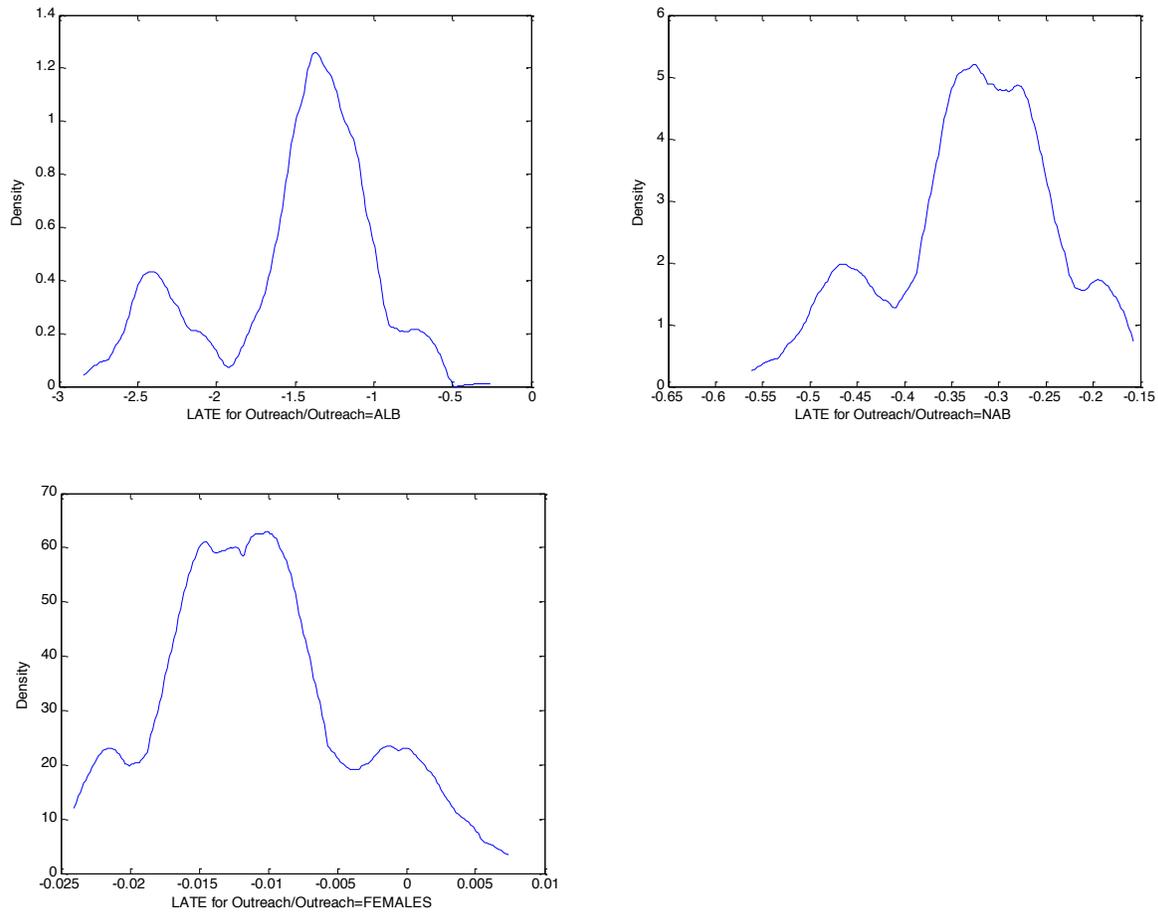




**Figure 3. *LATE* posterior predictive distributions of financial sustainability gain.**



**Figure 4. *LATE* posterior predictive distributions of outreach gain.**



It is argued that protecting the safety of clients' deposits provides a rationale for improved regulation and supervision of microfinance institutions, and thus prudential regulations should generally be triggered when an MFI accepts retail deposits from the general public. To investigate the potential effects of regulation on deposit-taking MFI's performance in this case *LATE* posterior predictive distributions for financial sustainability and outreach are calculated and presented on figures 3 and 4. *LATE* distribution is defined as the expected performance gain for those MFIs induced to become regulated once they get involved into deposit-taking. Our results show that MFIs which become regulated once they start accepting deposits from clients, improve their financial sustainability. Thus, any intervention implemented with the intent to make deposit-taking MFIs become regulated is financially feasible as regulation in this case improves MFI's financial performance. As for the effect of regulation on outreach of deposit taking MFIs, it decreases number of active clients including females at the same time reducing the average loan balance. Again, it is important to note that quantities like these ones (*TT* and *LATE*), which seem to have important policy relevance, cannot be obtained when looking only at mean effects.

## 7. Conclusions

Microfinance is accepted as an important poverty alleviation tool, and, there has been a high pressure to scale it up in terms of increasing the number of borrowers and number of institutions. In light of sustainability-driven scaling up in microfinance, when MFIs are motivated towards attaining financial sustainability, there are two main questions that require immediate solution: first, whether there is a trade-off between financial sustainability and outreach mission of MFIs and second, if there is a trade-off, what are the main determinants of this trade-off. Knowing the determinants of MFI outreach and efficiency would help to increase our understanding of what determines financial sustainability and outreach, therefore, also of the potential of microfinance in making significant and long-term contribution to poverty reduction. If institutions develop service delivery methods that satisfy clients need in a more efficient way, then financial sustainability could be achieved without hurting outreach.

Our results show that focusing on financial sustainability does not necessarily hurt the depth and breadth of outreach. This finding provides empirical support for the financial system approach that emphasizes the financial sustainability of microfinance programs. Based on this result, win-win proposition for microfinance institutions is achievable. Microfinance institutions that follow the principles of good banking are in position to combat the poverty as well.

As for the effect of regulation on MFIs performance, our results show that regulation might improve the financial performance of MFIs while decreasing its outreach. It is argued that protecting the safety of clients' deposits provides a rationale for improved regulation and supervision of microfinance institutions, and thus prudential regulations should generally be triggered when an MFI accepts retail deposits from the general public. Additionally, following questions seem to be of primary interest when evaluating the impact of regulation: (1) what is the effect of regulation on performance of actually regulated MFI? and (2) what is the effect of regulation on performance of MFIs that opt for regulation once they start taking deposits? To our knowledge, there is no empirical research that previously addressed these issues. In a new contribution to the literature, our results show that the impacts of regulation on performance of actually regulated MFIs and MFIs that opt for regulation once they start taking deposits are different from the effect of regulation on randomly chosen MFI. For regulated MFIs the impact of regulation on financial performance is negative and is positive for those MFIs which become regulated once they start accepting deposits from clients. Thus, any policy with the intent of keeping MFIs regulated to improve their financial performance is perhaps questionable while any intervention with the intent of making MFIs regulated once they start accepting deposits from clients is financially feasible.

As for the impact of regulation on outreach of actually regulated MFIs and those that opt for regulation once they start taking deposits, then regulated MFI tend to have larger loan size and serve more clients including females as result of regulation although the effect of regulation

on percentage of female clients is quite small. Additionally, once deposit taking MFIs become regulated, that decreases number of active clients including females at the same time reducing the average loan balance. Our results bring additional insight into the nature of the impact of regulation on performance of MFIs: while it improves financial sustainability of MFIs involved with deposit taking, it diverts it from its social mission.

Inspection of the elements of the covariance matrix reveals some very important results. Posterior means of the correlations between regulation and outreach, regulation and financial sustainability, and finally, between financial sustainability and outreach, indicate that selection bias is a key feature of the data employed for analysis. Thus, in order to accurately characterize the impact of regulation on MFI's performance, one needs to estimate model like one used in this research which accounts for both the endogeneity of regulation and a link between financial sustainability of MFI and its outreach.

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## Appendices:

### Appendix A1: Conditional posterior distribution

The conditional posterior for the parameter vector  $\theta$  is given by:

$$\begin{aligned}
 p(\theta | \mathcal{Y}_0^*, \Sigma) &\propto \exp\left(-\frac{1}{2} \left[ \sum_{i=1}^n (\mathcal{Y}_i^* - X_i \theta)' \Sigma^{-1} (\mathcal{Y}_i^* - X_i \theta) + (\theta - \mu_{\theta_0})' V_{\theta_0}' (\theta - \mu_{\theta_0}) \right]\right) \\
 &\propto \exp\left(-\frac{1}{2} \left[ \sum_{i=1}^n (\mathcal{Y}_i^* \Sigma^{-1} \mathcal{Y}_i^* - 2\theta' X_i' \Sigma^{-1} \mathcal{Y}_i^* + \theta' X_i' \Sigma^{-1} X_i \theta) \right. \right. \\
 &\quad \left. \left. + (\theta' V_{\theta_0}^{-1} \theta - 2\theta' V_{\theta_0}^{-1} \mu_{\theta_0} + \mu_{\theta_0}' V_{\theta_0}^{-1} \mu_{\theta_0}) \right]\right) \\
 &\propto \exp\left(-\frac{1}{2} \left[ \theta' \left( \sum_{i=1}^n X_i' \Sigma^{-1} X_i + V_{\theta_0}^{-1} \right) \theta - 2\theta' \left( \sum_{i=1}^n X_i' \Sigma^{-1} \mathcal{Y}_i^* + V_{\theta_0}^{-1} \mu_{\theta_0} \right) \right]\right) \\
 &\propto \exp\left(-\frac{1}{2} \left[ \theta' V_{\theta_1}^{-1} \theta - 2\theta' V_{\theta_1}^{-1} \mu_{\theta_1} \right]\right) \\
 &\propto \exp\left(-\frac{1}{2} \left[ \theta' V_{\theta_1}^{-1} \theta - 2\theta' V_{\theta_1}^{-1} \mu_{\theta_1} + \mu_{\theta_1}' V_{\theta_1}^{-1} \mu_{\theta_1} - \mu_{\theta_1}' V_{\theta_1}^{-1} \mu_{\theta_1} \right]\right) \\
 &\propto \exp\left(-\frac{1}{2} \left[ (\theta - \mu_{\theta_1})' V_{\theta_1}^{-1} (\theta - \mu_{\theta_1}) \right]\right)
 \end{aligned}$$

where  $V_{\theta_1} = \left( \sum_{i=1}^n X_i' \Sigma^{-1} X_i + V_{\theta_0}^{-1} \right)^{-1}$

and  $\mu_{\theta_1} = V_{\theta_1} \left( \sum_{i=1}^n X_i' \Sigma^{-1} y_i^* + V_{\theta_0}^{-1} \mu_{\theta_0} \right)$

Therefore,

$$p(\theta | y^*, \Sigma) = N(\mu_{\theta_1}, V_{\theta_1})$$

## Appendix A2: The posterior simulator

The posterior simulator employs a Gibbs sampling procedure, drawing in turn from the conditional posterior distribution for  $\beta, \Sigma$  and  $y^*$ :

*Step 0:* Set  $(y_i^*)^0 = \left[ (R_i^*)^0 (F_i^*)^0 (O_i^*)^0 \right] = [R_i, F_i, O_i]$  and  $\Sigma^0 = I$  (where  $I$  is an identity matrix);

*Step 1:* Draw  $\beta^1$  from the distribution given by (3.10) conditional on  $(y_i^*)^0$  and  $\Sigma^0$ .

*Step 2:* Draw the elements of the covariance matrix  $\Sigma^1$  conditional on  $\beta^1$  and  $(y_i^*)^0$  using (3.11).

*Step 3:* Data augmentation step. Draw the latent data  $(y_i^*)^1 = \left[ (R_i^*)^1 (F_i^*)^1 (O_i^*)^1 \right]$  conditional on  $\beta^1$  and  $\Sigma^1$ :

a. Compute the errors  $\varepsilon_{2i}$  and  $\varepsilon_{3i}$  given  $\beta^1$  from *Step 1* and latent data  $(F_i^*)^0$  and  $(O_i^*)^0$ ;

b. Draw  $(R_i^*)^1$  from

$$TN_{[0, \infty)} \left( x_{1i} \beta_1^1 + z_{1i} \alpha^1 + \sigma_{-1}^1 (\Sigma_{-11}^1)^{-1} \varepsilon_{-1}, (\sigma_1^2)^1 - \sigma_{-1}^1 (\Sigma_{-11}^1)^{-1} \sigma_{-1}^1 \right) \text{ if } R_i = 1$$

where  $\Sigma_{-ij}$  denotes the variance-covariance matrix  $\Sigma$  with removed row  $i$  and column  $j$ ,  $\sigma_{-i}$  denotes the  $i$ -th column of the variance-covariance matrix  $\Sigma$  with  $i$ -th element removed, and, finally,  $\varepsilon_{-i}$  denotes the error vector with the  $i$ -th element removed, and

$$TN_{(-\infty, 0]} \left( x_{1i} \beta_1^1 + z_{1i} \alpha^1 + \sigma_{-1}^1 (\Sigma_{-11}^1)^{-1} \varepsilon_{-1}, (\sigma_1^2)^1 - \sigma_{-1}^1 (\Sigma_{-11}^1)^{-1} \sigma_{-1}^1 \right) \text{ if } R_i = 0$$

c. Compute the errors  $\varepsilon_{1i}$  given  $\beta^1$  from *Step 1* and latent data  $(R_i^*)^1$ ;

d. Draw  $(F_i^*)^1$  from

$$TN_{(-\infty, 0]} \left( x_{2i} \beta_2^1 + \gamma_1^1 (R_i^*)^1 + \sigma_{-2}^1 (\Sigma_{-22}^1)^{-1} \varepsilon_{-2}, (\sigma_2^2)^1 - \sigma_{-2}^1 (\Sigma_{-22}^1)^{-1} \sigma_{-2}^1 \right) \text{ if } F_i = 0$$

and set  $F_i^* = F_i$  if  $F_i > 0$

e. Compute the errors  $\varepsilon_{2i}$  given  $\beta^1$  from *Step 1* and latent data  $(F_i^*)^l$ ;

f. Draw  $(O_i^*)^l$  from

$$TN_{(-\infty,0]} \left( x_{3i} \beta_3^1 + \gamma_2^1 (R_i)^l + \sigma_{-3}^{1'} (\Sigma_{-33}^1)^{-1} \varepsilon_{-3}, \left( \sigma_3^2 \right)^l - \sigma_{-3}^{1'} (\Sigma_{-33}^1)^{-1} \sigma_{-3}^1 \right) \text{ if } O_i = 0$$

and set  $O_i^* = O_i$  if  $O_i > 0$

g. Compute the errors  $\varepsilon_{3i}$  given  $\beta^1$  from *Step 1* and latent data  $(O_i^*)^l$ ;

*Step 4:* Repeat steps 1-3  $K$  times.

The Gibbs algorithm generates a sample of size  $K$  from conditional posterior distribution of each of the parameters of the model. The first  $K_0$  draws are discarded as burn-in, the remaining  $K_1 = K - K_0$  draws are used for the analysis.

## Appendix B.

**Table B1. Variables definitions**

Variable	Definition
OSS	Operational self-sufficiency=Financial revenue/(Financial expense+Loan Loss Provision+Operating Expense). Measures how well the MFI can cover its costs through operating revenues
AVERAGE LOAN PER GDP PER CAPITA	Average loan balance per borrower/ GNI per capita
PERCENTAGE OF FEMALE BORROWERS	Number of active borrowers who are women / number of active borrowers
NAB	Logarithm of the number of active borrowers, that is the number of individuals that currently have an outstanding loan balance with the MFI or are responsible for repaying any portion of the gross loan portfolio
PROFIT	A dummy variable takes value of zero if MFI is a non-profit organization and one otherwise.
MFITYPE	MFITYPE is a vector of dummy variables for different charter types: BANK, RURAL BANK, NBF, OTHER, AND CREDIT UNION with NGO as omitted type.
LENDING METHODOLOGY	Three dummy variables: INDIVIDUAL/SOLIDARITY and SOLIDARITY that capture the effect of solidarity type of lending and VILLAGE that looks at how village banking affects the performance of MFI with INDIVIDUAL as an omitted type.
REGULATION	A dummy variable that takes the value of 1 if the MFI is regulated and zero otherwise

CAPITAL	Ratio of capital to total assets
AGE	A vector of dummy variables that take the value of one if the MFI is YOUNG or MATURE where age of the MFI is calculated as the number of years since inception
LOANS	Ratio of loans outstanding to total assets
SIZE	Logarithm of the total assets of the MFI.
DEPOSITS	Dummy variable that take the value of one if MFI takes deposits
GDP	Growth rate of GDP per capita; source: IMF
INFLATION	The percentage of change of the GDP Deflator; source: IMF
REGION	A vector of dummy variables that take the value of one if MFI is located in one of the regions: Africa, East Asia and the Pacific, Eastern Europe and Central Asia, Middle East and North Africa, South America and the Caribbean, and South Asia.
NGO/NBFI	Dummy variable that takes the value of one if the MFI is registered as an NGO or NBFI
PROPERTY RIGHTS	Index of protection of property right, the higher the index the lower the protection of property rights; source: Heritage Foundation
BUSINESS FREEDOM	Index of Business Freedom; higher values mean higher business freedom; source: Heritage Foundation
INVESTMENT FREEDOM	Index of Investment Freedom; higher values mean higher investment freedom; source: Heritage Foundation
FINANCIAL FREEDOM	Index of Financial Freedom; higher values mean higher financial freedom; source: Heritage Foundation
ECONOMIC FREEDOM	Index of Economic Freedom; higher values mean higher economic freedom; source: Heritage Foundation
BANKING SUPERVISION	Dummy variable that takes the value of one if large and medium-sized banks have annual (or more frequent) onsite supervision; source: Barth, Caprio, and Levine (2012)

**Table B2. Summary Statistics**

Variable	Mean	Std. Dev.	Min	Max
OSS	1.160	0.430	-0.684	7.197
AVERAGE LOAN PER GDP PER CAPITA	0.658	1.244	0.009	21.294
PERCENTAGE OF FEMALE BORROWERS	0.646	0.259	0.000	1.194
NUMBER OF ACTIVE BORROWERS	9.393	1.894	2.773	15.835
PROFIT	0.389	0.488	0.000	1.000

BANK	0.080	0.271	0.000	1.000
CREDIT UNION	0.123	0.329	0.000	1.000
NGO	0.338	0.473	0.000	1.000
NBFI	0.398	0.489	0.000	1.000
OTHER	0.003	0.052	0.000	1.000
RURAL BANK	0.059	0.235	0.000	1.000
INDIVIDUAL	0.355	0.479	0.000	1.000
INDIVIDUAL/SOLIDARITY	0.465	0.499	0.000	1.000
SOLIDARITY	0.091	0.288	0.000	1.000
VILLAGE	0.089	0.284	0.000	1.000
REGULATION	0.562	0.496	0.000	1.000
CAPITAL	0.311	0.433	-4.078	17.753
MATURE	0.727	0.446	0.000	1.000
NEW	0.073	0.260	0.000	1.000
YOUNG	0.200	0.400	0.000	1.000
LOANS	0.765	0.507	0.000	24.941
SIZE	16.015	1.809	9.942	22.116
DEPOSITS	0.571	0.495	0.000	1.000
GDP	7.509	0.971	5.288	9.606
INFLATION	7.049	5.395	-5.140	39.245
AFRICA	0.154	0.361	0.000	1.000
EAST ASIA AND PACIFIC	0.121	0.327	0.000	1.000
EASTERN EUROPE AND CENTRAL ASIA	0.188	0.391	0.000	1.000
LATIN AMERICA AND THE CARIBBEAN	0.330	0.470	0.000	1.000
MIDDLE EAST AND NORTH AFRICA	0.056	0.229	0.000	1.000
SOUTH ASIA	0.150	0.357	0.000	1.000
NGO/NBFI	0.733	0.442	0.000	1.000
PROPERTY RIGHTS	34.281	10.775	5.000	90.000
BUSINESS FREEDOM	58.996	10.550	26.800	86.600
INVESTMENT FREEDOM	44.413	13.965	10.000	80.000
FINANCIAL FREEDOM	49.055	13.707	10.000	70.000
ECONOMIC FREEDOM	57.562	5.315	39.900	78.600
BANKING SUPERVISION	0.707	0.455	0.000	1.000

**Table B3. Collinearity Diagnostics**

Variable	VIF	SQRT VIF	Tolerance	Eigen-values	Cond Index
PROFIT	2.51	1.58	0.40	10.20	1.00
BANK	2.98	1.73	0.34	1.77	2.40
CREDIT UNION	1.86	1.36	0.54	1.50	2.61
NBFI	2.52	1.59	0.40	1.35	2.75
OTHER	1.08	1.04	0.92	1.31	2.80
RURAL BANK	2.31	1.52	0.43	1.22	2.89
INDIVIDUAL/SOLIDARITY	1.60	1.26	0.63	1.06	3.10
SOLIDARITY	1.47	1.21	0.68	1.03	3.15
VILLAGE	1.47	1.21	0.68	0.89	3.38
REGULATION	2.43	1.56	0.41	0.87	3.42
CAPITAL	1.54	1.24	0.65	0.81	3.54
MATURE	3.60	1.90	0.28	0.62	4.06
YOUNG	3.11	1.76	0.32	0.52	4.44
LOANS	1.36	1.16	0.74	0.37	5.23
SIZE	2.02	1.42	0.49	0.27	6.10
DEPOSITS	2.67	1.63	0.37	0.25	6.33
GDP	2.99	1.73	0.33	0.24	6.58
INFLATION	1.23	1.11	0.81	0.21	7.00
AFRICA	2.25	1.50	0.44	0.16	8.04
EAST ASIA AND PACIFIC	1.87	1.37	0.54	0.15	8.35
EASTERN EUROPE AND CENTRAL ASIA	1.75	1.32	0.57	0.11	9.79
MIDDLE EAST AND NORTH AFRICA	1.28	1.13	0.78	0.05	14.43
SOUTH ASIA	2.15	1.46	0.47	0.02	22.02
AVERAGE SALARY	2.36	1.54	0.42	0.00	45.51
NGO/NBFI	1.05	1.03	0.95	7.35	1.00
PROPERTY RIGHTS	1.68	1.3	0.59	0.26	5.36
BUSINESS FREEDOM	1.8	1.34	0.56	0.23	5.64
INVESTMENT FREEDOM	2.18	1.47	0.46	0.08	9.71
FINANCIAL FREEDOM	2.55	1.6	0.39	0.05	12.08
ECONOMIC FREEDOM	6.01	2.45	0.17	0.02	18.28
BANKING SUPERVISION	1.1	1.05	0.91	0.02	21.32

Condition Number 74.6793

Det (correlation matrix) 0.0002

## Appendix C.

**Table C1. Results: Posterior means, standard deviations, and probabilities of being positive.**

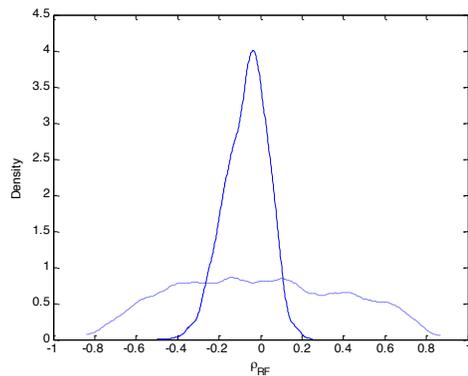
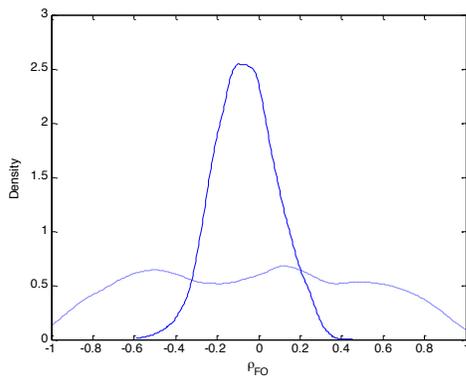
Variables	Financial sustainability			Outreach (Av. Loan)		
	Mean	Std.	$\Pr(\cdot > 0 y)$	Mean	Std.	$\Pr(\cdot > 0 y)$
OSS				0.0889	0.4665	0.5756
DEPOSITS	0.0293	0.0322	0.8182	0.4823	0.1225	1.0000
CAPITAL	0.5240	0.0573	1.0000	0.0222	0.3085	0.5287
LOANS	0.3136	0.0888	0.9998	-0.6242	0.3398	0.0331
SIZE	0.0523	0.0092	1.0000	0.0961	0.0399	0.9920
REGULATION	0.0194	0.0542	0.6396	-1.8143	0.1284	0
GDP	-0.0374	0.0175	0.0161	-0.6153	0.0679	0
INFLATION	0.0049	0.0026	0.9734	0.0354	0.0091	0.9999
PROFIT	-0.0235	0.0364	0.2595	0.2046	0.1166	0.9603
INDIVIDUAL/SOLIDARITY	-0.0278	0.0276	0.1568	-0.4618	0.0918	0.0000
SOLIDARITY	-0.1128	0.0536	0.0177	-0.5342	0.1874	0.0022
VILLAGE	-0.0648	0.0438	0.0698	-0.5565	0.1545	0.0002
MATURE	-0.1287	0.0488	0.0042	-0.0656	0.1740	0.3531
YOUNG	0.0375	0.0320	0.8794	0.0783	0.1035	0.7752
BANK	-0.1214	0.0666	0.0340	0.9536	0.2480	0.9999
CREDIT UNION	-0.0747	0.0489	0.0634	0.8742	0.1774	1.0000
NBFI	-0.0290	0.0364	0.2123	-0.1659	0.1209	0.0850
OTHER	0.1797	0.2128	0.8008	0.9581	0.7411	0.9020
RURAL BANK	0.1417	0.0789	0.9638	0.0942	0.3120	0.6187
AFRICA	0.0047	0.0471	0.5401	-0.1575	0.1651	0.1700
EAST ASIA AND PACIFIC	0.0292	0.0498	0.7213	-0.1945	0.1734	0.1311
EASTERN EUROPE AND CENTRAL ASIA	0.1584	0.0405	1.0000	0.6224	0.1558	1.0000
MIDDLE EAST AND NORTH AFRICA	0.0150	0.0536	0.6105	-0.4779	0.1912	0.0062
SOUTH ASIA	0.0251	0.0487	0.6967	-0.5607	0.1793	0.0009

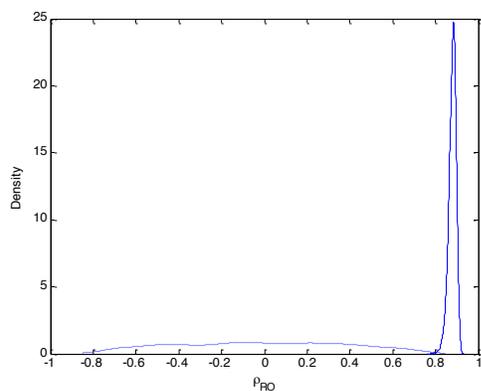
**Table C2. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Regulation (Outreach = Av. Loan)		
	Mean	Std.	$\Pr(\cdot > 0 y)$
DEPOSITS	0.4782	0.0928	1.0000
NGO/NBFI	-0.8257	0.1181	0.0000
PROPERTY RIGHTS	-0.0138	0.0047	0.0017
BUSINESS FREEDOM	-0.0085	0.0047	0.0351
INVESTMENT FREEDOM	-0.0030	0.0036	0.2025
FINANCIAL FREEDOM	-0.0039	0.0042	0.1769
ECONOMIC FREEDOM	0.0051	0.0162	0.6234
BANKING SUPERVISION	0.0220	0.0878	0.5989

**Table C3. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Outreach = Av. Loan		
	Mean	Std.	$\Pr(\cdot > 0 y)$
$\rho_{RF}$	-0.0608	0.0909	0.2519
$\rho_{RO}$	0.8796	0.0145	1.0000
$\rho_{FO}$	-0.0524	0.1240	0.3364





**Table C4. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Financial sustainability			Outreach (No. of clients)		
	Mean	Std.	$\Pr(\cdot > 0 y)$	Mean	Std.	$\Pr(\cdot > 0 y)$
OSS				0.4078	0.4596	0.8125
DEPOSITS	-0.0690	0.0359	0.0272	0.1057	0.0821	0.9011
CAPITAL	0.4922	0.0602	1.0000	-0.1221	0.2576	0.3177
LOANS	0.2677	0.0943	0.9977	0.6819	0.2325	0.9983
SIZE	0.0561	0.0097	1.0000	0.8019	0.0330	1.0000
REGULATION	0.5282	0.0458	1.0000	-0.4055	0.3019	0.0896
GDP	-0.0162	0.0197	0.2041	-0.0816	0.0395	0.0193
INFLATION	0.0013	0.0028	0.6813	-0.0061	0.0057	0.1427
PROFIT	0.0052	0.0371	0.5559	-0.0068	0.0786	0.4656
INDIVIDUAL/SOLIDARITY	-0.0342	0.0293	0.1218	0.7024	0.0617	1.0000
SOLIDARITY	-0.1124	0.0570	0.0243	1.1039	0.1259	1.0000
VILLAGE	-0.0634	0.0469	0.0881	1.0999	0.1003	1.0000
MATURE	-0.0983	0.0525	0.0306	0.2702	0.1162	0.9900
YOUNG	0.0329	0.0335	0.8375	0.1220	0.0706	0.9581
BANK	-0.3097	0.0749	0.0000	0.0688	0.2143	0.6259
CREDIT UNION	-0.2285	0.0529	0.0000	-0.4898	0.1560	0.0008
NBFI	-0.0398	0.0391	0.1546	-0.1295	0.0842	0.0619
OTHER	0.0388	0.2242	0.5687	-1.2331	0.4608	0.0037
RURAL BANK	-0.0076	0.0883	0.4658	-0.4513	0.1753	0.0050
AFRICA	-0.0138	0.0495	0.3903	0.5508	0.1022	1.0000
EAST ASIA AND PACIFIC	-0.0362	0.0501	0.2349	0.9866	0.1092	1.0000
EASTERN EUROPE AND	0.1390	0.0424	0.9995	-0.6322	0.1075	0.0000

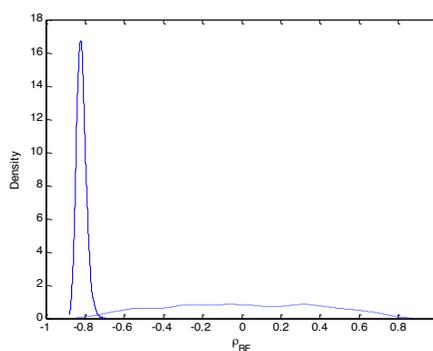
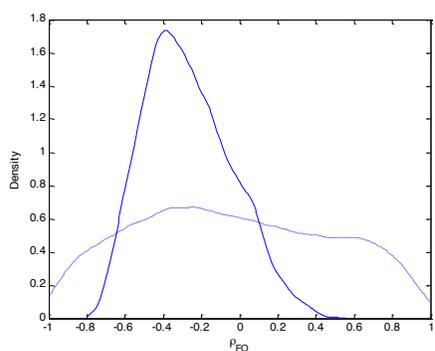
CENTRAL ASIA						
MIDDLE EAST AND NORTH AFRICA						
AFRICA	0.0274	0.0591	0.6783	0.6070	0.1201	1.0000
SOUTH ASIA	-0.0415	0.0550	0.2252	1.2951	0.1105	1.0000

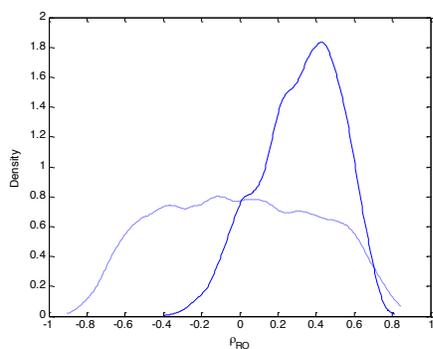
**Table C5. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Regulation (Outreach = No. of clients)		
	Mean	Std.	$\Pr(\cdot > 0 y)$
DEPOSITS	0.4340	0.0965	1.0000
NGO/NBFI	-0.6893	0.1215	0.0000
PROPERTY RIGHTS	-0.0102	0.0050	0.0198
BUSINESS FREEDOM	-0.0190	0.0051	0.0001
INVESTMENT FREEDOM	-0.0046	0.0039	0.1241
FINANCIAL FREEDOM	-0.0131	0.0048	0.0033
ECONOMIC FREEDOM	0.0199	0.0180	0.8658
BANKING SUPERVISION	0.1246	0.0971	0.9003

**Table C6. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Outreach = No. of clients		
	Mean	Std.	$\Pr(\cdot > 0 y)$
$\rho_{RF}$	-0.8184	0.0247	0
$\rho_{RO}$	0.3181	0.2137	0.9317
$\rho_{FO}$	-0.2701	0.2290	0.1192





**Table C7. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Financial sustainability			Outreach (Female clients)		
	Mean	Std.	$\Pr(\cdot > 0 y)$	Mean	Std.	$\Pr(\cdot > 0 y)$
OSS				-0.0252	0.1241	0.4194
DEPOSITS	-0.0684	0.0360	0.0287	0.0212	0.0209	0.8453
CAPITAL	0.4923	0.0618	1.0000	0.0299	0.0688	0.6682
LOANS	0.2687	0.0956	0.9975	0.0554	0.0599	0.8223
SIZE	0.0575	0.0098	1.0000	-0.0116	0.0088	0.0947
REGULATION	0.5284	0.0456	1.0000	-0.0145	0.0787	0.4268
GDP	-0.0192	0.0192	0.1576	0.0394	0.0101	1.0000
INFLATION	0.0016	0.0028	0.7140	-0.0024	0.0015	0.0493
PROFIT	0.0040	0.0372	0.5433	0.0152	0.0203	0.7728
INDIVIDUAL/SOLIDARITY	-0.0364	0.0293	0.1067	0.1146	0.0162	1.0000
SOLIDARITY	-0.1208	0.0580	0.0186	0.1350	0.0337	1.0000
VILLAGE	-0.0715	0.0472	0.0649	0.2210	0.0268	1.0000
MATURE	-0.1005	0.0525	0.0279	0.0411	0.0308	0.9094
YOUNG	0.0316	0.0336	0.8265	0.0228	0.0183	0.8930
BANK	-0.3165	0.0752	0.0000	-0.0938	0.0570	0.0499
CREDIT UNION	-0.2341	0.0531	0.0000	-0.1353	0.0413	0.0005
NBFI	-0.0454	0.0392	0.1231	-0.0416	0.0220	0.0295
OTHER	0.0260	0.2277	0.5454	0.0380	0.1201	0.6243
RURAL BANK	-0.0103	0.0899	0.4543	-0.2656	0.0452	0.0000
AFRICA	-0.0167	0.0505	0.3703	0.0470	0.0270	0.9589
EAST ASIA AND PACIFIC	-0.0353	0.0510	0.2444	0.2225	0.0284	1.0000
EASTERN EUROPE AND CENTRAL ASIA	0.1420	0.0421	0.9996	-0.0578	0.0283	0.0207
MIDDLE EAST AND NORTH	0.0318	0.0596	0.7033	0.0295	0.0308	0.8311

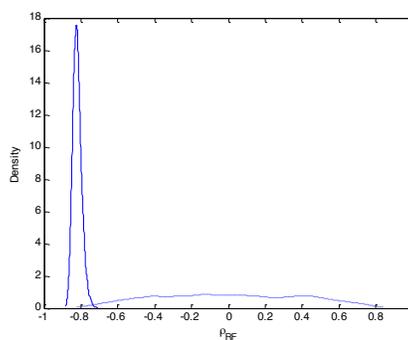
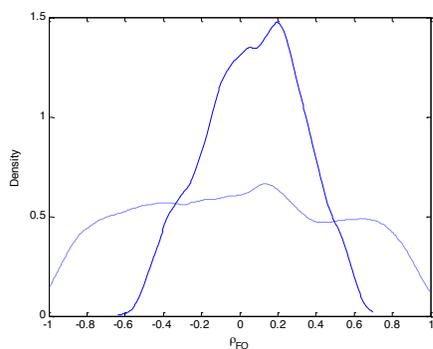
AFRICA						
SOUTH ASIA	-0.0378	0.0557	0.2483	0.2266	0.0282	1.0000

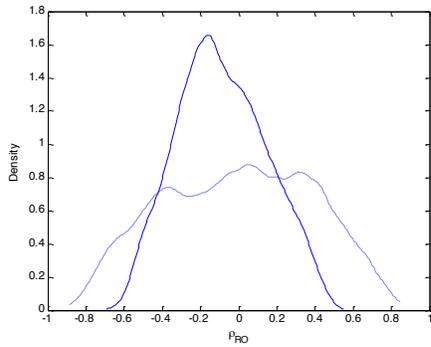
**Table C8. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Regulation (Outreach = Female clients)		
	Mean	Std.	$\Pr(\cdot > 0 y)$
DEPOSITS	0.4385	0.0983	1.0000
NGO/NBFI	-0.7094	0.1232	0.0000
PROPERTY RIGHTS	-0.0108	0.0050	0.0144
BUSINESS FREEDOM	-0.0195	0.0051	0.0001
INVESTMENT FREEDOM	-0.0050	0.0040	0.1038
FINANCIAL FREEDOM	-0.0139	0.0047	0.0015
ECONOMIC FREEDOM	0.0236	0.0178	0.9073
BANKING SUPERVISION	0.1479	0.0961	0.9381

**Table C9. Results: Posterior means, standard deviations, and probabilities of being positive.**

Variables	Outreach = Female clients		
	Mean	Std.	$\Pr(\cdot > 0 y)$
$\rho_{RF}$	-0.8199	0.0242	0
$\rho_{RO}$	-0.0879	0.2339	0.3535
$\rho_{FO}$	0.0741	0.2547	0.6145





## A Post Crisis Review of Accrual Model Integrity: The Power of Tails and Heteroscedasticity

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### Abstract

Post-crisis financial reporting chicanery suggest conditions have significantly heightened corporate incentives for earnings manipulation. However, in predicting the conditions and variables which give rise to earnings manipulation, research models continue to underperform. Findings for a FTSE sample comprising 4,455 observations over the period 2006-2013 suggest the explanatory power of accrual models and the significance of coefficients are a result of tail data artifact. We revisit accrual models, highlighting two adjustments necessary to preserve the integrity of earnings quality models. Failure to adjust research approaches will, we suggest, perpetuate methodological flaws and also erroneous conclusions about the explanatory power of models. We identify a research need to develop filters that cutoff idiosyncratic observations related to business situations that alter relations among studied variables. Empirically, significant changes in explanatory power are related to unusual business conditions contained in data tails. Secondly, we identify that the removal of idiosyncratic observations does not protect against heteroscedasticity. Therefore, we re-estimate model coefficients by computing heteroscedasticity consistent

variance-covariance matrices - an adjustment that results in a drastic decrease in significance of coefficients for all models except Dechow and Dichev (2002). Results suggest a research need to revisit the integrity of earnings quality models.

## **The Effect of Accounting Method Choice on Reported Earnings: Case of Kazakhstan Oil and Gas Companies**

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### **Short abstract:**

The paper discusses the issue of the accounting method choice in the oil and gas industry and its effect on the reported earnings on petroleum companies in Kazakhstan. The discussion of the accounting method is the quite hot topic sine the middle of 20<sup>th</sup> century and is still one of the very acute issues. Many accounting researchers still discuss whether the ability of the investors to predict future earnings is affected by the quality of the firm's reported earnings. This paper discusses the effect of the accounting method choice upon the quality of the reported earnings based on the study of Kazakhstan oil and gas companies, and, consequently, the relationship of the high quality of the reported earnings with the ability of the firm to forecast future earnings and book value.

Full cost method requires capitalization of all costs while Successful Efforts method capitalizes only cost that discovers reserves and expenses 'dry hole' costs. This choice is further fueled by the fact that International Financial Reporting Standards (IFRS) do not require the explicit choice of either method. This leaves the issue quite open and opens up a big room for companies to choose one method over another and to mask their real intentions.

Investors realize that neither of the methods adopted would provide accounting information close to fair market values to be reflected in the financial statements and reported earnings. Accounting information represents historical perspective and is not reflecting the current economic reality and its effect on the financials. As evidenced by many accounting researchers already, Full cost method approximates the book values of the reserves close to its economic reality. However, the same time Full cost method provides a basis for companies to mask their unsuccessful investments by allowing capitalization of everything.

In summary, “the raging arguments reveal the possibility of manipulation of earnings by oil firms depending on intentions through choice of accounting method.” In Kazakhstan, multinational firms tend to adopt accounting method which is often in line with the method chosen by the parent company. In some instances, the method chosen represents the mixture of the successful effort and full cost approaches. The main reason is to ensure the uniformity and ease of comparison of the performance results.

**Keywords:** oil and gas accounting; petroleum industry; financial disclosures; company’s performance

## «ALMATY - CITY OF SOCIAL ENTREPRENEURSHIP»: POTENTIAL, TRENDS AND PROSPECTS

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### Abstract

Social entrepreneurship is developing actively in Kazakhstan. Basically, experts have identified four features of social entrepreneurship. Firstly, it is the social impact, i.e. the activity of the company should be aimed at mitigating the existing social problems. Secondly, it must be characterized by innovation, that is, in their work the company must use new and unique methods of work. Thirdly, it must have signs of financial stability. Finally, the fourth feature - is scalability, i.e. the possibility to transfer their skills to other companies, markets and even countries. The adoption of a new law in Kazakhstan Republic of Kazakhstan "On Public-Private Partnership" provides for the removal of restrictions on the areas of public-private partnership, to create all conditions for the effective implementation of social projects, which leads to an increase in the number of social entrepreneurs. Within the framework of the idea of "Almaty - the city of social entrepreneurship" in Almaty Management University on the basis of social entrepreneurship lab created "ecosystem of support" of social entrepreneurship.

### Keywords:

Social entrepreneurship, innovation, social impact, Public-Private Partnership, ecosystem of support

Nowadays social services are subsidized from the budgets of all levels, however, the field is constantly expanding and requires large investments. The transition to the market leads to an inevitable structural change in the system of socio-economic relations, which affect to the dynamics of redistribution of priorities and roles among main institutions of society.

These changes are the result of a significant reduction in the efficiency of state regulation of economic processes.

It's been a substantial change of resource, primarily financial, security measures of socio-economic policies across the social sphere as a result of market reforms. Due to permanent lack of funds the opportunities of government to pursue effective social transformation in the transition period are limited [1].

The entire social sphere is in a difficult economic situation: education, science, healthcare, culture, etc. In these circumstances, the searching of financial resources becomes extremely urgent problem, including extra non-budget sources, involvement of all groups of society to solve critical socio-economic problems. Social entrepreneurship is the one of such social institutions that can effectively deal with the solution of many social problems, attract additional financial resources to social sectors and facilitate their optimization and distribution in the national economy [2]. Despite the active development and dissemination of social entrepreneurship around the world, it is almost impossible to calculate the true scale of activity because of the diversity of organizational forms and activities related to social entrepreneurship, and also because of differences in the understanding of this phenomenon in different countries.

In modern economic system it is customary to distinguish three sectors of the economy: the public sector (public-sector), private or commercial sector (private commercial sector) and non-profit or third sector (non-profit, civil society sector): Social entrepreneurship tied with the government by the fact that social entrepreneurs provide goods and involved in addressing social issues traditionally reserved for government, for example, elderly care, employment for people with disabilities, socialization of migrants, etc. The private sector and social entrepreneurship combines the use of business tools in their work. From the non-profit sector social entrepreneurship takes a mission to create social value and approach to interaction with the major stakeholders, which is based on the principles of inclusion and trust.

Social entrepreneurship is able to find innovative ways of creating social values and introduce market relations in areas where they previously did not actually have the existence of a high positive effects. It is caused by market failures and government failures. Study of peculiarities of social entrepreneurship development in different regions of the world shows that there is no region in the world that has not been touched by the rapid spread of social entrepreneurship. It is obvious that none of the participants of the economic system at the present stage can no longer ignore this phenomenon. However, the process of emergence and development of social entrepreneurship in different countries has not been unique and characterized by its national specifics.

Social entrepreneurship is a phenomenon that is clearly limited by contextual framework, and therefore, the dissemination of social entrepreneurship practices should occur with a clear understanding of regularities and peculiarities of country's development to achieve maximum effect.

On the basis of a comparative and systematic analysis of case studies of social entrepreneurs in Almaty, we have selected three main approaches, which define social entrepreneurship:

- the first focuses on the ability of social entrepreneurship to implement a social transformation, social change;
- the second approach defines social entrepreneurship as an innovative, entrepreneurial way to create a social effect;
- the third approach is based on the important condition for the existence and sustainability in social entrepreneurship – achievement of "double effect" – social and economic.

Thus, it is allowed to highlight the most important and common aspects in the definitions of social entrepreneurship (social orientation, business approach, financial stability).

There is no universally accepted definition of the term "social entrepreneurship" in the world practice, so, in the process of selection of case studies we adhered to the following definitions:

*Social entrepreneurship is a way of social activities, combining the social mission with the achievement of economic efficiency and entrepreneurial innovation.*

Based on this definition, we have the following fundamental features of social entrepreneurship:

- *The primacy of the social mission over business*: social effect is pre-planned and expected result, and not the side, as in ordinary commercial enterprise. These companies initially created to achieve socially significant goals, manifested in the creation of jobs (including for the disabled people), education (including adults), etc.
- *Sustainable commercial impact (self-sufficiency and competitiveness)*: achieving sustainable self-sufficiency by generating income from the sale results (goods and services), and by grants and charitable donations.
- *Innovation in combination with social and economic resources*: entrepreneurial innovation, which can be implemented through the use of a new idea or a new combination of resources (including not very attractive from the point of view of the market) to solve social problems.
- *Personality*: social business is the first and foremost a creative idea that provides the greatest success. Such ideas are created by individuals and not corporations. An ordinary man and his small idea can change the world.

Currently, concepts of social entrepreneurship are not legalized in Kazakhstan. However, there are a lot of companies designed to solve a specific social problem. The analysis of the case study materials for social entrepreneurs in Almaty shows us that social entrepreneurship is not charity; it is cost-effective, successful social and commercial projects. These cases are evidence that social entrepreneurship is a progressive direction, opening up new business opportunities.

It should be noted that the case studies represent different areas (psychological assistance, sports, education, rehabilitation) and different features of social problems. Each of the selected organizations working in areas, which for one reason or another are not sufficiently addressed by the state and the market. The identification of social problems, and its transformation into market opportunity, and also searching for innovative solutions and their implementation through a sustainable business model is the way of a social entrepreneur, who wants to realize a project.

During an interview on the experience of our selected social entrepreneurs, we need to show:

- the real form of social problems to be solved by the activity of the enterprise;
- the mechanism (the business model), which was developed to address it;
- the sequence of steps that led to the development of this mechanism. It is connected with the fact that the history of the company reflects the thought process social entrepreneur, opportunities and barriers;
- results. In addition, each case contains information about social entrepreneurs - its social and professional experience, education, and so on. This is important not only to present the personality a social entrepreneur and his motivation, but also to understand how prior experience and professional knowledge of the person associated with the features of the proposed business model of social enterprise.

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Social entrepreneurship is considered as the mechanism, which can become social measurement of Kazakhstan modernization. In addition to the offered variety of approaches to interpretation of social entrepreneurship, the article has directions in which researches of social entrepreneurship can be or already are the most fruitful, meaning economic specifics and prospects of development of Kazakhstan. In mass consciousness of citizens of Kazakhstan, the concept "social entrepreneurship" is absent, but there are prerequisites for its forming. Society is ready to innovations in the social sphere, to positive perception of business structures, which work on the solution of social problems. For achievement of considerable progress in distribution of social entrepreneurship, it is necessary to solve two complex problems.

The first is the creation of an appropriate regulatory framework and legislative strengthening of "social entrepreneurship" concepts, as well as the inclusion of the state in process of financing of projects at the initial stage. It is necessary to clearly limit the scope and give it a certain status, which will more actively promote social entrepreneurship in the regions. Such state support gives multiplicative effect and is capable to become the catalyst of process of involvement of new participants in process of distribution of social business.

The second important task is formation of complex informational strategy of social entrepreneurship development, which will have impact on traditional business as well in this case efficiency of informational company is determined by examples of successful use of mechanisms of social entrepreneurship that solve pressing problems.

In article social entrepreneurship is considered as a form of ensuring stability of small enterprises, as well as studying the experience of social initiatives in Kazakhstan. Social entrepreneurship is considered as the mechanism capable to start the process of economy modernization in Kazakhstan and cardinaly change the processes of perception of social responsibility in business community and public authorities.

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### **Money, Income, Prices and Causality: The Case of Kazakhstan**

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#### **Abstract**

This paper examines the causal relationship among the monetary aggregates (M1, M2, and M3), consumer prices (CPI) and incomes (nominal and real, GDP and RGDP) for Kazakhstan using quarterly data over the period 1994:1-2015:4. The modified Granger causality method used in the cointegration context is employed to examine short- and long-run causality using a bivariate as well as multivariate model. Results based on Engle-Granger (1987) and Phillips-Ouliaris (1990) tests of cointegration are strongly supportive of the long-run relationship among the underlying variables when the latter test is used rather than when the former test is used, and irrespective of whether the relationship is normalized on prices, incomes or money. Results of causality based on error-correction models built in a bivariate and a multivariate framework can be summarized as follows. First, the monetary aggregates cause GDP, RGDP and CPI only in the long-run but not in the short-run. Second, RGDP causes M1 both in the long- and short-run but M2 only in the long-run, while GDP causes M1, M2 and M3 only in the long-run. Third, there is unidirectional causality running from CPI to M1. The results of causality based on a multivariate model show that monetary aggregates and CPI cause RGDP in the long-run and not in the short-run. On the other hand, CPI causes M1 and RGDP causes CPI when the model uses M1. However, only do RGDP cause CPI in the short-run when the model uses both M2 and M3. One implication that emerges from these results is that money is not exogenously determined in Kazakhstan.

## **1.Introduction**

The objective of this paper is to undertake an empirical investigation into the causal relationship among prices, money and income, as embedded in the quantity theory of money (QTM), for Kazakhstan over the period 1995-2015. Ever since Granger (1969) developed the causality test and Sims (1972) carried out seminal work on money-income causality, a large body of empirical work has appeared in the literature investigating the causal relationship among such macroeconomic variables as money, income, prices, interest rates, and domestic credit etc. Notwithstanding the tremendous amount of work on money-income and money-price causality for developed and underdeveloped economies, controversy on this issue has remained still unresolved. While it is now widely accepted that money, prices and income are empirically related, researchers often explore the fundamental question as to what is the direction of causation.

Since its independence in December 16, 1991, Kazakhstan's monetary history provides abundant evidence on the role the monetary policy has played in stabilizing prices and economic growth in the economy. It is, therefore, important to evaluate the significance of the monetary policy by investigating into the impact of money on economic fluctuations in Kazakhstan measured by fluctuations in income and prices. While the massive amount of empirical work exists on the causal relationship among money, income and prices for developed and developing countries, only little attempt has been made for Kazakhstan in this direction. The rest of the paper is structured as follows. Section 2 reviews some selected studies in the underlying area of research to derive the existing evidence on causality between money and income, and money and prices, whereas Section 3 explains the econometric procedure for testing causality in the cointegration context. In Section 4, the data sources are discussed and empirical results are presented and interpreted. The concluding remarks and implications are given in the final section.

## **2.Evidence on Causality**

The role that money plays in the determination of prices and incomes is one of the most widely investigated relationships in economics (Brillembourg and Khan, 1979). The earliest major work lending support to the role of money in determining prices and incomes was carried out by Friedman and Schwartz who investigated the monetary history of the United States for the period 1867-1960 and reached the conclusion that "Changes in the behavior of money stock have been closely associated with changes in economic activity, money, and prices" (Friedman and Schwartz, 1963a; p.676). In their subsequent work on "money and business cycles", Friedman and Schwartz argue that the historical record justifies two important generalizations: (i) "there is one-to-one relation between monetary changes and changes in money income and prices" and (ii) "the changes in the stock of money cannot consistently be explained by the contemporary changes in money income and prices" (Friedman and Schwartz, 1963b; p.50). Sims (1972; p.540) argues that "no degree of positive association between money and income can itself prove

that variation in money causes variation in income” and uses a direct for the existence of unidirectional causality to examine the statistical evidence whether money is exogenous in some sense of the money-income relationship. Applying formal tests<sup>16</sup> than the ones performed by Friedman and Schwartz (1963a, 1963b) to the postwar U.S. data over the period 1947-1969, he produced evidence confirming the findings of Friedman and Schwartz (1963a, 1963b) that money causes income without any feedback. Using quarterly data on M1, the monetary base (MB) and GNP, Sims (1972) produced results indicating a unidirectional causal relationship running from M1 and MB to GNP without feedback.

However, subsequent studies conducted, inter alia, by Feige and Pearce (1974), Barth and Bennett (1974), William et al (1976) and Komura (1982) who investigated the money-income causality experience for the United States, Canada, the United Kingdom, and Japan respectively and found results that are, in general, not consistent with the Sims’s (1972) findings for the United States in that they do not support the hypothesis of unidirectional causality running from money to income without feedback. Using a somewhat different testing procedure, Feige and Pearce (1974) argue that prices, to a great degree, are independent of variations in monetary aggregates. Following the Sims procedure and using quarterly data on M1, M2, GNP and industrial production (IP) for Canada over the period 1957-1972, Barth and Bennett (1974) produced results which were in sharp contrast with the findings of Sims (1972). The results they obtained show that there is bidirectional causality running from M1 or M2 to GNP and from GNP to M1 or M2, thereby resulting in feedback from economic activity to the money supply, whereas unidirectional causality running from IP to M1, but not M2<sup>17</sup>. However, results obtained by Brillembourg and Khan (1979) were consistent with the findings of Sims (1972) for the postwar period and Friedman and Schwartz (1963a) for the post-World War II period. Brillembourg and Khan (1979) argue that the studies failing to produce evidence supportive of the monetarist hypothesis do not represent fair tests of the Friedman-Schwartz proposition, since their tests are restricted to the post-World War II period. Using annual data over the longer period 1870-1975, they tested the direction of causation for three pairs of series – money and real income, money and nominal income and money and prices – and produced results showing that money and real income were contemporaneously related over the period 1870-1975 and that money did appear to cause both nominal income and prices. Similarly, empirical work conducted by Hasio (1979) lent support to the findings of Barth and Bennett (1974) for Canada, confirming that there is feedback between M1 and GNP but unidirectional causality running from M2 to

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<sup>16</sup> Based on Granger’s notion of causality, Sims (1972) developed a test for unidirectional causality in that Y is regressed on past and future values of X and if causality runs from X to Y only, then all the coefficients of future values of X in the regression should be jointly insignificantly different from zero. The results obtained show that future values of GNP are highly significant in explaining M1 and MB as dependent variables, whereas future values of M1 and MB are not in explaining the GNP dependent variable.

<sup>17</sup> Auerbach and Rutner (1978) show that the results produced by Barth and Bennett (1974) are biased due to two errors: (i) the use of inappropriate filter for their data and (ii) failure to eliminate autocorrelation in their residuals. When causality tests are conducted properly by correcting for the two errors, results were obtained indicating only a weak causal relationship between Canadian GNP and M1 in the bivariate model.

GNP. Results were also found supportive of the monetarist hypothesis by Atesoglu and Tillman (1980) who investigated the direction of causality among autonomous expenditures, income and the money supply for Korea using the Sims test. The findings obtained confirm the causal implication of the simple Keynesian approach that autonomous expenditures cause income and rejected the causal implication of the quality theory approach that the money supply causes income.

Applying the Sims's methodology to the U.K. data over the period 1958:01-1971:03, Williams et al (1976) found evidence of unidirectional causality from GDP to M1 and MB but some evidence of unidirectional causality from M1 or MB to prices. Following the similar approach, Komura (1982) tested the money-income causality for Japan for three separate periods (1955:1-1964:4, 1965:1-1971:2 and 1971:3-1980:4) representing different exchange rate regimes and found evidence of bidirectional causality between money and both nominal and real income during the first period of fixed exchange rates and bidirectional causality between money and GNP in the extended period of fixed exchange rates (1955:1-1971:3) and unidirectional causality from GNP to money during flexible exchange rates (1971:3-1980:4). Results obtained by Hsiao (1981) for the U.S. postwar data show that a bidirectional feedback model fits the data best between *M1* and *GNP*, whereas a unidirectional model in which causation runs from *M2* to *GNP* performs better.

Dyreyes et al (1980) employed three test procedures – Sims's exact regression procedure, a modified version of Sims's regression procedure and a residual cross-correlation method developed by Haugh (1976) – to examine the money-income causality for six countries: Australia, Canada, Germany, Japan, the United Kingdom, and the United States. Using quarterly data on GDP (GNP) and M1 for the countries, results were obtained indicating bidirectional causality between money and income for Japan and the United States and unidirectional causality running from money to income for Australia and Canada and from income to money for the United Kingdom. Similar findings were obtained for Australia by Layton (1985) who produced results showing that monetary growth leads both real and nominal income growth by six months. However, the results of the post-sample forecasting analysis indicated that real income rather than nominal income as the more relevant causal variable as far as monetary growth is concerned.

Athanasenas (2010) investigated the causal relationship between credit and money income, as embedded in the "credit view", using the U.S. postwar data and produced results showing that credit causes income significantly in the long-run, and there is a rather weak causality running from income to credit in the long-run. The results obtained also show a dynamic causality effect in the short-run running from income changes to credit ones. Similar results were obtained by Gairy and Kutay (2013) who examined the causal relationship between domestic credit by the banking sector and GDP per capita using the balanced panel framework

for 20 Latin America countries over the period 1960-2010. Using panel cointegration tests, they produced results indicating that there is a significant long-run relationship between domestic credit and GDP per capita in Latin American countries. The results of panel causality tests show that there is a unidirectional causation running from domestic credit to GDP per capita. Results were also produced supportive of unidirectional causality running from money to income by Ansari and Ahmed (2007) who used quarterly data on IP, CPI, 30-days treasury bill interest rate, M1 and M2 over the period 1980-2000 for Mexico to test the money-output relationship by employing a multivariate error-correction model. The results, however, show that the monetary aggregates have little impact on prices.

### 3. Methodology for Short-run and Long-run Causality

The conventional Granger (1969) causality test assumes that the information relevant to predict such variables as M1, GDP and CPI is contained solely in the time series data on these variables. Assuming the underlying series to be stationary with zero means, the conventional Granger causality test involves estimating the following three regressions:

$$CPI_t = a + \sum_{i=1}^m b_i M_{t-i} + \sum_{i=1}^m c_i GDP_{t-i} + \sum_{i=1}^m d_i CPI_{t-i} + u_{1t} \quad (1)$$

$$M_{1t} = \alpha + \sum_{i=1}^m \beta_i M_{t-i} + \sum_{i=1}^m \gamma_i GDP_{t-i} + \sum_{i=1}^m \theta_i CPI_{t-i} + u_{2t} \quad (2)$$

$$GDP_t = \delta + \sum_{i=1}^m \phi_i M_{t-i} + \sum_{i=1}^m \varphi_i GDP_{t-i} + \sum_{i=1}^m \vartheta_i CPI_{t-i} + u_{3t} \quad (3)$$

In Equation (1), M1 causes CPI if the coefficients on M1 are significantly different from zero ( $b_i \neq 0$ ), whereas GDP causes CPI if the coefficients on GDP are significantly different zero ( $c_i \neq 0$ ). Similarly, the hypotheses whether GDP and CPI cause M1 in equation (2) and whether M1 and CPI cause GDP in equation (3) can be tested. To this end, the F-test can be used to test the causality restrictions.

Since all the variables underlying the above equations are non-stationary, therefore the OLS method becomes invalid and the inference procedure based on t-statistic as well as the F-statistic will also be invalidated. To test the direction of causality between non-stationary variables, the modified Granger causality test can be used in the context of cointegration. If M1, GDP and CPI are I(1) in level and I(0) in first difference, then the causality can be tested using the following model in which all variables appear in first difference rather in level<sup>18</sup>.

$$\Delta CPI_t = a + \sum_{i=1}^m b_i \Delta M_{t-i} + \sum_{i=1}^m c_i \Delta GDP_{t-i} + \sum_{i=1}^m d_i \Delta CPI_{t-i} + e EC_{t-1} + v_{1t} \quad (4)$$

where  $EC_{t-1}$  is the lagged value of the long-run relationship among prices, money and income ( $CPI_t = \beta_0 + \beta_1 M_t + \beta_2 GDP_t + \varepsilon_t$ ). Equation (4) can be used to test for short-run and long-run

<sup>18</sup> For a discussion on cointegration and causality see Moosa and Bhatti (1997; p.187-88)

causality from M to CPI and GDP. While the former is given by  $H_0 : b_i = c_i = 0 \forall_i$ , the latter is given by  $H_0 : e = 0$ .

#### 4. Sample Data and Empirical Results

The causality among money, prices and income is tested using the modified Granger causality test. To this end, quarterly data are used for Kazakhstan on M1, M2, M3, CPI, and GDP over the period 1994:1-2015:4. The data on money were obtained from the website of the NBK, IMF data are used on GDP and CPI.

Prior to testing for short-run and long-run causality among money, prices and income, tests were conducted to determine the order of integration of the underlying time series. Results obtained based on Dickey-Fuller (1979) and Phillips-Perron (1988), as reported in Table 1, indicate that all the variables are I(1) in level and I(0) in first difference, except for CPI and GDP which are stationary in level when Phillips-Perron statistic is used.

**Table 1: Testing for a Unit Root**

Variable	ADF		PP	
	Level	First Difference	Level	First Difference
CPI	0.47	-13.72*	-5.53*	-19.85*
M1	-1.19	-8.72*	-1.17	-8.72**
M2	-1.31	-8.74*	-1.25	-8.76*
M3	-1.22	-8.61*	-1.15	-8.63*
GDP	-0.74	-8.84*	-9.84*	-11.16*
RGDP	-1.01	-3.59*	-0.97	-16.17*

The results, as reported in Table 2, show that there is a strong long-run relationship between money and prices, money and income, and income and prices in a bivariate framework, since the null of no cointegration can be rejected in all cases when Phillips-Ouliaris (1990) test statistics rather than when Engle-Granger (1987) statistics are used.

**Table 2: Testing for Cointegration in a Bivariate Model**

Relation	Slope	St. errors	$\bar{R}^2$	EG $\tau$	EG $\mu$	Z $\tau$	Z $\mu$
<b>With Narrow Money (M1)</b>							
GDP=f(M1)	0.85	0.027	0.93	-1.14	-4.04	-8.12*	-48.97*
M1=f(GDP)	1.14	0.040	0.93	-1.09	-3.29	-7.09*	-46.91*
RGDP=f(M1)	0.43	0.016	0.92	-4.69*	-53.09*	-5.88*	-43.82*
M1=f(RGDP)	2.23	0.083	0.92	-5.39*	-53.59*	-5.60*	-39.72*
CPI=f(GDP)	0.48	0.023	0.88	-0.86	-2.17	-6.12*	-22.25*
GDP=f(CPI)	1.96	0.098	0.89	-1.25	-2.51	-4.44*	-17.47**

CPI=f(RGDP)	0.90	0.090	0.59	0.13	0.40	-8.36*	-23.68*
RGDP=f(CPI)	0.96	0.098	0.58	-1.21	-2.51	-4.44*	-17.47**
CPI=f(M1)	0.42	0.032	0.72	0.15	0.36	-8.16*	-32.94*
M1=f(CPI)	2.15	0.181	0.74	-0.82	-1.42	-5.39*	-25.47*
<b>With Broad Money (M2)</b>							
GDP=f(M2)	0.72	0.019	0.94	-1.25	-4.14	-8.98*	-51.78*
M2=f(GDP)	1.35	0.040	0.94	-1.68	-4.48	-7.74*	-50.54*
RGDP=f(M2)	0.37	0.014	0.92	-4.02*	-32.75*	-5.84*	-42.76*
M2=f(RGDP)	2.63	0.098	0.92	-4.75*	-32.75*	-5.56*	--38.50*
CPI=f(M2)	0.36	0.025	0.74	0.02	0.06	-8.47*	-33.62*
M2=f(CPI)	2.55	0.020	0.75	-6.82*	-19.37*	-5.59*	-26.42*
<b>With Broad Money (M3)</b>							
GDP=f(M3)	0.70	0.017	0.94	-1.99	-6.52	-9.20*	-53.30*
M3=f(GDP)	1.41	0.040	0.95	-2.17	-5.83	-7.95*	-52.27*
RGDP=f(M3)	0.35	0.075	0.91	-3.20*	-23.54*	-5.30*	-37.07*
M3=f(RGDP)	2.73	0.117	0.91	-3.53*	-25.03*	-5.01*	-32.71*
CPI=f(M3)	0.34	0.023	0.76	-13.33*	-29.50*	-8.85*	-34.64*
M3=f(CPI)	2.67	0.199	0.77	-7.29*	-20.42*	-5.82*	-27.82*

Results of short-run and long-run causality based on bivariate models are reported in Table 3. These results can be summarized as follows. First, both monetary aggregates (M1, M2 and M3) do not cause GDP, RGDP and CPI in the short-run. Second, while M1 causes only RGDP in the long-run at the 5% significance level, M2 and M3 cause both GDP and RGDP, the former at the 5% and 10% significance levels respectively and the latter at the 5% significance level. Third, RGDP causes M1 in the short-run as well as in the long-run but M2 and M3 cause RGDP only in the long-run. On the other hand, GDP causes M1, M2 and M3 only in the short-run. The causality running from GDP to M2 and M3 is rather somewhat weaker as the null hypothesis that GDP does not cause M2 and M3 is rejected at the 10% significance level. Fourth, thus there is bidirectional causality running from M2 and M3 to GDP and from GDP to M2 and M3. However, while GDP causes M2 and M3 in the short-run, M2 and M3 cause GDP in the long-run. Yet the long-run causality is weaker from M2 to GDP because the hypothesis that M2 does not cause GDP in the long-run is rejected at the 10% significance level. Fifth, the speed of adjustment to the long-run causal relationship running from monetary aggregates to RGDP is relatively much faster when M1 is used (26%) rather than when M2 and M3 are used (11% and 14% respectively). In contrast, the speed of adjustment to the long-run causal relationship running from M2 and RGDP is much faster (27%) than that of the long-run causal relationship running from M3 to RGDP (22%). Sixth, both GDP and RGDP cause CPI in the short-run, whereas CIP causes only RGDP in the short-run. On the other hand, M1, M2 and M3 do not cause CPI, whereas CPI causes M1. Thus, there is unidirectional causality running from CPI to

M1 in the short-run, bidirectional causality running from CPI to RGDP and RGDP to CPI in the short-run and unidirectional causality running from GDP to CPI in the short-run.

**Table 3: Short-Run and Long-Run Granger Causality in a Bivariate Framework**

Regression Model	Coefficient of $EC_{t-1}$	t-test for $EC_{t-1}$	F-test	Direction of causality
$\Delta GDP_t = f(\Delta M_{1t-i}, \Delta GDP_{t-1}, EC_{t-1})$	-0.07	-1.19	0.49	M1 does not Granger cause GDP
$\Delta M_{1t} = f(\Delta GDP_{t-i}, \Delta M_{1t-1}, EC_{t-1})$	-0.06	-1.30	4.40*	GDP does not Granger cause M1
$\Delta RGDP_t = f(\Delta M_{1t-i}, \Delta RGDP_{t-i}, EC_{t-1})$	-0.26	-2.75*	0.68	M1 does not Granger cause RGDP
$\Delta M_{1t} = f(\Delta RGDP_{t-i}, \Delta M_{1t-1}, EC_{t-1})$	-0.20	-3.49*	3.47*	RGDP does not Granger cause M1
$\Delta CPI_t = f(\Delta GDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	-0.01	-0.48	3.08*	GDP does not Granger cause CPI
$\Delta CPI_t = f(\Delta CPI_{t-i}, \Delta GDP_{t-i}, EC_{t-1})$	-0.03	-1.03	0.18	CPI does not Granger cause GDP
$\Delta RGDP_t = f(\Delta RGDP_{t-i}, \Delta CPI_{t-i}, EC_{t-1})$	-0.01	-0.82	3.06*	CPI does not Granger cause RGDP
$\Delta CPI_t = f(\Delta CPI_{t-i}, \Delta RGDP_{t-i}, EC_{t-1})$	-0.03	-0.85	2.30**	RGDP does not Granger cause CPI
$\Delta M_{1t} = f(\Delta CPI_{t-i}, \Delta M_{1t-1}, EC_{t-1})$	-0.02	-0.88	3.20*	CPI does not Granger cause M1
$\Delta CPI_t = f(\Delta M_{1t-i}, \Delta CPI_{t-i}, EC_{t-1})$	0.00	0.15	1.84	M1 does not Granger cause CPI
$\Delta GDP_t = f(\Delta M_{2t-i}, \Delta GDP_{t-1}, EC_{t-1})$	-0.11	-1.72**	0.87	M2 does not Granger cause GDP
$\Delta M_{2t} = f(\Delta GDP_{t-i}, \Delta M_{2t-1}, EC_{t-1})$	-0.03	-0.75	2.25**	GDP does not Granger cause M2
$\Delta RGDP_t = f(\Delta M_{2t-i}, \Delta RGDP_{t-i}, EC_{t-1})$	-0.27	-2.88*	0.58	M2 does not Granger cause RGDP
$\Delta M_{2t} = f(\Delta RGDP_{t-i}, \Delta M_{2t-1}, EC_{t-1})$	-0.09	-1.88**	1.36	RGDP does not Granger cause M2
$\Delta M_{2t} = f(\Delta CPI_{t-i}, \Delta M_{2t-1}, EC_{t-1})$	-0.01	-0.84	1.22	CPI does not Granger cause M2
$\Delta CPI_t = f(\Delta M_{2t-i}, \Delta CPI_{t-i}, EC_{t-1})$	0.00	0.10	1.10	M2 does not Granger cause CPI
$\Delta GDP_t = f(\Delta M_{3t-i}, \Delta GDP_{t-1}, EC_{t-1})$	-0.14	-2.20*	-0.87	M3 does not Granger cause GDP
$\Delta M_{3t} = f(\Delta GDP_{t-i}, \Delta M_{3t-1}, EC_{t-1})$	-0.02	-0.62	2.17**	GDP does not Granger cause M3
$\Delta RGDP_t = f(\Delta M_{3t-i}, \Delta RGDP_{t-i}, EC_{t-1})$	-0.22	-2.77*	0.68	M3 does not Granger cause RGDP
$\Delta M_{3t} = f(\Delta RGDP_{t-i}, \Delta M_{3t-1}, EC_{t-1})$	-0.02	-0.60	1.00	RGDP does not Granger cause M3
$\Delta M_{3t} = f(\Delta CPI_{t-i}, \Delta M_{3t-1}, EC_{t-1})$	-0.01	-0.99	0.97	CPI does not Granger cause M3
$\Delta CPI_t = f(\Delta M_{3t-i}, \Delta CPI_{t-i}, EC_{t-1})$	0.03	0.23	1.29	M3 does not Granger cause CPI

**Table 4: Testing for a Cointegration in a Multivariate Framework**

	CPI	Money	RGDP
	<b>Narrow Money (M1)</b>		
Constant	-3.07 (0.765)	6.14 (0.252)	-3.27 (0.160)
Money	0.73 (0.103)		0.49 (0.029)
RGDP	-0.71 (0.228)	1.75 (0.096)	
CPI		0.48 (0.096)	-0.10 (0.066)
$R^2$	0.74	0.95	0.93
$EG_\tau$	-0.84	-4.20*	-5.20*
$EG_\mu$	-2.84	-34.47*	-79.92*
$Z_\tau$	-8.17*	-7.31*	-6.82*

$Z_{\mu}$	-41.61*	-59.98*	-55.95*
<b>Broad Money (M2)</b>			
Constant	-2.40 (0.514)	5.21 (0.236)	-2.53 (0.113)
M1	0.69 (0.073)		0.44 (0.023)
RGDP	-0.89 (0.192)	1.98 (0.090)	
CPI		0.67 (0.090)	-0.17 (0.060)
$R^2$	0.78	0.96	0.93
$EG_{\tau}$	-0.76	-4.05*	-4.84*
$EG_{\mu}$	-2.09	-23.37*	-41.88*
$Z_{\tau}$	-8.90*	-7.97*	-7.36*
$Z_{\mu}$	-46.30*	-63.76*	-60.31*
<b>Broad Money (M3)</b>			
Constant	-2.06 (0.417)	4.86 (0.274)	-2.40 (0.141)
M2	0.63 (0.059)		0.43 (0.030)
RGDP	-0.81 (0.160)	1.92 (0.104)	
CPI		0.84 (0.104)	-0.20 (0.081)
$R^2$	0.80	0.96	0.93
$EG_{\tau}$	-1.42	-3.63	-4.02*
$EG_{\mu}$	-3.69	-17.26	-28.55*
$Z_{\tau}$	-9.32*	-7.68*	-6.90*
$Z_{\mu}$	-47.48*	-61.40*	-57.37*

Tests are also conducted to examine short-run and long-run causality among money, prices and income in a multivariate framework. Prior to undertaking empirical investigations into the causal relationship, we tested the long-run relationship among the three variables by normalizing the relationship on CPI, monetary aggregates (M1, M2 and M3) and income (GDP and RGDP). Results based on Engle-Granger (1987) and Phillips-Ouliaris (1990) tests, as reported in Table 4, indicate that the underlying variables are strongly cointegrated irrespective of the direction of normalization when the latter method of cointegration is used rather than when the former method is used.

**Table 5: Short-Run and Long-Run Granger Causality in a Multivariate Framework**

Model specification	Coeff. $EC_{t-1}$	Null hypothesis for no short-run causality	
		F-statistic	
$\Delta RGDP_t = f(\Delta M_{1t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-i}, EC_{t-1})$	-0.36* (-2.86)	M1 does not cause RGDP 0.85	CPI does not cause RGDP 0.45
$\Delta M_{1t} = f(\Delta RGDP_{t-i}, \Delta M_{1t-i}, \Delta CPI_{t-i}, EC_{t-1})$	-0.10 (-1.27)	GDP does not cause M1 1.74	CPI does not cause M1 2.34*

$\Delta CPI_t = f(\Delta M_{1t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	0.00 (-1.27)	M1 does not cause CPI 1.74	RGDP does not cause CPI 2.77*
$\Delta RGDP_t = f(\Delta M_{2t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	-0.50* (-3.50)	M2 does not cause RGDP 0.89	CPI does not cause RGDP 0.66
$\Delta M_{2t} = f(\Delta RGDP_{t-i}, \Delta M_{2t-i}, \Delta CPI_{t-1}, EC_{t-1})$	-0.07 (-1.20)	RGDP does not cause M2 1.52	CPI does not cause M2 0.69
$\Delta CPI_t = f(\Delta M_{2t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	-0.01 (-0.49)	M2 does not cause CPI 1.04	RGDP does not cause M2 2.79*
$\Delta RGDP_t = f(\Delta M_{3t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	-0.39* (-3.50)	M3 does not cause RGDP 1.07	CPI does not cause RGDP 0.60
$\Delta M_{3t} = f(\Delta RGDP_{t-i}, \Delta M_{3t-i}, \Delta CPI_{t-1}, EC_{t-1})$	0.01 (0.14)	RGDP does not cause M3 1.03	CPI does not cause M3 1.00
$\Delta CPI_t = f(\Delta M_{3t-i}, \Delta RGDP_{t-i}, \Delta CPI_{t-1}, EC_{t-1})$	0.01 (0.63)	M3 does not cause CPI 1.31	RGDP does not cause CPI 2.76*

Results of short-run and long-run causality based on multivariate models are reported in Table 5. The results show that both CPI and M1 cause RGDP in the long-run but not in the short-run, whereas CPI and RGDP and M1 and RGDP do not cause M1 and CPI respectively in the long-run. However, while CPI causes M1 and RGP causes CPI in the short-run. However, the results for M2 and M3 are similar when causality is tested in a multivariate framework. CPI and M2 and CPI and M3 cause RGDP in the long-run and not in the short-run. On the other hand, only RGDP cause CPI in the short-run when M3 and M3 are used in the multivariate model, but there is no causation in the short-run either from CPI to RGDP or from M2 or M3 to RGDP.

## 5. Conclusion

This paper has examined the direction of causal relation among money, prices and income in Kazakhstan. For this purpose, quarterly data are used on three monetary aggregates (M1, M2 and M3), consumer prices and income (GDP) over the period 1994:1-2015:4. Tests of causality are conducted in the context of cointegration analysis using the modified Granger causality. Prior to testing for causality in a cointegration framework, tests are carried out based on Dickey-Fuller (1979) and Phillips-Perron (1988) methods whether the underlying time series are I(1) in level and I(0) in first difference. Tests are then conducted on the basis Engle-Granger (1987) and Phillips-Ouliaris (1990) methods of cointegration to examine if a long-run relationship exists among the underlying variables in a bivariate and a multivariate framework. Results obtained indicate that there exists a long-run relationship among the underlying variables when the latter test is used rather than when the former test is used.

As Granger (1988) argues that if a pair of I(1) series are cointegrated, there must be causation in at least one direction. Thus, the direction of causation is tested using error-correction models normalized on three variables built on the basis of bivariate and multivariate models. The results show that monetary aggregates do not cause income and prices without feedback. The results based on bivariate and multivariate models of causality are summarized as follows. First, both M1, M2 and M3 do not cause income (GDP, RGDP) and prices (CPI) in the short-run. Second, while M1 causes only RGDP in the long-run, M2 and M3 cause both GDP and RGDP in the long-run. Third, RGDP causes M1 in the short-run as well as in the long-run, whereas M2 and M3 cause RGDP only in the long-run. On the other hand, GDP causes M1, M2 and M3 only in the short-run. Fourth, there is bidirectional causality running from M2 and M3 to GDP and from GDP to M2 and M3. However, while GDP causes M2 and M3 in the short-run, M2 and M3 cause GDP in the long-run. Yet the long-run causality is weaker from M2 to GDP because the hypothesis that M2 does not cause GDP in the long-run is rejected at the 10% significance level. Fifth, both GDP and RGDP cause CPI in the short-run, whereas CPI causes only RGDP in the short-run. On the other hand, M1, M2 and M3 do not cause CPI, whereas CPI causes M1. Thus, there is unidirectional causality running from CPI to M1 in the short-run, bidirectional causality running from CPI to RGDP and RGDP to CPI in the short-run and unidirectional causality running from GDP to CPI in the short-run.

The results of causality based on the multivariate model indicate that while monetary aggregates and CPI cause RGDP in the long-run, CPI causes M1 and RGDP causes CPI in the short-run. On the hand, M2 and CPI and M3 and CPI cause RGDP in the long-run when the model uses M2 and M3. On the other hand, only RGDP causes CPI in the short-run when M2 and M3 are used the multivariate model.

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## **Are BASEL III requirements working in Developing countries: Case of Kazakhstan banks**

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### **Abstract**

Many financial institutions have experienced a serious change as a result of the global financial crisis in 2008-2009. In 2010, the Basel Committee on Banking Supervision proposed a new framework for banking regulation called “Basel III: A global regulatory framework for more resilient banks and banking systems” (hereinafter “the Basel III”). This became pretty important and serious step towards combating the consequences of the crisis. Having aimed at the strengthening the control of the regulators and supervisors over the banking activities, the Basel III introduced more tools to keep banks in a safer position and offered more tools to prevent crisis signs.

The current paper focuses on Kazakhstan banks as a case from developing countries. What are the peculiarities in introducing and implementing the Basel III requirements? What would further steps be in applying the international experience in local regulator’s settings?

The methodology to be employed is mixed research approach having divided the study in two parts, where both quantitative and qualitative methods will be used. Data will include quarterly information from post crisis period from 2010 to 2015.

The study will further investigate the relationships between banks performance and regulator’s activities, influences if any or association of the strengthened and extended requirements upon banks reporting results.

Keywords: Banking Supervision, Basel III, capital adequacy, tier I capital, tier II capital, National Bank of Kazakhstan.

## **Early Warning System of Kazakhstani Banks**

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### **Abstract**

This paper explains the factors to determine and characterize the satiable functioning of Banks and whole bank system. The decisive incitement for such studies gave the crisis in Kazakhstan in August 2008 and recent crisis in 2014-2015.

Issues of risk assessment of the financial sector in the world in recent times have gained special urgency. The concept of stability of the financial system has now become an important object of targeted policies of central banks and other authorities. Among the main reasons for this interest are high costs of financial crises and their more frequent, rapid growth in the volume of financial transactions and the high complexity of new instruments. Global experience shows that the cost of monitoring the risks of financial institutions significantly lowers the cost of overcoming the effects of local and systemic financial crises. Financial crises can be very expensive, given the fiscal costs of restructuring the financial sector and the impact of the crisis on economic activity because of the inability of financial markets to function effectively. As the international assessments, the average cost of the financial crisis is 15% -20% of GDP before the crisis.

In the first part of the study addressed issues sustainability assessment of the banking systems, a comparative description of the foreign and Kazakh banking system in early diagnosis of instability. Revealed that the stability analysis of the commercial banks have significant differences in different countries, due to both historical and structural features of the banking systems of these countries, as well as the peculiarities of the economic policies of states. However, individual systems and approaches that have received a powerful impetus to development in the 90's, characterized by an increasing emphasis on risk and quality management, as well as the need for early detection of problems in the activities of commercial banks and timely corrective action on the part of the bank and by the supervisory authorities.

It is proved that all existing methods for evaluating the reliability and stability of the bank can be divided into four groups: rating systems, financial ratios and group analysis,

comprehensive rating system of bank risk and statistical models ("early response"). Rating system and financial ratios are effective tools in evaluating your current financial situation in the banking institution, the main drawback of the supervisory rating systems and financial ratios. They do not determine the potential problems in the activities of commercial banks and do not predict a possible scenario for its development in the future. An integrated approach allows us to estimate not only quantitative, but also qualitative risk factors. However, prognostic models of this type are limited. The problem is reduced to what statistical models predict the future state of the banks, that is, the diagnosis of banking problems at an early stage. A statistical model attempts to identify risky banks before the crisis or bankruptcy, which largely distinguishes it from other systems.

It is concluded that the evaluation of indicators of banking instability, the precursors used different approaches, the most famous of which is a qualitative analysis, econometric modeling and nonparametric estimation, the latter approach (nonparametric estimation) is recognized as the most effective tool for evaluating indicators of banking instability, and is used in the construction of a system of early diagnosis of instability of the banking central banks in the U.S. and the UK.

Analysis approach to the construction of early diagnosis of banking instability in Kazakhstan led to the conclusion that the basis of the proposed model EWS is an approach Kaminsky, and Lizondo, Reinhart - nonparametric estimation. In Kazakhstan, the mechanism for risk analysis of financial institutions and financial system that includes the construction and use of various indicators based on aggregate indicators of the banking system, derived from the NBK (National Bank of Kazakhstan) and Committee for the Control and Supervision of Financial Market and Financial Organizations of the National Bank of the Republic Kazakhstan, as well as macroeconomic and financial indicators, which characterize the stability of the banking sector. The set of indicators of banking instability in Kazakhstan IMF corresponds to the recommended core set, and contains the capital ratios, the quality of loan portfolio, credit risk, market risk, liquidity and efficiency of the financial institution. The main drawbacks of the EWS model in Kazakhstan could include the following:

- A lack of quality evaluations of financial institutions (management quality, strategy, etc.)
- The subjective choice of index weights in the model, indicators are evaluated in isolation, without consideration of their mutual influence on each other
- To leave out of account peculiarities of the economic situation of the analyzed period.

On the way to the development of scientific methods of risk assessment remains a problem that American researcher has designated as the phenomenon of "black swan" - a significant amount of risk cannot be foreseen and evaluated simply by virtue of the fact that analysts have not come across them in the past ( N.N. Taleb, The Black Swan, 2007).

Hence, the failure or inaccuracy of the information available, the irrational behavior of economic agents, dependence of the interpretation of the facts from the general market conditions, uncertainty about the variables to be analyzed in the framework of risk assessment, and the inability to anticipate sudden changes in the market objectively limit the possibilities to develop a scientific approach to evaluating and predicting the stability of banking systems.

Development and improvement of EWS systems is a prerequisite for the further development of risk - based surveillance, which focuses primarily on the development of prophylactic and preventive measures regulating the banking system.

### **Comparative analysis between Kazakhstan's financial system and Russian financial system**

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#### **Abstract**

Both Russian and Kazakhstan's financial systems are similar to each other due to the fact that both countries are from CIS region. Also, both are members of Eurasian Union and have some common background including past cooperation during Soviet times. Both countries are trading partners in terms of international trade due to geopolitical location. Both are dependent upon each other in many sectors of the economy. Both countries' economies are dependent upon oil prices and prices of different minerals. Both countries are members of Eurasian Economic Union.

The only one issue to mention is that Russia is more developed in the area of finance than Kazakhstan in terms of quantity of stock in Russian index, quantity of financial institutions and overall development of finance services industry. There are 834 banks operating in Russia, while quantity of local Kazakhstan's banks is only 35 at the moment. Russian RTS Index is more representative in terms of quantity of stock than Ka To compare both countries with each other, it should be noted that Russia' spending on military issues is far greater than Kazakhstan's. Social security payments of Russia are greater than Kazakhstan's social security payments. Russia is operating under different sanctions and does not have an access to external financial markets and cannot search for any external funds. Russia cannot find ways to finance its budget deficit except using funds from its own reserves, which will be totally finished by the end of 2016. Therefore, Kazakhstan and Russia differ from each other due to some political issues, such as sanctions, which create problems for Russian economy. Kazakhstan does not have such problems, which gives an access for Kazakhstan to attract foreign direct investment, search for external financing and also it gives a chance to be more integrated into the world economy.

## **1. Introduction**

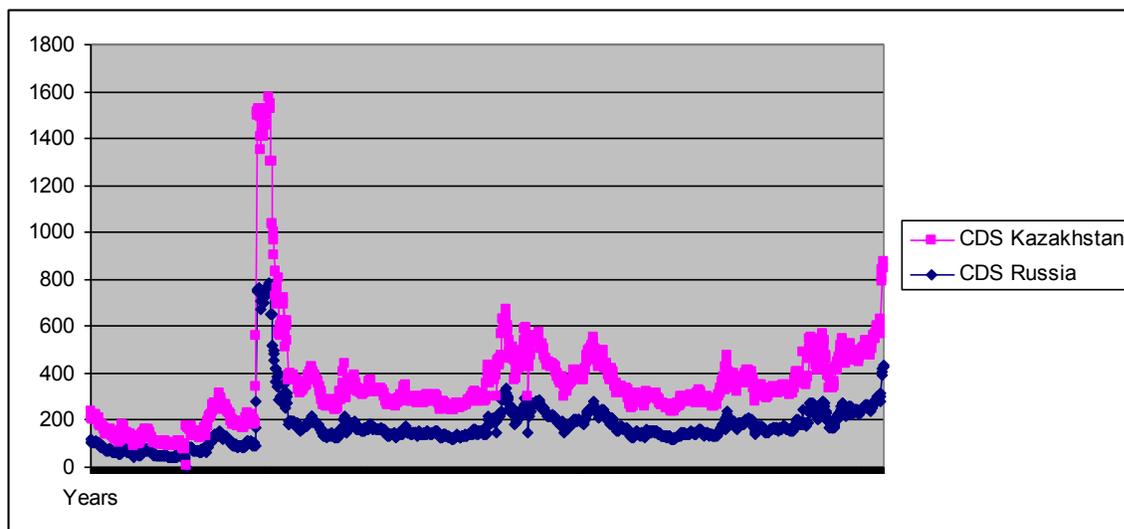
Both Russian and Kazakhstan's financial systems are similar to each other due to the fact that both countries are from CIS region. Also, both are members of Eurasian Union and have some common background including past cooperation during Soviet times. Both countries are trading partners in terms of international trade due to geopolitical location. Both are dependent upon each other in many sectors of the economy. Both countries' economies are dependent upon oil prices and prices of different minerals. Both countries are members of Eurasian Economic Union.

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To compare both countries with each other, it should be noted that Russia' spending on military issues is far greater than Kazakhstan's. Social security payments of Russia are greater than Kazakhstan's social security payments. Russia is operating under different sanctions and does not have an access to external financial markets and cannot search for any external funds. Russia cannot find ways to finance its budget deficit except using funds from its own reserves, which will be totally finished by the end of 2016. Therefore, Kazakhstan and Russia differ from each other due to some political issues, such as sanctions, which create problems for Russian economy. Kazakhstan does not have such problems, which gives an access for Kazakhstan to attract foreign direct investment, search for external financing and also it gives a chance to be more integrated into the world economy.

Because both economies are connected with each other due to Eurasian economic union, Kazakhstan shares risk with Russia. Because of Eurasian Economic Union, currencies of both economies are connected with each other and Kazakhstan's currency depreciated after the depreciation of Russian rubl. Since August, 20, 2015, Kazakhstan's tenge is not supported and is floating without any support from regulator. Tenge devaluation is the hottest topic for discussion among economists and financial analysts in Kazakhstan recently. Russian and Kazakhstan's economies are too dependent upon oil prices and currency devaluation was the only possible solution for both countries to support balance of payment deficit. After the devaluation of Russian rubl, tenge devaluation was needed to protect the economy of Kazakhstan from an external shock of declining oil prices. Depreciation of a currency would positively affect export oriented developing economies such as Russia and Kazakhstan in the short run. Credit default swaps of both countries are demonstrated below in a figure 1.

**Figure 1. Credit default swap of Russia and Kazakhstan**



According to World Bank Report, while lower dependence on foreign currency (FX) denominated wholesale funding has led to lower FX-related liquidity risk; dollarization keeps the economy of Kazakhstan vulnerable to exchange rate volatility and exchange rate-induced credit risk. The share of FX-denominated loans has declined by nearly 20 percentage points since 2009, while the share of FX deposits has risen and both shares now stand at a relatively high 40 percent. The impact of the recent devaluation on banks' balance sheets should be confined to a worsening of credit risk.

As it was mentioned in IMF Report, the financial sector is faced with a number of risks:

1. Lower than anticipated growth in emerging markets (EM), especially in China and Russia, with the latter possibly aggravated by the Ukraine crisis. This scenario, motivated in part by U.S. tapering, could impact foreign direct investment to the region, lower medium-term growth, and cause an additional decline in housing prices, further weakening credit quality. Exchange rate depreciation would heighten indirect credit risks—if the central bank were to intervene, a loss in international reserves would take place, leading to tighter liquidity.
2. A sustained decline in oil and other commodity prices in an environment of weak global demand. This could lead to a fall in oil prices and lower the value of Kazakh exports. The result would be a marked deceleration in domestic growth and a depreciation of the tenge, both of which fuel credit risk.
3. Insufficient progress to bring down NPLs. These depress bank profitability, limit banks' ability to increase capital and extend credit, and pose a contingent liability for the public sector.

4. Concerns about devaluation, rapid consumer lending growth, and/or the inconsistent implementation of regulatory reforms could trigger a confidence crisis. System-wide deposit withdrawals and reduced access to wholesale funding could ensue, possibly triggering a liquidity crunch and/or asset fire sales.

According to the article in “Delovoy Kazakhstan”, as of May, 22, 2015, banking system of the country is going to be healthier than before. National Bank as a regulatory body is going to decrease the amount of bad loans, prudential norms are going to be introduced which will limit the amount of problematic loans. Several banks already changed their portfolios and some banks merged in order to solve this issue such as BTA and Kazkommertsbank, as an example. Moreover, in order to solve the problem, banks created daughter companies which will buy bad loans and will deal with this problem themselves. Commercial banks will allow bad loans to be in their portfolio but the amount of such bad loans cannot exceed 10% of the portfolio. The government supported banks in the area of mortgage lending providing the amount of 130 billion tenge. The amount of consumer loans cannot exceed 30% in the loan portfolio of banks.

According to IMF Report on Russia, during early 2000-s Russia has experienced dramatic growth in terms of industrial production. However, world financial crisis negatively affected Russia’s economic growth in 2008 and 2009. In 2010, it started to grow again but in early 2014 it was slowing down because of sanctions against Russia and political problems.

The report concludes that credit growth and bank balance sheet expansion have been strong in 2011. Nominal credit to the non-financial private sector grew by 25 percent in 2011 (20 percent in real terms), though the increase in the credit-to-GDP ratio (2 percentage points to 47 percent) appeared less alarming and the pace was still below the pre-crisis peak of about 40 percent (year on year). The total asset of banks also grew strongly by 23 percent in 2011, indicating that credit grew in tandem with overall balance sheet expansion, rather than asset substitution away from other types of investment, such as securities. Growth has been particularly strong in the household segment, though from a low base. Household credit growth continued to accelerate to over nominal 40 percent (year on-year) in the first months of 2012, though this segment is still small, amounting to 11 percent of GDP. Within household credit, about 20 percent is mortgage and the credit growth has been equally strong in both mortgages and other types of consumer loans. Corporate loans grew at more modest rate of nominal 24 percent in 2011, and a significant part of this growth appears to reflect substitution away from foreign funding. Exposures to the commercial real estate segments (construction) are small at about 6 percent of total loans, although some market participants consider higher exposure (15–20 percent) once on-lending is considered.

It was mentioned in the latest *World Bank’s Russia Economic Report* that Russian banks regained their strong profitability and the NPL ratio has declined noticeably since the 2008/09 crisis. Return on assets (ROA) recovered to over 2 percent in 2011. While this is still lower than

before the crisis, it is the highest among comparator countries. The NPL ratio declined from over 10 percent in 2009 to below 7 percent in 2011. However, this decline is due to rapid credit growth, and the amount of overdue and nonperforming loans have not been reduced. Russia's NPL ratio also remains one of the highest among the peer group. In addition, the NPL ratio itself could be underreported due to (i) overvaluation of the foreclosed assets on bank balance sheets, (ii) the transfer of distressed assets to affiliated off-balance sheet entities that are not subject to consolidated supervision, and (iii) doubtful quality of restructured loans.

Volatile external conditions, especially in oil prices, continue to be the main source of risks for Russian banks. The Russian economy and asset prices are largely driven by oil prices. Declines in oil prices (\$20–30) with corresponding sharp declines in the GDP growth rate were the main stress scenario considered in the stress testing exercises for the 2015-2016. Credit risks are the key risk factors for Russian banks, and oil prices and the exchange rate (which is highly correlated with oil prices) are the key drivers for credit quality. According to the results of the tests, the system was broadly resilient with overall capital ratio declining from 18.1 percent to 14.1 percent. However, given the reduced levels of current capital ratio at 14.7 percent, the similar magnitude of shocks could make larger number of banks undercapitalized.

As it was mentioned in the World Bank Press Release, The World Bank projected a negative growth outlook for Russia in 2016, with the economy expected to contract by 3.8 percent in 2015 and modestly decline by 0.3 percent in 2016, which came up to be true in reality. Investment is projected to contract for a second year in a row as the Russian government is delaying some large infrastructure projects and private investors are cutting back on investment programs. The report notes that the weak investment demand resulting from deep structural problems in the Russian economy was an important cause of the slowing Russian growth in 2014, and this was compounded by the terms of trade shock, geopolitical uncertainties, and the economic sanctions later in the year.

And yet, despite the confluence of adverse factors that hit the economy in 2014, Russia has so far avoided recession. *“The impact of the main shock, the slump in oil prices, only began to affect the economy in the final quarter of last year, and the impact is likely to be more profound in 2015 and 2016,”* said **Birgit Hansl, World Bank Lead Economist for the Russian Federation and the main author of the Report.** *“Moreover, the Russian government and Central Bank were able to respond swiftly with policy responses that successfully stabilized the economy.”* According to the report, consumption growth is expected to turn negative for the first time since 2009, eroded by declining real incomes and wages. The only bright spot is that the depreciated ruble could create incentives for expansion in some tradable industries. However, structural rigidities and the surging cost of imported investment goods and credit may dampen these benefits. The report notes that the economic impact of sanctions is likely to linger for a long time. The main medium-term risk for Russia's growth lies in the continued dearth of

investment and lack of affordable credit, according to the report. In particular, less foreign direct investment could limit the transfer of innovation and technology that is critical to increasing Russia's growth potential. The report says that systematically lower investment rates will ultimately lessen Russia's prospects for growth in the coming years and limit already modest growth potential. Finally, the report emphasizes that as long as access to external finance continues to be a constraint, a policy of careful management of financial sector risks and buffers will be important. Because of sanctions Russia will not be able to attract external financing from other countries. Kazakhstan today does not have such problems and is open to other countries as a result of it; it may attract external funds.

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## **The impact of ownership structure on bank performance: Evidence from Kazakhstan**

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## **Abstract**

The purpose of this study is to find the relationship between ownership structure and bank performance in 38 Kazakh banks listed on Kazakh Stock Exchange during the 2009- 2012 period. In particular, we examine the influence of the different ownership structures such as managerial ownership, foreign ownership and government ownership on bank performance. Our findings show that there is a positive relationship between managerial ownership and earnings.

Similarly, our findings indicate that foreign ownership has a positive impact on performance. We also provide empirical evidence that foreign ownership; government ownership and managerial ownership are positively related to capital adequacy, thus indicating that effective ownership structures lower liquidity risks in terms of capital structure. Overall, we conclude that that ownership structure, especially foreign ownership has a positive impact on the performance of Kazakh banks in the post crisis period.

**Keywords:** Corporate Governance, Ownership structure, Bank Performance, Kazakhstan.

## **ANTECEDENTS OF CORPORATE SOCIAL RESPONSIBILITY IN THE BANKS OF CENTRAL-EASTERN EUROPE AND IN THE COUNTRIES OF THE FORMER SOVIET UNION**

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### **Abstract**

This article explores the determinants of corporate social responsibilities (CSR) in the banking sector of the transition countries of Central and Eastern Europe (CEE), as well as those of the former Soviet Union (FSU). Our panel fixed-logit results for 237 banks, covering the period 2000–2012, show that while financial performance is not associated with CSR, larger banks are more likely to engage in CSR. Additionally, a government's effectiveness and its regulatory quality increase the likelihood that the banks will engage in social activities. There is a range of possible approaches that governments can take to encourage social activities in the banking sector of transition countries:

- They can stimulate the demand for CSR information, and encourage banks to report their social activities through improving the relevant legislation;
- They can improve competition in the financial sector in general, as well as in the banking sector – in particular, by developing securities markets and by attracting foreign investors from Western OECD countries.

Overall, our results are consistent with the theory that the necessary conditions must be in place to support CSR, which seem to be absent in the countries under investigation.

**Keywords:** Banks, corporate social responsibility, performance, transition economies.

# Corporate Governance, Risk Management, and Bank Performance in Kazakhstan

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## **Abstract**

Recently financial crisis has raised several questions with respect to the corporate governance of banking system in Kazakhstan. Reason for the failure was not only in the global financial crisis, but also was due to the local crisis of corporate governance expressed by owners' numerous conflicts of interest. According to ownership structure, many owners were also as a top managers and made decisions contrary to the interests of the banks and minority shareholders and creditors. This peculiarity in Kazakhstan decreased the reputation of privately owned Kazakh banks and businesses among the top ranking companies and international capital markets. With the decreasing price of oil the Kazakh economy faces serious challenges. It's clear that Kazakhstan requires significant external investment and financing and considerable improvement in business management efficiency in all sectors of economy, and in banking sector particularly.

The purpose of this paper to analyze whether risk management-related corporate governance mechanisms, such as ownership structure, independence of directors in a bank's executive board, Z-scores and amount of NPL, are associated with a better bank performance during the delayed to the present time financial crisis. Bank's market value and performance were measured by Tobin's Q, ROA and ROE. The banking risks were measured by variables as NPL/L, percentage of non-performing loans in total loans, which is the proxy of loan portfolio risk and Z-score, which captures the probability of default, and compares a bank's buffers (capitalization and returns) with the volatility of those returns. The sample of 35 listed and included in a market index of Bloomberg banks in Kazakhstan for 2008-2013 years is a homogeneous set of banks dedicated to the provision of a set of financial services consisting of retail banking, loans, and money transmissions. Thus, we not only avoid confounding effects that would amplify the sample variance and most probably hinder the efficiency of the regression coefficient estimates but also contribute to a more focused analysis of the influence of MO on the market value, performance, and risk of listed banks and included in a market index of Bloomberg.

Analysis from the banking sector shows a negative relationship between managerial ownership and both market value (Tobin's Q) and performance (ROA and ROE). Moreover, there are statistically significant relationship between bank performance and stock market capitalization and there is statistically significant negative relationship between Tobin's Q and net interest income to total operating income as a proxy for income diversity. The findings also

show higher risk-taking behavior (capital market indicators as risk measure, Z-score and the percentage of non-performing loans in total loans as NPL/L). There is a positive relation between MO and Z - scores, and negative relationship between MO and NPL. Moreover, there are significant relationship between banking risk and development of the financial markets which is proxy by private credit and stock market capitalization, both scaled by GDP of country, and there is statistically significant negative relationship between debt intensity and risk.

**Keywords:** Corporate governance; Risk governance; Bank performance

## **The Effect of Corporate Governance on Sustainability Reporting**

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### **Abstract**

The purpose of this study is to investigate the relationship between corporate governance mechanisms and sustainability reporting. In particular, we examine the impact of board characteristics on sustainability disclosure which includes economic, environmental and social performance indicators. The final sample consists of data from top 30 companies which operate in Kazakhstan for the period 2010-2013. Financial data were obtained from annual reports whereas data on sustainability disclosure were hand collected from sustainability reports available on the companies' websites. Our findings show that board size and the presence of board committees are positively associated with sustainability reporting and its components. The empirical results also indicate that board characteristics such as board independence and board gender have no impact on sustainability reporting. This study is considered the first of its kind conducted on Kazakhstan. To the best of our knowledge, no such studies have been conducted to investigate the effect of board characteristics on sustainability reporting in the context of Kazakhstan.

**Keywords:** Corporate governance, board characteristics, sustainability reporting, Kazakhstan

# **The influence of corporate governance decisions on innovation management practices: the case of large Kazakhstan Company**

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## **Abstract**

Globally, large corporations play the leading role in the R&D effort spreading the innovation impulse to SMEs. The corporate governance decisions greatly influence the R&D investment and the overall innovation effort of the company. This paper is a case study of one of the large corporations operating in Kazakhstan. The purpose of the paper is to study the company's corporate governance decisions influence on innovation activities of the firm. This study discovers the dual role of the State as a major shareholder of the corporation and identifies possible solutions to the challenges associated with that role.

***Key words:** management, corporate governance, innovation management*

## **1. Introduction**

Nelson (1993) argues that industrial research laboratories rather than university laboratories or government facilities are the key institutional actors of the technical advance in the modern world. First, companies work on the detailed information about the strengths and weaknesses of the new technology from the users (firms' customers and suppliers). Second, the integration of activities of R&D, manufacturing, marketing, etc. is required in order to successfully commercialize innovations.

The corporate governance decisions influence the manner in which the company's resources are allocated and exploited (including R&D spending). The ability of the firm to innovate defines its ability to be competitive at the global market and is assessed through the extent to which organizations' skills, processes, culture, and the context support the innovation activities (Chen & Muller, 2010).

This paper aims to study one of the large Kazakhstan Company's corporate governance decisions and influence of those decisions on innovation management practice. The focus of the paper is to identify the corporate governance role in the innovation effort of the firm.

The company may be involved both in incremental and radical innovation efforts. The incremental innovations involve sustained incremental change and have less dramatic impact than radical innovations (Srinivasan, Lilien & Rangaswamy, 2002; Tidd & Bessant, 2009). Rothwell and Gardiner (1985) state that "...Innovation does not necessarily imply the commercialization of only a major advance in the technological state of the art (a radical innovation) but it includes also the utilization of even small-scale changes in technological know-how (an improvement or incremental innovation)". The step-by-step changes practiced on continuous basis can cumulatively have greater impact over time than those coming from occasional radical innovations (Hollander, 1965). Moreover, the scope of the innovation may be identified as follows: new to the world, new to the region, new to the firm, product line extension, product improvements, and product repositioning (Ahmed and Shepherd, 2010).

This study is based on the primary and secondary data sources including semi-structured interviews conducted with members of the Board of directors, several top management and middle-level management representatives. In additions, the authors have studied some publicly available internal documentation of the company.

## **2. Analysis and findings**

Since the separation of management and ownership makes corporate governance an important issue, one may consider management as locked in their decision to spend the company's resources. Taking into account that resource allocation depends on the interests of those who control the firm (versus interests of those who supply the firm with external finance); the ultimate responsibility of the board of directors is to make business-wise decisions to supply external financing. However, the R&D or any innovation investment is not the primary focus of many corporations due to the survival matter.

The corporation under the study has enjoyed the "special status" in the country for the past decade and was protected on behalf of the State for several reasons (including global competition in the industry). However, the State in the capacity of the shareholder has affected (declined) innovative efforts of the management. For example, it has disapproved investment in IT integrated system for client services. Although any shareholder is interested in the innovative efforts of the company, especially in the commercially fruitful projects, the role of the State is to accommodate for greater community interests (including economic development of the region and high employment rates).

## **3. Conclusion and recommendations**

R&D in large corporations plays a leading role in the economic development of entire regions. Shareholders should be interested in the innovative effort of the corporations. However, the State, being the owner of large corporations in Kazakhstan may not always behave as a private investor and may create restrictions for innovative investments and efforts.

There are some ways to overcome the confusing role of the State. First, to reduce the ownership share of the State (privatization), second, provide tax incentives for investments for innovation efforts (outside of Tax free zones), and third, to introduce R&D regulation for large corporations at the status of law.

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## THE CHALLENGIES OF TECHNOLOGY TRANSFER IN KAZAKHSTAN: THE CASE OF “ABC” ENERGY COMPANY

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## Abstract

Technology transfer is a popular practice among less technologically advanced countries that aim to grow their innovation potential. The intensified global competition has urged many nations to find new ways to strengthen their competitive positions to ensure sustainable growth. For the past two decades since the Republic of Kazakhstan got its independence, it was economically and financially relied on the extraction of its raw materials. However, the economic power of the geographic regions, nations, and organizations is built by the continuous development of its intellectual, technical, and scientific talent realized through their innovation efforts. Indeed, innovations are considered as a key driving element of the economic policy by many countries. Possibility of the country to be on an edge of technological innovations defines the competitiveness of its economy in the world. One way to significantly contribute to the economic and innovation development is to transfer technologies as this process involves provision of equipment as well as knowledge, expertise and mechanisms to operate. This paper aims to study the experience of technology transfer of Kazakhstan Company operating in the energy sector. The in-depth interviews with managers involved in the technology transfer project have revealed major challenges involved in each phase of the project. This paper highlights the challenges faced by the Kazakhstan energy company involved in the technology transfer project and develops recommendations to overcome those challenges.

**Key words:** management, innovation management, and technology transfer

## Employee Duty Orientation in Kazakhstan: A Multi-Level Analysis

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## Abstract

**Purpose** – The objective of this paper is to assess the level of duty orientation of employees in Kazakhstan and the influence of employee personality traits, manager leadership styles and organizational culture on employee duty orientation. **Methodology** – A quantitative approach for data collection process was followed. A questionnaire with Likert-type scale was

distributed among employees working in international and local organizations in Kazakhstan. To analyze 284 usable questionnaires that were returned back, correlation and regression analyses were performed using SPSS package.

Findings – Research results suggest that employees in Kazakhstan have relatively high level of duty orientation. Personality traits, leadership styles and organizational culture influence on duty orientation. Among personality traits, conscientiousness has the most significant positive influence on duty orientation, honesty-humility has the least significant positive influence on duty orientation and emotionality has significant negative influence on duty orientation. Among leadership styles, autocratic leadership has the most significant positive influence on duty orientation. Among types of organizational culture, adhocracy culture has the most significant positive influence on duty orientation.

Theoretical implication – The article contributes to the current body of knowledge by exploring the antecedents of duty orientation in collectivistic country with transition economy.

Practical implication – The article advises managers working in Kazakhstan on how to nurture the level of duty orientation in their employees.

#### **Adoption of Electronic Health in Developing Countries: Kazakhstani case**

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#### **Abstract**

Problems of paper-based records are influencing a transition across the globe towards Electronic Health Records (EHRs) and in general electronic health (eHealth). However, despite the well documented benefits of eHealth, adoption particularly in developing countries remains a great challenge. Modern information and communication technologies occupy a central position in the world in health security, medical services and the transformation of healthcare systems. Information systems of electronic health allow monitoring of patients at a significant distance, distribution of information among patients and improved accessibility to healthcare for disabled and elderly people, especially in remote areas. During the last 10 years, Kazakhstan has been introducing and developing e-government, the main goal of which is to create a country in which the interaction between the people and the state is simple, clear and approachable.

This study evaluates the most current literature to establish the extent to which electronic health has been adopted in developing countries. The study has shown various determinants of electronic health adoption which will help countries particularly the developing ones come up with necessary interventions to accelerate the adoption.

**Keywords:** electronic health, eHealth, ICT adoption, developing country, Kazakhstan

## **Life Cycles of Kazakhstan Light Industry's Enterprises: When to Enter the World Market?**

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### **Abstract**

This article studies what phases of development Kazakhstani companies go through in their organizational life cycles and at which one they could be ready to integrate into the world competition. Kazakhstan for many years was one of the main resource-driven economies, but today the country tries to benefit from the economic situation by moving away from being a resource supplier to the world, and pays a lot of attention to manufacturing sectors. One of them is so called "light industry". In the conditions of WTO and EAEU activities the industry needs to think about how it will develop in the future within cooperation with EAEU countries. Its integration processes could develop as horizontally as vertically. The priority can be given to horizontal integration as this would help the industry to stimulate local enterprises to firstly saturate local markets. Increased local content should be the highest priority for Kazakhstani small light industry companies. These companies as many other organizations grow and decline through series of changes that constitute their lives. Better understanding specificities of the organization life cycle's stages will help these companies accomplish their first mission to grow and compete the world producers.

**Keywords:** *light industry, organization life cycle (OLC), change, growth, integration*

### **1. Introduction**

The world markets warn that decline in economic activity could call a recession. Trying to quit the role of an economy which is mainly based on oil and gas processing Kazakhstan launches programs on developing other sectors of the economy, not only those that are involved in resource extraction. This is done to some extent to obtain economic sovereignty. In order to create a basis for this sovereignty and secure economic stability during the hard time, the country needs to participate in the integration processes.

Integration processes have to be viewed as opportunities for a country or a company to participate in the economic policies on the national and international levels. It is a great

opportunity to transfer from internalization of economic relations to the higher level of interactions with other world economies. [1]

In the new economic realities when imported products become too expensive, there is a potential for developing new local businesses as they can enter the market and saturate it by home-produced products. Textile and clothes – products of the light industry – historically were produced in Kazakhstan. Now the situation can be a re-starting point for the industry to say its word in the new economic direction of the country.

There are several theories of organization development and the life cycle. They are developed for better understanding managerial problems with the business existence that appear at different phases through which a company goes during its life. One of the signs for any company's ability to participate in cooperative activity on either national or international levels is its own comprehension of the place it might occupy in the market. Thus, any integration can be seen as a feature of the well-established managerial processes in the company not depending on the phase on which it performs in the market. OLC methodologies are used by successful companies for profitable growth, and what might help the Kazakhstan light industry companies to be more productive and successful will be considered further in the paper.

## **2. Light industry: features and development in Kazakhstan**

### **2.1 Research methods**

The current paper has been written on the basis of the existing data type of research which is done on the available data to find some opportunities for the researcher to reveal in the data any potential for the light industry companies to grow and develop through their life cycles. The growth can be assumed a basis for being integrated to either wider activity in the field or even international markets. Thus, integration here is considered as a kind of benchmark of a company's success in the market. For the further research the paper is setting the hypotheses that need to be answered by the results of the survey.

### **2.2 Industry definition and analysis**

Light industry is a “manufacturing activity that uses moderate amounts of partially processed materials to produce items of relatively high value per unit weight”. [2]

The light industry in Kazakhstan is a little bit different in its content than in other countries though in general it is almost the same. It is the industry that combines many activities but those that are more related to textile, sewing, footwear production as well as fur developing and leather tanning. It takes one of the important places in the gross national product and plays a significant role in the economy because it performs both activities – primary processing of raw materials and production of finished products. Besides, it also produces goods for industrial and special purpose. Last but not least the industry is considered as more social as it is more labor intensive and, consequently it is less capital intensive comparing to “heavy” industries.

The industry's faster return on investment and technological features allow for a quick change of the range of products at the lowest cost, which provides high mobility of production. In general, this industry is more consumer directed as the number of products is high, and it requires only a small amount of raw materials, less area and power and the value of its goods is

low and they are easy to transport. Typically the light industry causes little pollution, but some light industry's production can cause significant pollution or risk of soil contamination.

The share of the industry constituted 15.8% of the total volume of industrial production in 1990 and in 2000 it declined to 2.3%. Currently the light industry combines several branches among those the main are textile (49%), sewing (42%) and footwear production (9%). In the same year the share of the light industry in production volume of the economy constituted 0.34% comparing to its 0.2% in 2008. [3]

The share of the light industry in the structure of processing industries was 1.11% in 2014 (2008 – 0.82%). In 2015 it was reported that the volume index of the industry in the previous year was 103.4% (as planned of 101.2%), including volume index of textile products – 101.4%, clothes – 105.6%, and leather production – 108.6%. [4]

Industry	Year				
	2010	2011	2012	2013	2014
Mining and quarrying	107.2	101.0	100.4	103.3	99.7
Manufacturing	113.9	107.7	101.2	101.9	101.1
Electricity, gas steam and condition supply	104.9	108.6	103.5	100.5	102.6
Water supply; sewage, waste management and remediation activities	109.0	102.4	95.7	88.6	95.3

Table 1. Volume indices of industrial production by types of economic activity, as percent of the previous year

It is needed to mention, that the light industry shows relatively stable situation with the volume indices of its output comparing to the other industries. This is a good sign for the industry to be integrated into the international activities. The table 1 shows the volume indices of industrial production by types of economic activity, as percent of the previous year. [5]

### 2.3 Potential for integration

In 2014 year summed volume of the industry's import by only three mentioned categories of products put away more than 900 mln US dollars. The biggest increase in clothes imports comparing to 2010 showed Bangladesh (10 times) and Kyrgyzstan (80 times). The other three main importers – China, Russia and Turkey – just remained their import shares proportionally. [6]

Foreign trade between Kazakhstan and other CIS countries has not developed with the stable rate. The stability was hindered by both economic crises of 2008-2010 and recent political conditions. For example, Ukraine exported to Kazakhstan goods and services for more than 2.9 bln US dollars during the most active year in the foreign trade between the two countries – 2012, and in its own turn Kazakhstan exported to Ukraine for much lesser amount – 2.3 bln US dollars. For long time Ukraine was one of the countries to Kazakhstan to have a negative trade balance and stood in one row with only a few other states – Russia, Japan, Germany, Vietnam, and Belorussia. In 2014 the situation changed and Kazakhstani export to Ukraine was 30 per cent

higher than its import in average. In 2015 the volume of foreign trade turnover between Kazakhstan and Ukraine declined, as for ten months (January-October, 2015) it gained only 1.6 bln US dollars. [7]

The volume of foreign trade turnover between Kazakhstan and Ukraine is decreasing with the greater rate than it happens between Russia and Ukraine. This is mostly because of economic reasons. Part of the export from that country including some machines and other equipment for the light industry is imported in fewer quantities because of the partial shutdown of plants and due to appearance of Chinese counterparts. This situation is also happening due to the start of work of the EAEU and the emergence of Russian and Belarusian products in the Kazakhstan market. [8]

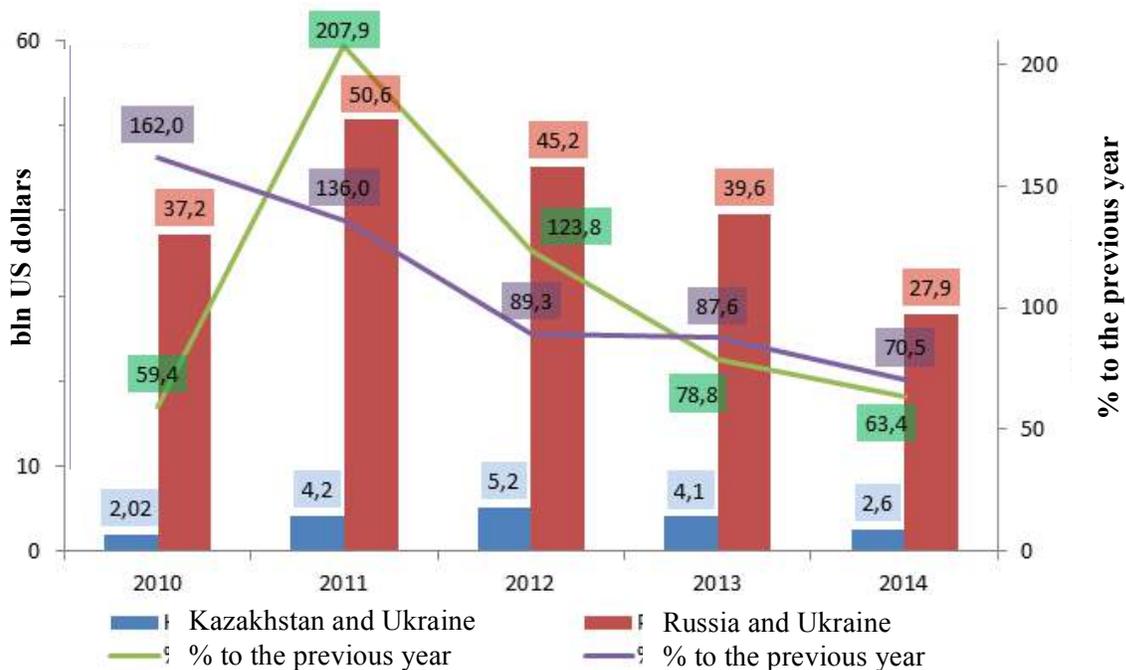


Figure 1. Dynamics of foreign trade turnover between Kazakhstan, Russia and Ukraine

Out of 756 acting enterprises in 2014 more than 90% (681) were small companies and only 57 and 18 medium and large businesses respectively. [4] For the Kazakhstan light industry's population because of biggest number of small enterprises, to be more productive and efficient a specific type of integration could serve better. This is horizontal integration where the companies could create small clusters to increase their productive capacities. By establishing these clusters companies may achieve some synergy.

Integration of the local light industry into international markets might also happen thanks to the Eurasian Economic Union. It can be successful if the EAEU countries would allocate their potentials in accordance with their specific features. With the EAEU member countries Kazakhstan light industry's producers can also create clusters. Horizontally they can integrate with their foreign counterparts by securing a special share in the Union's market. There is also

space for vertical integration if these companies could either be customers or suppliers to their foreign partners.

Integration is seemingly breaking barriers between the participating bodies. Locally 110 light industry's companies have been gathered under the protection and guidance of the Light Industry Enterprises' Association that was established in 1999 as an initiative of industry's enterprises with the goal to be a liaison between the companies themselves and the government. [9] Companies may integrate at any age of their existence. As it is assumed there should be differentiation in integrating possibilities: small companies may be involved in completing orders from other larger companies; medium enterprises can take part in integrational projects; and large businesses can participate in integrational processes by placing their orders to the markets.

### **3. Organizational life cycles of enterprises in the light industry**

There are several theories of organization life cycles in management studies. Some of them are very practical methodologies and are used by successful companies for profitable growth. In general there are a few directions organization life cycle studies, such as the population ecology of organizations (John Freeman, 1977) [10], the industry life cycle (Michael Porter, 1979) [11], the product life cycle (Theodore Levitt, 1965) [12] and many others.

In accordance with the topic of the PhD research the appropriate theories for studying companies of the Kazakhstan light industry are seen ones that were developed by Larry Greiner (1972), Ichak Adizes (1979), and Eric Flamholtz (1986).

The first theory mostly considers crises related to transition from stage to stage when life of the organization develops with the time. During its development any organization goes through different stages and has to overcome several crises the nature of which depends on the age and, consequently, on the atmosphere in the organization – if it is developed or not. Each stage itself is considered a cycle and each related crisis, if it would have been conquered, gives the new impetus for further growth. All sources of the crises are inside the company and the company should find the way how to outfight them effectively and efficiently (Greiner, 1972). [13]

Ichak Adizes combines in his studies of organizations several aspects of organizational development such as organization flexibility, amount of control, leadership and the owner's role in the company. The theory treats the organization as a living organism (Adizes, 1979) that grows and declines and has a set of predictable behaviors during each period out of the ten development phases that define the growth of the company (Courtship, Infancy, Go-Go, Adolescence, and Prime) and its decline (The Fall, Aristocracy, Recrimination, Bureaucracy, and Death). [14]

Eric Flamholtz studies the changes in the organizational life cycle through “organizational infrastructure” that comprises six key tasks organization should perform in order to succeed in the market. These tasks are related to markets, products, resources, operational systems, management systems, and corporate culture which Flamholtz combined into the Pyramid of Organizational Development (Flamholtz, 1986). The author develops his own understanding of the organizational changes through the series of “growing pains”. [15] In his 5<sup>th</sup> edition of the book devoted to organizational success, Flamholtz further develops his approach

to quantitatively assess each of the six strategic organizational building blocks. [16] With this tool the company’s management can identify and describe its strengths and limitations or “opportunities to improve”.

The survey is called on to help in developing standards for strategic development scores. According to Flamholtz, the higher the score the higher the company’s ability to succeed in the long run. The strategic development scores for different levels of success range from weak companies to global leaders and the use of the survey can help in defining companies that fall into each level of strategic development. The following table (Table 2) combines some material from the book and shows the thinking patterns of the author. As it was concluded by the author, most of the studied companies (about 76%) fell into the score range of 3.0 to 3.9 and one fifth of the total number had scores less than 3.0. [16]

Level	Success	Required overall strategic development score	Examples	Mean score	Percent of companies with mean scores
I	Global leader	4.50+	Starbucks, Microsoft, IBM, Caterpillar	4.5-5.0	Less than 1%
II	Superior	4.00+	Amgen, Nike, Wal-Mart	4.0-4.4	3%
III	Sustainably successful	3.50+	Movenpick, Komatsu, Li Ning	3.5-3.9	26%
IV	Marginally successful	3.00+	Nokia, Ford, Sony	3.0-3.4	50%
V	At risk/ Unsuccessful	<3.00	Sears, Radio Shack, Kmart	<3.0	20%

Table 2. Strategic development scores required for different levels of success

It seems appropriate to adapt that assessment technique to the local light industry to reveal when companies become leaders and at which stage of their life cycle this might happen. As the potential for integration can be measured by success it is assumed that this survey of Kazakhstan light industry’s companies may help to reveal which crises or pains the companies have during their life cycles and develop some recommendations how they can overcome these.

Thereby, the following hypothesis can serve as basis for further research of the light industry companies’ life cycles:

1. A company changes the structure and strategy going from one stage of development to another in its life cycle due to changes in the indicators of efficiency and effectiveness.
2. There is a relationship between the age of a company and its success (number of the company’s products) in the long-run

#### 4. Conclusions

Integration was first used by industrial organizations through agreements and cooperation to increase their productivity. In the new direction of the Kazakhstan economy one should not underestimate the role of the light industry in the economy development as it is more socially significant. The industry can better perform in the market only if it would have strong and sustainable companies. As it was reported, most of the companies in that industry are small enterprises and they can participate in the integrational processes by creating clusters. Industrial clusters start from the gradual expansion in the geographical closeness of companies involved. Then clusters may expand geographically if their technology and productivity improve.

Organizations grow and decline through series of changes that constitute their lives. Knowing the patterns of organizational life cycles and difficulties as “pains” or “crises” they would meet during the changes they could overcome them if they understand specific features of their life cycles. As Ichak Adizes pointed out, organizations should admit that they always have problems, and these problems can be normal, depending at which stage they are occurring. Companies may integrate at any age of their existence. This would depend only on companies’ capability to do particular work. And the purpose of the further research is to study which companies can do which work. This would give the knowledge of the industry composition and define “leaders” and companies that are “at risk”.

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### **Retail Hypermarket Format in Kazakhstan**

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### **Abstract**

The major objective of the research was to clarify if the Hypermarket format of such retail players as Carrefour will be interesting for Kazakhstani customer or not. Research raised up also the questions of future success of Carrefour business in Kazakhstan with their concept and store formats. This study also answered on the questions what is important for Kazakhstani customers in retail shopping, which factors are really matter for them. What influences on customer behavior in retail and what retailers should do in order to be successful on Kazakhstani market. The research was conducted in three major steps – collecting qualitative and quantitative

data, analyzing the results and findings, and making conclusion and recommendations. The research proved that retail Hypermarket format will be interesting for Kazakhstani customers and Carrefour has all chances to become a very big player on the market. However, the measure of this success will totally depend on proper implementation of Carrefour's concept. The major factors that really matter for Kazakhstani customer in retail shopping must be implemented for success business story of Carrefour.

**Keywords:** *retail factors, store format, hypermarket, FMCG*

## **1. Introduction**

World largest retailers – Walmart, Carrefour and Tesco are world leaders in retail business. Day by day they do not stop surprise the world and business, generating more and more revenue and entering new and new markets, which respond positively to newcomers. Whole world is getting conquered by huge retail professional players, more and more people all over the world start to spend huge money in good professional outlets and give it to retailers for services they have never seen, enormous cash flows start to redistributing on the new markets in pockets of retail newcomers. How do these professional retailers able to do like this? How do they do it? How do they make customers like them? How do they make people spend more than customer need? And why do people like it? What is the key of this success? Hypermarket – is just parameter which describe the size of the store or something else? Indeed, the majority of retailers focusing their business in this format, which is concept and core of the retail business, the concept which all customers like so much. This concept, which assume everything for you under one roof or “All under one roof” concept: FMCG goods, textile, household goods and electronics by lowest price in one place. The concept, which became a benchmark of retailing, which make everybody be enjoyed in shopping and plenty of advantages which make customers fall in love with this shopping process. Spreading around the world hypermarkets become more and more popular, worldwide customers indeed like them and the concept, Retailers keep going invest big money in expanding to conquer the new markets, one by one the get countries successfully, however, with the growing number of success there is appearing first fails. French retailer Auchan has a great success in Russia's market, however French Carrefour has attempted to enter Russia's market as well and failed. Metro Cash&Carry entered a Kazakhstani Market and failed as well, Russian retailer «Пятёрочка» and “Gross” failed also. Why? Is Kazakhstan special Market? Carrefour came on Kazakhstani market 3 years ago and everybody is still waiting for new store opening in Almaty, it will be first real Hypermarket format for Kazakhstani customer, for whole Kazakhstan, new benchmark in Kazakhstan retail. Many people will visit the first store to evaluate the new concept Carrefour has brought, namely hypermarket concept that will be tested by our strict customer and the most important question should be replied – will Hypermarket concept succeed in Kazakhstan. Will Kazakhstani customers like it?

## **2. MAF Hypermarkets in KAZAKHSTAN**

MAF Carrefour entered Kazakhstani market in 2012 with Head Office only, for now total employee in Kazakhstan MAF Carrefour is more than 70 employees. First store will be opened in the beginning of 2016 year in Almaty, near to Armada furniture center. Total area 12 000sq meters, where 8000sq meters is sales area. 35 000 SKUs will be on the shelves of huge Hypermarket. MAF Carrefour will have huge free parking on 1000 car places. The concept of Hypermarket is unique for Kazakhstan. Hypermarket format or “All under one roof” is the format of multi-hours shopping experience. Format is when the customer can find first necessity things in one place with one trolley, buying everything by “Lowest on the market” prices. In such format of Hypermarkets the store is divided by 2 main departments – food with 45% of layout, and rest 55% is for non-food. Food department is category of goods with expiration dates, while non-food is Textile, Electronics, Heavy House Hold and Light House Hold. Carrefour is the first price store, it means lowest on the market. It means that Carrefour will have to be competitive with specialized players on whole market, e.g. in electronics – main competitors will be “Planeta Electroniki” or “TehnoDom” not in terms of prices only, and in terms of service, goods delivery, postservice etc. If it is textile – it would be Almaty ADEM, FMCG – Magnum etc. Thus, customers when planning own shopping e.g. in the end of the week, will not have to go several places to shop in full, and they can go in one place and buy everything they need under one roof by lowest prices. No other players have same concept in Kazakhstan retail.

### **2.1 Problem Definition & Hypothesizes Statements**

Obviously, as previous studies observed and learnt it becomes difficult enough to answer the question which format is the most suitable for Kazakhstani market due to incomprehensible situation with the Carrefour’s formats. From one side it’s became quite popular in many countries such as Iran, Pakistan, Georgia and many others. On the other hand Carrefour failed with other countries e.g. USA, India or Russian and in Europe sales of particular format is declining. One thing stays permanent, Carrefour is very successful player, taking number 2 place in the world retail business and they have to enter new markets and new countries. Franchise agreement works quite well with MAF, and the only thing can be wrong is the way how Carrefour conquer new external markets. Originally, new countries Carrefour open with the Hypermarket first, and then – supermarkets or convenience stores, spreading the brand awareness. Kazakhstan didn’t become an exception and new launch is almost ready – first Hypermarket in Kazakhstan will appear in January 2016. How Kazakhstani market will react? Will the Hypermarket concept be successful in Kazakhstan?

Investigation in this field is crucial for retailers in order to understand Kazakhstani customers. Retailers should understand customer first before investing. Even if decision taken the conducted research and its result will be able to help retailers to coordinate their actions, to be more flexible, to find new solutions and being more adapted, what crucial on external

markets. The results of research should help to act in right way and choose correct way of doing business. It is also useful for customers, if retailer understand the customers and gives what they need, want and demand – both parties win. Customers are satisfied and in the end it is increased average check, increased values in terms of taxes, because of expanded spending by consumers, good returns on investments for companies, so - good for whole Kazakhstani economy. This can be kind a tool which helps parties to find each other. Thus, for the reason to attempt to estimate the future success of new concept for Kazakhstan market this research will have to investigate 3 hypothesizes described below:

Hyp 1: Distinctive features in hypermarket concept as Electronics, Light-House Hold and Textile departments will be interesting for KZ customers.

Yes, it will be interesting.

No, KZ customer will not be interested in them.

Hyp 2: Prices, assortment, and location are major factors in retail for KZ customers.

Yes, they are.

No, it can be another bunch.

Hyp 3: Would hypermarket concept be interesting for KZ customer?

Yes, it will.

No, it wouldn't.

## **2.2 Methodology**

The methodologies which will help to disclose the topic are described below. There will be two methods of research: qualitative and quantitative ones. Qualitative research method helped to understand the nature of the problem, what is the base of the problem, what is the nature of research. This method directed and showed the spot where to dig in deep. It was conducted a 3 interviews with Top Managers, of MAF Carrefour in order to understand the reason and consequences of actions on the researched topic. Duration of each interview varied from 30 minutes to 1 hour, depends on the interviewed person. 30 minutes for Commercial Director of MAF Carrefour, 1 hour – Marketing Manager of MAF Carrefour and 45 minutes for Head of Heavy Household and Electronics department. The first and last persons are expatriates managers came from France and Iran respectively, where Hypermarkets exist. All of them were warned that interviews are recorded and in case of acceptance this – it has started. All interviewing person felt really comfortable during the process and responded freely to all questions were asked. From the interviews it was identified the distinctive features of Hypermarket concept, point of differences of the concept, point of differences of MAF group itself, factors which are critical to have in retail, what is core of its concept. Whole picture of problem was formulated. Then qualitative results were transferred into quantitative data, which was investigated with another research method – quantitative. It was measured the problem itself to provide numerical evidence. Survey was conducted with 90 questionnaires with direct

potential customers on Russian language. Sample of respondents was randomly selected. Questionnaire consisted of more than 30 questions and was divided by 3 parts. 1<sup>st</sup> part was dedicated for identifying the general information about customer, in order to provide behavioral description of sample, i.e. who and how will act and what is likes or dislikes they have. 2<sup>nd</sup> part was dedicated to identify customer's preferences while shopping in supermarkets. This part let answer on the Hypothesis #2 of the research mostly. It contained Likert-scale questions with 5 measurements from 1 to 5, where 5 is "Very Important" or "Very Interesting" and 3 is "Neutral", so 1 is respectively vice-versa. Likert scale will show the importance of each factor and allow describing consumer behavior. The 3<sup>rd</sup> part was open-ended questions where potential customers were asked about their personal opinions on the questions, were formulated from the qualitative results. This part mostly discloses the first Hypothesis and tangentially the major hypothesis about full concept success. Results of both first hypothesis let answer on the third hypothesis of the research. In the end of questionnaires it was provided the email and date for sample audience in order to get the results of the research.

### 3. Illustrations And Tables

#### 3.1 Corelation analysis.

Average check KZT	
Less than 5 000	6,7%
6000 - 10 000 KZT	31,1%
11 000 – 15 000 KZT	28,9%
16 000 – 20 000 KZT	13,3%
21 000 – 30 000 KZT	11,1%
31 000 - 39 000 KZT	6,7%
More than 40 000 KZT	2,2%

Table 1. Average check

Correlation			
		How often do you usually by CG for home?	How much an average do you usually spend per one visit in supermarket?
How often do you usually by CG for home?	Pearson Correlation	1	-,096
	Significance		,264
	N	90	90
How much an average do you usually spend per one visit in supermarket?	Pearson Correlation	-,096	1
	Significance	,264	
	N	90	90

Table 2. Correlation between frequencies of shopping and the volume of money spent

#### 3.2 Analysis of importance of different factors in retail shopping for Kazakhstani customers.

Factors	Significance
Product Quality\Freshness	100,0%
Stock Availability	95,6%
Free cashcounters, no queues	88,9%
Variety of assortment	84,4%
Big free parking	82,2%
Assortment interest	77,8%
Close location	75,6%
Merchandizing	75,6%
Staff service	73,3%
Supermarket Interior	71,1%
Low prices	68,9%
Big number of promos	60,0%
Low traffic\ load in store	60,0%

Table 3. Retail factors ranking

To what extent Textile department could be interesting for you in supermarkets?	
Not interesting at all	20,0%
Not interesting	2,2%
Neutral	37,8%
interesting	22,2%
To what extent Light house hold goods department could be interesting for you in supermarkets?	
Not interesting at all	,0%
Not interesting	,0%
Neutral	17,8%
interesting	33,3%
Very interesting	46,7%
To what extent Electronics department could be interesting for you in supermarkets?	
Not interesting at all	6,7%
Not interesting	8,9%
Neutral	31,1%
interesting	28,9%
Very interesting	24,4%

Table 4. Customers' interests towards Electronics

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## **Online Advertisement in Kazakhstan: Customers' Preferences and Factors That Influence Consumer Behavior**

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### **Abstract**

Nowadays the importance of digital communication with customers should not be undervalued. More and more time in everyday life is spent on the web, where people go searching for information, for news, for shopping and for social networking. Therefore, digital marketing is considered to be the most promising venue for reaching modern consumer (Okazaki et al., 2007). There have been numerous academic studies about digital marketing communications, however very little research can be found for Kazakhstani market, which has its own peculiarities. Different media agencies such as TNS and J'son & Partners study the Kazakhstani media market on a regular basis and provide their overview. However, there is a **research gap**, there was small amount of research found, which was focused on what types of

digital marketing strategies are more welcomed by Kazakhstani citizens and which ones influence their purchasing behavior. The **purpose** of this study is to examine how Kazakhstani citizens respond to online marketing communications. Particularly, the research will focus on online advertisements, and customer receptiveness of such ads. Three **research questions** will be answered:

1. What is the attitude of Kazakhstani customers towards online ads?
2. What types of online advertising are preferred by Kazakhstani customers?
3. Which features of online advertisement can attract customers?

## **1. Literature Review**

Internet advertisements represent the fastest growing marketing channel in Kazakhstan (VI Kazakhstan, 2015). According to ZenithOptimedia (2014), the share of the internet advertisement in marketing budgets of the Kazakhstani companies is the smallest one, compared with other media channels. While it has been continuously rising during last seven years, it constituted only 4,2% of the total advertisements market in 2014 (ZenithOptimedia, 2014). However, the growth rate of digital marketing budgets is impressive. According to VI Kazakhstan (2014) marketing agency, the dynamics of the growth of spending for Internet advertisements in 2014 relative to 2008 is 1678% in Kazakhstan (Valuation of VI Kazakhstan). The statistics, shown by the Ministry of National Economics of Kazakhstan (2014), demonstrates the high dynamics of growth of Internet users in Kazakhstan: in 2008 year, only 15% of population was using the Internet and this proportion has grown to 71% in 2015 year. The Internet has become an attractive channel to reach targeted audience, through contextual, banner, video, pop up, social media, email and other types of online ads. For effective communication different types of internet ads with various factors that attract customers' attention are used. For example, size (Chandon et al., 2003; Nihel, 2013), audio (Kim et al., 2010), design (Cho, 2003), color (Clifford, 2008), animation (Chandon et al., 2003) are considered as traditional factors that attract internet users. However, nowadays literature identifies additional specific factors that should be considered for internet advertisements, which include congruity, duration and perceived risk (Danaher&Mullarkey, 2003).

## **2. Hypothesis**

Based on the research questions of the research and updated after secondary data analysis, the following hypotheses were formulated.

H1. Kazakhstani customers prefer emails as an online advertisement.

H2. Kazakhstani consumers pay attention to the ads if there is congruity between the website and the content of the advertisement.

H3. If the content of the ads refers to financial benefit to the customer, it is more likely that the customer will notice it and follow the link.

H4. One of the reasons of avoidance of online ads in Kazakhstan is perceived risks of safety and privacy.

H5. People usually react positively to the advertisement on the social media and their purchasing decision refers to the advertisement in the internet.

### **3. Methodology**

The methodology of this research combines a survey and a review of existing academic literature. This study reviews the statistical information about Kazakhstani digital market, which demonstrates the level of development and the growth potential for online advertisements in Kazakhstan. The survey focuses on two largest age groups 15-24 and 25-44 ages, which are the most active internet users (TNS Kazakhstan, 2014). The study examines customers' attitude towards different types of online ads and evaluate the level of effectiveness of different factors in terms of attracting attention of online consumers. To increase representativeness of results which would reflect the target population precisely, the amount of the participants was calculated through a special online service – Sample Size Calculator. The survey will be conducted among 300 participants.

### **4. Results so far**

The research is still in process and there are no final results. However, based on the secondary data expected results could be projected. Kazakhstani customers are expected to have a different attitude towards online advertisement. According to Victor Yeliseyev (2016) the number of Kazakhstani citizens in the social media is rapidly increasing and the popularity of social media ads also grow. In terms of pop up and video ads, the overall attitude is projected to be negative, since this types of ads are usually perceived as irritating, while email ads is expected to be attractive for customers, because people have an opportunity to choose which ads they are willing to receive. The attitude towards contextual advertisement is expected to be positive, because consumers are receiving this type of ads when they are searching for advertised product. The most attractive factor of internet advertisement is estimated to be congruity between the context of website and the advertisement. All traditional factors of online advertisement are projected to be not attractive for customers because consumers are used to ignore the unnecessary ads ('banner blindness') or perceive it as irritating and distracting.

### **5. Conclusion**

The internet as a marketing media has attracted a lot of attention of both academic and market researchers. While the internet has been becoming more widespread and internet users were getting more experience in dealing with different types of internet ads, the factors that could make them more effective were changing. Using various approaches academics studied different factors of internet ads. Internet came to Kazakhstan and became widely used by citizens later than in developed countries. This can be the reason for very little academic research in this field performed in Kazakhstan. As the share of internet ads in Kazakhstan is constantly

increasing, the study of consumer attitudes towards online advertisements can be very useful for businesses. This research aims to study perception of consumers towards online ads.

The importance of this paper is that it provides a complex research of the market for digital marketing in Kazakhstan, as it studies the problem from both angles: from the viewpoint of senders and receivers of marketing messages. The work on the study is still in progress, however, the results will be analyzed and presented on the conference. The results of the study would be of a particular interest to Kazakhstani companies and marketing agencies, as it will give some insights to online behavior and customer perception of online marketing messages, show the growth potential of digital marketing and identify digital marketing strategies that can attract and engage consumers.

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**Parent-adolescent conflict and its linkage to family communication patterns in selecting a tertiary education institution in Kazakhstan.**

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**Abstract**

The purpose of this study is to investigate the impact of family communication patterns (FCPs) on adolescents' choice of conflict resolution strategies in selecting a tertiary education in Kazakhstan. The study is based on the literature on the family communication patterns and the conflict resolution strategies in family purchasing decisions. The hypothesized model for this study relates concept- and socio-oriented family communication patterns with four types of resolution strategies which are used by adolescents in selecting a tertiary education: bargaining, persuasion, conflict avoidance and problem-solving. A sample of 200 students was surveyed using a structured questionnaire. The confirmatory factor analysis and regression analysis have been used to analyze the data. The findings show that in families where parents have concept-oriented communication pattern, adolescents exhibit all four conflict resolution strategies, while in families with socio-oriented communication style of parents, children have conflict avoidance strategies. The impact of individual factors is discussed and recommendations are provided.

**Key words:** Family Communication Patterns (FCPs), parent-adolescent conflict

**The impact of individual, social, and economic factors on the student's choice of university in Kazakhstan.**

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## Abstract

The purpose of the study is to examine individual, social, and economic factors influencing the student choice of university in Kazakhstan. The study is based on economic and social models of student choice. Economic models consider cost-benefit analysis that takes into account aspects of costs related to education including real costs and opportunity costs. Sociological models of student choice include such aspects as personal background, family background, academic ability, school counseling, motivation and personal goals. A sample of 200 students was surveyed using a structured questionnaire that included twenty one motivational tools adapted from the literature. The exploratory factor analysis has been used to analyze the data. Five distinct motivational factors were derived. The study discusses the impact of the student's career, family, social, personal and academic factors on the student's choice of the university. The recommendations are provided.

**Key words:** models of student choice.

## Simulation Models with MS Excel modules and tools

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**Key words:** IT, “what-if” analysis, scenario, data tables, goal seek, solver, random numbers generator, histogram, Monte Carlo method.

## 1. Introduction.

We in KIMEP university have IT (information technology) courses offered to our students, in which we try to give students as many as possible computer software facilities to decide different business problems. In this article we'd like to set the examples of usage of MS Excel facilities in deciding different business problems, like simulating business cases in MS Excel spreadsheet.

Simulation is a flexible methodology useful for analyzing the behavior of a present or proposed business activity, new product, manufacturing line or plant expansion, and so on. By performing simulations and analyzing the results, we can gain an understanding of how a present system operates, and what would happen if we changed it, or we can estimate how a proposed new system would behave. Very often a simulation deals with uncertainty and it's important to make risk analysis.

Simulation is one of the most widely used quantitative methods, because it is flexible and can yield so many useful results. With simulation we can create a quantitative model, run simulations to better understand the potential impact of the uncertain variables, and, finally test a range of what-if choices.

A simulation model is a mathematical model that calculates the impact of uncertain inputs and decisions we make on outcomes that we care about, such as profit and loss, investment returns, environmental consequences, and the like. Such a model can be created by writing code in a programming language, statements in a simulation modeling language, or formulas in a Microsoft Excel spreadsheet. Regardless of how it is expressed, a simulation model will include:

- Model *inputs* that are uncertain numbers -- we'll call these uncertain variables
- Intermediate calculations as required
- Model *outputs* that depend on the inputs -- we'll call these uncertain functions

It's essential to realize that model *outputs* that depend on uncertain *inputs* are uncertain themselves -- hence we talk about uncertain variables and uncertain functions. When we perform a simulation with this model, we will test many different numeric values for the uncertain variables, and we'll obtain many different numeric values for the uncertain functions.

Microsoft Excel provides us with powerful tools and modules to build and analyze simulation model of any type of business activity. So, it's a very useful tool in academic process of business university like KIMEP. Excel simulation models and tools allow to simulate business process and make what-if analysis with smallest efforts. One of simulation methods available in MS Excel is Monte Carlo method which can be used to solve any problem having a probabilistic interpretation, that rely on repeated random sampling to obtain numerical results. In this article we've tried to set some example business cases

with possible inputs, outputs, and scenario for better decision making using MS Excel facilities.

## 2. Business case for simulation

Let's consider a case simulating marketing conditions for a new product:

A company decided to make a capital investment to a new product – C. Usually there is uncertainty associated with development of new product like manufacturing cost, potential volume of sales, selling price, etc. The project profitability can be investigated using simulation. The probabilities for each factor are given in the Table 1:

**Table 2.1 Probabilities of uncertain factors**

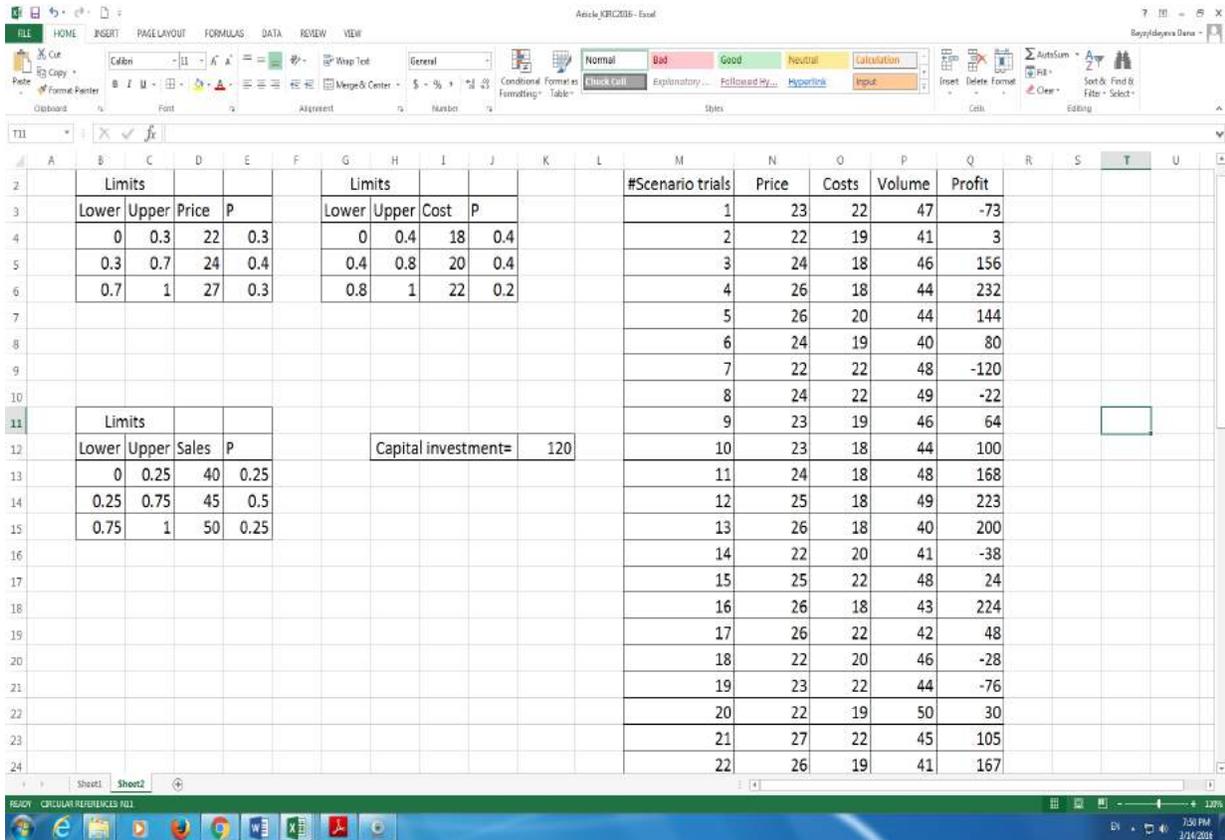
Selling price	Probability	Variable cost	Probability	Sales	Probability
22	0.3	18	0.4	40	0.25
24	0.4	20	0.4	45	0.5
27	0.3	22	0.2	50	0.25

Profit for a new product we'll calculate as follows:

$$\text{PROFIT} = (\text{PRICE} - \text{COST}) * \text{VOLUME} - \text{CAPITAL INVESTMENT}$$

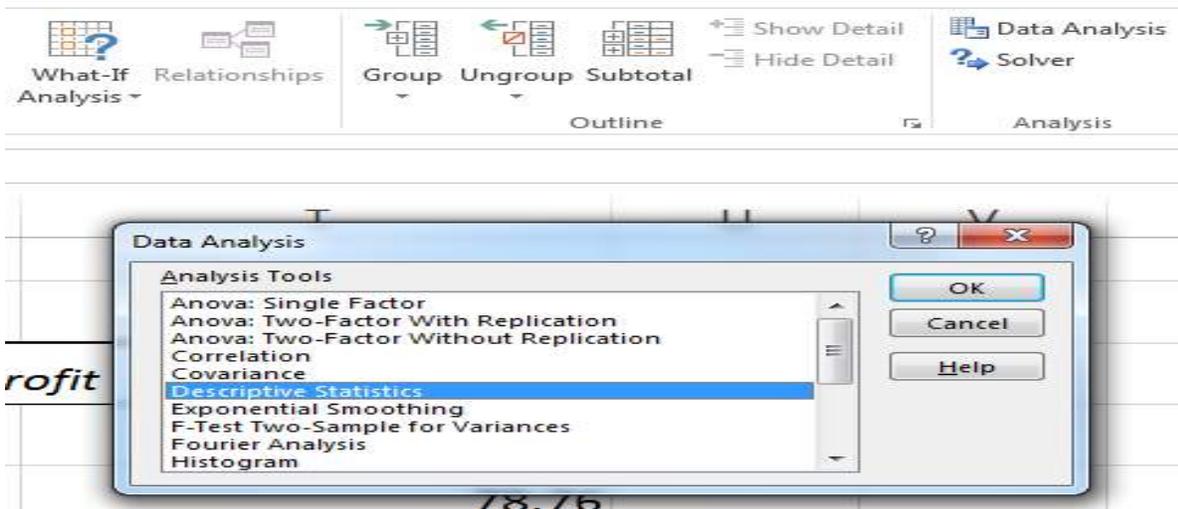
We can investigate the business case Profit calculations, trying hundreds, thousands and even more trials of different combinations of 3 variables: Price, Cost, Sales using Random numbers generations as in Figure 2.1:

**Figure 2.1 What-if scenario**



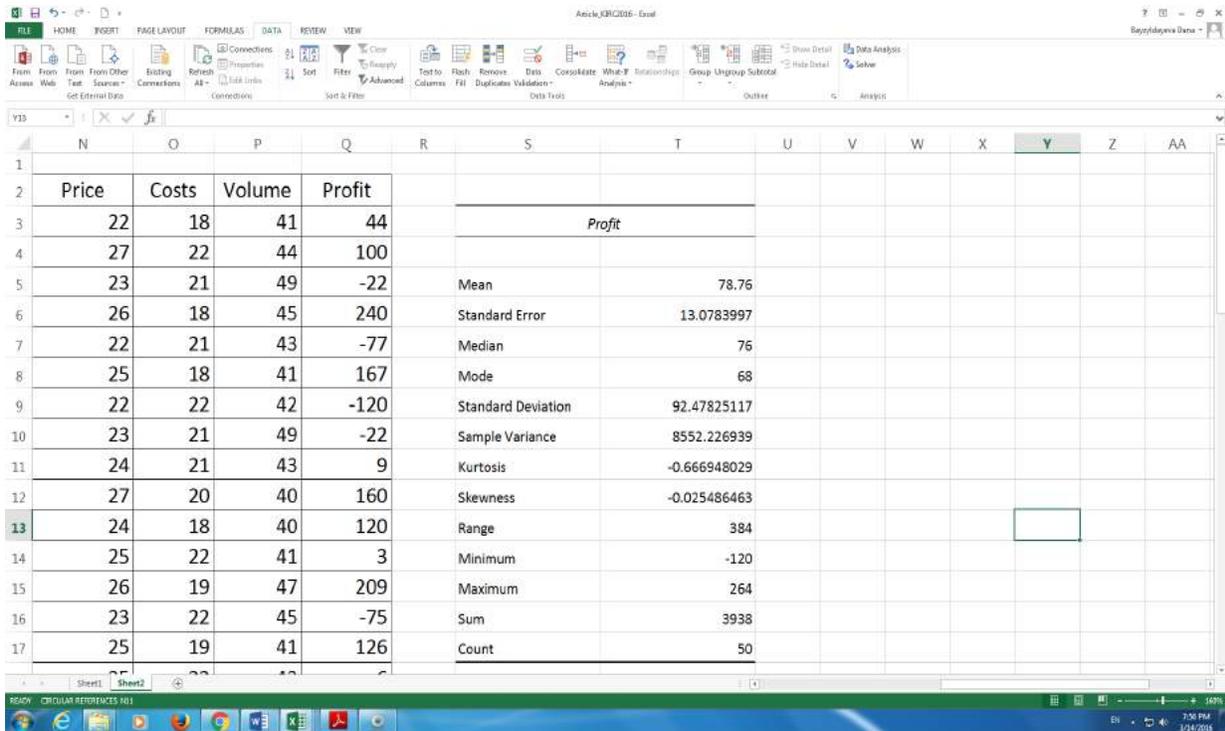
Using Excel Descriptive Statistics analysis as in Figure 2.2:

**Figure 2.2 Descriptive statistics analysis dialogue box**



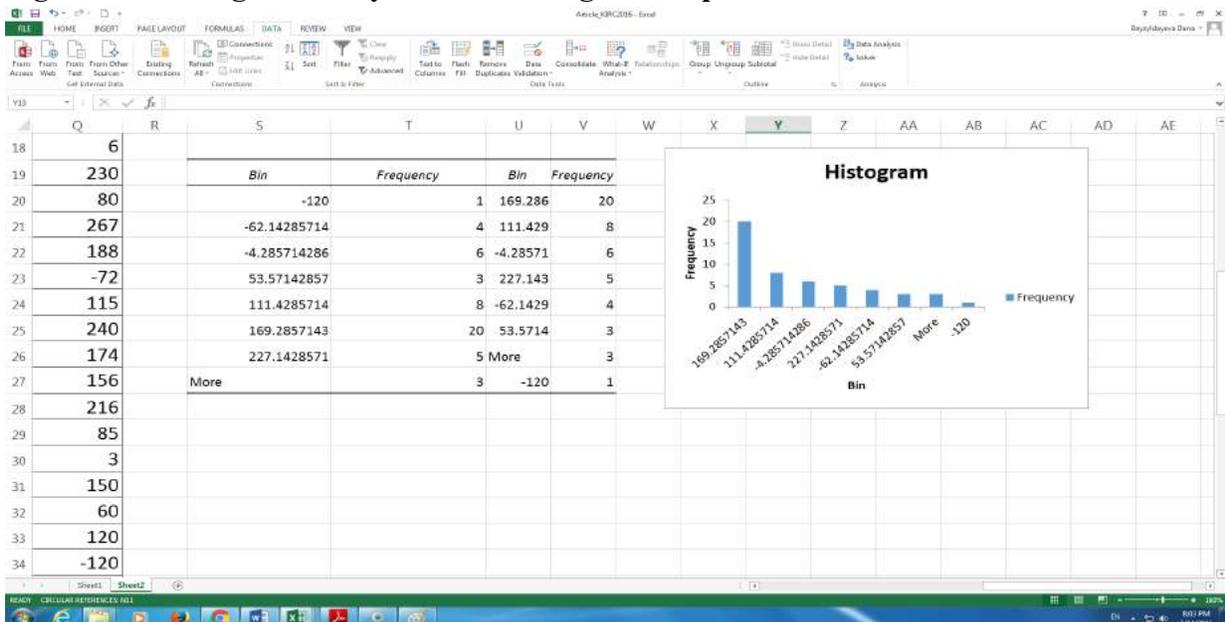
we can obtain the following statistical analysis of our simulation model as in Figure 2.3

**Figure 2.3 Descriptive statistics analysis table**



Charts reporting is convenient form of presentation, which can be obtained using Pareto histogram as in Figure 4.

**Figure 2.4 Histogram analysis: Pareto diagram of probable Profit outcomes**



So, using a Monte-Carlo simulation model we could simulate a business problem with the set of uncertain inputting data and with statistical analysis we could obtain possible outcomes for better decision making.

### **3. Summary:**

In many business cases it's very important to make what-if analysis for planning any types of new, modified projects, products, etc. Such analysis are available for trials in Excel to avoid any types of risks for businesses. Trying such simulation models and tools in education process will be very helpful for business university students in their future carriers.

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## **Governmental Auditing in Kazakhstan: Perspectives and Challenges**

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### **Abstract**

According to the “Strategy Kazakhstan-2050”, one of the seven long-term priorities of the Republic of Kazakhstan is the new course of economic policy – through pervasive economic pragmatism based on the principles of profitability, return on investments and competitiveness. Governmental control plays a significant role in execution of that long-term priority. Based on the experiences of well-developed countries, it became obvious that governmental auditing is a major branch of governmental control that ultimately brings country among most developed countries around the world. And as Kazakhstan wants to be a major player in a world arena, today Kazakhstan is in the middle of second stage (2015-2017) of introducing the governmental auditing. Report on the Law of the Republic of Kazakhstan “about governmental audit and financial control” states that international practice was studied in creating the law. The purpose of this paper is to introduce the experience of different countries (Germany, UK, Canada) that were chosen to be a base of creating the Law of the Republic of Kazakhstan “about governmental audit and financial control”, also the perspectives and challenges that Kazakhstan

might face. This would be done by carefully examining the economic condition of countries (Germany, UK, Canada) before they introduced governmental audit, as well as, conditions after.

**Keywords:** Auditing, Governmental Auditing, International Practice of Auditing

## **Improvement of the Quality of Audits in Banks and Other Financial Institutions in Kazakhstan**

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### **Abstract**

Nowadays, it is time of unstable economic situation in Kazakhstan and the whole world. Banks and other financial institutions play an important role there and audit in this sphere is very important, because all the related parties are interested in getting reliable information about its financial position and activities. Commercial banks activities affect property and social rights of a wide range of citizens, enterprises, organizations, firms; moreover, due to the credit relations between banks, stability of ones directly related to the stability of others. So, the state through its authorized bodies should provide effective surveillance and monitor the stability of each bank and the banking system as a whole. The purpose of this study is to identify possible ways on how to improve the quality of audit conducted in banks and other financial institutions in Kazakhstan taking into consideration current unstable situation in the world. In particular, the audit process of banks and other financial institutions will be investigated to define what the strengths and weaknesses it has and how to develop and improve them.

**Keywords:** *Audit, commercial banks activities, credit relations, stability, surveillance, banking system.*

### **1. Introduction**

The title of my research is “Improvement of the quality of audits of banks and other financial institutions in Kazakhstan” and I am interested in this theme, because it is very actual topic for today’s unstable situation in the world and particularly for Kazakhstan. The topic should be investigated with purpose to understand whether audit in banks and other financial institutions directly connected with instability of Kazakhstan’s economy and whether improvement of audit quality will change the situation in the country and ease life of population. As cited in Doogar, Rowe and Sivadasan (2015) “The collapse of number of financial institutions during the financial crisis of 2008–2009 occurred without any advance warning from the auditors and this has led some observers to question that the auditors failed to incorporate into their audit judgments and/or reports the likely implications of auditee exposure to well-known systemic risks”. However, the statement was argued by other observers who noted that “institutional arrangements of accounting and audit reporting rules constrain the auditors” ability

to issue public warnings, even though auditors did recognize and respond to the audit risk implications of deteriorating market conditions” (Doogar, Rowe and Sivadasan, 2015).

Thus, it can be seen that banks and other financial institutions play an important role worldwide and audit in this sphere is very important, because all the related parties are interested in getting reliable information about their financial position and activities. Commercial banks activities affect property and social rights of a wide range of citizens, enterprises, organizations, firms; moreover, due to the credit relations between banks, stability of one’s directly related to the stability of others. So, the state through its authorized bodies should provide effective surveillance and monitor the stability of each bank and the banking system as a whole. The research question is “How to improve quality of audit in banks and other financial institutions” and the aim of this study is to identify possible ways on how to improve the quality of audit conducted in banks and other financial institutions in the Kazakhstan taking into consideration current unstable situation in the world economy. Particularly, the audit process of banks and other financial institutions will be investigated to define what are the strengths and weaknesses it has, how to develop and improve them and examine possible outcomes.

## **2. Literature review and recommendations**

Despite the amount of research that has been conducted on theme “Audit in banks and other financial institutions” and “How to improve audit quality in banks and other financial institutions” the vast number of factors affecting audit quality particularly in Kazakhstan result in the inability to definitively label the greatest factor why things go not so good in Kazakhstani banks. However, the current literature review focuses on the ways how different countries succeed in improving quality of audit in their banks and financial institutions. Moreover, findings of other researchers are combined with recommendations on improvement of audit quality in Kazakhstani banks and other financial institutions.

The first possible solution on how to improve the quality of audit in banks and other financial institutions in Kazakhstan is to enhance power and authority of auditors, banking, financial and market regulators. Eddine (2015) in his article stated that auditors in Malaysia and many other countries worldwide are restricted by auditing standards and requirements, and by giving auditors permission to attend client company meetings, and offer auditors sufficient accessibility to the company accounting records and information, the audit quality in Malaysia has increased. Moreover, legal requirements are more satisfied now and attractive economical environment for international investors is provided. So, on the example of Malaysia it is seen that by enhancing authority of auditors, sufficient results have been reached and that is why, it is recommended to implement such a practice in Kazakhstan. What is more, in case of banks, it is suggested that annual obligatory audit oversight by audit committee of the Republic of Kazakhstan should be done in order to provide “consistent assessment of the processes adopted

by audit committees in their oversight of audit quality, including audit appointment processes” (Eddine, 2015).

The second line to attack the problem of audit quality in Kazakhstan is to enhance relevant financial reporting, disclosures and assurance for banks and other financial institutions. In other words, all the financial information regarding banks and financial institutions based on which audit is conducted should be in public availability in order to show the transparency of reports. It is recommended for the auditors to issue additional disclosures that will draw public’s attention to risks, associated with particular banks. In Serbia, there was conducted the research, where the public and users of audit reports were asked whether they aware about responsibilities of auditors or not. The results of report showed that “responsibilities of auditors are known to bank officials, but not to the public and the users of audit reports”, however it was also found that the last ones would be very interested if auditors would draw attention of public when they not only discover fraud while auditing banks, but also when financial condition and profitability of the banks is increasing. The interest of public may be explained by the fact that population just want to know in what banks their savings and deposits will be in safety and it is clear that rational person will not invest their money in a bank, stability of which is questioned. That is why, it is recommended to implement such a practice under which after discovering some warning signs regarding bank’s policies, inappropriateness of internal control, corporate governance and other matters that could affect going concern assumption, an auditor will immediately make the findings publicly available and for example, draw attention of mass media.

Another approach to improvement of audit quality in Kazakhstan is that auditors should be responsible for issuance of unqualified opinions where in reality the financial statements contain material misstatements. Under this solution it is also meant that professional liability of auditors should be strengthened and their behavior should be ethical. However, it needs not to forget about customer-client relationship, and that it is not advantageous for both an auditor and a bank or financial institution to be involved in litigations. So, it is recommended to implement increased dialogue between auditors and the risk committees of the financial institutions they audit. For example, external auditors should discuss with bank’s audit committee not only auditor’s judgments about the bank’s accounting principles or significant changes in accounting information systems and related controls, but also issue regarding key judgments, decisions, inspection result findings and so on.

### **3. Conclusion**

The present study was designed to determine how to improve quality of audit in banks and other financial institutions. The aim of the study was to get a better understanding how improvement of audit quality can influence on current unstable situation in the world and particularly on Kazakhstan. The following conclusions can be drawn from the investigation. First

of all, by improving audit quality in banks and other financial institutions, population will be sure about security of their savings and deposits. Secondly, by transparently disclosing the information regarding financial health of banks', it would be easy for the National Bank of Kazakhstan and other financial analysts and experts to predict any instability and prevent financial crisis. And finally, the economy of Kazakhstan will raise to a new level and become more development.

However, number of important limitations need also to be considered. Firstly, the research was time limited and therefore it was impossible to conduct interview with auditors who have sufficient knowledge about peculiarities of audit in banks and financial institutions. And secondly, since the research was conducted based only on previous publications of other researchers in other countries, the solutions on improving quality of audit in those countries may be not applicable for Kazakhstan. To sum up, it needs to be noted that although the current study was limited by time and reliable information of conducting audit in Kazakhstan, the findings suggest that by implementing the above discussed solutions, it would be possible to eliminate audit risk or reduce it to an acceptable level. To conclude, I can say that further investigation and experimentation into the issue is strongly recommended; however, this information can be used to develop targeted interventions aimed at finding solutions of improving audit quality of banks and financial institutions in Kazakhstan.

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## **Governmental audit in Kazakhstan.**

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### **Abstract**

The purpose of this study is to explore the government audit in Kazakhstan. Precisely, I have studied the structure of Kazakhstani state audit, its objectives and procedures. The concept of government audit was based on international practice of different countries. France's experience is a good example of legal regulation of the structure of internal and external state audit, because this country has a unitary presidential-parliamentary structure similar to Republic of Kazakhstan. Moreover, I explored the factors and needs of our country that lead to implementation of the government audit. The structure of the state audit that is described in this study is based on law of the Republic of Kazakhstan "On government audit and financial control" of 17<sup>th</sup> November 2015 whereas analysis and other considerations are based on data from official government websites. This study is considered the first of its kind conducted in Kazakhstan. I have explored a big number of different sources of information, and as a result, I have not found a study that has been conducted to investigate the nature of the state audit in Kazakhstan.

**Keywords:** Government audit, implementation, Kazakhstan, international practice.

### **Introduction :**

Governmental audit - is a kind of professional activities aimed to improve the national management of resources, the most important of which are the public finances, property, natural resources, intellectual capital. Governmental audit's main mission is not confined solely to check the financial statements of state. Its main goal is to ensure an independent objective of public control over the activity of authorities entrusted to them by public resources, on behalf of the state and society.

The area of professional activity of governmental auditors includes the provision of control and audit of financial and other resources at the disposal of the state and municipal authorities, organizations and institutions of various forms of ownership, the processes of formation and use of these resources. President of the Republic of Kazakhstan Nursultan Nazarbayev signed a decree approving the concept of the implementation of the governmental audit (Nazarbayev,2013).

## **Methodology:**

During the research study I used two types of research methods: practical and theoretical. First type includes observations and analysis that were made regarding the governmental audit. Theoretical method is based on observation of data.

In order to write a credible research, find out and provide information about implementation of the state audit, I have observed various methods to collect and present data. Mainly I used two types of data for this purpose: primary and secondary data.

1. This report was prepared through extensive use of primary data. These data were collected from the interviewed person who is directly involved into the government audit operation process. The following methods are used in collecting primary data. These are

a. Direct interviewing: I have collected data from Bekturova Arman Tursynovna, who is Director of the auditing department in the Ministry of Finance in the Republic of Kazakhstan with the protested and well-designed questions that helped me to understand the real situation in the governmental control system.

b. Observation method: I considered carefully Auditing department, precisely I observed activities of employees

2. Secondary data are sources that are published or processed materials. I have collected secondary data from the following sources:

a. Various types of official documents that an interviewed person provided

b. Information from official website of the government

c. Official Law and Concept on Governmental audit

## **The origin of the Governmental audit in Kazakhstan**

In accordance with the Decree of the President of the Republic of Kazakhstan dated December 18, 2012 № 449 "On measures to implement the President's Address to the people of Kazakhstan of December 14, 2012 «Strategy "Kazakhstan-2050": a new policy established state» decree:

1. To approve the Concept of implementation of the state audit in the Republic of Kazakhstan.

2. Control over the execution of this Decree to assign to Presidential Administration of the Republic of Kazakhstan.

3. This Decree comes into force from the date of signing.

## **International practice**

The concept of the Governmental audit was prepared basing on international practice. A good example is the experience of France - a country with a similar structure of a unitary presidential-parliamentary republic, and regulatory law.

In France, the main uniqueness is unlimited external audit control power of the French Court of accounts whose independence is guaranteed by the Constitution. Court of Accounts of France annually prepares an opinion on compliance and performance audits to the Government report on the implementation of the budget, submits it to the Parliament. To prepare an opinion it cooperates with the regional courts of accounts and internal organs of the state audit.

In Canada, control of the effectiveness of use of the federal budget carried out by members of Parliament.

The government annually drafts budget and reports on its performance in the previous year to the House of Commons (Audit Committee)

Canada has made two types of state audit, depending on the subject of the audit: external and internal. On the slide you may see which authorized bodies conduct internal and external audits.

Canada is one of the pioneers in the introduction of performance audit and one of the first in the world to abandon the practice test only the legality of the financial and economic activities of the government. Office of the General Auditor and the Public Accounts Committee, monitor the effective implementation of government programs and, as a consequence, the use of public resources.

In Russia, the supreme body of state audit is the Audit Chamber of the Russian Federation

Accounting Chamber provided the functional, organizational and financial independence from the executive branch.

The main functions of the Chamber of Accounts are:

1) The organization and carrying out of operational control over the execution of, the targeted and efficient use of the federal budget

2) The feasibility and effectiveness of the audit to achieve the strategic objectives of socio-economic development of the Russian Federation

3) The formation, management and disposal of federal and other resources within the competence of the Accounting Chamber

4) Examination of the federal budget draft laws and other normative legal acts, international treaties of the Russian Federation, federal programs and other documents that affect the federal budget and finance issues.

Chamber of Accounts on a quarterly basis in the prescribed form is the Federal

Assembly-line report on the federal budget.

### **Current situation in Kazakhstan**

In order to illustrate the current situation in Kazakhstan, I highlighted main aspects of the current financial control system:

- There are no signs of improvement in the level of financial discipline and effective organization of public funds and asset management activities. According to the Financial Control Committee of the Ministry of Finance of the Republic of Kazakhstan revealed violations on the state budget in 2010 amounted to 230 billion tenge, in 2011 - 208 billion tenge, and in 2012 - 333 billion tenge;

- There is an inefficient existing mechanism of interaction of bodies of state financial control. The functions and powers of state bodies, carrying out internal and external control, not legally separated, which leads to increased duplication of their activities and reduces the effectiveness of the state financial control system. Finance Committee's main activity absorbs directions of the Audit Committee by 77% and the Audit Commission - by 87.5%;

- There is no system of certification of auditors in the field of the state financial control, which reduces the quality of their work;

- It does not introduce a single information base for financial violations and the results of the control measures.

### **The concept of the governmental audit**

State audit will be divided by type: performance audit, audit of financial statements and audit compliance (Nazarbayev, 2013).

Depending on the subject of state audit is divided into external and internal audit

The main objectives of the external audit are assessment; check the efficient and legitimate use of national resources to ensure the dynamic growth of the quality of the living conditions of the population and the country's national security.

Internal audit as an independent and objective assessment involves testing and analysis:

- Achievement of public authority direct and final results;
- The reliability of financial and management information;
- Efficiency;
- Compliance with the budgetary and other legislation of the Republic of Kazakhstan.

Violations will be divided into financial and procedural. In other words, violations that caused or did not caused unreasonable spending of budget funds.

Implementation and development of the governmental audit are conducted in two stages (Nazarbayev,2013). As you can see the first stage already passed and so let me conclude what

government did during this stage.

- Development of the Law of the Republic of Kazakhstan "On state audit and financial control";
- Identification of the powers of the state audit bodies and the state financial control;
- Development and adoption of standards for the external and internal public audit and financial control of the state to meet the requirements of international standards;
- The creation of an effective system of training, retraining and advanced training of personnel;
- Strengthening the methodological coordination of audit committees by the Accounts Committee.

The second stage is conducted till 2017 (Establishment of the governmental auditing)

1) The creation of an authorized body of the Government of the Republic of Kazakhstan on internal state audit

2) Granting financial control bodies functions of external public audit;

3) Movement to the unified state financial control system called "electronic government".

### **Interview results**

I have conducted an interview with Bekturova Arman Tursynovna regarding the realization of Plan of the Nation. She is Director of the auditing department in the Ministry of Finance in the Republic of Kazakhstan

Progress of the realization of the Nation Plan – «100 concrete steps to implement the five institutional reforms» by regions. 93rd step includes implementation of the new audit and evaluation of the work of the state apparatus:

- Evaluation of state programs will be carried out once every three years;
- Evaluation of the effectiveness of state bodies will be carried out annually on the strategic plans. Adoption of the Law "On state audit and financial control";
- Accounts Committee will work on the model of first-class global auditing firms, and will leave from the current operational control;
- The introduction of e-audit as an integrated database. States can carry out checks without going on the test object;
- To solve the problems of inconsistency and recognition of audit results to create a unified data. A single database can form an archive of inspections and recommendations, eliminating duplication;
- All checks are formed on the basis of a risk management system for checking certain point questions;

- Increased demands on the auditors' skills through certification will certify the National Commission.

According to the words of Bekturova Arman (2016, April 1), there was conducted a pilot version of off-site control within the boundaries of 93rd step of the Plan of Nation. It was conducted in January-February 2016. It allowed covering more than 34 000 public procurement in the amount of 221 billion tenge, which found violations of in the amount of 66 billion tenge. Due to in-time tender cancellations, today already remedied the sum of 14 billion tenge. Off-site control has allowed inspections to cover 100 percent of public procurement procedures, and has shown that one in four procurements is conducted with violation (Bekturova, 2016). Government has created the conditions for the effective implementation of the budget without direct contact.

Last year 1,642 inspections on complaints in the field of public procurement were carried out. It was spent more than 8800 auditor-days. With the introduction of off-site control, governmental audit can reduce the burden on control objects, save labor and financial costs.

## **Conclusion**

To conclude, I have researched the governmental audit in Kazakhstan starting from its foundation. In my opinion, this sphere is quite new for Kazakhstani people. Thus it only gains popularity and governmental audit would be an essential part of the state's operational process. According to all available numerical and non-financial data, governmental audit will contribute to the prosperity of the Republic of Kazakhstan. Thus, in my opinion it was a great and well-considered decision.

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**Audit Risk and Materiality**  
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**Abstract**

The purpose of this study is to investigate an audit risk along with materiality, which are considered to be obligatory parts when issuing an audit opinion in accordance with generally accepted auditing standards. Moreover, the methods of risks assessment will be evaluated respectively. The existence of audit risk is inseparably connected with the fraud and error, as a result of which both of these terms are expected to be discussed in my research. Apart from error and fraud risks, such risks as inherent, control and detection ones will be discussed as well. Additionally, a case of Toshiba Corporation would be examined as one the best lessons to comply with the internal control in order to avoid an audit risk. Furthermore, data concerning audit risk management being gathered from the press release organized by manager of KPMG Karlygash Kaltayeva, will be presented as one of the key tools to reduce audit uncertainty in Kazakhstan.

**Keywords:** *audit risk, materiality, KPMG study of risk management, Toshiba Corporation*

***Audit Importance***

The world of business has been changing over the recent years, and a vast number of attentions are required to the audit process as well as materiality in order to avoid the audit risk. Actually, an audit risk is considered to be the basis for audit procedure for the reason that auditors are not always able to express an appropriate opinion regarding financial statements that are materially misstated. However, the auditors are likely to widely apply a risk-based approach to reduce a threat of presenting inconsistent audit opinion, ensure an efficiency of document by using a set of most productive tests on the base of audit risk evaluation. (Anderson, 2012). Thus, audit risk standards comply an idea of risk assessment, which enable to enhance an audit quality by gathering sufficient audit evidence ISA (500), comprehending an organization and its environment (IAASB, 2012, ISA 315), defining and assessing probable material risks (IAASB, 2012, ISA 316, SAS 110 & Auditing Standards, No 12) as well as presenting logical responses to it (IAASB, 2012, ISA 330).

***Audit Evidence***

According to ISA (500), audit evidence conceives an idea of explaining the main auditor's responsibilities with a purpose of presenting reasonable conclusions and expressing an opinion regarding the conclusions. Although it should be noted that sufficiency and

appropriateness of audit evidence are considered to be 2 elements which correlate with each other. Actually, a sufficiency is the proportion of the quantity of audit evidence, which is influenced by the auditor's uncertainties of misstatement. As for appropriateness, it is a measure of the quality of audit evidence which is affected by its relevance and reliability in giving reinforcement to the conclusions. As a result of which, audit evidence, which is acquired, is likely to be a valuable part of professional judgement.

### ***Materiality***

Due to IAASB Handbook (2009), "materiality", it is likely to be a subject of professional ability to judge objectively, where the auditor tends to count on financial statements. Based on the information, it can be clearly seen that material misstatements mean the action of excluding relevant accounting information, as a result of which the prudent person tends to alter his opinion and apply quantitative and qualitative reflections. (IAASB, 2012, ISA 320) Accordingly, it goes without saying that the misstatements characterized by roughly small quantities can lead to significant either additional expenditures or loss of the future revenue.

However, in order to acquire appropriate assurance in an efficient manner due to the interaction of statements, the auditor follows the principle of planning materiality carefully. Therefore, *the auditor tends to accomplish his job at a reasonable time and cost respectively whilst sticking to economic ranks. (IAASB, 2012, ISA 320) Hence, it goes without saying that a related percentage of costs is inseparably connected with the audit fees for operating an audit. Actually, high-qualified auditors are expected to be well paid in a competitive environment and be allocated the sufficient resources for continuing education. It is self-evident that quiet fair amounts of payments contribute to improvement of overall quality of audits that they conduct. Moreover, it is interesting to note that the auditor is able to measure materiality in advance the financial statements are audited. If to take both of these circumstances (the time of materiality assessment), the auditors provide judgements at least annually or a couple of prior periods if acknowledgement refers to main modifications in the economy, industry or the organization itself.* Therefore, the auditor tends to examine the audit risk and materiality during such activities as planning and designing audit process, so that to evaluate whether the given financial statements are presented in conformity with generally accepted accounting principles.

Having analyzed the given information, it can be clearly confirmed that there is likely to be a reverse relation between audit risk and materiality features. (IAASB, 2012, ISA 320)

### **Identifying and assessing the risks of material misstatement through comprehending the entity and its environment**

According to IAASB (2012), ISA (315), risk assessment tends to give an opportunity of taking an overlook at standards that the auditors need to obey with a purpose of finding out uncertainties. Besides, in the sequent times audit risks will serve the basis for creating an audit plan. Owing to it, it is likely to involve making a research of management and other authorities

inside the organization. This conceives an idea of arranging a meeting with an audit committee as well as top key management in order to elaborate vital audit questions; understand not only the business activities of the entity, but the industry within which it works; establishing the scope of services to be implemented, discover the client's accounting policies and procedures respectively and prepare an internal control for carrying out an audit. (IAASB, 2012, ISA, 315) Hence, risk assessment includes analytical steps in determining suspicious transactions or records with a purpose of providing a support for planning and indicating reactions to evaluated risks.

Once the analytical process is finished up, the auditor tends to observe the entity and its working area. Actually, based on IAASB (2012), ISA (315), observation area tends to cover the organization's document authentication, various kinds of reports being developed by managers, some assumptions and equipment tools respectively. Therefore, it can be found out that each chain of activity should be tightly connected for the reason that it serves a foundation for detecting a material misstatement. It is undoubtedly that key risks can be revealed during any step of auditing procedure. Moreover, throughout an assessment stage of materiality, the auditor selects sampling or analytical procedures. As soon as the auditor gets down to testing transactions, the problem of a real verification of data is of vital importance. Once the existence of information is confirmed, the auditor is likely to identify an accurate amount in order to find out if material misstatements exist. (IAASB, 2012, ISA 300) According to this fact, the auditor tends to use an audit test for analyzing a positive statement towards accounting records, as a result of which the specialist predicts the number of recognized misstatements described in sample itself. Actually, it is obvious that this kind of procedure relates to auditor's assessment.

### ***Fraud & Error***

According to IAASB Handbook (2009), an audit risk is likely to be a situation, when in most frequent cases the auditors are not able to express an appropriate opinion for financial statements. This means that the auditors do not tend to reveal actual material misstatements such as fraud or errors whilst accommodating assurance services. It is firmly claimed that fraud means intentional distortions, involving document falsification, or premediated counterfeiting to record transactions. IAASB (2012), ISA (316) As far as error is concerned, the definition relates to unintentional misstatement in a statement of a company's financial state as of the end of a determined period. IAASB Handbook (2009). Owing to SAS (110) firstly, errors tend to encompass misconceptions in obtaining and transforming data from the income statements, balance sheet, statements of retained earnings and cash flows, as well as other possible statements. Secondly, errors tend to involve irrational accounting estimates as well as judgements. Thirdly, the majority of errors are likely to arise because of mistakes in the operations of accounting standards referring to quantity, categorization, the format of presentation, or disclosing of notes. Besides, it goes without saying that if the auditor faces with

an obstacle of detecting an audit risk, it is quiet more vital to fix it up in a timely way, rather than sitting out the original roots of its occurrence: whether it is error or fraud.

### **Inherent, Control and Detection Risks**

Additionally, an account balance tends to include the risks, such as inherent and control ones, preliminary caused by an error or fraud, which are admitted to be material. Furthermore, it is not excluded that the auditors will not be able to find out the uncertainties at all, so that this kind of risk is called as detection. It is important to note that the auditor needs to definitely maintain quiet skillful and professional prudence. Due to IAASB Handbook (2009), inherent risk conceives an idea of susceptibleness of financial statements to material distortions excluding the effectiveness of internal control. For instance, the accounts such as cash or receivables are exposed to more levels of risk than others. Due to Auditing Standard (No. 12), accounts containing a number of accounting estimates and external aspects constitute more significant threat than those with repetitive, valid data. That is why; nobody denies the fact that technological innovations are likely to affect the inherent risk as well.

Actually, I interpret this fact as out of date equipment is likely to lead to more exaggeration. Furthermore, an inadequate shortage of technical facilities along with unstable business conditions contributes to inherent risk as well.

Having relied upon IAASB Handbook (2009), control risk means the risk that a material misrepresentation is not likely to be precluded or disclosed within internal authorities at a reasonable time. Accordingly, due to Auditing Standard (No. 12), this sort of risk is considered to be a capacity of effective project and procedure in the pursuit of the company's aims regarding the financial records. Besides, it should be noted that no matter what, control risk will be always presented for the reason that inherent risk constitutes some limitations of internal control.

As far as detection risk is concerned, it is a probability that the auditor will not be able to reveal material distortions in an assertion. Basically, this kind of uncertainty is admitted to be a responsibility of effective work performed by the auditor. Nevertheless, these risks are possible to be decreased to insignificant level by the way of competent planning and instruction along with appropriate conduction of quality control procedures. (IAASB, 2012, ISA 330) Actually, it is self-evident that the problem is inseparably associated with irresponsible attitude of the auditor to explore transactions properly. Due to this fact, it can be outlined that the detection risk is likely to occur for various facts such as unsuitable auditing process, wrong interpretation of process and the following audit outcomes. Owing to Auditing Standard (No. 12), the greater inherent and control risk, the lesser the detection uncertainty would be, so that the elements of audit risk are likely to be determined in quantitative and non-quantitative rates. Therefore, it can be found out that there exists an inverse relation between inherent and control risk as well as detection one.

Based on Auditing Standard (No. 12), the auditor is in full right to assess inherent and control risks separately, whilst having a relevant support for this evaluation. For instance, this support is likely to be acquired via different inquiries, consulting, and online procedures for both of these controls, and implementation of appropriate controlling tests for control uncertainty. Besides, in all cases a professional expertise should be applied in gathering, enhancing and depicting these materials.

### ***Internal Control***

Additionally, Anderson (2012) recognizes the fact that uncertainty evaluation is tightly associated with implementation of internal control. Based on PCAOB Auditing Standard (No. 5), there can be exploited absolutely different methods of understanding internal control structure such as walkthroughs, inquiries, review of accounting manuals and job descriptions, plant and operational tours and prior year working papers. As for walkthroughs, they tend to specify the nature of operations in vital financial accounts, so that the auditor basically seeks some required data using the computer network in order to define the real conditions of the work implementation. Moreover, inquires conceive an idea of conducting some sorts of discussion with the staff of enterprise in the direction of clearing up the responsibilities division, the usage of computer devices, the documents that the software formulates and the general transaction processing. Apart from two above mentioned methods, a review of accounting appeals is likely to be considered a popular one for the reason that it includes a designation of accounting principles, a thorough table of accounts as well as a plan transferring accounting records. Furthermore, a plant operational guidance is likely to provide honesty and integrity of an employee respectively, whilst the papers for previous years are widely applied for upgrading and overviewing.

It goes without saying that if the auditor aspires to minimize some uncertainties at lower rate and prevent significant misstatements; the auditor needs to broaden the scope of control by using different techniques except for walkthroughs. Thus, only the compliance with the rules will be admitted to be as cost effective one for internal control.

Nevertheless, there are loads of situations, when the companies, particularly global ones, do not comply with the accepted laws and consequently plunge in the world of dishonesty and criminality.

The best flagship of presenting a real case because of its inability to capture the audit risk because of irrelevant internal control is considered to be the case of Toshiba Corporation. The scandal, which spread across the whole world involved illegal accounting practices, the disclosure of approximately \$1.9bn losses for 6 years and retirement of half of organization's board of directors in 2009. It goes without saying that the main purpose of presenting a better picture than the real circumstances merited, was associated with attracting more potential investors. As soon as the truth was revealed, Toshiba was obliged to pay off a penalty in the

amount of \$60 million, which was admitted to be the largest one throughout the whole history in Japan. As a result of this scandal, the investors still experience doubts concerning their returns for the reason that Toshiba accounted for more than 1.3 billion impairment losses.

## Toshiba's Troubles

An accounting scandal has taken a steep toll on the Japanese electronics and industrial giant's share price.



Sources: WSJ Market Data Group (share price); the company

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Moreover, due to the decrease in share price, fifty shareholders prosecuted a claim against the Corporation, by requiring ¥ 302 million for the wastes. Thus, based on the table, it is important to note that the prices dramatically plummeted by almost ¥181, from ¥ 483 to ¥ 302. Having experienced not the best times, Toshiba Corporation had to abolish the dividends on May 8, 2015. With regards to such events, Stock Exchange took control over Toshiba by watching its amounts of money in the capital markets. According to this fact, the company has altered an approach of managing its staff, by strengthening the rules, regulations and principles. However, an interesting question arises: Will Toshiba Corporation be able to regain the public honors and trust respectively? Or it will be bearing it cross forever? (*Fukase, A., December 7, 2015*).

It goes without saying that almost every misdeed bears some burden of significant lessons. Indeed, 5 of them concerning internal audit are likely to be discussed in a more detailed way.

Firstly, it should be noted that internal audit must erect a sign with yellow card that tends to point out on mistrust of corruption. Despite the fact that Toshiba President Sepp Blatter denied his participation in thoroughly elaborated corrupted plan, it was ultimately revealed that almost every sort of bribe is likely to involve the responsibility, which runs upward the organization. With regards to it, an integral as well as honest aspect of corporate culture should be admitted to be as obligatory internal audit activity. Besides, any suspicious actions should be immediately analyzed for the purpose of preventing serious consequences.

Secondly, the urgency of addressing the risk is of significant issue, so that it should be reported to key top management and the board of directors in the quickest way in order to avoid

a spread of unwilling rumors, which are likely to affect the goodwill of the company. In regard to it, the internal audit function should take this responsibility by providing the relevant assurance to the official parties.

Thirdly, internal auditing must be liable for establishing proper planning and its implementation in the case of crisis. It is obvious, that authorities working in internal audit must not only provide a feedback regarding a crisis plan, but elaborate the projects respectively in order to understand its basis. Furthermore, potential uncertainties are likely to be relieved within literally composed plans. Fourthly, the internal auditor must obey the legislation, especially the newly introduced one. And lastly, the members of internal audit must possess the qualities of braveness. With regards to case of Toshiba, the main officials must have a courage to say a firm word “no”, if it blatantly contradicts the principles of ethical morality.

### ***Audit Risk management by KPMG view points***

Having attended the lecture organized by KPMG manager Karlygash Kaltayeva, I revealed the importance of effective audit risk management in Kazakhstan, where a development of corporate culture is considered to be as one of the inseparable parts of it. Due to this press release, it was found out that 47 % of Kazakhstan’s companies consider the level of corporate culture among the staff as satisfactory one; only 6% assess it on excellent rate, whereas 35 % of surveyed companies note it as below the average rate. Actually, it is self-evident that the employees of the companies are not always able to fully underpin the principles and philosophy of audit risk management, as a result of which the corporations face various obstacles:

1. inadequate mistakes throughout the application of risk-based tools
2. wrong assessment of determined risks
3. low level of exchanging information between the structural units
4. lack of rewarding systems to motivate the employees to use risk-based approach

According to the lecture, I also found out that the significant audit risk is influenced by safety (10%), strategic (14%), nature (5%), and reputation risks (13%); investment (28%), trade(15%) and productions uncertainties (15%). Besides, Kazakhstan’s companies admit the increased uncertainty of enforcement from the state authorities and risks connected with the personnel staff of Kazakhstan. Actually, the introduction of audit risk management program will have a success only in those organizations, where the workers are likely to believe in the productivity of the program directed at minimizing audit risks.

### **Conclusion**

To sum up, it can be seen that the topic of audit risk is considered to be of significant issue. According to this fact, the purposes of audit risk along with materiality are properly discussed. It should be also noted that understanding the organization as well as its environment reconciles with minimizing an audit risk. Following that, the distinction between a fraud and error is likely to be felt and not confused by the people. The *inherent, control and detection ones are discussed as well*. Moreover, risk management along with internal control, which serves the

basis for pursuing the company's aims, is recognized as well. Besides, Toshiba Corporation is presented as a real case of incompliance with internal control, as a result of which a disastrous scandal is rotated around the company till current days. Moreover, the importance of audit risk management is determined by KMPG managers as well. It can be clearly seen that, all of these mentioned are the matters of a professional auditor.

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# **An empirical test of the interest rate parity theory: does it hold between U.S.A and KZT, RUB and UAH?**

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## **Introduction:**

Interest Rate Parity (CIP) is a theory that exchange rates are determined between two currencies based on the interest rate prevailing in those two countries. CIP theory postulates that in an efficient market actual forward exchange rate is equal to projected forward (through interest parity) exchange rate.

The key goal of this paper is to test the role of speculative expectations about exchange rate from the market players in determining the forward exchange rate. In my paper I used Cointegration technique for testing the correlation between non-stationary time series variables. The currency pairs which I tested in my paper is following:

- US dollar/Kazakhstan tenge
- US dollar/Russian rouble
- US dollar//Ukrainian hryvnia

The hypothesis that the expectations of the market players is affecting to the determining of the forward exchange rates has been used in many studies of the foreign exchange market. This hypothesis implies that forward prices determining not only by interest parity of two countries (as traditional theory postulates) and also from the market expectations about the feature of this currencies.

## **Literature review**

Many analyses have been made to test the role of expectations in determining the forward exchange rate. The most valuable, in my opinion, for my paper could be following three papers:

- «Testing the effectiveness of arbitrage and speculation under flexible exchange rates» ии Imad A. Mosa and Rozzaque H. Bhatti (1994).
- «Expectations and the Forward Exchange Rate» by Craig S. Hakkio (1980 y.)
- «Exchange rate expectations and the Risk premium» by Jeffrey A. Frankel and Menzie D. Chinn (1993)

Mentioned studies already have rejected the interest rate parity theory, however the theory is used both by academicians and policy makers because there is no alternative theory.

## Methods

In my paper analyses, I use Cointegration analysis. I look at monthly exchange rate changes for three country pairs – Kazakhstan, Russia and Ukraine - over the period from June 2011 to April 2016.

For each country pair, I extract difference between local interest rates and US Libor interest rates. For Kazakhstan I use Kazprime index, Mosprime and KievPrime for Russia and Ukraine. The difference between local interest rate indexes and US labor could be used to calculate projected forward exchange rate (interest parity between the countries). As traditional covered interest parity (CIP) theory postulates forward exchange rates of the currency pair determines as a difference between interest rates of these countries (interest parity) in following formula:

$$1 + r_d = \frac{F}{S} (1 + r_f)$$

Where,  $r_d$  – domestic interest rate,  $r_f$  – forward interest rate,  $F$  – forward rate,  $S$  – spot rate. Therefore in terms of CIP theory Forward exchange rate should be equal to interest parity of countries:

$$F^* = S \left[ \frac{1 + r_d}{1 + r_f} \right]$$

To compare interest parity (projected forward) with actual forward exchange rates, I found real prices for forward rates for these three Countries in bloomberg over the same period.

The null hypothesis states that actual forward exchange rates are equal to the projected forward exchange rate. If the null hypothesis is accepted, then I will conclude that interest rate parity holds. Based on t-test for equal means, if the null hypothesis is rejected, then we conclude that interest rate parity does not hold.

## Results. Conclusion

The results of the t-test are given in Table 1, 2 and 3.

**The results of the t-test for equal means of the actual and projected forward rate for U.S. and Kazakhstan, Russia and Ukraine shows that we can reject the null hypothesis, then we conclude that interest parity does not hold.**

**Table 1. Testing CIP between US dollar and Kazakhstan tenge**

29.04.2011	-	-	-
31.05.2011	-	-	-
30.06.2011	148,6367193	145,925	2,71171925
29.07.2011	149,1877509	146,425	2,76275085
31.08.2011	149,7574895	146,9	2,857489462
30.09.2011	151,2273603	148,95	2,277360276
31.10.2011	151,3292547	148,25	3,079254656
30.11.2011	151,5069408	148,15	3,356940753
30.12.2011	151,7685895	149,95	1,8185895
31.01.2012	151,7319153	149,125	2,606915295
29.02.2012	151,6561932	147,95	3,70619315
30.03.2012	151,8065642	148,125	3,681564225
30.04.2012	152,1515407	148,025	4,126540665
31.05.2012	152,3579593	148,85	3,507959265
29.06.2012	153,178597	150,225	2,953597
31.07.2012	154,1021899	150,975	3,12718986
31.08.2012	154,3643968	151	3,36439675
28.09.2012	155,0170783	151	4,0170783
31.10.2012	156,2557778	152,8	3,455777825
30.11.2012	156,9247162	152,475	4,4497162
31.12.2012	156,9388076	152,22	4,7188076
31.01.2013	157,1711658	151,95	5,2211658
28.02.2013	156,6043552	151,5	5,10435519
29.03.2013	156,6286999	151,9	4,72869992
30.04.2013	157,2451217	152,1	5,14512168
31.05.2013	157,862301	152,9	4,962300975
28.06.2013	159,0455658	153,75	5,2955658
31.07.2013	161,178768	154,1	7,078768
30.08.2013	164,3237882	156,93	7,3937882
30.09.2013	164,2010811	155,4716	8,72948107
31.10.2013	164,6175124	155,8759	8,7416124
29.11.2013	164,9286686	157,025	7,90366857
31.12.2013	164,6985577	155,9314	8,76715769
31.01.2014	165,2085367	157,9355	7,27303666
28.02.2014	192,5516642	188	4,55166424
31.03.2014	193,7907504	186,74	7,05075042
30.04.2014	194,1617907	185,45	8,711790655
30.05.2014	194,3185772	186,45	7,86857718
30.06.2014	194,3245855	186,13	8,19458549
31.07.2014	194,0410173	185,935	8,10601728
29.08.2014	194,6287196	186	8,6287196
30.09.2014	195,6667853	185,26	10,40678532
31.10.2014	198,6167267	195	3,61672671
28.11.2014	198,9008867	186,7746	12,12628672
31.12.2014	201,4891775	196,1449	5,34427752
30.01.2015	201,8888035	211,445	-9,55619651
27.02.2015	202,2109058	208,4	-6,189094205
31.03.2015	203,0359806	208,5575	-5,521519425
30.04.2015	203,1164126	199,8319	3,284512625
29.05.2015	203,2349899	194,3095	8,925489875
30.06.2015	202,2858817	192,525	9,76088172
31.07.2015	205,2815508	198,05	7,2315508
31.08.2015	262,1643948	269,7	-7,5356052
30.09.2015	302,804	287,25	15,554
30.10.2015	318,8265473	296,3999	22,42664728
30.11.2015	350,9976029	327	23,99760292
31.12.2015	406,2768762	377,194	29,0828762
29.01.2016	445,1514613	394,5	50,6514613
29.02.2016	411,71585	363	48,71585
31.03.2016	405,3363927	355,5	49,83639274
01.04.2016	404,3265054	351,875	52,45150543

HO: Mean1=Mean2    Mean1    Mean2  
201,2671    192,3409  
S1^2    S2^2  
5959    4405,2    101    74,6644  
n1    n2  
59    59

t-statistics 0,673482  
t-distr 0,10%    1%    5%  
3,687964    2,918394    2,301084  
Not Reject    Not Reject    Not Reject  
0,983051

3rd  
HO: Mean=0    Mean  
8,926222  
S^2  
165,9816

t-statistics 5,321864  
0,10%    1%    5%  
t-distr 3,687964    2,918394    2,301084  
Rejected    Rejected    Rejected

**Table 2. Testing CIP between US dollar and Russian riuble**

Date	Interst parity	Actual FWD	Gap
29.04.2011	28,5138753	27,6345	<b>0,879375</b>
31.05.2011	29,25453623	28,2913	<b>0,963236</b>
30.06.2011	29,12223405	28,135	<b>0,987234</b>
29.07.2011	28,87252129	27,8915	<b>0,981021</b>
31.08.2011	30,31545948	29,3025	<b>1,012959</b>
30.09.2011	34,40930797	32,7855	<b>1,623808</b>
31.10.2011	32,41590888	30,6495	<b>1,766409</b>
30.11.2011	32,98627199	31,139	<b>1,847272</b>
30.12.2011	34,64400737	32,6543	<b>1,989707</b>
31.01.2012	32,62247236	30,7138	<b>1,908672</b>
29.02.2012	31,29305777	29,679	<b>1,614058</b>
30.03.2012	31,45944108	29,7825	<b>1,676941</b>
30.04.2012	31,50216105	29,78	<b>1,722161</b>
31.05.2012	35,98701272	34,0615	<b>1,925513</b>
29.06.2012	34,91500383	32,9915	<b>1,923504</b>
31.07.2012	34,69676821	32,6996	<b>1,997168</b>
31.08.2012	34,75616585	32,8635	<b>1,892666</b>
28.09.2012	33,5273863	31,7088	<b>1,818586</b>
31.10.2012	33,75863731	31,8105	<b>1,948137</b>
30.11.2012	33,27708896	31,341	<b>1,936089</b>
31.12.2012	32,898624	30,8945	<b>2,004124</b>
31.01.2013	32,23741653	30,4567	<b>1,780717</b>
28.02.2013	32,83371494	31,0573	<b>1,776415</b>
29.03.2013	33,35227543	31,528	<b>1,824275</b>
30.04.2013	33,37729683	31,5125	<b>1,864797</b>
31.05.2013	34,24151115	32,4565	<b>1,785011</b>
28.06.2013	35,24436942	33,3395	<b>1,904869</b>
31.07.2013	35,39512333	33,4985	<b>1,896623</b>
30.08.2013	35,64256992	33,8032	<b>1,83937</b>
30.09.2013	34,68024293	32,9347	<b>1,745543</b>
31.10.2013	34,37042413	32,576	<b>1,794424</b>
29.11.2013	35,48446992	33,735	<b>1,74947</b>
31.12.2013	35,30066849	33,3562	<b>1,944468</b>
31.01.2014	37,77497079	35,8281	<b>1,946871</b>
28.02.2014	38,5128969	36,5604	<b>1,952497</b>
31.03.2014	38,48342798	35,8987	<b>2,584728</b>
30.04.2014	39,30917376	36,5404	<b>2,768774</b>
30.05.2014	38,37576345	35,653	<b>2,722763</b>
30.06.2014	37,27202452	34,7056	<b>2,566425</b>
31.07.2014	39,39779562	36,5777	<b>2,820096</b>
29.08.2014	40,98802566	37,84	<b>3,148026</b>
30.09.2014	43,8633119	40,4589	<b>3,404412</b>
31.10.2014	47,8274672	44,1784	<b>3,649067</b>
28.11.2014	55,85002381	51,9977	<b>3,852324</b>
31.12.2014	75,32756829	61,83	<b>13,49757</b>
30.01.2015	84,06368612	72,1525	<b>11,91119</b>
27.02.2015	72,46269934	64,4875	<b>7,975199</b>
31.03.2015	67,49265709	60,3825	<b>7,110157</b>
30.04.2015	59,09521767	53,3845	<b>5,710718</b>
29.05.2015	59,50787722	54,1428	<b>5,365077</b>
30.06.2015	62,3523056	57,0605	<b>5,291806</b>
31.07.2015	69,42343163	63,52	<b>5,903432</b>
31.08.2015	72,42781453	66,5846	<b>5,843215</b>
30.09.2015	73,57852305	67,6462	<b>5,932323</b>
30.10.2015	71,68316199	65,6657	<b>6,017462</b>
30.11.2015	74,52450009	68,1574	<b>6,3671</b>
31.12.2015	81,88649098	74,6694	<b>7,217091</b>
29.01.2016	85,05232649	77,3672	<b>7,685126</b>
29.02.2016	84,40438348	76,7934	<b>7,610983</b>
31.03.2016	75,56326206	68,8209	<b>6,742362</b>

H0: Mean1=Mean2

Mean1 Mean2  
45,84529 42,39048  
S1^2 S2^2  
330,2077 246,8759  
n1 n2  
61 61

t-statistics 1,123231  
t-distr 0,10% 1% 5%  
Rejected 3,680708 2,914553 2,299046

3rd  
H0: Mean=0

Not rejecte Not rejecte Not rejecte  
Mean  
3,454805  
S^2  
7,246777

t-statistics 10,02342  
0,10% 1% 5%  
t-distr 3,680708 2,914553 2,299046  
Rejected Rejected Rejected

Table 3. US dollar and UAH

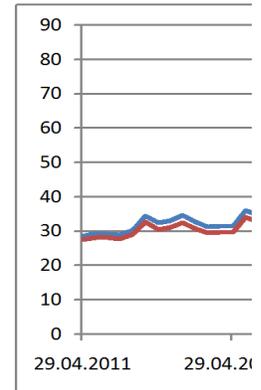
Date	Interst parity	Actual FWD	Gap
30.06.2011	28,68232675	8,18	20,50233
29.07.2011	27,51103575	8,115	19,39604
31.08.2011	26,32200602	8,31	18,01201
30.09.2011	26,4610392	8,54	17,92104
31.10.2011	27,52380648	8,675	18,84881
30.11.2011	26,10968468	8,65	17,45968
30.12.2011	27,0139475	8,65	18,36395
31.01.2012	24,65121379	8,39	16,26121
29.02.2012	24,39980593	8,255	16,14481
30.03.2012	24,07449558	8,18	15,8945
30.04.2012	23,91599313	8,17	15,74599
31.05.2012	27,17465975	8,41	18,76466
29.06.2012	32,8255135	8,36	24,46551
31.07.2012	19,73933846	8,42	11,31934
31.08.2012	19,44566715	8,545	10,90067
28.09.2012	18,6786467	8,58	10,09865
31.10.2012	16,6156575	8,82	7,795658
30.11.2012	16,58383475	8,85	7,733835
31.12.2012	16,408392	8,545	7,863392
31.01.2013	14,0055295	8,54	5,46553
28.02.2013	13,25248425	8,45	4,802484
29.03.2013	13,00783267	8,36	4,647833
30.04.2013	12,7916796	8,3	4,49168
31.05.2013	12,43005969	8,315	4,11506
28.06.2013	10,87764845	8,385	2,492648
31.07.2013	9,41596308	8,35	1,065963
30.08.2013	9,0771428	8,465	0,612143
30.09.2013	9,098170355	8,525	0,57317
31.10.2013	9,025843266	8,495	0,530843
29.11.2013	9,038096359	8,545	0,493096
31.12.2013	9,445576856	8,485	0,960577
31.01.2014	9,22646058	8,985	0,241461
28.02.2014	9,622319686	10,65	-1,02768
31.03.2014	9,638749665	11,55	-1,91125
30.04.2014	9,57933135	12,925	-3,34567
30.05.2014	9,614843305	12,6	-2,98516
30.06.2014	9,606244375	12,1663	-2,56006
31.07.2014	9,628801109	12,75	-3,1212
29.08.2014	9,5178048	14,55	-5,0322
30.09.2014	9,680498813	14,65	-4,9695
31.10.2014	9,649512842	14,35	-4,70049
28.11.2014	9,634856064	16,65	-7,01514
31.12.2014	9,770526989	16,85	-7,07947
30.01.2015	9,685513601	17,1072	-7,42169
27.02.2015	9,834461101	29,06	-19,2255
31.03.2015	10,20532829	25,24	-15,0347
30.04.2015	10,14649756	22,85	-12,7035
29.05.2015	10,1832708	22,9	-12,7167
30.06.2015	10,21735086	22,6653	-12,4479
31.07.2015	10,11746324	23,2617	-13,1442
31.08.2015	10,1327316	24,0461	-13,9134
30.09.2015	10,02975975	24,2	-14,1702
30.10.2015	9,891644031	26,35	-16,4584
30.11.2015	9,969674218	27	-17,0303
31.12.2015	9,94715056	27,028	-17,0808
29.01.2016	9,905911435	28,65	-18,7441
29.02.2016	9,894120387	28,1	-18,2059
31.03.2016	9,884724713	27,4	-17,5153
01.04.2016	9,856329998	27,25	-17,3937

H0: Mean1=Mean2    Mean1    Mean2  
 14,58771    13,96008  
 S1^2    S2^2  
 49,6807    54,64007  
 n1    n2  
 59    59

t-statistics    0,472005  
 t-distr    0,10%    1%    5%  
 3,687964    2,918394    2,301084  
 Not Reject    Not Reject    Not Reject

3rd  
 H0: Mean=0    Mean  
 0,627633  
 S^2  
 156,8693

t-statistics    0,384913  
 0,10%    1%    5%  
 t-distr    3,687964    2,918394    2,301084  
 Not Reject    Not Reject    Not Rejected



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## **The Effectiveness of Internal Control on Organizational Performance: A Study of Professional Auditing Firms in Kazakhstan**

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### **Abstract**

Internal control is methods taken by companies to provide the integrity of operations and financial reporting and compliance with rules and regulations. Internal control plays a vital role in how entities meet their management objectives. In addition, companies with weak internal control face an environment in which effectiveness and efficiency are not monitored and firms receive unreliable, incomplete information. Consequently, this affects organizations' decision making. Companies with strong internal control have opportunities to prevent and detect errors, in order to avoid fraud. Nowadays, many organizations emphasize the importance of internal control, because of financial reporting scandals. This helps to avoid theft and fraud, to protect management and financial data within the companies.

The purpose of this research is to investigate techniques, methods, and usage of internal control systems, and their impact on organizational performance. It will examine the effectiveness of internal control and its influence on performance of professional audit firms in Kazakhstan. A quantitative survey method will be used in this study. To collect the data on

internal control system and organizational performance, we will develop a questionnaire. Collected data will be analyzed using EXCEL and SPSS software. Frequency distribution, analysis of variance, correlation and regression analysis will be conducted to test the hypotheses.

In summary, supposedly Kazakhstani companies have a low level of effective internal control systems. This study will assist to Kazakhstani companies to improve and create an effective internal control system. Also, it will reveal to the management of the organization's employees expectations of proper internal control and on alternative way to operate effectively. Additionally, this study shows how five interrelated components: control environment, risk assessment, information and communication, control procedures, monitoring of controls are assessed in our country.

**Keywords:** *internal control, organizational performance, methods, Kazakhstan.*

### **Introduction:**

Internal control is methods taken by companies to provide the integrity of operations and financial reporting and compliance with rules and regulations. Internal control includes the procedures and policies created to ensure the management with reasonable assurance that the firm reaches its aims. Internal control plays a vital role in companies' operations. Because effective and strong internal control can reduce the probability of fraud and risk of material misstatements in financial statements.

Management of the organization is responsible for designing and maintaining the company's internal control. Additionally, management must inform significant aspects of company's internal control to the independent auditor and audit committee. Furthermore, management of the organizations must select the best way to implement internal control for maintaining competitive environment and meeting economic changes.

In addition, effective internal control reveals that financial records are safeguarded, however it should also provide an environment in which effectiveness and efficiency are monitored. A proper control system must obtain reliable, complete and relevant information. Firms should improve and develop their own controls in order to provide reasonable assurance that financial reports are fairly stated. In addition, reasonable assurance does not guarantee that internal control is absolutely certain assurance that organizations will achieve their own goals and objectives. There some different risks that affect company activities: cost of operation, human factor, environmental changes.

Nowadays, many organizations emphasize the importance of internal control, because of financial reporting scandals. According to a KPMG survey, half of typical frauds are prevented and found by internal control. One should note here that properly designed internal control might avoid the likelihood of theft and fraud and protect management and financial data.

**Objectives and Method:** The purpose of this research is to investigate techniques, methods, and usage of internal control systems, and their impact on organizational performance. It will examine the effectiveness of internal control and its influence on performance of professional audit firms in Kazakhstan. Strong internal control provides reliable information for its shareholders and stakeholders.

In Kazakhstan, auditor's activities have been implemented for about twenty five years. Indeed, external auditing is simultaneous with internal auditing work in the companies. Internal control is not regulated by legislation of the Republic of Kazakhstan. One should note here that basically only big companies implement internal control procedures and check a variety of processes. So that small enterprises are faced with fraud, control failures and risk of misuse of corporate assets.

Effective internal control requires organizations to test all relevant assertions, determine the probability of control failure in financial statements, find deficiencies and weaknesses in internal control, and discuss findings with stakeholders. Kazakhstani enterprises in order to prosper in the economic area should evaluate and design procedures of internal control. Administration must disclose information about the quality of a firm's control, important deficiencies and material weaknesses.

A quantitative survey method will be used in this study. To collect the data on internal control system and organizational performance, we will develop a questionnaire. Further, specific group of people from this area will participate in survey. Certainly, questions were prepared for people who work in Kazakhstani companies.

### **Research results and expectations:**

The research question asks how the effectiveness of internal control influences a company's performance in Kazakhstan. To address this question, we will more deeply discover and examine information about companies' internal control and explore methods of measuring the effectiveness of internal control. We will develop a questionnaire.

The purpose of the questionnaire is to answer the research question and identify techniques of using internal control systems, how strong or weak internal control within the organization impacts employees' performance, how workers are measured, and how satisfied they are with management activities. Collected data will be analyzed using EXCEL and SPSS software. Frequency distribution, analysis of variance, correlation and regression analysis will be conducted to test the hypotheses.

The finding of the questionnaire results will show participants' attitudes to internal control system, how it works within the company, and what measures the management must take

in order to change the environment. Results will demonstrate the most probable mistakes which were made by management of the companies, challenges which employees face daily during work and workers' recommendations to administration of the firms.

Additionally, the research will more deeply investigate previous studies done by other experts and compare with questionnaire results. Besides, after detailed analysis, companies can use this information for their own purposes. This information can help decision making.

### **Benefits and Contribution of the study:**

This study will assist to Kazakhstani companies to improve and create an effective internal control system. Also, it will reveal to the management of the organizations employees expectations on proper internal control and on alternative way to operate effectively.

This finding supports that the idea effective internal control can optimize a firm's goals. Especially in Kazakhstan, there are widespread companies, which have branches in different towns. It is difficult to control economic operations, transactions and procedures, and to ensure compliance with rules and regulations and internal performance reports of the branches. Generally, the research will teach local companies how to properly manage and maintain an adequate internal control structure.

Investors, top management and stakeholders are interested in effective internal control systems. The research supports idea of hiring several staff from the accounting sphere who will deeply investigate the internal control system and will make some improvements inside the company. Sometimes when it is too costly for enterprises to hire new personnel, management of the company can entrust those responsibilities to employees who work there in the accounting department.

### **Conclusion:**

To conclude, this research has investigated the utilization of the most appropriate methods and techniques of effective internal control. Nowadays, Kazakhstani companies are gradually developing in an economic environment, and for enterprises it is essential to have strong internal control. In general, internal control system is responsible for providing reasonable assurance of an organizations' financial statements in accordance with generally accepted accounting principles and International Financial Reporting Standards.

As this study demonstrates, local organizations have a low level of effective internal control systems. Additionally, this research shows how five interrelated components: control environment, risk assessment, information and communication, control procedures, monitoring of controls are assessed in our country. Also, companies will have better understanding of each component of internal control.

The research has shown that it is crucial to explore the control environment, because it includes all procedures and policies which have a direct impact on top management, stakeholders and investors. Proper control environment is a significant part of internal control and guarantees enhancing the quality of economic performance. Undoubtedly, strong internal control in advance can detect and prevent fraud, even many frauds as a result of management operations. This investigation makes recommendations to the management of the companies how to effectively assess controls, how to achieve their objectives through internal control, how to involve their personnel in operations to develop internal control.

In conclusion, the research shows the importance of monitoring procedures to ensure that internal control works properly. Kazakhstani companies will be familiar with how to implement and construct strong internal control in order to have reasonable assurance that organizations achieve their objectives.

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