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Case of the financial market connectivity in the EAEU

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ORIGINAL ARTICLE

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Abstract. The creation of an integration association entails not only the intensification of trade turnover between countries and the elimination of trade barriers but also a closer connection, particularly among financial markets. In this context, an interesting research question is how integration processes in the EAEU affect the connectivity of financial markets and whether a financial spillover effect arises within the framework of this integration association. This research sheds light on the connectivity of financial markets in the EAEU area over the long term. Using correlation analysis, the paper tests the hypothesis that the creation of the EAEU has fostered closer integration among the financial markets of its member states. The results reveal a statistically significant relationship between the KASE and KSE indexes, as well as between the KASE and RTS indexes, but no significant correlation between the KSE and RTS indexes. These findings highlight the varying degrees of financial connectivity among EAEU countries, providing insights into how integration policies could enhance overall market synchronization.

Keywords: EAEU integration; financial spillover; correlation analysis; RTS, KASE, KSE indexes

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Introduction

Financial spillovers are closely tied to integration processes because financial and economic integration inherently create interdependencies among countries. These linkages amplify the transmission of financial shocks (both positive and negative) across borders. Here's how financial spillovers and integration processes are related (see Table 1).

Table 1 – Interrelation between Integration and Financial Spillovers

Factor	Mechanism	Relationship with Spillovers	Example
Strengthened Interconnections Through Financial Integration	Highly integrated financial markets enable shocks (e.g., changes in interest rates, currency fluctuations, or asset price volatility) to spread quickly across borders. For example, a banking crisis in one country can ripple through the	Financial integration involves the liberalization of capital markets, cross-border investments, and financial institution linkages	The 2008 Global Financial Crisis began in the U.S. housing market but affected countries worldwide due to interconnected banking systems and exposure to U.S. financial products.

Factor	Mechanism	Relationship with Spillovers	Example
	global banking network if institutions are closely interconnected.		
Trade Integration and Financial Spillovers	Integration through trade agreements (e.g., free trade areas, customs unions) often includes financial cooperation or shared capital market access.	Countries with strong trade linkages are more exposed to financial spillovers as economic shocks in one trading partner affect demand, supply chains, and currency stability. Trade integration often leads to similar economic cycles, increasing the synchronization of financial markets.	In the European Union, economic shocks in one member state (e.g., Greece's debt crisis) have significant financial spillovers across the bloc due to shared trade and investment ties.
Capital Mobility and Cross-Border Investments	Integration processes, such as opening capital accounts or harmonizing financial regulations, increase cross-border flows of capital.	Higher capital mobility means investors reallocate resources more easily, spreading shocks across multiple markets. Countries with open capital accounts are more vulnerable to sudden stops (capital outflows) or surges (inflows) triggered by financial crises elsewhere.	Emerging markets often experience capital outflows during global financial instability as investors move to safer assets in advanced economies.
Monetary Integration	Regional integration may involve monetary coordination, such as fixed exchange rate regimes, currency unions, or shared monetary policies.	In a currency union (e.g., the Eurozone), monetary policy decisions and financial shocks in one member state can affect all members due to shared exchange rates and interest rates. Loss of independent monetary policy in integrated systems can reduce the ability to respond to localized financial shocks, amplifying spillovers.	The European debt crisis in 2010-2012 was magnified by the inability of individual Eurozone countries to adjust their monetary policies independently.
Regulatory and Policy Harmonization	Integration processes often involve harmonizing financial regulations, creating a shared framework for capital markets, banking, and investment.	Harmonized policies may reduce regulatory arbitrage but can also synchronize vulnerabilities, making all countries susceptible to similar financial risks. Conversely, weakly integrated systems may lack coordinated responses, leading to unchecked spillovers.	Global financial regulations under the Basel framework aim to reduce systemic risks, but uneven adoption across countries can result in financial fragility spreading through less regulated markets.

Factor	Mechanism	Relationship with Spillovers	Example
Global and Regional Supply Chains	Economic integration fosters global supply chains, tying financial systems to trade dependencies.	Financial shocks in a hub economy (e.g., funding crises) can disrupt supply chains, affecting production, employment, and trade balances in dependent economies.	During the COVID-19 pandemic, financial strains in major economies like China and the U.S. disrupted global supply chains, causing ripple effects in dependent countries.
Shared Risk and Contagion	Integration pools risks across participating countries, making them more exposed to each other's vulnerabilities.	Risk-sharing mechanisms (e.g., shared financial backstops) can mitigate some effects of financial spillovers but may also create moral hazard, leading to systemic risks. Contagion becomes more likely when financial or economic integration creates a perception that all members share similar risks.	In the Eurozone, fears of contagion from the Greek debt crisis spread to other economies like Spain and Italy, exacerbating the crisis.
Financial Technology and Integration	Digital integration, such as unified payment systems, cross-border fintech platforms, and blockchain-based transactions, accelerates financial flows.	Faster and more integrated digital systems can transmit shocks more rapidly, as markets react almost instantaneously to financial disturbances. However, integrated technology also enables faster policy responses to mitigate spillovers.	

Source: composed by the authors

So, financial spillovers are an inherent byproduct of integration processes. While integration offers benefits such as increased capital flows, risk-sharing, and economic growth, it also increases vulnerability to external shocks. Moreover, financial spillovers significantly affect economies by transmitting financial shocks across borders, influencing macroeconomic stability, financial markets, and long-term growth prospects. Here are the key ways in which financial spillovers impact economies:

1. Economic growth and output: financial spillovers can disrupt credit flows, investment, and consumer confidence, leading to slower economic growth or even recessions.

Effect:

– Reduced access to credit hampers business expansions and household spending.
– Export-oriented economies suffer if demand from trading partners declines.
– Spillovers can amplify local vulnerabilities, making recessions deeper and recoveries slower.

2. Financial market volatility: spillovers introduce uncertainty and increase the volatility of stock markets, bond yields, and exchange rates.

Effect:

– Investors pull capital from riskier markets (e.g., emerging economies), leading to asset price declines and funding pressures.
– High volatility discourages investment and disrupts long-term financial planning.

3. Exchange rate pressures: spillovers often affect exchange rates through capital flows and market sentiment.

Effect:

– Currency depreciation increases the cost of servicing foreign-denominated debt, leading to potential defaults.

– Appreciation in some currencies (e.g., "safe havens") can reduce export competitiveness, harming trade balances.

4. Banking and credit constraints: cross-border financial institutions may tighten credit in response to losses elsewhere, limiting access to funding.

Effect:

– Businesses and consumers face higher borrowing costs or reduced credit availability, slowing economic activity.

– Banking crises can deepen as global financial conditions worsen.

5. Inflationary or deflationary pressures: Spillovers influence inflation dynamics differently based on the nature of the shock. A supply-side shock (e.g., a surge in global oil prices) raises input costs, increasing inflation. A demand-side shock (e.g., reduced consumption in major economies) can lead to deflation.

Effect:

– Persistent inflation undermines purchasing power and erodes savings.

– Deflation discourages investment and consumption, worsening economic stagnation.

6. Trade and investment disruptions: countries reliant on external trade and investment face spillover effects if partner economies experience a downturn.

Effect:

– Reduced export revenues hurt production, employment, and fiscal revenues.

– Foreign direct investment (FDI) flows may decline as global investors reassess risks.

7. Sovereign debt and fiscal stress: higher borrowing costs due to global interest rate increases or reduced investor confidence affect sovereign debt sustainability.

Effect:

– Emerging markets and developing economies (EMDEs) with high external debt face increased risk of default.

– Governments may cut spending or raise taxes to stabilize public finances, exacerbating economic downturns.

8. Loss of investor confidence: spillovers erode investor confidence, causing risk aversion and flight to safe-haven assets.

Effect:

– Capital outflows weaken domestic financial systems and deepen liquidity shortages.

– Lower confidence hampers private-sector investment, slowing recovery efforts.

9. Widening inequalities: spillovers disproportionately affect vulnerable populations through job losses, inflation, and reduced social spending.

Effect:

– Wealthier individuals and firms with diversified assets are better positioned to withstand shocks, while low-income groups bear the brunt of economic adjustments.

– Rising inequality can increase social and political instability, complicating recovery.

As we see financial spillovers are an inevitable consequence of economic integration, acting as both a challenge and a driver for closer cooperation and economic development.

Research by several scholars confirms the ambiguous effects of financial spillovers on economies, indicating mixed outcomes depending on context:

Cotter, Hallam & Yilmaz (2023): We find that financial markets are typically net transmitters of shocks to the real side of the economy, particularly during turbulent market conditions. This result holds both for domestic US macro-financial spillovers, and also those between the US and other advanced economies [1].

Croitorov, Giovannini, Hohberger, Ratto & Vogel (2020): Spillover from financial shocks increases with international financial integration and is practically zero under full home bias in normal times. The global

risk captures international synchronisation of financial cycles. Spillover of financial shocks is amplified at the zero lower bound, at which investment risk takes on the characteristics of a general uncertainty shock [2].

Fang, Jing, Shi & Zhao (2021): Four important findings emerge: (1) financial spillovers account for a large proportion of the variations in bond, stock, and foreign exchange markets, indicating that the international spillover effect has become an important driver of asset prices; (2) Chinese financial markets have a growing impact on global financial markets over time, especially during periods of turbulence; (3) spillovers from the G7 to China are still higher than the spillbacks from China, suggesting that Chinese markets are more influenced by the financial markets in the G7 economies than the other way around; (4) economic policy uncertainty is the main driver of cross-border financial spillovers [3].

Fukuda & Tanaka (2020): We first investigate stock market spillovers across the regions and find that spillovers from emerging Asia became significant after the global financial crisis. However, our industry-level analysis shows that the increased spillovers can be attributed to the first principal component (PC) in the manufacturing sector rather than to the first PC in the financial sector. This implies that the rise of the Asian manufacturing sector in the global market played a key role in enhancing the stock market spillovers. We next examine bilateral spillovers in short-term and long-term rates. In the tapering period, we find significant spillovers in long-term rates from the first PC in emerging Asia to Europe and the United States. However, these spillovers were much smaller than the stock market spillovers in magnitude [4].

Chen, Hamori & Kinkyo (2017): We find that a banking sector characterized by a higher degree of competition and larger margin of safety is less affected by financial spillovers [5].

Białkowski, Bohl & Serwa (2006): Applying the new testing methodology based on transition matrices, we find that spillovers from the US stock market to the UK, Japanese and German markets are more frequent when the latter markets are in a crisis regime. However, we reject the hypothesis of strong financial contagion from the US to the other markets [6].

Feng, Liu, Wu & Guo (2023): The empirical results show that (1) the linkages between financial markets significantly exist, (2) uncertainty and negative macroeconomic shocks enhance the spillover effect in financial markets, and (3) the impact of negative macroeconomic shocks on the spillover effect of the financial market is weakened at the high economic growth stage [7].

Chen, Zhong & Failler (2022): We find that China plays the role of a net recipient most of the time. China's financial cycle net spillover index fluctuates widely and is vulnerable to economic events such as the financial crisis. This implies that international capital flows have brought volatility and shocks to the Chinese financial market, such as the Asian financial crisis and the 2008 international financial crisis. In addition, during 2004-2005 and 2014-2015, the G7 countries also suffered from financial cycle spillover from China. The US received most of the financial cycle spillover from China, followed by Canada, Germany, and Italy [8].

Yildirim & Ivrendi (2021): Based on data from 20 emerging and 20 advanced countries, our empirical findings reveal that US unconventional monetary policies significantly affect financial conditions in emerging and advanced countries by altering the risk-taking behavior of investors. This result suggests that the risk-taking channel plays an important role in transmitting the effects of these policies to the rest of the world. The extent of these effects depends on the type of QE measures. QE measures such as purchases of private sector securities that lower the US mortgage spread exert stronger and more significant spillover effects on international financial markets than those that reduce the US term spread [9].

Haddou (2022): We have found evidence of financial stress spillovers on bank lending and that their distributional impacts vary across time, banks size and capitalization. However, the role of banks liquidity in shaping the impacts of financial stress on lending is found to depend on dry-ups/abundance of market funding liquidity [10].

Gulzar, Mujtaba Kayani, Xiaofeng, Ayub & Rafique (2019): We find long-term cointegration between the U.S. market and emerging stock markets, and the level of cointegration increased after the crisis period. The V.E.C.M. and impulse response function reveal that a shock in the U.S. financial market has a short-term impact on the returns of emerging financial markets. Past shocks and volatility have more effect on the selected stock markets during all time periods. The Korea Composite Stock Price Index and the Bombay

stock exchange (B.S.E.) are the only stock markets that have cross-market news and volatility spillover effects during the crisis period. After the crisis period, news effects are positive on the B.S.E. and the Russian Trading System and have a negative effect on the Kuala Lumpur Stock Exchange and the Shanghai Stock Exchange [11].

Alkan & Çiçek (2020): Employing BEKK parameterization of the multivariate GARCH model between 2006 and 2018, it found a strong mean spillover from global markets to domestic stock and bond markets, from stock and exchange markets to the bond market and from the dollar return to the stock market. For the volatility spillover, the results also supported strong spillover between each market pairs. These findings implied that the Turkish economy is well integrated into global markets and that a fluctuation in volatility in a global or domestic market immediately spreads to other domestic markets, regardless of borders [12].

In this context, an interesting research question is how integration processes in the EAEU affect the connectivity of financial markets and whether a financial spillover effect arises within the framework of this integration association.

This research sheds light on the connectivity of financial markets in the EAEU area over the long term.

Methods

This study hypothesizes that the creation of the EAEU has led to closer integration among the financial markets of its member states.

Research Methodological Basis:

1. The indicators under study (dataset is available upon request):

– KASE index 2010-2024 (Kazakhstan stock exchange)[1];
– KSE index 2010-2024 (Kyrgyz stock exchange)[2];
– RTS index 2010-2024 (Russian Trading System stock exchange)[3].

An important note in the study: due to insufficient data on the dynamics of stock markets in Armenia and Belarus, these countries were excluded from the analysis.

2. The object of the research: the EAEU countries, except of Belarus and Armenia, 2010-2024.

3. Research methods: correlation analysis is used to verify the hypothesis (p-value = 5%).

Results

The results of the correlation analysis are presented in Figure 1 and in summary Table 2.

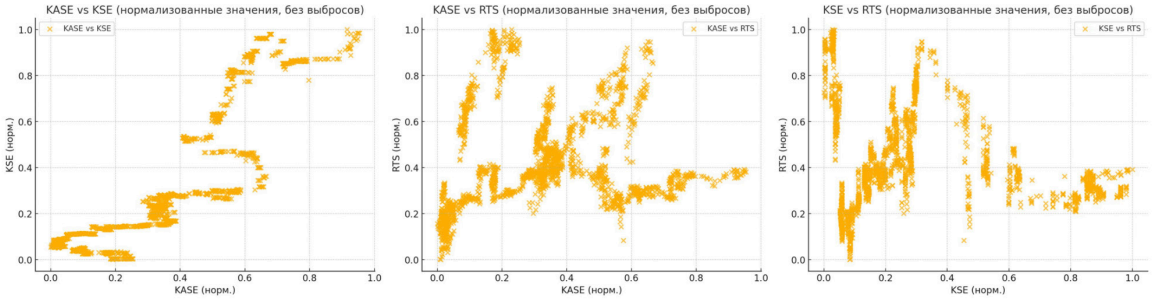

Figure 1. Scatter diagram correlation on stock exchange indexes in the EAEU countries
Source: composed by the authors

Table 2 – Correlation analysis results for the EAEU countries

Countries	Correlation Coefficient	P-Value	Significance
KASE/KSE	0.443186350	8.75302907	Yes
KASE/RTS	0.337249876	4.23468602	Yes
KSE/RTS	-0.01887080	0.34358314	No

Source: composed by the authors

[1] *KASE index dynamics (2010-2024). URL: https://investfunds.ru/indexes/357/*
[2] *KSE index dynamics (2010-2024). URL: https://investfunds.ru/indexes/1871/*
[3] *RTS index dynamics (2010-2024). URL: https://investfunds.ru/indexes/218/*

The analysis shows:
– Strong Positive Correlation (statistically significant) between: KASE and KSE;
– Moderate Positive Correlation (statistically significant) between: KASE and RTS;
– No Significant Correlation between: KSE and RTS.

Conclusions

This moderate positive correlation suggests a degree of alignment between the financial markets of Kazakhstan and Kyrgyzstan. The integration processes within the EAEU may be contributing to this connectivity, reflecting shared regional trends or economic linkages.

The financial markets of Kazakhstan and Russia exhibit a weaker but still significant positive correlation. This indicates some degree of interdependence, possibly driven by trade ties, shared energy sectors, or economic policies influenced by the EAEU framework.

There is no meaningful relationship between the financial markets of Kyrgyzstan and Russia. This lack of correlation might reflect differences in market structures, levels of development, or external influences on their economies.

The divergence between financial markets of Kyrgyzstan and Russia reflects fundamental differences in economic structures, financial market maturity, external dependencies, and integration levels. Addressing these disparities through targeted policies – such as enhancing financial market development in Kyrgyzstan, fostering greater regional financial integration, and harmonizing monetary policies – could help reduce this divergence over time.

Overall conclusions:

– Inter-regional financial connectivity. The positive correlations involving Kazakhstan suggest that its market is more integrated with both Kyrgyzstan and Russia, potentially making it a central player in the EAEU financial network.

– Asymmetric relationships. The weak correlation between Kyrgyzstan and Russia may point to an unequal level of financial integration among EAEU member states, highlighting areas where policy coordination or market harmonization could be improved.

– EAEU's role in integration: These results underscore the varying degrees of financial connectivity among EAEU countries, offering insights into how integration policies could enhance overall market synchronization.

Research limitations:

– data biasing the overall picture by the impact of the coronavirus pandemic and subsequent lockdown in 2020 and 2021;

– external shocks significantly affecting the dynamics of socio-economic development of the EAEU countries;

– perhaps, correlation analysis was not optimal one for research purpose addressing (the research methodology is being tested for adequate to the research objectives).

However, research results could provide a number of applied researches on interregional financial development in the EAEU countries.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR'S CONTRIBUTIONS

Marina A. Mayorova – the concept of the research; writing the original text.
Denis V. Gerasimov – correlation analysis; data visualisation;

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