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INTERNATIONAL CREDIT RATING AGENCIES IN FINANCE: A STATISTICAL AND ANALYTICAL ASSESSMENT

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Abstract. This article examines the institutional role of the three principal international credit rating agencies — Standard & Poor's Global Ratings, Moody's Investors Service, and Fitch Ratings — in global financial markets, as well as their influence on the investment attractiveness of sovereign states, within the theoretical framework of asymmetric information. The study draws upon the foundational theoretical contributions of George Akerlof, Michael Spence, and Joseph Stiglitz to elucidate the function of credit ratings as informational intermediaries. Empirical findings confirm that sovereign credit ratings exert a statistically and economically significant impact on investment decision-making and international capital flows. The article concludes with a set of policy recommendations oriented toward institutional quality enhancement, fiscal consolidation, and the deepening of domestic financial markets, with the objective of attaining an investment-grade credit rating (BBB–).

Keywords: sovereign credit rating, asymmetric information theory, S&P Global Ratings, Moody's Investors Service, Fitch Ratings, investment attractiveness, foreign direct investment (FDI), yield spread, adverse selection, information intermediation, Uzbekistan**.**

INTRODUCTION: The contemporary global financial architecture constitutes a complex and multi-layered system predicated upon extensive information flows and the continuous movement of transnational capital. International investments amounting to tens of trillions of dollars, the debt obligations of hundreds of sovereign states, and the bond markets of thousands of major multinational corporations require a sustained and delicate balance between risk and return [1]. In this context, international credit rating agencies (CRAs) — which assess the creditworthiness of sovereign and corporate borrowers — serve as critical institutional intermediaries in the global capital market.

The primary function of international CRAs is to mitigate the informational asymmetry prevailing in global capital markets and thereby facilitate the efficient allocation of capital flows. At present, approximately 94 percent of the global credit rating market is concentrated among the so-called 'Big Three' agencies: Standard & Poor's Global Ratings holds a market share of approximately 50.0 percent, Moody's Investors Service approximately 31.7 percent, and Fitch Ratings approximately 12.5 percent [2]. The ratings assigned by these agencies serve as crucial signals within the international financial system and are widely employed by institutional investors in their decision-making processes, as well as within regulatory frameworks and the provisions of the Basel Accords.

The relevance of this research is determined by several interrelated factors. First, access to international capital markets by developing economies is directly contingent upon their sovereign credit ratings, which in turn conditions their ability to mobilise the financial resources necessary for economic development. Second, in recent years, Central Asian states — and Uzbekistan in particular — have been actively integrating into the global financial system, rendering an in-depth understanding of the rating framework of considerable practical

importance. Third, the global financial crisis of 2008 necessitated a fundamental reassessment of the role of rating agencies in the context of systemic risk and informational asymmetry [3].

The primary objective of this study is to analyse the functional role of international credit rating agencies as information intermediaries in global financial markets within the framework of asymmetric information theory, and to empirically assess the impact of rating changes on investment attractiveness, drawing upon the case of Uzbekistan. In pursuit of this objective, the following research tasks were formulated:

-to analyse the organisational structure and methodology of credit rating agencies;

-to identify statistical relationships among sovereign credit ratings, FDI inflows, and yield spreads;

-to evaluate the rating dynamics of Uzbekistan over the period 2024–2026;

-to develop strategic recommendations for attaining an investment-grade rating.

The scientific novelty of this research lies in the integration of asymmetric information theory and credit rating methodology within the specific context of Uzbekistan. Furthermore, the study offers a systematic analysis of the formation and development of an international bond market denominated in the national currency — a dimension that remains comparatively underexplored in the national economic literature.

LITERATURE REVIEW: Foundational research on asymmetric information in credit markets originates with George Akerlof's seminal work, 'The Market for Lemons' (1970) [4], which provided a rigorous theoretical justification for the disruption of market equilibrium and the phenomenon of adverse selection under conditions of informational inequality. Michael Spence [5], in 'Job Market Signaling' (1973), developed the theory of signalling and elucidated the mechanisms by which high-quality economic actors may reduce the information gap. Joseph Stiglitz and Andrew Weiss [6], in 'Credit Rationing in Markets with Imperfect Information' (1981), conducted an in-depth analysis of the effects of informational asymmetry on borrower selection and credit rationing in financial markets. The collective contributions of these scholars were recognised by the award of the Nobel Prize in Economics in 2001.

Among studies devoted to the methodology of sovereign credit ratings, the work of Cantor and Packer, 'Determinants and Impact of Sovereign Credit Ratings' (1996) [7], is of particular significance. This study identified the principal macroeconomic determinants of sovereign ratings and provided empirical grounding for the impact of rating announcements on bond yield spreads. Kaminsky and Schmukler [8], in 'Emerging Markets Instability' (2002), documented the asymmetric response of financial markets to rating changes, demonstrating that downgrades exert a substantially stronger impact than upgrades — a phenomenon widely known in the financial literature as the 'cliff effect'.

Reinhart and Rogoff [9], in their monograph 'This Time is Different' (2009), analysed historical patterns of sovereign default and established the long-term relationship between credit quality and capital flows. The nexus between sovereign ratings and foreign direct investment (FDI) has been extensively examined in research by UNCTAD and the World Bank [10]. In particular, studies employing the ARDL (Autoregressive Distributed Lag) framework and panel data methodologies confirm that rating improvements generate statistically significant positive effects on FDI inflows.

Frederic Mishkin [11] and Joseph Stiglitz [12] have critically assessed the contribution of credit rating agencies to systemic risks and moral hazard during the global financial crisis of 2008. These deliberations provided an impetus for subsequent regulatory reforms within the international financial system, including the enactment of the Dodd–Frank Act (2010).

Research on sovereign credit ratings in the Commonwealth of Independent States (CIS) has been primarily conducted in the context of Russia and Kazakhstan. Morozova and Yefimova [13]

analysed the relationship between Russia's sovereign rating and capital flows, employing econometric methods to establish a causal link between the geopolitically induced rating downgrade of 2014 and the subsequent episode of capital flight. Akhmetova et al. [14] examined the impact of rating changes on Kazakhstan's national equity market indices and bond spreads through cointegration analysis, identifying heightened rating sensitivity in transition economies.

Pomfret [15] demonstrated a direct relationship between institutional quality improvement and the attraction of international capital in a broader study of Central Asian economies. Research by the National Bank of Serbia [16], employing event study methodology, found that a one-notch rating upgrade is associated with a statistically significant increase in FDI as a share of GDP.

Within Uzbekistan's economic literature, scholarly engagement with international credit rating issues is relatively nascent, commensurate with the country's active entry into international capital markets from 2019 onwards. Umarova and Kholiqov [17] analysed the relationship between Uzbekistan's investment climate and its international rating performance, demonstrating the necessity of improving institutional quality indicators. Yusupov [18] examined the significance of internationally placed bonds denominated in the national currency and their role in mitigating currency risk.

Existing research nonetheless exhibits several notable gaps: limited engagement with international methodological frameworks; insufficient quantitative analysis based on panel data; a near-absence of empirical research on the dynamics of the local-currency bond market; and the lack of a systematic investigation of the relationship between institutional quality (governance) and sovereign credit ratings. The present article is directed toward partially addressing these lacunae by strengthening the theoretical foundation and deepening the empirical analysis.

MATERIALS AND METHODS: The present study employs a comprehensive methodological framework, integrating multiple scientific approaches: (1) comparative-analytical method — systematic comparison of international, CIS, and Uzbekistan-specific evidence; (2) econometric analysis — identification and estimation of the relationships between sovereign credit ratings and key macroeconomic indicators; (3) event study methodology — measurement of the short-term effects of rating announcements on financial markets; and (4) analysis of official documents and statistical data — drawing upon press releases from S&P Global Ratings, Moody's Investors Service, and Fitch Ratings, as well as data from the International Monetary Fund, the World Bank, and the Ministry of Finance of the Republic of Uzbekistan.

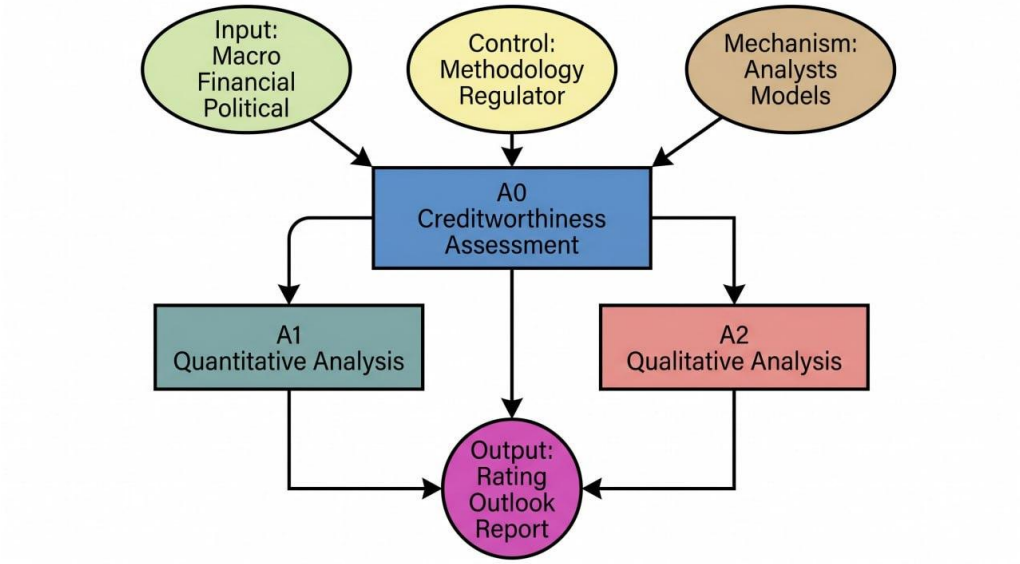
The object of study is the sovereign rating system of international credit rating agencies and the dynamics of the sovereign credit rating of the Republic of Uzbekistan over the period 2019–2026. The subject of study comprises the statistical and functional relationships between credit ratings, foreign direct investment, government bond yields, and institutional quality indicators.

Table 1. Comparative Analysis of International, CIS, and Uzbekistan Credit Rating Indicators (2024–2026)

Criterion	International Experience	CIS Experience	Uzbekistan Experience
Rating Level	Most advanced economies rated AAA–AA	Russia: BB+; Kazakhstan: BBB–	BB (S&P, Fitch, 2025)

FDI Inflows (Annual)	OECD countries: >$500 bn (aggregate)	Kazakhstan: ~$28 bn (2023)	$12 bn (2024, record high)
Bond Yield	AAA-rated sovereigns: 3–5% (USD); 0–2% (EUR)	Kazakhstan: 5.5–7% (USD, 2024)	12.25% (UZS, 2026, record low)
Public Debt (% of GDP)	OECD average: ~110% (2024)	Kazakhstan: ~23%; Russia: ~18%	~39% (stable, moderate)
Foreign Exchange Reserves	High and stable in advanced economies	Russia: ~$600 bn; Kazakhstan: ~$95 bn	$59 bn (~44% of GDP, Oct. 2025)
Institutional Governance	High in Scandinavia; moderate in Southern Europe	Developing; ongoing reforms	Previously limited; significant improvement in recent years

Source: Compiled by the authors based on data from S&P Global Ratings, Moody's Investors Service, Fitch Ratings, the International Monetary Fund, the World Bank, and the Ministry of Finance of the Republic of Uzbekistan.



The IDEF0 conceptual model (Figure 1) systematically represents the process of sovereign credit rating formation. The central A0 block — 'Assessment of Creditworthiness' — generates the final rating output on the basis of diverse input data, control parameters, and resource mechanisms. Inputs comprise the country's core macroeconomic indicators, the condition of its financial sector, and political and institutional factors. Control parameters encompass the methodologies and assessment criteria of the rating agencies, together with regulatory requirements. The mechanism block incorporates analysts, the rating committee, and econometric models. At the sub-process level, the model distinguishes between quantitative analysis (A1) and qualitative analysis (A2), yielding as output a standardised rating symbol, its associated outlook, and a detailed analytical report.

RESULTS: Credit rating agencies serve an economic function as essential institutional intermediaries that mitigate informational asymmetry. As demonstrated by the 'lemons' model developed by George Akerlof [4], informational inequality among economic agents may lead to the deterioration — and ultimately the breakdown — of market efficiency. S&P Global Ratings, Moody's Investors Service, and Fitch Ratings employ complex, multi-dimensional methodologies in order to address this market failure. Specifically, S&P employs a five-pillar analytical framework, Moody's a four-factor model, and Fitch's Sovereign Rating Model (SRM) encompasses 18 core indicators [19, 20, 21].

These methodologies integrate quantitative factors (macroeconomic and financial indicators) with qualitative dimensions (institutional quality, political stability, and governance standards), producing a standardised alphanumeric rating as the final output.

Table 2. International Credit Rating Scale and Definitions

Category	S&P	Moody's	Fitch	Description
Investment Grade (Prime)	AAA	Aaa	AAA	Highest credit quality; minimal default risk
Investment Grade (High)	AA+/AA/AA–	Aa1–Aa3	AA+/AA/AA–	Very high financial stability; obligations considered highly reliable
Investment Grade (Upper-Medium)	A+/A/A–	A1–A3	A+/A/A–	Stable outlook; somewhat susceptible to macroeconomic fluctuations
Investment Grade (Lower Threshold)	BBB+/BBB/BBB–	Baa1–Baa3	BBB+/BBB/BBB–	Adequate payment capacity; minimum threshold for institutional investors
Speculative Grade (BB)	BB+/BB/BB–	Ba1–Ba3	BB+/BB/BB–	Short-term stability present; elevated uncertainty
Highly Speculative	B+/B/B–	B1–B3	B+/B/B–	Low financial stability; high risk
Very High Risk	CCC and below	Caa1 and below	CCC and below	Default risk is very high
Default	SD, D	C	RD, D	Obligations unmet; default declared

Source: Compiled on the basis of official methodologies published by S&P Global Ratings, Moody's Investors Service, and Fitch Ratings [19, 20, 21].

The alphanumeric rating scale employed by the three major international credit rating agencies — S&P Global Ratings, Moody's Investors Service, and Fitch Ratings — expresses, in

standardised form, the creditworthiness of a borrower and the probability of default. The scale is divided into investment-grade and speculative-grade categories, with each tier reflecting a progressively increasing level of financial risk.

The highest tier — AAA (Aaa) — denotes minimal default probability and maximum financial reliability. AA and A ratings represent high credit quality with comparatively lower risk. BBB (Baa) constitutes the lower threshold of the investment-grade category; ratings below this level (BB/Ba and lower) fall within the speculative segment and are associated with elevated risk. CCC (Caa) and lower ratings denote issuers with a very high probability of default.

The rating framework also incorporates additional differentiation elements: within the S&P Global Ratings and Fitch Ratings systems, the '+' and '–' modifiers indicate relative positioning within a given rating category; in the Moody's system, the numerical suffixes 1, 2, and 3 denote the upper, middle, and lower sub-tiers of each major rating level, respectively. The designations SD, RD, and D signify that debt obligations have not been met, i.e., that default has been declared.

A critical dimension of the rating methodology concerns the management of conflicts of interest. Under the 'issuer-pays' business model, an institutional firewall mechanism — colloquially referred to as a 'Chinese Wall' — has been established between commercial and analytical divisions. The rating assessment is initially prepared by the lead analyst and subsequently confirmed by an independent Rating Committee through collegial deliberation [19]. Furthermore, the enactment of the Dodd–Frank Act (2010) substantially enhanced the accountability of rating agencies, rendering their assessment activities more transparent and subject to rigorous oversight.

Empirical analyses conducted by international organisations — notably the United Nations Conference on Trade and Development and the World Bank — as well as by independent researchers, confirm the existence of a statistically significant positive relationship between sovereign credit rating upgrades and foreign direct investment (FDI) inflows. In particular, ARDL cointegration models and panel data analyses applied to Egypt and the Balkan countries indicate that a one-notch improvement in sovereign credit rating is associated with an average increase in annual FDI inflows of approximately 1.3 billion US dollars, or between 1 and 2 percent of GDP [10, 22].

Event study analysis conducted in the case of South Africa demonstrates that rating downgrades lead to a contraction in capital inflows in the short term and a deterioration in investment attractiveness over the medium to long term [23]. These findings corroborate the proposition that rating signals exert a direct and immediate influence on investor decision-making.

From the perspective of yield spreads, the sovereign credit rating constitutes a pivotal determinant. The foundational study by Cantor and Packer [7], together with subsequent empirical research, establishes that each one-notch change in a sovereign rating produces an average differential of 50 to 100 basis points in bond yield spreads. Moreover, a downgrade from investment grade to speculative grade may precipitate a spread widening of 200 to 400 basis points. This dynamic is closely associated with the investment mandates of institutional investors — including pension funds and insurance companies — which typically impose restrictions on exposure to sub-investment-grade assets, thereby generating the sharp market reaction known in the financial literature as the 'cliff effect' [8].

Historical context. Uzbekistan obtained its inaugural international sovereign credit rating in 2019. S&P Global Ratings, Fitch Ratings, and Moody's Investors Service initially assigned the country a rating of 'BB–' / 'Ba3', with a Stable outlook. This period was characterised by the commencement of wide-ranging economic reforms and the country's entry into international

capital markets. Notwithstanding the heightening of global uncertainty in 2022 in the aftermath of the Russia–Ukraine conflict, Uzbekistan's rating remained stable, reflecting the relative resilience of its macroeconomic fundamentals.

Current status. In 2025, two of the three principal rating agencies — Fitch Ratings (26 June) and S&P Global Ratings (21 November) — upgraded Uzbekistan's sovereign credit rating from 'BB–' to 'BB'. Moody's Investors Service retained its 'Ba3' rating while revising its outlook to 'Positive' [24, 25, 26].

Table 3. Dynamics of the Sovereign Credit Rating of the Republic of Uzbekistan (2025–2026)

Agency	Previous Rating	Current Rating	Outlook	Date of Change
S&P Global Ratings	BB–	BB	Stable	21.11.2025
Fitch Ratings	BB–	BB	Stable	26.06.2025
Moody's Investors Service	Ba3	Ba3	Positive	13.06.2025

Source: Compiled by the authors based on official press releases from S&P Global Ratings [24], Fitch Ratings [25], and Moody's Investors Service [26].

The rating upgrades are attributable to a range of fundamental macroeconomic and institutional factors. Fitch Ratings highlighted the structural reforms implemented by the government, including the partial liberalisation of the energy sector — which contributed to a reduction in budget subsidy costs to below 1 percent of GDP — and the stabilisation of the fiscal deficit at approximately 3 percent of GDP in 2024 [25].

S&P Global Ratings focused on macroeconomic stability, noting real GDP growth of 6.3 percent in 2024 and a projected 7.7 percent in 2025, the maintenance of general government debt at approximately 39 percent of GDP, and the growth of the central bank's international reserves to approximately 59 billion US dollars as of October 2025, equivalent to approximately 44 percent of GDP [24].

A landmark development in Uzbekistan's financial history was the sovereign bond issuance executed on 1 April 2026. Under this transaction, the government successfully placed three-year bonds denominated in the national currency — the Uzbekistani som — in the amount of 12.2 trillion som (approximately 1.0 billion US dollars) on the international capital market [27].

Table 4. History of Sovereign Bond Issuances by the Republic of Uzbekistan Denominated in the National Currency

Year	Volume (trln UZS)	Volume (USD equiv.)	Interest Rate	Orders / Offer
2024	3.0 trln	~$245 mn	16.625%	N/A

Year	Volume (trln UZS)	Volume (USD equiv.)	Interest Rate	Orders / Offer
2025	6.0 trln	~$490 mn	15.5%	N/A
2026 (April)	12.2 trln	~$1.0 bn	12.25% (record low)	23.4 / 12.2 trln (~1.9×)

Source: Compiled by the authors based on data from the Ministry of Finance of the Republic of Uzbekistan, gov.uz [27], and gazeta.uz [29].

The April 2026 issuance is remarkable on several grounds. Orders totalling 23.4 trillion som (approximately 1.9 billion US dollars) were received from 32 international investment funds against a supply of 12.2 trillion som, yielding an oversubscription ratio of approximately 1.9 times. This outcome signals a substantial strengthening of international investor confidence in Uzbekistan's sovereign debt instruments.

The decline in the coupon rate from 16.625 percent in 2024 to 12.25 percent in 2026 may be interpreted as a direct financial consequence of the improvement in the sovereign credit rating. This reduction materially lowers the cost of sovereign debt service, generating significant medium-term fiscal savings. The transaction, in terms of both its volume and its outcomes, ranks among the largest local-currency sovereign bond placements in the CEEMEA (Central and Eastern Europe, Middle East, and Africa) region in recent years [27, 28, 29].

The improvement in Uzbekistan's credit rating was reflected in FDI inflows with equal clarity. The country attracted 12 billion US dollars in FDI in 2024, establishing an all-time record [30]. Notably, ACWA Power's commitment to invest 7.5 billion US dollars by 2030 constitutes compelling evidence of the substantial enhancement of the country's investment attractiveness [24]. These findings empirically corroborate the core propositions of asymmetric information theory, demonstrating that the rating signal exerts a multiplicative effect on FDI inflows.

Notwithstanding these achievements, several factors continue to impede further rating improvements. First, deficiencies in institutional governance quality — including judicial independence, the level of corruption, and the transparency of state institutions — remain only partially addressed [26]. Second, the growth of state-owned enterprise (SOE) and quasi-sovereign debt obligations may generate contingent fiscal liabilities over the medium term. Third, the protracted accession process to the World Trade Organization is constraining the pace of international trade integration. Fourth, existing restrictions on national currency convertibility represent an additional risk factor for certain categories of institutional investors.

DISCUSSION AND CONCLUSION: The findings of the study permit several significant theoretical conclusions to be drawn. First, the upgrade of Uzbekistan's sovereign credit rating to 'BB' and the concomitant decline in the bond coupon rate from 16.625 to 12.25 percent empirically validate the practical operation of signalling theory [5] in sovereign debt markets. The positive assessment by rating agencies functions as a credible signal of the government's commitment to reform, thereby materially reducing informational asymmetry in international capital markets.

Second, the fact that total orders for the bond issuance (23.4 trillion som) exceeded the offered amount (12.2 trillion som) by a ratio of approximately 1.9 times demonstrates the

attenuation of adverse selection risk. Investors have begun to assess Uzbekistan not as a high-risk issuer harbouring latent financial vulnerabilities, but as a relatively stable and creditworthy borrower.

Third, the attainment of record FDI inflows of 12 billion US dollars — coinciding with the period of rating improvement — corroborates at the regional level the positive relationship between credit quality and capital flows documented by Carmen Reinhart and Kenneth Rogoff [9].

The attainment of an investment-grade rating (BBB–) by Uzbekistan necessitates the sustained pursuit of comprehensive institutional, fiscal, and financial reforms. Based on the findings of this study, the following strategic directions are proposed.

First, the enhancement of institutional transparency and governance quality is of paramount importance. Governance indicators constitute a significant factor in the methodologies of the credit rating agencies. In this regard, it is imperative to ensure the independence of the judicial system, strengthen the protection of private property rights, increase accountability in public administration through digitalisation, and intensify systematic anti-corruption measures. Progress towards the levels of regional leaders in the World Bank's 'Doing Business' and 'World Governance Indicators' rankings could contribute substantially to rating improvements.

Second, the deepening of state-owned enterprise (SOE) reforms and the acceleration of privatisation are of critical importance. The introduction of corporate governance standards through the management of strategically significant enterprises via open market mechanisms — including through IPO placements on international stock exchanges — would serve to stimulate foreign capital inflows while simultaneously reducing financial risks and enhancing overall economic efficiency. This dimension is assessed as a significant qualitative indicator within the methodologies of both Moody's Investors Service and S&P Global Ratings.

Third, the consolidation of fiscal discipline requires the institutional entrenchment of fiscal rules. It is essential to enshrine, through legislative mechanisms, the commitment to maintaining the fiscal deficit below 3 percent of GDP, and to introduce rigorous monitoring of quasi-sovereign debt obligations guaranteed by the state. Absent such measures, these liabilities may be reflected in Fitch Ratings and S&P Global Ratings assessments as contingent fiscal risks.

Fourth, the broadening of national currency convertibility and the acceleration of WTO accession proceedings are necessary objectives. The liberalisation of the foreign exchange market would enhance the credibility of monetary policy and serve as an additional confidence signal for investors. Full integration into the multilateral trading system would, simultaneously, reinforce external sector stability and exert a positive influence on the rating assessment.

Fifth, the establishment of a systematic and proactive engagement framework with the credit rating agencies is of considerable importance. Regular information exchange with analysts from S&P Global Ratings, Moody's Investors Service, and Fitch Ratings — and the transparent provision of data on reform progress and macroeconomic performance — would serve to expedite the rating review process. In particular, the development of direct communication channels with 'country specialist' analysts would enhance the effectiveness of this engagement.

The comprehensive analysis conducted in this study enables the formulation of several overarching scientific conclusions. First, the international credit rating agencies — S&P Global Ratings, Moody's Investors Service, and Fitch Ratings — constitute indispensable institutional intermediaries in the determination of sovereign investment attractiveness under conditions of asymmetric information. Their assessment activities are conceptually grounded in the theoretical frameworks developed by George Akerlof, Michael Spence, and Joseph Stiglitz.

Second, Uzbekistan's experience over the period 2024–2026 — characterised by sovereign rating upgrades, the decline of bond yields from 16.625 to 12.25 percent, and FDI inflows of 12

billion US dollars — empirically confirms the existence of a positive relationship between credit rating improvements and investment attractiveness.

Third, the attainment of an investment-grade rating (BBB–) is not reducible to the short-term improvement of macroeconomic indicators. The achievement of this objective is inextricably linked to the systematic enhancement of institutional quality, the guarantee of judicial independence, and the comprehensive adoption of international financial standards.

In conclusion, the cultivation of trust in the sovereign credit standing within global debt markets is a process contingent upon sustained and consistent institutional reform, underpinned by a stable macroeconomic policy stance and a high level of institutional development.

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