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Eurobond Performance in Emerging Markets: Do Economic Freedom, Contagion Effects, and Strategic International Relations Matter?

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Eurobond Performance in Emerging Markets: Do Economic Freedom, Contagion Effects, and Strategic International Relations Matter?

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Abstract

This paper studies the factors moving the Eurobond prices and credit ratings issued by emerging markets. By observing a set of variables, including economic freedom, contagion effects and strategic international relations, the study was able to provide a thorough analysis of their impact on Eurobond performance. The research was able to identify significant determinants of Eurobond prices and credit ratings through utilizing panel data from 20 emerging markets over a period of April 2018 to September 2023 where we applied fixed effects linear regression and ordered logit models. The findings resulted that economic freedom, in specific enforcement of contracts, and strategic international relations significantly influence Eurobond performance. The robustness of the research results shows the importance of the mentioned variables in knowing the dynamics of Eurobond markets. The insights attained from this study can support policymakers in applying strategies to improve the financial stability and moderate risks related to Eurobond investments.

Keywords: Eurobonds, Emerging Markets, Bond Pricing, Credit Ratings, Contagion Effect, Economic Freedom, Strategic International Relations.

Section One – Introduction

Eurobonds are a crucial asset class that provides a mean for international diversification for investors which offers an attractive risk-return profile along with relative liquidity and transparency. They enable borrowers in emerging and developing markets, in particularly sovereign entities, to access a broad investor base and manage their debt portfolios flexibly. Eurobonds play a significant role in macro-finance by channeling debt capital flows to and from emerging markets. During debt crisis, the re-profiling and restructuring of Eurobonds is a pivotal component of resolution efforts. The pricing of Eurobonds is closely monitored as a benchmark of market participants' risk perceptions and serves as an indicator for pricing other financial products (Hardy, 2022).

With the fiscal needs outstripping country revenues, various governments resorted to borrowing through Eurobonds from the international markets (Rusike & Alagidede, 2021). Along with the large fiscal financing needs, reasons behind Eurobond issuances by African countries include the favorable global financing conditions and drop in commodity prices. After the heave in credit ratings, Eurobonds surged (Mecagni et al., 2014). Spreads on sovereign bond yields have always been used as a measure of emerging market creditworthiness and investor's financial compensation for enduring sovereign risk; by that, pricing of the financial assets are driven by both investor's appetite for risk and country specific fundamentals (Remolona et al., 2007). While following this conjecture, Mauro, Sussman and Yafeh (2002) argued that sovereign bond spreads co-move to a great extent, where they are driven mostly by global events than country specific fundamentals. Similarly, Westphalen (2001), McGuire and Schrijvers (2003) and Garcia-Herrero and Ortiz (2007) also debated that there is a common factor related to the changes of emerging market spreads when linked to international developments along with Baek et al. (2005) who claimed that "countries that are not necessarily experiencing changes in economic fundamentals may find changes in their bond yield spreads because of a change in the market's attitude towards risk".

This paper delves deeper into the implications of the country specific, global events and international developments on the emerging markets Eurobonds. Specifically, the focus will be on

further exploring the effects of Economical Freedom, Contagion effect of U.S. Treasury Bonds and the Impact of Economic & Strategic relations between emerging economies and the U.S. on the performance of the selected Eurobonds under study. The literature review is structured to stipulate a comprehensive analysis of the different factors affecting Eurobonds in emerging markets, with a specific emphasis on two performance indicators: Eurobond prices and Eurobond credit ratings. It starts with testing the pricing dynamics of Eurobonds followed by an evaluation on the role of credit rating agencies and their impact on perceived return and risk. The review then analyzes the relationship between Economic freedom, the phenomenon of financial contagion and the effect of strategic international relations on Eurobond performance. By knowing the effects of these relationships, stakeholders can better direct the complexities of the Eurobond market, especially in emerging economies where risk and volatility are prominent.

Section Two – Literature Review

I – Performance Indicator 1: Eurobond Prices

As stated above, the pricing of Eurobonds is a fundamental performance indicator as it reflects investor perceptions of market stability and credit risk. The fluctuation in Eurobond prices is a response to the changes in perceived macroeconomic conditions, creditworthiness and geopolitical events. In the case of decline in Eurobond prices, investor's concern arises over the issuer's ability to pay its debt obligations that are possibly driven by adverse political instability and economic news (Krishnamurthy et al., 2023). Previous researches have shown that Eurobond yields highly react to changes in global risk sentiment where spreads widen during periods of market uncertainty (Huang et al., 2023). This sensitivity makes Eurobond pricing an important tool for analyzing and forecasting shifts in credit risk and market state.

Moreover, the relationship between Eurobond pricing and global economic factors underlies its role as a performance indicator. Several studies concluded that fluctuations in Eurobond prices is linked to global interest rate changes and transformations in investor risk appetite (Mendoza & Schmitz, 2023). For example, during economic downturns or periods of high uncertainty, prices tend to fall as investors require higher yields to compensate for the higher risk

(Gertler & Karadi, 2023). Additionally, changes in interest rates and investor risk appetite as proven in some studies show that rising interest rates tend to lead to a decline in bond prices (Bernanke & Blinder, 2022). In the case of COVID-19 pandemic, high volatility in Eurobond prices reflected investor concern about economic disruptions and the stability of the emerging markets (Faria et al., 2023). Also, Eurobond pricing not only reflects the current financial and economic conditions, but also provides broader comprehension into global capital market trends making it a vital tool of both immediate and long-term market dynamics (Albuquerque et al., 2023).

II – Performance Indicator 2: Eurobond Credit Rating

Eurobonds, serving as debt instruments, entail a commitment from the issuer to provide bondholders with coupon payments scheduled on dates as outlined in the terms of the issuance. Holders in debt securities are exposed to various risks, including the prominent risk of default. With that, credit rating agencies (Standard and Poor's, Moody's and Fitch) act as a key metric and pivotal indicator for the probability of debt default (Fabozzi, 2013). They are intermediaries between issuers and investors, evaluating the creditworthiness of issuers worldwide (Bongaerts et al., 2012). Their evaluations greatly impact issuers' access to and cost of capital (SEC,2003), making credit ratings an important performance indicator for Eurobonds.

The majority of researches centered on testing how common stocks reacted to rating changes (Griffin & Sanvicente, 1982; Cornell, landsman, & Shapiro, 1989; Goh & Ederington, 1999). However, a few have been conducted on issuers at the time of Eurobond issuance (Frydrych, 2020). Moreover, there are challenges concerning CRAs stemming from conflicting viewpoints regarding their impact on the performance of Eurobonds. At the beginning of the paper (Frydrych, 2020) argued that the more creditworthiness assessment done on Eurobonds the lower the cost of debt where the argument was later disregarded mentioning that the number of ratings attained does not affect the coupon rate thus cost of debt not affected. This discovery shows that a single evaluation done by the CRA is ample and no need for issuers to incur extra costs for further assessments by other agencies. Furthermore, several authors have also examined and discussed the implications of the credit rating announcements on sovereign bonds. During the timeframe of 1997 and 2000, Kräussl (2005) states that credit rating changes and outlooks have a significant

effect on the volatility and volume of lending in emerging markets especially in the cases of negative outlooks and downgrades. In addition, Reisen and von Maltzan (1999) reported that when a country has been reviewed for a downgrade, its sovereign bond yield spreads are significantly affected.

Adding to the above, Afonso et al. (2014) argued at the beginning of the paper that for emerging markets, positive events have a great influence on the CDS (Credit Default Swaps) markets causing spillovers to other countries; where positive credit ratings is mostly relevant in emerging markets and negative events are tentatively anticipated. Contrary to the previously mentioned findings, Afonso et al. (2014) later concludes that for contagion/spillovers, both upgrades and downgrades in one specific European country will also cause a certain level of volatility in the rest of the European countries and that the CRAs spillover effects are not just limited to emerging markets. Later on, Rusike and Alagidede (2021) came to conclude that on average only one third of the actions taken regarding ratings impact bond yields in African countries and generally implied that the effect of CRAs on bond yields is weak. They also mention that "not all rating actions by CRAs impact on bond yields. The results signify that bond investors are not solely relying on CRAs as the only experts on creditworthiness. The development of the fixed income market has probably helped to reduce the influence of CRAs rating changes on bond yields."

III – Economic Freedom

Recently, the Middle East and North Africa (MENA) region have encountered several hurdles, some of which are civil conflicts, political unrest, increasing unemployment rates, falling oil prices and economic vulnerability. With that, some governments have started implementing various economic reforms and initiatives and development strategies to enhance economic advancement (ElBannan, 2021). To assess the efficacy of the newly introduced initiatives and reforms, and for the context of this paper, Economic Freedom, characterized by twelve components (Property Rights, Judicial Effectiveness, Government Integrity, Tax Burden, Government Spending, Fiscal Health, Business Freedom, Labor Freedom, Monetary Freedom, Trade Freedom, Investment Freedom, Financial Freedom) as defined by the Heritage Foundation,

has been used. Yang et al. (2023) also elaborates how economic freedom help foster two paths for growth (1) path for the adoption and development of new technologies and designs (2) influencing the level of market investment and the openness of an economy, due to the index comprehensively capturing the complex and multifaceted aspects of financial development which includes accessibility, depth and efficiency. While prior researches have explored the effect of Economic Freedom on FDI inflows and financial development, this paper aims to explore its significance in relation to the performance of emerging market Eurobonds.

Firstly, the Economic Freedom as published by the Heritage Foundation is described as "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. In economically free societies, governments allow labor, capital, and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself." Below is a brief definition of each freedom directly attained from the Index of Economic Freedom:

I. **Property Rights:** "The property rights component assesses the extent to which a country's legal framework allows individuals to acquire, hold, and utilize private property and the extent to which these rights are secured by applicable laws that the government enforces effectively." Property rights are necessary because they provide the legal guarantee needed for businesses and individuals to invest securely. When property rights are protected, individuals and businesses are more willing to invest in assets, aware that their ownership is secure against any expropriation. This assurance is key for economic development which encourages both local and foreign investment.

II. **Judicial Effectiveness**: "Properly functioning legal frameworks are essential for protecting the rights of all citizens against unlawful acts by others, including governments and powerful private parties." A healthy legal structure protects individuals and businesses from unlawful events where rights are enforced and disputes are resolved effectively. Efficient judicial frameworks lead to economic stability and fosters a fair field for economic activities.

III. **Government Integrity:** "Corruption erodes economic freedom by introducing insecurity and coercion into economic relations. Of greatest concern is the systemic corruption of government institutions and decision-making by such practices as bribery, extortion, nepotism, cronyism, patronage, embezzlement, and graft. The lack of government integrity that such practices cause reduces public trust and economic vitality by increasing the costs of economic activity." The higher the levels of corruption the higher the cost of doing business. Economies with low corruption levels become more attractive to investors, offering a more transparent and stable environment for business transactions, lowering the costs and risks related to corrupt practices.

IV. **Tax Burden:** "Tax burden is a composite measure that reflects marginal tax rates on both personal and corporate income and the overall level of taxation (including direct and indirect taxes imposed by all levels of government) as a percentage of gross domestic product (GDP)."

V. **Government Spending:** "The government spending component captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs."

   a. Tax Burden and Government Spending are both interlinked in affecting economic vitality. Economies with high tax burden can discourage consumption and investment where the capital available by individuals and businesses is reduced which large government spending waves out private investment. The two should be balanced to serve adequate public services and encourage economic activity.

VI. **Fiscal Health:** "Widening deficits and a growing debt burden, both of which are caused by poor government budget management, lead to the erosion of a country's overall fiscal health, and deteriorating fiscal health is associated with macroeconomic instability and economic uncertainty." It assesses how the long-term government finances will be efficiently sustained. The widening deficits and high debt levels can cause macroeconomic

instability and lack of investor confidence. It is pertinent to have strong fiscal health to ensure that economic policies do not lead to financial crises affecting economic growth.

VII. **Business Freedom:** "The business freedom component measures the extent to which a country's regulatory and infrastructure environments constrain the efficient operation of businesses." It is pivotal for economic drive where economies with high business freedom experience a great deal of entrepreneurship and innovation because businesses operate efficiently without any bureaucratic input.

VIII. **Labor Freedom:** "The labor freedom component is a quantitative measure that considers various aspects of the legal and regulatory framework of a country's labor market, including regulations concerning minimum wages, associational rights, laws inhibiting layoffs, severance requirements, and measurable regulatory restraints on hiring and hours worked, in addition to the labor force participation rate and labor productivity as an indicative measure of employment opportunities in the labor market." It mirrors the flexibility of labor markets and the employment opportunities available. The labor market that provides suitable working conditions and low regulatory constraints can efficiently react to any economic shifts and improve the overall labor market productivity.

IX. **Monetary Freedom:** "Monetary freedom combines a measure of inflation with an assessment of various government activities that distort prices." Stable prices are important for economic expectedness where they allow consumers and businesses to make informed financial decisions without any variabilities of government-applied price restrictions.

X. **Trade Freedom:** "Trade freedom is a composite measure of the extent of tariff and nontariff barriers that affect imports and exports of goods and services."

XI. **Investment Freedom:** "In an economically free country, there would be no constraints on the flow of investment capital. Individuals and firms would be able to move their resources into and out of specific activities, both internally and across the country's borders, without restriction."

a. Both Trade and Investment freedom are vital for integrating economies into the global market. Investment freedom allows for a steady capital flow across borders while trade freedom reduces limits to importing and exporting goods and access to international markets fostering competition.

XII. **Financial Freedom:** "Financial freedom is both an indicator of banking efficiency and a measure of independence from government control and interference in the financial sector. State ownership of banks and other financial institutions such as insurers and capital markets reduce competition and generally lowers the level of access to credit." A competitive financial sector free from government dominance allows for better credit access and financial services which are essential factors for any economic development and innovation.

In the analysis of the impact of Economic Freedom on FDI inflows, Beheshtitabar et al. (2008) concluded that the overall positive and significant coefficient led to favorable effects on the FDI inflows. Similarly, Yang et al. (2023) mentioned that irrespective of the existence of exogenous and endogenous shocks, improving economic freedom and promoting inclusive growth enhances a country's financial development having a positive correlation between economic freedom and inclusive growth with the development of financial institutions and markets. Research indicates that countries with strong property rights, transparent regulatory environments and low corruption levels are viewed as lower-risk destinations for investment (Ljubaj, 2020). Furthermore, some studies showed that by safeguarding property rights and lowering regulatory barriers, it encouraged individuals to invest in new technologies, driving economic growth (Gwartney & Lawson, 2020). Economies with higher economic freedom scores exhibit high levels of technological productivity and advancement (Cebula & Toma, 2021). These indicators are yet to be tested with Eurobonds, as no prior research has been conducted in that regard and understanding their impact can provide valuable insights on how economic freedom factors can influence the financial performance and market behavior.

IV – Contagion Effect

Before the 1990s, scholars and experts viewed financial and economic crises as events that mostly impacted the markets of which the financial turbulence originated. But since mid-1990s, crises originating in emerging markets have been characterized by the phenomenon of contagion. The contagion effect was mostly evident and more pronounced later in the global downturn of 2007-2009 (Ballester et al., 2019). During the crisis, developing nations experienced a significant drop in their exports as a result of the decline in consumption in developed economies stemming from the crisis. Even though the global downturn of 2008-2009 originated in a developed economy unlike the case of crises of the 1990s, yet the repercussions for emerging economies have been somewhat similar: an unexpected halt of capital inflows leading to an economic crisis (Darolles et al., 2019). Emerging sovereigns are ranked among the largest borrowers at high yields globally. Since the global financial crisis, these market's debt and budget deficits have surged, making them more susceptible to sudden rise in borrowing costs. Darolles et al. (2019) indicates that emerging markets are highly vulnerable to both regional and global shocks, and particularly unstable compared to advanced economies where their heightened risk profile is due to their political, currency, liquidity, extreme returns, contagion and systemic risks.

Understanding the dynamic spillovers occurring among financial markets, in particularly debt markets, is critical for policymakers and investors. It aids in planning the appropriate policy decisions, understanding business cycles and assessing the diversification advantages for international portfolios. Several factors impact both the strength and direction of spillovers within the fixed-income markets of both developed and developing countries (Umar et al., 2021). Considering the case of Covid-19, the virulent disease has led to major influences on both financial markets and economies. Sene et al. (2021) demonstrated that the yields on Eurobonds of both emerging and developed markets overreacted on the economic downturn triggered by the Covid-19 in the first half of 2020. They then mention how in late March 2020 emerging bond markets reached their peaks in regards to liquidity and credit stresses. The pandemic has mostly caused damage in the emerging markets due to its significantly weak growth prospects, high policy uncertainty and fragile economic conditions (Djankov & Panizza, 2020). For instance, Harjoto et al. (2021) states that the number of reported cases and deaths impacts emerging markets while only number of cases affects the equity market in developed economics.

Umar et al. (2021) then shows in their paper that a systemic crisis, similar to that of Covid-19, leads to the decrease by a great degree in the diversification and hedging attributes of the EM and U.S. bonds. They then demonstrated that the emerging market bonds exhibit the highest spillover to other countries unlike the spillover exhibited by U.S. bonds where the extent of volatility spillovers from the emerging market debt is significant, indicating a strong integration of the emerging debt markets with the international debt markets. This highlights that the EM bond markets are much more sensitive than the U.S. governmental debt.

V – Strategic International Relation

A – Strategic Economic Relation

The progression in technology of information, notably the internet has significantly enhanced global connectivity where the information age has undoubtedly supported policy efforts aimed towards market liberalization over the past four decades fostering globalization (Balli et al., 2015). Globalization has led the world dynamically interconnected, so with this intricate complex global link, economies are now tackling the same portfolios to promote economic growth and prosperity. Within this framework, the extent and intensity of international trade among the world's major economies holds substantial influence on the global economic recovery. As the largest economy globally, the United States' involvement in international trade has been shown by numerous studies to be beneficial not only for America but also on the global scale. In the study, it was observed that the advent of the 2019 Covid pandemic has caused major disruptions in American bilateral trade with emerging economies where bilateral trade was later seen to have adjusted based on the political and economic ties the U.S. shares with the emerging countries (Kumar et al., 2022). Furthermore, another study emphasized that trade wars between the U.S. and emerging markets pose a significant threat to the global economy where embracing protectionism is not the most efficient solution when addressing the current account deficits rooting largely from inadequate net savings (Bouët & Laborde, 2018). Balli et al. (2015) also shows that bilateral trade, security investments, shared language and market capitalization are key components influencing shock spillovers to emerging markets. Additionally, the research also suggests that geographical distance and colonial connections also play a role.

Furthermore, strategic economic relations are rather complicated by the part multinational companies and the global supply chain play. These corporations tend to be at the forefront of steering the mentioned interdependencies that globalization has caused. For this case, the U.S. has utilized its economic power and technological innovations to create deep-rooted trade relations with emerging countries, decreeing the terms that support its strategic interests (Stiglitz, 2017). Such economic ties and policies are often used as a mean for exerting influence over emerging countries (Rodrik, 2018). For instance, the financial system is heavily dependent on the U.S. dollar, making emerging markets susceptible to any shifts in U.S. monetary policy leading to significant economic volatility (Eichengreen, 2021). By that, the strategic application of trade tariffs and agreements has been necessary for the U.S. in managing its economic relations with emerging nations, especially with the rising competition of other countries like China (Baldwin, 2016). These factors imply the importance of strategic economic relations in shaping the world economic order and the main role the U.S. plays in this complex interconnectedness.

B- Strategic Political Relation

Figures compiled by the Stockholm International Peace Research Institute (SIPRI) demonstrated that the United States dominated major weapon deliveries, constituting 39% of the total over the five-year span from 2017-2021. This share is twice the size of Russia's contribution and over eight times China's share. Advocates of weapons exports promote sales by asserting that they aid U.S. allies in self-defense, foster stability in crucial regions, deter U.S. adversaries, cultivate military ties with current and potential partner nations, exert political and diplomatic influence, and boost domestic employment in the United States. On the contrary, arm sales carry risks to U.S. security, leading to the escalation of conflicts, provocation of adversaries, stimulate arm races and involvement in unnecessary wars. Roughly, two-thirds of ongoing conflicts – 34 out of 46 – involve one or more parties armed by the United States where in some instances, they significantly contribute to the continuation and exacerbation of hostilities (Hartung, 2022). It was also noted that for developing countries as a whole, military spending and the existence of armed forces consistently exert a negative effect on the economy (Nolan, 2001). In 2020, the global arms trade was estimated to constitute about 0.5% of the total global trade in all products and services. But unlike general trade in goods and services, arms transfers involve not only economic issues

but also the allocation of military capabilities, international relations, political security and defense strategies where arm trade linkages most likely to occur between countries where there is a low and medium economics levels along with medium levels of military burden (Wang et al., 2023).

In the context of arms trade, there are profound effects on the geopolitical and economic stability of emerging markets. The association of armament trade and military aid with economic policies tends to affect the sovereign risk and fiscal health of these countries. For example, arms trade deals between emerging markets and major developed nations can strengthen political alliances and enhance security assurances but they come with the risk of heightening regional conflicts, destabilizing economies and increasing the cost of severing debt (Perlo-Freeman & Sköns, 2021). Moreover, previous studies showed that such strategic relations can inflict long-term economic burdens on emerging nations by shifting resources to military expenditures instead of productive investments (Deger & Sen, 2023). Not only so, but arms trade often causes dependence on developed major powers in regards to political alignment and economic policies, limiting the emerging countries their economic sovereignty (Feaver & Gelpi, 2004). With this said and for the purpose of this paper, its pertinently crucial to examine the impact of American bilateral/arm trade with the emerging countries under study.

This research paper differentiates itself from previous literatures by employing an approach where the Eurobond credit ratings are treated as the dependent variable rather than an independent variable. Earlier studies focused mostly on the various factors influencing Eurobond prices or yields, this paper reverses the perspective by testing how different financial and economic determinants directly affect the credit ratings of the Eurobonds assigned. This method fills in a significant research gap where the focus is shifted towards comprehending the determinants of Eurobond credit ratings instead than their impact on other financial metrics.

Section Three – Data and Descriptive Statistics

This study utilizes panel data derived from emerging market USD-denominated Eurobond prices spanning from April 30, 2018 to September 29, 2023. The countries under study are: Argentina, Brazil, China, Egypt, Indonesia, Jordan, South Korea, Mexico, Mongolia, Morocco,

Pakistan, Peru, Philippines, Poland, Qatar, Romania, Saudi Arabia, Sri Lanka, Thailand, Turkey, Uzbekistan and UAE. The mentioned countries were selected due to their extensive activity and consistent issuance of the Eurobonds. The mentioned data was sourced from Bloomberg.

Eurobond credit ratings were obtained from Moody's, as previously mentioned in the paper that a single evaluation suffices, lowering issuer costs for additional assessments by other agencies (Frydrych, 2020). Economic freedom results were acquired from the Heritage Foundation. Data for measuring the contagion effect utilized yields of U.S. Treasury Bonds from S&P Dow Jones Indices. Strategic political relations data was attained from SIPRI, while strategic economic relations data was sourced from Trade Map. Limitations arose regarding the extracted data, as the prices of emerging market Eurobonds, credit ratings, U.S. Treasury bond yields, and economic freedom data were available on a monthly basis, whereas data on strategic political and economic relations were obtained annually.

Table One: Data Summary

Variable	Obs	Mean	Std. Dev.	Min	Max
Prices	2,084	92.64	16.76	23.42	112.42
Rating	4,769	2.37	0.59	1	3
Free Capital Flows	3,539	54.97	15.30	0	80
Enforcement of Contracts	3,064	48.82	15.03	13	87.10
Contagion Effect	4,971	0.02	0.01	0	0.05
Strategic Political Relation	2,008	4.38	1.69	0	7.96
Strategic Economic Relation	2,585	23.97	79.79	-16.20	403.80

A - Dependent Variable:

In this paper, two performance indicators were utilized to assess the performance of the Eurobonds under study. The first indicator focused on the prices of the emerging market Eurobonds, the second centered on the credit ratings assigned to these Eurobonds.

The rationale for selecting these indicators, as previously stated in the paper, stems from the close monitoring of Eurobond pricing as a benchmark of market participants' risk perceptions

and acts as an indicator for pricing other financial products (Hardy, 2022). Moreover, research underscores the significance of Eurobond pricing and credit ratings in comprehending market dynamics where Rusike and Alagidede (2021) emphasize that those fluctuations in credit ratings highly impact Eurobond yields in African countries. Similarly, Remolona et al. (2007) and Mauro, Sussman, and Yafeh (2002) argue that sovereign bond spreads affected by credit ratings, co-move extensively due to global factors suggesting that credit ratings serve not only as risk metrics but also as indicators of vast market sentiment and economic stability.

B - Independent Variable:

To explore the dynamics of emerging market Eurobonds, our study incorporated several variables, the contagion effect proxied by U.S. Treasury Bond yields, economic freedom where we mostly focused on Judicial Effectiveness "Enforcement of Contracts" and Investment Freedom "Free Capital Flows", strategic economic relations proxied by the trade balance between the mentioned countries and the U.S and strategic political relations measured by the arm exports from the U.S. to the countries under study. The use of the mentioned variables into our study of emerging market Eurobonds provides for a comprehensive analysis of their impact on risk perceptions, pricing and market movements. The contribution of each variable is as follows: the contagion effect emphasizes systemic risks and global market interdependencies (Darolles et al., 2019), economic freedom highlights governance and regulatory environments moving borrowing costs (Yang et al., 2023), strategic economic relations reflect trade and economic policies' influence (Balli et al., 2015) while strategic political relations underline geopolitical risks and their financial effects (Hartung, 2022).

By adding these variables, researchers and investors can develop their understanding of how internal and external factors influence the performance of Eurobonds in emerging markets, offering insights into policy implications and risk management for both issuers and investors similarly.

Section Four – Research Methodology

To assess the impact of the variables on the two performance indicators of this study in regards to the emerging market Eurobonds, a rigorous quantitative approach using panel data analysis was used. The fixed effect linear regression model was selected due to its effectiveness in controlling for unobserved heterogeneity within countries over time. This deemed essential given the complexities inherent in analyzing Eurobonds where various external and internal factors influence the pricing dynamics. To ensure the soundness of the results and avoid endogeneity concerns, an instrumental variable (IV) approach was later utilized. The model used in analyzing Eurobond prices is as follows:

$$Eurobond\ Prices_{it} = \alpha_i + \beta_1 Free\ Capital\ Flows_{it} + \beta_2 Enforcement\ of\ Contracts_{it} + \beta_3 Contagion\ Effect_{it} + \beta_4 Strategic\ Political\ Relation_{it} + \beta_4 Strategic\ Economic\ Relation_{it} + \gamma_t + \epsilon_{it}$$

Where:

- $Eurobond\ Prices_{it}$ represents the dependent variable denoting the prices of Eurobonds for country *i* at time *t.*
- $Free\ Capital\ Flows_{it}$, $Enforcement\ of\ Contracts_{it}$, $Contagion\ Effect_{it}$, $Strategic\ Political\ Relation_{it}$, $Strategic\ Economic\ Relation_{it}$ represent the independent variables influencing Eurobond prices.
- α_i are country fixed effects.
- γ_t are time fixed effects.
- ϵ_{it} is the error term.

Furthermore, a robustness test was conducted by using an ordered logit model to analyze the relationship between the variables and credit ratings assigned to the Eurobonds. The results attained from the ordered logit model reflected those of the fixed effect regression, showing additional insights into the credit ratings drivers in the emerging markets. The model used in analyzing Eurobond credit ratings is as follows:

$$Eurobond\ Credit\ Ratings_{it} = \alpha_i + \beta_1 Free\ Capital\ Flows_{it} + \beta_2 Enforcement\ of\ Contracts_{it} + \beta_3 Contagion\ Effect_{it} + \beta_4 Strategic\ Political\ Relation_{it} + \beta_4 Strategic\ Economic\ Relation_{it} + \gamma_t + \epsilon_{it}$$

Where:

- $Eurobond\ Credit\ Ratings_{it}$ represents the dependent variable denoting the credit ratings of Eurobonds for country *i* at time *t.*
- $Free\ Capital\ Flows_{it}$, $Enforcement\ of\ Contracts_{it}$, $Contagion\ Effect_{it}$, $Strategic\ Political\ Relation_{it}$, $Strategic\ Economic\ Relation_{it}$ represent the independent variables influencing Eurobond prices.
- α_i are country fixed effects.
- γ_t are time fixed effects.
- ϵ_{it} is the error term.

Previous studies have used similar approaches where for instance, Afonso et al. (2012) utilized a fixed effect regression model to analyze the impact of fiscal variables on sovereign bond spreads in the Euro zone. The results showed that higher debt levels and fiscal deficits increased bond spreads. In contrast to the approach used in this paper, earlier studies like Kaminsky and Schmukler (2002) used credit ratings as independent variables to study their implications on bond yields and spreads where they employed regression analysis and event study methodologies to reflect how alterations in credit ratings and outlooks move bond yields and affect investor behavior.

Section Five – Empirical Results

A – Regression Model

In analyzing the data using the fixed effect linear model to study the effect of various factors on emerging market Eurobond prices, several variables were used: Free Capital Flows, Enforcement of Contracts, Strategic Political Relations and Strategic Economics Relations.

Table Two: Regression Results of Fixed & IV Model

VARIABLES	Dep=Prices Fixed Effect	Dep=Prices IV-Model
Free Capital Flows	0.0039***	0.0038***
	(0.0008)	(0.0008)
Enforcement of Contracts	0.0015***	0.0015***
	(0.0002)	(0.0002)
Contagion Effect	-1.8192***	-1.8190***
	(0.1684)	(0.1669)
Strategic Political Relation	0.0114***	0.0132***
	(0.0023)	(0.0024)
Strategic Economic Relation	0.0027***	0.0023***
	(0.0007)	(0.0007)
Observations	766	752
Number of Issuers	30	30
R-squared	0.4323	0.4424
Time FE	YES	YES
Issuer FE	YES	YES
Sargan Test (Pvalue)	--	0.6988
Cragg-Donald Test	--	1299***
Anderson Canonial Correlation	--	634***

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results shown above indicates statistically significant relationships between the Eurobond prices and the independent variables. Free Capital Flows and Enforcement of Contracts both show positive coefficients of 0.0039 and 0.0015 respectively significant at the 1% level. This means that countries with more liberal capital flows and efficient contract enforcement tend to demonstrate higher Eurobond prices, mirroring lower perceived risk and lower borrowing costs.

Conversely, the Contagion Effect showed a negative coefficient of -1.8192 significant at the 1% level indicating that higher levels of contagion, which reflects global market interdependencies and systemic risks, lead to lower prices of Eurobonds because of perceived volatility and risk in emerging markets.

Lastly, the Strategic Political and Economic Relations also exhibited positive coefficients of 0.0114 and 0.0027 respectively at the 1% significance level. These results show that stronger relationships in economic and political domains between emerging markets and major economies (like the US) show higher Eurobond prices indicating enhanced investor confidence and stability. Overall, the fixed effect model with an R-squared result of 0.4323 concludes that these variables collectively show a substantial input of the variation in Eurobond prices across all the emerging markets under study.

Addressing endogeneity in the above data was a crucial concern to ensure the validity of the results attained, thus to mitigate this concern, an instrumental variable (IV) approach was used as mentioned previously. In the IV model results, Free Capital Flows and Enforcement of Contracts continued to show positive significant coefficients of 0.0038 and 0.0015 respectively, showing consistency with the fixed effect model results. Also, the Contagion Effect maintained a negative coefficient of -1.8190 confirming that higher levels of contagion adversely affect Eurobond prices because of increased risk perceptions and market volatility. Similar outcomes were obtained in both the cases of Strategic Economic and Political relations. The IV-model's robustness test was supported by the Sargan test, Cragg-Donald test, and Anderson Canonical Correlation, all of which confirmed the validity of the variables used.

B – Robust Model

For robust testing, ordered logit model (Ologit) was used aiming to assess the relationship between the various independent variables against the credit ratings instead of Eurobond prices. The ordered logit model is suited for ordinal dependent variables (such as credit ratings and rankings) where the categories have a certain order but the intervals between them are not in particularly equal.

Table Three: Robustness Test Results

VARIABLES	Dep=Rating Ologit Model
Free Capital Flows	0.0213**
	(0.0098)
Enforcement of Contracts	0.0699***
	(0.0082)
Contagion Effect	24.2307
	(32.6747)
Strategic Political Relation	1.4459***
	(0.0736)
Strategic Economic Relation	0.0336***
	(0.0043)
Constant cut1	6.2906***
	(1.4157)
Constant cut2	13.1633***
	(1.4656)
Observations	1,931
chi2	599.8
Log-Likelihood	-835

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in the above table shows several statistically significant connections between the credit ratings and the stated independent variables. Particularly, Enforcement of Contracts shows a coefficient of 0.0699 with a robust standard error of 0.0082, exhibiting a strong positive association with the credit rating. This means that stronger Enforcement of Contracts tends to lead to higher ratings. Similarly, variables such as Strategic Political and Economic Relations show significant positive coefficient of 1.4459 and 0.0336 respectively, meaning that these factors positively affect the credit ratings of the Eurobonds.

On the other hand, results attained for the Contagion Effect in the regression model were unusual shown by the abnormally large coefficient of 24.2307 and high standard error of 32.6747. These results show that the model struggled to accurately estimate the effect of the contagion effect due to statistical issues such as data anomalies or multicollinearity. The high standard error outcome exemplifies the uncertainty around this variable, raising concerns about the credibility of

the results. Moreover, the high coefficient could be a result of overfitting or model misspecification where the regression model failed to correctly state the true relationship between sovereign ratings and contagion effect. This may suggest that the abnormal results are stemming from issues within the data or model rather than the actual impact of contagion effect on the sovereign ratings.

Moreover, the model's chi-squared value of 599.8 and Log-Likelihood of -835 shows that the model fits the data significantly better than a null model with no predictors. The chi-squared results suggest that the included independent variables overall contribute considerably to explaining the variation in the ordinal dependent variable, credit ratings.
Overall, the model provides a robust framework for the analysis of the ordinal data where the significant coefficients and model fit statistics confirms the validity of the model in underlying factors influencing the credit ratings under study.

Section Six - Conclusion

This study was able to provide a robust framework for assessing the determinants of Eurobond pricing and credit ratings issued by emerging markets. The results emphasize the significant role of enforcement of contracts, strategic political relations and strategic economic relations in influencing credit ratings while also free capital flows' impact on Eurobond prices. The use of fixed effects linear regression and ordered logit models confirms the reliability of these results, showing valuable insights for both policymakers and investors.

The key contribution of this research paper is the ability to fill a notable gap in the existing literatures in regards to the variables affecting Eurobond performance in the emerging markets. Previous literatures mostly focused on macroeconomic indicators and traditional financial metrics overlooking the impacts of economic freedom, strategic economic and political interactions. By inducing these variables, this paper expands the analytical work and gives a more detailed understanding of the internal and external forces at play in the Eurobond market.

The insights attained from this paper can support policymakers in setting strategies to improve the financial stability and avoid risks associated with Eurobond investments. For example, by improving the enforcement of contracts and enhancing international strategic relations,

governments can improve their credit ratings thus attracting more favorable investment conditions. Not only so, but the insights provided could also help investors make informed decisions improving the overall efficiency of the Eurobond market. Investors can leverage on the information to better assess the risk-return aspect of the Eurobond investments and having a more strategic and data-driven investment decision.

The outcomes achieved in the paper show the critical link between internal governance factors and external strategic relations that could pave the way for further future research in different market contexts. Future research can explore additional variables, such as the impact of political stability, regulatory changes and international economic shifts, or examining other emerging markets. To conclude, this research paper not only addresses a gap in understanding the performance of Eurobond markets in emerging markets but also sets the way for further studies to delve deeper into influences on financial products in the region.

References

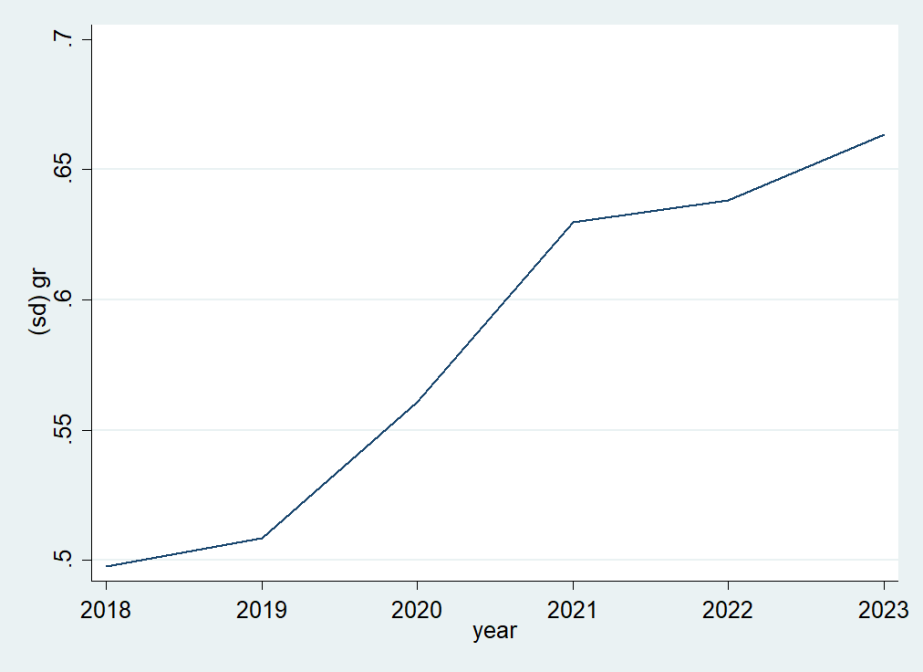
1. Afonso, A., Furceri, D., & Gomes, P. (2012). Sovereign credit ratings and financial markets linkages: Application to European data. *Journal of International Money and Finance, 31*(3), 606-638.
2. Afonso, A., Gomes, P., & Taamouti, A. (2014). Sovereign credit ratings, market volatility, and financial gains. *Computational Statistics & Data Analysis, 76*, 20–33.
3. Albuquerque, R., Carvalho, V. M., & Ferrari, R. (2023). Global risk sentiment and emerging markets: Evidence from Eurobonds. *Journal of Financial Markets, 65*, 65-90.
4. Baek, I-M, Bandopadhyaya, A., & Du, C. (2005). Determinants of market-assessed sovereign risk: Economic fundamentals or market risk appetite? *Journal of International Money and Finance, 24*, 533-548.
5. Baldwin, R. (2016). *The Great Convergence: Information Technology and the New Globalization*. Harvard University Press.
6. Ballester, L., Díaz-Mendoza, A. C., & González-Urteaga, A. (2019). A systematic review of sovereign connectedness on emerging economies. *International Review of Financial Analysis, 62*, 157–163.
7. Balli, F., Balli, H. O., Jean Louis, R., & Vo, T. K. (2015). The transmission of market shocks and bilateral linkages: Evidence from emerging economies. *International Review of Financial Analysis, 42*, 349–357.
8. Beheshtitabar, E., & Irgaliyev, A. (2008). The impact of economic freedom on FDI inflows to developing countries: The case of the Middle East. *Jonkoping International Business School*.
9. Bernanke, B. S., & Blinder, A. S. (2022). *The Federal Reserve and the financial crisis*. Princeton University Press.
10. Bongaerts, D., Cremers, K. J., & Goetzmann, W. N. (2012). Tiebreaker: Certification and multiple credit ratings. *The Journal of Finance, 67*(1), 113–152.
11. Bouët, A., & Laborde, D. (2018). US Trade Wars in the twenty-first century with emerging countries: Make America and its partners lose again. *The World Economy, 41*(9), 2276–2319.
12. Cebula, R. J., & Toma, M. (2021). Economic freedom and economic growth: An updated Granger causality analysis for the USA. *Journal of Policy Modeling, 43*(5), 927-940.
13. Cornell, B., Landsman, W., & Shapiro, A. C. (1989). Cross-sectional regularities in the response of stock prices to bond rating changes. *Journal of Accounting, Auditing and Finance, 4*(4), 460–479.
14. Deger, S., & Sen, S. (2023). The economic effects of military expenditure in developing countries. *Journal of Peace Research, 42*(5), 553-571.
15. Djankov, S., & Panizza, U. (2020, September 29). Covid-19 in developing economies. *EconPapers*.
16. Eichengreen, B. (2021). *Globalizing Capital: A History of the International Monetary System*. Princeton University Press.

17. ElBannan, M. A. (2021). On the prediction of financial distress in emerging markets: What matters more? empirical evidence from Arab Spring countries. *Emerging Markets Review, 47*, 100806.
18. Fabozzi, F. J. (2013). *Bond Markets, Analysis, and Strategies*. Pearson Education Limited.
19. Faria, J. R., Gracia, J., & Silva, E. (2023). Impact of COVID-19 on Eurobond pricing and emerging market stability. *Emerging Markets Review, 56*, 101-123.
20. Feaver, P. D., & Gelpi, C. (2004). *Choosing Your Battles: American Civil-Military Relations and the Use of Force*. Princeton University Press.
21. Frydrych, S. (2020). The role of credit rating of the eurobond issuers from Central and Eastern Europe. *Annales Universitatis Mariae Curie-Skłodowska, Sectio H – Oeconomia, 54*(4), 31.
22. García-Herrero, A., & Ortiz Saravia, A. (2007). The role of global risk aversion in explaining sovereign spreads. *Economía, 7*(1), 125–155.
23. Gertler, M., & Karadi, P. (2023). The macroeconomic effects of the pandemic on financial markets. *Review of Economic Studies, 90*(4), 2145-2174.
24. Goh, J. C., & Ederington, L. H. (1999). Cross-sectional variation in the stock market reaction to bond rating changes. *The Quarterly Review of Economics and Finance, 39*(1), 101–112.
25. Griffin, P. A., & Sanvicente, A. Z. (1982). Common stock returns and rating changes: A methodological comparison. *The Journal of Finance, 37*(1), 103.
26. Gwartney, J., & Lawson, R. A. (2020). *Economic Freedom of the World: 2020 Annual Report*. Fraser Institute.
27. Hardy, D. (2022). Sovereign eurobond liquidity and yields. *IMF Working Papers, 2022*(098).
28. Harjoto, M. A., Rossi, F., Lee, R., & Sergi, B. S. (2021). How do equity markets react to COVID-19? evidence from emerging and developed countries. *Journal of Economics and Business, 115*, 105966.
29. Hartung, W. D. (2022, October 9). The impact of U.S. arms sales on national and global security.
30. Huang, Y., Liu, H., & Wang, Y. (2023). Eurobond spreads and global financial conditions. *International Review of Financial Analysis, 85*, 119-135.
31. Kaminsky, G. L., & Schmukler, S. L. (2002). Emerging market instability: Do sovereign ratings affect country risk and stock returns? *The World Bank Economic Review, 16*(2), 171-195.
32. Kräussl, R. (2005). Do credit rating agencies add to the dynamics of emerging market crises? *Journal of Financial Stability, 1*(3), 355–385.
33. Krishnamurthy, A., Nagel, S., & Vissing-Jorgensen, A. (2023). Market dynamics and the pricing of Eurobonds. *Review of Financial Studies, 36*(2), 233-270.

34. Kumar, G. K. C., Rangappa, K. B., & Suchitra, S. (2022, December 22). American bilateral trade with emerging economies and its influence on world economic recovery post Covid-19: Analysis through VECM. *Munich Personal RePEc Archive*.
35. Ljubaj, I. (2020). The impact of economic freedom on FDI: Evidence from transition economies. *European Journal of Economic and Political Studies, 13*(1), 27-48.
36. McGuire, P., & Schrijvers, M. (2003). Common factors in emerging market spreads. *BIS Quarterly Review*, 261–280.
37. Mecagni, M., Canales-Kriljenko, J. I., Gueye, C. A., Mu, Y., Yabara, M., & Weber, S. (2014). Issuing international sovereign bonds: Opportunities and challenges for Sub-Saharan Africa. *SSRN Electronic Journal*.
38. Mendoza, E. G., & Schmitz, A. (2023). Interest rates, global risk appetite, and Eurobond pricing. *Journal of International Money and Finance, 119*, 102436.
39. Mauro, P., Sussman, N., & Yafeh, Y. (2002). Emerging market spreads: Then versus now. *The Quarterly Journal of Economics, 117*(2), 695–733.
40. Nolan, P. (2001). *China and the global economy: National champions, industrial policy, and the Big Business revolution*. Palgrave.
41. Perlo-Freeman, S., & Sköns, E. (2021). The arms trade and global security. *Security Dialogue, 37*(2), 183-196.
42. Remolona, E. M., Scatigna, M., & Wu, E. (2007). The dynamic pricing of sovereign risk in emerging markets: Fundamentals and risk aversion. *SSRN Electronic Journal*.
43. Reisen, H., & Von Maltzan, J. (1999). Boom and bust and sovereign ratings. *International Finance, 2*(2), 273–293.
44. Rodrik, D. (2018). *Straight talk on trade: Ideas for a sane world economy*. Princeton University Press.
45. Rusike, T. G., & Alagidede, I. P. (2021). The impact of sovereign credit ratings on Eurobond yields: Evidence from Africa. *Research in International Business and Finance, 58*, 101475.
46. Sène, B., Mbengue, M. L., & Allaya, M. M. (2021). Overshooting of sovereign emerging Eurobond yields in the context of COVID-19. *Finance Research Letters, 38*, 101746.
47. Stiglitz, J. E. (2017). *Globalization and its discontents revisited: Anti-globalization in the era of Trump*. W.W. Norton & Company.
48. U.S. Securities and Exchange Commission. (2003). Report on the role and function of credit rating agencies in the operation of the securities markets.
49. Umar, Z., Manel, Y., Riaz, Y., & Gubareva, M. (2021). Return and volatility transmission between emerging markets and US debt throughout the pandemic crisis. *Pacific-Basin Finance Journal, 67*, 101563.
50. Wang, X.-Y., Chen, B., & Song, Y. (2023). Dynamic change of international arms trade network structure and its influence mechanism. *International Journal of Emerging Markets*.
51. Washington: The Heritage Foundation.

52. Westphalen, M. (2001). The determinants of sovereign bond credit spreads changes. *Working paper, University of Lausanne*.
53. Yang, Z., Vitenu-Sackey, P. A., Hao, L., & Tao, Y. (2023). Economic freedom, inclusive growth, and financial development: A heterogeneous panel analysis of developing countries. *PLOS ONE, 18*(7), e0271208.

Appendix: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2018
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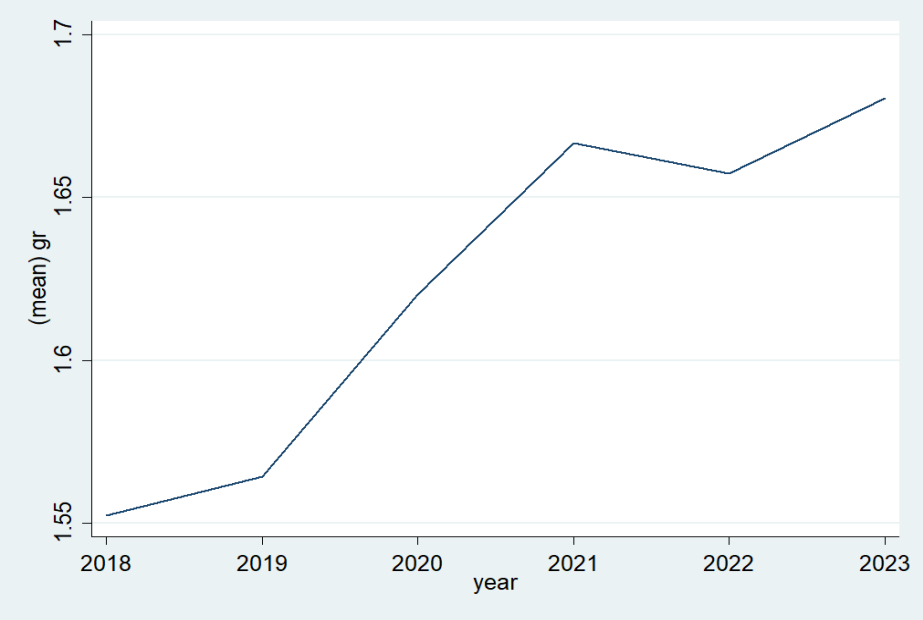
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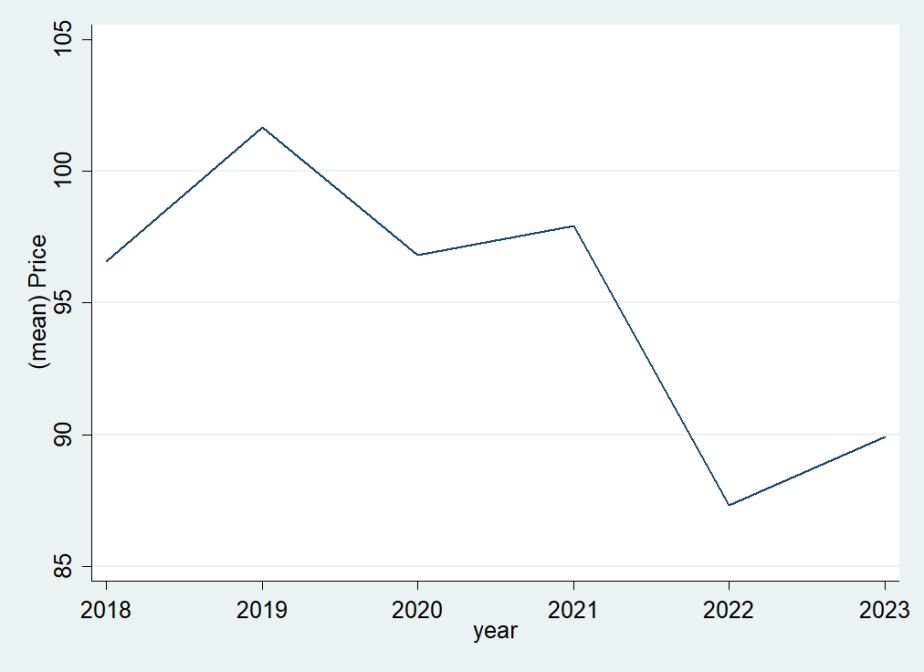
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105
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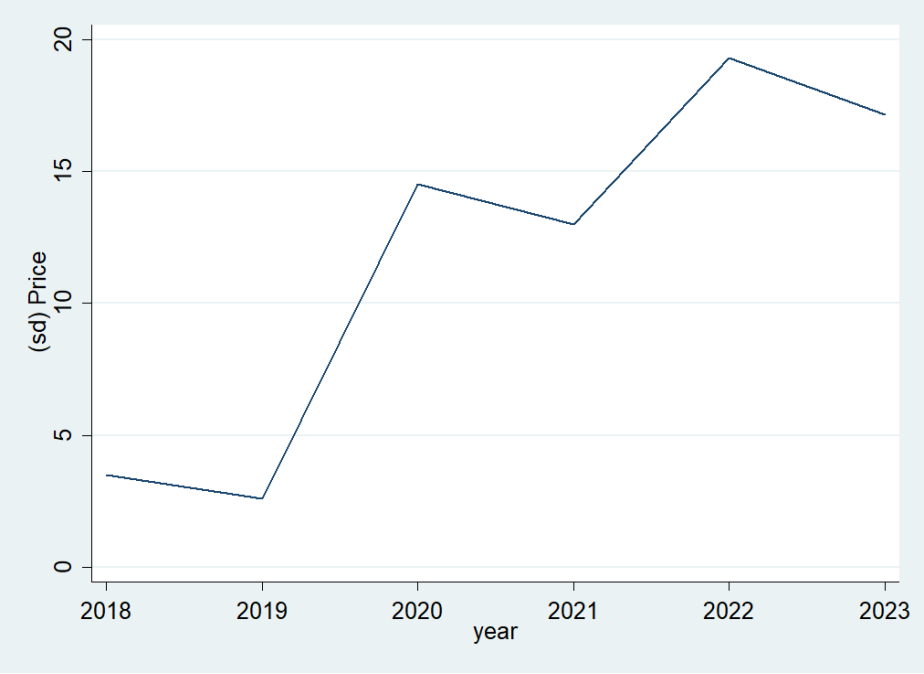
(sd) Price
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