

[Open Peer Review on Qeios](#)

Factors Affecting Economic Crisis in Ethiopia: A Literature Review

Atinafu Regasa¹, Demelash Lemmi Ettisa¹, Efa Tadesse¹

¹ Samara University (SU), Ethiopia

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

The majority aims of this study of the literature reviews are to investigate factors influencing the economic crisis in Ethiopia, which is a developing country in East Africa. Ethiopia has experienced a range of economic difficulties over the last few decades, such as huge rates of inflation, quickly increasing unemployment, dropping currency value, and restricted access to credit. This study looks at both internal and external factors—such as population growth, unstable politics throughout the regions, enough infrastructure and governance, and the amount of outstanding external debt—that affect the nation's economy.

Vary academic papers, reports, and articles from institutions, government agencies, and international organizations are examined in this study. This study offers insights and a thorough grasp of the complex factors affecting Ethiopia's economy through the incorporation of prior research on the topic.

Findings from this literature review reveal that political instability, characterized by protests, ethnic tensions, and political transitions, greatly hampers the economic development of Ethiopia. This instability reduces investor trust, interferes with corporate operations, and deters foreign direct investment. The economic crisis is made worse by ineffective governance, which is characterized by corruption, inefficient bureaucracy, and inadequate execution.

Inadequate infrastructure additionally hinders commerce, investment, and production. Examples of this include restricted access to telecommunication, transportation, and electrical networks. Although a potential resource in terms of human capital, rapid population expansion also presents difficulties, such as rising unemployment rates and dwindling funding for healthcare and education.

External causes are a major contributing element to Ethiopia's economic problems as well. The country's main exports, oilseeds, textiles, and coffee, are highly impacted by changes in global commodity prices, which also lead to trade imbalances and unstable revenue streams. Furthermore, the burden of external debt restricts government spending and limits resources for development projects.

To overcome these challenges and mitigate the economic crisis, this literature review suggests several policy recommendations. These include improving political stability through transparent governance and inclusive policies,

investing in infrastructure development to enhance productivity and competitiveness, and diversifying the economy to reduce reliance on primary commodities.

Dr. Atinafu Regasa¹, Demelash Lemmi^{2,*}, Efa Tadesse³

¹ *Department of Veterinary Medicine, Samara University, Ethiopian*

² *Department of Statistics, Samara University, Ethiopian*

³ *Department of Sociology, Samara University, Ethiopian*

***Corresponding Author:** nicemanyes@su.edu.et (Demelash Lemmi Ettisa)

1. Introduction

A crisis can be defined as a period in the dynamics of a system, and it is described as a multitude of difficulties, such as a conflict or tensions, the fact that makes difficult its normal work or functioning and this can lead to powerful pressures toward changing, and “The crisis period represents the stage in which the changes within the system are determined by the actions of a system”. During the period of crisis, the threats change into dangers which are the basis of defining the insecure state of any system. When a country's economy suddenly diminishes, it's referred to as an economic crisis. This is usually the outcome of unnecessarily financial crisis. An economic crisis might manifest as a stagflation, recession, or depression.^[1]

By 2025, Ethiopia wants to be considered a lower middle-income country. Ethiopia has experienced persistent difficulties despite being one of Africa's fastest-growing nations in recent years, including high rates of poverty, unemployment, low agricultural output, poor infrastructure, and political instability. ^[2]

The findings show that growth in Ethiopia is positively affected by investment (physical capital), human capital, foreign aid, and rainfall. Whereas, population growth and terms of trade (the latter is insignificant) hurt the growth of real GDP in Ethiopia. Prolonged armed conflict in the country has led to a major humanitarian crisis, with deadly consequences of food insecurity and famine becoming widespread. As of September 2022, 20 million Ethiopians required humanitarian assistance. These persistent crises have made poverty worse and severely damaged people's means of subsistence.^[1]

Scholars and decision-makers have expressed worry over Ethiopia's economic problems. This crisis has been caused by a number of issues, which have had detrimental effects on the nation's economy. This literature review aims to identify and analyze the factors affecting the economic crisis in Ethiopia based on existing literature.

2. Macroeconomic Factors

Macroeconomic factors: Undesirable situations that exist in the macro-economy, largely because one or more of the

macroeconomic goals are not satisfactorily attained. The primary problems are unemployment, inflation, Foreign Exchange Shortages, and stagnant growth. ^[3]

2.1. Unemployment

The percentage of the labor force that is jobless yet looking for work is referred to as unemployment. In 2022, Ethiopia's unemployment rate increased by 0.09% from 2021 to 4.02%. Ethiopia's unemployment rate for 2021 was 3.93%, a 0.2% decline from 2020. ^[4]

2.2. Inflation

High inflation rates have been a critical factor affecting the Ethiopian economy. High inflation erodes purchasing power, increases production costs, and discourages investments. Various studies have linked inflation to factors such as excessive government spending, monetary mismanagement, and external shocks. The annual inflation rate in Ethiopia eased slightly for a fourth consecutive month to 28.8% in July of 2023, the lowest since July 2021, down from 29.3% in the prior month. The headline inflation had held above 30% for two years, due to the cumulative economic impact of civil war in the northern Tigray region, drought, the Ukraine conflict, and the lingering effects of COVID-19, and food prices decreased to 27.3% from June's 28% and non-food goods to 31.1% from 31.4%. In July, consumer prices increased by 2.6% month over month, following a 3.3% increase in June. ^[5]

2.3. Foreign Exchange Shortages

Ethiopia has faced significant foreign exchange shortages, leading to an imbalance in trade. This situation is often attributed to limited export diversity, low foreign direct investment inflows, and low foreign exchange earnings from primary commodities such as coffee. Ethiopia's foreign currency shortage is exacerbated by ongoing instability. Massive government spending on the war resulted in a foreign exchange reserve outflow of US\$307 million during the 2020/21 fiscal year. The conflict obstructed foreign currency inflow by limiting tourism and foreign direct investment. ^[6]

2.4. Fiscal policy

Fiscal policy is one of those different variables that determine economic growth. According to ^[7], fiscal policy is defined as the deliberate manipulation of government income and expenditure to achieve economic and social objectives and sustain the country's growth..According to the description given above, Ethiopia has prioritized social and economic development in its growth strategy. Therefore, during the past ten years, pro-poor economic development has resulted in a notable rise in per capita GDP and a decline in the country's poverty rate. In order to achieve the MDGs, significant progress has been accomplished. These include lower child mortality and increasing vaccination rates, greater primary school enrolment rates, and improved access to clean water and sanitary facilities. ^[8] In recent years, the fiscal policy measures of the government have mainly focused on strengthening domestic revenue mobilization and increasing on pro-poor spending. During 2010/11, the overall revenue mobilized by the government was Birr 85.6 billion, which was 99% of that indicated in

the budget. The domestic revenue and grant components performed 104.5% and 82.5% of their corresponding annual plan, respectively. Particularly, tax revenue exhibited a good performance becoming 11.5% of the GDP compared to what it was in 2009/10 (11.3%); after showing a declining trend for the previous five years. Looking at the spending side, in 2010/11, a total of 40.5 billion Birr recurrent spending has been effected at the general government level, which constitutes 94% of the budget. Capital expenditures reached Birr 53.3 billion at this time, accounting for 97% of the yearly budget and representing a 33% increase over 2009/10 performance of Birr 32.3 billion. Additionally, in 2010-11, capital expenditures accounted for around 57% of the whole federal budget. The overwhelming share of the expenditure (66%) was made to finance pro-poor spending. This resulted in a fiscal deficit of Birr 8.2 billion: a deficit that was well below the plan.

3. Socio-economic Factors

It is one of the poorest countries in Africa and the globe in terms of health and welfare, with one of the worst rates of infant mortality worldwide. Political instability is another major problem of Ethiopia for the socioeconomic development. In this paper, an attempt has been made to discuss the socio-economic circumstances of Ethiopia. ^[9]

3.1. Poverty and Inequality

A high poverty rate and income inequality exacerbate the economic crisis. Poverty limits domestic demand, restricts access to credit and productive resources for businesses, and perpetuates economic vulnerability. Poverty entails more than the lack of income and productive resources to ensure sustainable livelihoods. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision-making. Different social groupings experience poverty at disproportionately high rates. ^[10]. According to UNDP, the poverty rate in Addis Ababa may have increased from 17.8% to 24% between 2016 and 22. According to the organization, within the same time period, Tigre's poverty rate increased from 27% to 45%. ^[11]

Corruption Land distribution and administration is a sector where corruption is institutionalized, and facilitation payments, as well as bribes, are often demanded from businesses when they deal with land-related issues. Corruption also occurs when businesses obtain permits and licenses due to complicated bureaucracy. ^[12]

3.2. Political Instability

Political instability has hampered economic growth in Ethiopia. Researchers have highlighted the negative impact of conflicts, political transitions, and unrest on investment, business confidence, and overall economic stability. Instability in the political system is common in all countries throughout the world. Political instability is commonly characterized as the probability of a government toppling due to disagreements or fierce rivalry among several factions. Given the relationship between political stability and economic growth, two outcomes are possible. First, the political environment's unpredictability could slow growth and discourage both domestic and foreign investment. Furthermore, a faltering

economy can lead to political unrest and the toppling of an administration. ^[13]

lack of modern technology and lack of Good governance: One of the main reasons why ICT is not developed in Ethiopia is that for decades, it has been considered a luxury by the general population and, most importantly, by high government officials, and heads of private and government organizations. ^[14]

Changes in production and distribution processes. These changes are improving efficiency, reducing costs, and increasing market reach for many industries, while also facilitating global e-commerce, enabling businesses to reach customers worldwide and reshaping traditional retail models. ^[15]

4. Structural Factors

The economy of Ethiopia is a mixed and transition economy with a large public sector. The government of Ethiopia is in the process of privatizing many of the state-owned businesses and moving toward a market economy. ^[16]

4.1. Dependence on Agriculture

Ethiopia's heavy reliance on agriculture exposes the economy to vulnerability, particularly due to reliance on rainfed agriculture, climate change impacts, and market volatility. Diversification into other industries is necessary to lessen susceptibility, according to studies. Ethiopia's economy is based mostly on agriculture, which employs around 75% of the labor force and generates 40% of the nation's GDP and exports. But just 5% of the land is irrigated, and small farms' crop yields fall short of average for the region. Market linkages are weak, and the use of improved seeds, fertilizers, and pesticides remains limited. Despite these challenges, agriculture-led economic growth that is linked to improved livelihoods and nutrition can become a long-lasting solution to Ethiopia's chronic poverty and food insecurity. ^[17] The study by ^[18] emphasizes low agricultural productivity resulting from land fragmentation, limited access to improved technologies and inputs, inadequate irrigation, and weak extension services as factors contributing to economic crises.

- ^[19] highlight the impact of unpredictable rainfall patterns, soil degradation, and limited access to credit on productivity, farm income, food security and There is a reasonable case to be made that there is an indirect co-integration of shock and agriculture, which tends to deprive the welfare of poor households.

4.2. Limited Infrastructure

Insufficient infrastructure development, such as roads, electricity, and water supply, hinders economic growth and investment. Infrastructure gaps have been associated with high production and transportation costs, limiting competitiveness and hindering the business environment. Infrastructure contributed 0.6 percentage points to Ethiopia's annual per capita GDP growth over the last decade. Raising the country's infrastructure endowment to that of the region's middle-income countries could add 3 percentage points to infrastructure's contribution to growth. Ethiopia's infrastructure successes include developing Ethiopia Airlines, a leading regional carrier; upgrading its network of trunk roads; and

rapidly expanding access to water and sanitation. The country's greatest infrastructure challenge lies in the power sector, where a further 8,700 megawatts of generating plants are needed over the next decade, implying a doubling of current capacity. The transport sector faces the challenges of low levels of rural accessibility and inadequate road maintenance. [\[20\]](#)

5. Policy Factors

To understand the policy context for adolescent health, psychosocial well-being, and bodily integrity, we reviewed the Strategic Plan for an Integrated and Multi-Sectorial Response to Violence against Women and Children and Child Justice in Ethiopia (hereinafter referred to as 'the Strategic Plan') developed in 2010. The Strategic Plan also provides an opportunity to look at the policy-making process as it unfolds, explaining that the document 'has been developed with a view to the development of a national strategy and action plan for the implementation of the multi-sectorial and integrated response' to violence against women and children (VAWC)

the factor that affected the implementation of Ethiopia's policy was a failure to establish the National Population Council; weak coordination and institutional arrangement due to the absence of a legally defined structure for implementation, lack of monitoring and evaluation system, absence of a comprehensive population program and financial constraints, among others are the major barriers. [\[21\]](#)

5.1. Government Intervention and Regulation

Researchers have identified excessive government intervention and regulation as key factors affecting the economic crisis. Price controls, voluminous bureaucracy, and restrictions on foreign investment are a few instances of interventions that have hampered economic advancement and the growth of the private sector. Government interventions in the economy can take many different forms, such as minimum wage legislation, price controls, subsidies, restrictions, and government bailouts. The government may intervene to prevent a monopoly, to boost a struggling economy, or when poverty is worsening. [\[22\]](#)

5.2. Lack of Economic Reforms

Limited progress and delays in implementing economic reforms have restricted Ethiopia's economic potential. Researchers emphasize the need for market liberalization, deregulation, and improved business environment policies to attract both domestic and foreign investment. Ethiopia's reform introduced in the early 1990s resembles that of China in 1978 in many aspects. Both countries transitioned from central planning to a market-oriented economy that still leaves significant room for state intervention. However, the reform in Ethiopia suffered the hangover of the civil war of the 1980s, the need to rebuild the state in a new format, and a war that broke out at the end of the '90s. As a result, and unlike China, the post-reform growth in Ethiopia was lackluster. In the early 2000s, the government introduced programs of massive state investment in infrastructure, schools, and health facilities. The policy resulted in sustained and fast growth of the

economy, significant poverty reduction, improved health outcomes, and educational attendance^[23]. The government procurement system's lack of transparency, which includes canceled tenders, coupled with Ethiopia's inadequate infrastructure, bureaucratic processes, lack of coordination, inefficiencies in government agencies and systems, lack of foreign exchange, and expensive transaction and transportation costs, are some of the most commonly mentioned barriers to doing business in the country. ^[24]

5.3. Natural Disasters and Climate Change

In Ethiopia, natural disasters including floods, droughts, and locust invasions are frequent occurrences. These problems are made worse by climate change, which has an impact on food security, agriculture, and economic stability.

Using appropriate agricultural mechanization services is critical to increasing agricultural productivity and ensuring food security. Tractors, combine harvesters, and threshers are examples of agricultural mechanization services that are inaccessible to a significant proportion of Ethiopian farmers. The low usage of agricultural mechanization services in Ethiopia is caused by a number of issues. The findings showed that promotion and support from different organizations, including the government and development partners, are the main factors that influence farmers' decisions to hire mechanization services. The results also revealed that economically active family labor, off-farm income, number of oxen, the goal of farming, and institutional influence are the main factors that significantly influence farmers' decisions about hiring tractor services in the study area. Harvesting labor costs and weather uncertainty were discovered to be the factors that positively and significantly influenced the farmers' hiring decisions for combined harvester services. It is important to create awareness among farmers about agricultural mechanization services. Systematic support for both private machinery service providers and cooperative unions is needed to improve mechanization services for farmers in the area. ^[25]

6. Conclusion

The several causes of Ethiopia's economic challenges have been examined in this literature study, including political unrest, problems with governance, dependency on rain-fed agriculture, climate change, and poor infrastructure. Macroeconomic imbalances, social challenges, policy failures, and structural faults are the causes of the present economic crisis. To promote sustainable economic growth, reduce poverty rates, and raise Ethiopians' standard of life generally, policymakers must address these challenges holistically. For Ethiopia to experience sustainable economic growth and crisis resilience in the future, it is imperative that these issues be understood and addressed holistically. This includes investing in infrastructure development, promoting good governance, investing in agriculture and rural development, building climate resilience, and maintaining political stability.

7. Recommendation

The literature has highlighted a number of reasons that are contributing to Ethiopia's economic turmoil. A survey of the

literature supports the following suggestions:

7.1. Strengthen the private sector

By lowering bureaucratic red tape, guaranteeing the preservation of property rights, and encouraging competition, the government should foster an atmosphere that is favorable to the private sector. Fostering entrepreneurship and small companies may lead to growth and new economic prospects.

7.2. Improve infrastructure

Economic progress is hampered by inadequate energy, transportation, and communication infrastructure. To help companies, draw in investment, and promote commerce, the government should spend money modernizing and enlarging infrastructure.

7.3. Enhance access to finance

Only 45% of Ethiopia's population has access to bank accounts, and less than 30% of adults save with formal institutions. Access to consumer loans and credit is extremely low, and a small insurance market offers limited product options to a tenth of the population.

7.4. Diversify the economy

Ethiopia is particularly susceptible to exogenous shocks like drought, climate change, and changes in global prices because of its substantial reliance on agriculture and the growth lab and the government of Ethiopia initiated this engagement in 2019 to advance research, policy analysis, and knowledge sharing toward the goal of sustaining rapid and inclusive growth in the country. Over the three-and-a-half-year project, the Ethiopian economy faced pandemic, conflict, drought, and a range of other challenges.

7.5. Promote regional integration

Ethiopia can benefit from regional economic integration, particularly through the African Continental Free Trade Area (AfCFTA). In order to increase market access, draw in foreign direct investment, and encourage economic diversification, the government should aggressively participate in regional trade agreements.

7.6. Increase agricultural productivity

An important part of Ethiopia's economy is still agriculture. Enhancing agricultural output via investments in R&D, irrigation systems, market accessibility, and contemporary farming methods may increase food security, lessen rural poverty, and promote general economic expansion.

7.7. Address political instability

Political instability and social unrest can disrupt economic activities and deter investment. The government should focus on addressing political grievances, promoting political stability, and ensuring security to create a conducive environment for economic growth.

7.8. Invest in human capital

Inadequate education and skill sets hinder economic growth and productivity. To improve human capital and raise the population's employability, the government should fund educational and career training initiatives.

7.9. Enhance governance and reduce corruption

Corruption taints economic activity, undermines public confidence, and makes investment difficult. Addressing Ethiopia's economic problems requires bolstering institutions, enacting anti-corruption measures, and enhancing governance and transparency.

The interaction of these variables must be taken into account by policymakers as they create comprehensive plans to deal with Ethiopia's economic problems. Furthermore, additional investigation and empirical study are required to enhance comprehension of the particular impacts of these variables and evaluate their possible influence on the economy.

References

- ^{a, b}. *The Economic Crisis – Meanings and Significations Causes and Solutions – DOAJ [Internet]. [cited 2023 Nov 10]. Available from: <https://doaj.org/article/24b05a46eac94cf99ca2f2f6d2fe7cca>*
- [^] *Ethiopia Overview: Development news, research, data | World Bank [Internet]. [cited 2023 Nov 10]. Available from: <https://www.worldbank.org/en/country/ethiopia/overview>*
- [^] *Macroeconomic Determinants of Economic Growth in Ethiopia. A Vector Correction Model - GRIN [Internet]. [cited 2023 Nov 10]. Available from: <https://www.grin.com/document/498084>*
- [^] *Ethiopia Unemployment Rate 1991-2023 | MacroTrends [Internet]. [cited 2023 Nov 10]. Available from: <https://www.macrotrends.net/countries/ETH/ethiopia/unemployment-rate>*
- [^] *Ethiopia Inflation Rate - September 2023 Data - 2006-2022 Historical [Internet]. [cited 2023 Nov 10]. Available from: <https://tradingeconomics.com/ethiopia/inflation-cpi>*
- [^] *Ethiopia's informal currency exchanges: validate or veto? - ISS Africa [Internet]. [cited 2023 Nov 10]. Available from: <https://issafrica.org/iss-today/ethiopias-informal-currency-exchanges-validate-or-veto>*
- [^] *St. Mary's University Institutional Repository: THE EFFECT OF ETHIOPIAN FISCAL POLICY INSTRUMENTS ON COUNTRY'S UNEMPLOYMENT (1990-2019G.C) [Internet]. [cited 2023 Nov 10]. Available from: <http://repository.smuc.edu.et/handle/123456789/5312>*
- [^] *Kentikelenis AE, Stubbs TH, King LP. IMF conditionality and development policy space, 1985-2014. Rev Int Polit Econ*

- [Internet]. 2016 Jul 3 [cited 2023 Nov 10];23(4):543-82. Available from: <https://www.tandfonline.com/doi/abs/10.1080/09692290.2016.1174953>
9. ^Mohajan H, Mohajan HK. Munich Personal RePEc Archive Ethiopia: A socio-economic study Ethiopia: A socio-economic study. *J Bus Manag Adm*. 2013;1(5):59-74.
 10. ^Issues | Poverty Eradication [Internet]. [cited 2023 Nov 10]. Available from: <https://www.un.org/development/desa/socialperspectiveondevelopment/issues.html>
 11. ^The New Humanitarian | Fallout of war and drought leaves Ethiopians mired in poverty [Internet]. [cited 2023 Nov 10]. Available from: <https://www.thenewhumanitarian.org/news-feature/2023/08/01/boom-bust-fallout-war-and-drought-leaves-ethiopians-mired-poverty>
 12. ^The ABCs of the CPI: How the Corruption Perceptions Index is calculated. Transparency.org [Internet]. [cited 2023 Nov 10]; Available from: <https://www.transparency.org/en/news/how-cpi-scores-are-calculated>
 13. ^Is there any relationship between political instability and economic growth? | The Business Standard [Internet]. [cited 2023 Nov 10]. Available from: <https://www.tbsnews.net/thoughts/there-any-relationship-between-political-instability-and-economic-growth-585422>
 14. ^Bekele D. Impact of Government Policies on the Development of ICT in Ethiopia. 2001 [cited 2023 Nov 10]; Available from: https://scholarworks.wmich.edu/africancenter_icad_archive/17
 15. ^How technology is changing the landscape of economic development - ResearchFDI [Internet]. [cited 2023 Nov 10]. Available from: <https://researchfdi.com/resources/articles/how-technology-is-changing-the-landscape-of-economic-development/>
 16. ^Wakjira DT, Gole TW. Customary Forest Tenure in Southwest Ethiopia. *For Trees Livelihoods* [Internet]. 2007 [cited 2023 Nov 10];17(4):325-38. Available from: <https://api.semanticscholar.org/CorpusID:167720625#id-name=S2CID>
 17. ^Agriculture and Food Security | Ethiopia | Archive - U.S. Agency for International Development [Internet]. [cited 2023 Nov 10]. Available from: <https://2017-2020.usaid.gov/ethiopia/agriculture-and-food-security>
 18. ^Degefu MA, Argaw M, Feyisa GL, Degefa S. Impact of landscape dynamics and intensities on the ecological land of major cities in Ethiopia. *Environ Syst Res* 2021 101 [Internet]. 2021 Jun 28 [cited 2023 Nov 10];10(1):1-19. Available from: <https://environmentalsystemsresearch.springeropen.com/articles/10.1186/s40068-021-00237-1>
 19. ^Wong HL, Wei X, Kahsay HB, Gebreegziabher Z, Gardebroek C, Osgood DE, et al. Effects of input vouchers and rainfall insurance on agricultural production and household welfare: Experimental evidence from northern Ethiopia. *World Dev*. 2020 Nov 1;135:105074.
 20. ^Foster V, Morella E. Ethiopia's Infrastructure A Continental Perspective. 2011 [cited 2023 Nov 10]; Available from: <http://econ.worldbank.org>.
 21. ^Hailemariam A. Implementation of the Population Policy of Ethiopia: Achievements and Challenges. *Popul Horizons*. 2016;13(1):19-30.
 22. ^Government Intervention in the Economy | Definition & Examples - Video & Lesson Transcript | Study.com [Internet]. [cited 2023 Nov 10]. Available from: <https://study.com/learn/lesson/government-intervention-economy-overview-impact-examples.html>
 23. ^South-South Integration and the SDGs: Enhancing Structural Transformation in Key Partner Countries of the Belt and

Road Initiative Andualem Telaye Mengistu Senior Researcher, Policy Studies Institute, Addis Ababa Ethiopia's Macroeconomic and Finance Policy Framework for Structural Transformation. 2020;

24. [^] *Ethiopia - Trade Barriers [Internet]. [cited 2023 Nov 10]. Available from: <https://www.trade.gov/country-commercial-guides/ethiopia-trade-barriers>*
25. [^] *Tesema YM, Asrat P, Sisay DT. Factors affecting farmers' hiring decisions on agricultural mechanization services: A case study in Ethiopia. Cogent Econ Financ [Internet]. 2023 Jun 15 [cited 2023 Nov 10];11(2). Available from: <https://www.tandfonline.com/doi/abs/10.1080/23322039.2023.2225328>*