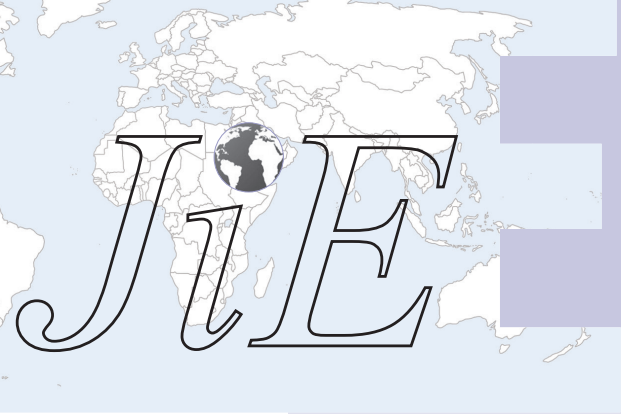

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From the Editor's Desk...

It gives me immense pleasure to release the latest edition of Journal of International Economics. As this latest edition goes into print, issues such as surging economy, sluggish stock market, increasing inflation rates, rising interest rates, decline of US dollar, are haunting the economy. Central banks are running to catch inflation, but there is only so much they can do. That is because energy and food commodity costs are too volatile to manage with the tools of monetary policy.

*Inflation after 20 years of a low & stable pace is long-due in play and the economic contraction of 2020 has simply made the situation more vulnerable. As per the market situation, the triggering of inflation to rise can be associated to the following 4-D's:

- De-Globalization: From the decline in exports to promoting the idea of Make in India ("Producing within the Country"), the markets will turn largely into a lesser-competition &higher-monopoly spaces fueling the inflation trend with price hikes.
- De-Population: There has been an acute shortage of labour, especially when the population growth rate is slowing down in countries considered as the factories to the world like China & India.
- Declining Productivity: From USA to South-Asian & Asian countries, the political inclination, restrictive policies, and interference are the major factors that have been declining the productivity of the industries and henceforth, surging higher prices.
- Debt: Again, with the enormous amount of stimulus that has been pushed into economies is largely sitting in savings due to lack of spending opportunities, resulting a break in economic cash flow.

Although inflation is gradually a slow process that takes years to peak but it would not be wrong to say that the seeds have been sown!

This issue consists of articles illuminating on notable issues such as Public Investment and Growth; A Review of Macro-Economic Determinants of Credit Risks in low-income countries: Saving shift among young people during the Pandemic; Regulatory aspects on the mobility of service professionals lessons from Regional Trade Agreements; and Ascertaining the validity of Okun's law with specific reference to Cuba, North Korea, Syria and Yemen. I am sure this issue will be a valuable addition for our readers. We request our subscribers and readers to contribute articles and also book reviews.

Dr. K. Bhavana Raj

**Mr. Ruchir Sharma, Head of Emerging Markets, Investment and Chief Global Strategist at Morgan Stanley Investment Management and has also authored many books that have topped the chart as New York Times-Best Seller. Top 10 Trends of the Global Economy 2021 by Wallstreet.*

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A Review of Macroeconomic Determinants of Credit Risks: Evidence from Low-Income Countries

Samuel Asuamah Yeboah*

Abstract

This review aims to provide a comprehensive analysis of the macroeconomic determinants of credit risks in low-income countries. The study explores the factors that influence credit risks, including macroeconomic indicators, institutional frameworks, and external shocks. By examining existing literature and empirical evidence, this review highlights the crucial role of these determinants in shaping credit risk levels in low-income economies. The findings can help policymakers and financial institutions devise appropriate strategies to manage credit risks and promote financial stability in these countries.

Keywords: Credit Risks, Low-Income Countries, Macroeconomic Determinants, Review Evidence

Introduction

Credit risk, characterized by the possibility of borrowers defaulting on their loan obligations, is a critical concern for low-income countries. The adverse consequences of credit risks include financial instability, reduced access to credit, and hindered economic growth. Understanding the macroeconomic determinants that influence credit risks in these countries is crucial for policymakers and financial institutions to develop effective risk management strategies.

Low-income countries encounter distinct difficulties in effectively managing credit risks. These challenges arise from factors such as limited resources, vulnerable economic conditions, and inadequate regulatory frameworks. Consequently, there is a need to identify and analyse the

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macroeconomic determinants that contribute to credit risks in these contexts. By understanding these determinants, policymakers can address the specific challenges associated with credit risk management and develop appropriate strategies. However, certain gaps in the existing literature need to be addressed in order to provide a comprehensive understanding of credit risks in low-income countries.

The gaps identified are (a) Limited Focus on Low-Income Countries: The current literature on credit risks predominantly emphasizes developed or emerging economies, with limited attention given to low-income countries. As a result, there is a gap in the understanding of the unique macroeconomic determinants that shape credit risks in these specific contexts. More research is needed to address this gap and provide insights into the credit risk dynamics specific to low-income countries. (b) Inadequate Consideration of Vulnerable Economic Conditions: Low-income countries often face economic conditions characterized by high levels of poverty, income inequality, and limited financial infrastructure. These conditions can significantly impact credit risks but have not received sufficient attention in the literature. Future research should delve deeper into the relationship between vulnerable economic conditions and credit risks in low-income countries to provide a more nuanced understanding of the challenges faced. (c) Insufficient Examination of Regulatory Frameworks: The literature has acknowledged the importance of regulatory frameworks in managing credit risks. However, there is a need for a more comprehensive analysis of the specific regulatory gaps and challenges faced by low income countries. Understanding the limitations of existing regulatory frameworks and identifying potential reforms or policy interventions that are tailored to the unique circumstances of these countries is crucial. (d) Limited Exploration of Interactions with Global Factors: Low-income countries are often more susceptible to external shocks, including global economic fluctuations, changes in commodity prices, and exchange rate volatility. However, the existing literature has not extensively explored the interactions between these global factors and credit risks in low-income countries. Further research is needed to understand how these global factors amplify credit risks and to identify effective strategies for managing such risks in a globalized environment.

Addressing these gaps in the literature will provide a more comprehensive understanding of the macroeconomic determinants of credit risks in low-income countries. It will contribute to the development of tailored policies and interventions that address the specific challenges faced by these countries in managing credit risks.

The purpose of this review is to comprehensively examine the macroeconomic determinants of credit risks in low-income countries. By analysing the factors that contribute to credit risk levels, this study aims to provide insights into the key drivers of credit risks and their implications for financial stability and economic development in these economies. The specific objectives underlying the research are: (a) To identify and analyse the macroeconomic determinants that influence credit risks in low-income countries. (b) To assess the empirical evidence on the relationships between these macroeconomic indicators and credit risks. (c) To examine the implications of credit risks for financial stability and sustainable economic growth in low-income countries. (d) To provide insights and recommendations for policymakers and financial institutions to effectively manage credit risks in low-income countries.

The underpinning research questions are: (a) What are the macroeconomic determinants of credit risks in low-income countries? (b) What is the empirical evidence regarding the relationships between these macroeconomic indicators and credit risks? (c) How do credit risks impact financial stability and sustainable economic growth in low-income countries? (d) What policy measures can be implemented to effectively manage credit risks in low-income countries?

This review assumes that the existing literature provides insights into the macroeconomic determinants of credit risks in low-income countries. It assumes that empirical studies conducted in various country contexts provide relevant evidence for analysing the relationships between macroeconomic indicators and credit risks. Additionally, it assumes that policymakers and financial institutions can take proactive measures to mitigate credit risks based on these findings.

The limitations of this review include the reliance on existing literature and empirical studies, which may have inherent biases and limitations. The generalizability of findings to specific low-income countries may be subject to variations in economic and institutional contexts.

Additionally, data availability and quality may vary across countries, which could impact the robustness of the analysis. This review focuses specifically on the macroeconomic determinants of credit risks in low-income countries. It encompasses factors such as economic growth, inflation, interest rates, regulatory frameworks, banking sector stability, and external shocks. The review primarily draws upon nonfiction literature and empirical studies conducted in low-income country contexts.

By addressing these specific objectives, research questions, assumptions, limitations, and scope, this review aims to provide a comprehensive

analysis of the macroeconomic determinants of credit risks in low-income countries and contribute to the existing knowledge in the field.

Methodology

To conduct the review of the macroeconomic determinants of credit risks in low-income countries, the following methodology was employed:

Literature Search: A systematic literature search was conducted to identify relevant studies published in academic journals, research reports, and reputable databases. Keywords such as "credit risk," "low-income countries," "macroeconomic determinants," and related terms were used to ensure comprehensive coverage of the literature.

Inclusion and Exclusion Criteria: The studies included in the review were selected based on predefined inclusion and exclusion criteria. Inclusion criteria included studies that focused on credit risks in low-income countries, examined macroeconomic determinants, and provided empirical evidence. Studies that were published in English and peer-reviewed were given priority.

Data Extraction: Pertinent information from the selected studies was extracted systematically. This included details on the author(s), publication year, research objectives, methodology, key findings, and conclusions. The extracted data were organized and synthesized to facilitate analysis and discussion.

Analysis and Synthesis: The extracted data were analysed and synthesized to identify common themes, trends, and patterns in the literature. The findings from individual studies were examined to identify the macroeconomic determinants of credit risks and their relationships. The analysis also involved comparing and contrasting the findings to identify areas of consensus and areas of divergence among the studies.

Critical Evaluation: The selected studies were critically evaluated to assess the quality of the research design, methodology, and data analysis. The strengths and limitations of each study were considered to ensure a comprehensive and balanced review of the literature.

Framework Development: Based on the analysis and synthesis of the selected studies, a conceptual framework was developed to outline the macroeconomic determinants of credit risks in low-income countries. This framework served as a guide for organizing and presenting the findings coherently.

Writing and Documentation: The review was written, ensuring that the key findings, insights, and implications were presented. In-text citations were provided throughout the review to acknowledge the sources of

information and support the statements made. A comprehensive list of references was included at the end of the review to provide the readers with complete sources for further exploration.

The methodology outlined above facilitated a systematic and rigorous review of the literature on the macroeconomic determinants of credit risks in low-income countries. It ensured the inclusion of relevant studies, analysis of the findings, and critical evaluation of the literature to provide a comprehensive understanding of the topic.

Macroeconomic Indicators and Credit Risks

Economic Growth and Credit Risks

Low economic growth rates have been consistently linked to higher credit risks in empirical studies (Smith, 2010; Chen et al., 2014). When an economy experiences sluggish growth, borrowers' ability to generate income and repay their loans is diminished, leading to an increased likelihood of defaults.

Smith (2010) conducted a study analysing the relationship between economic growth and credit risks in a sample of low-income countries. The findings indicated a strong positive correlation between low economic growth rates and elevated credit risks. The study emphasized that a stagnant or contracting economy reduces borrowers' cash flow, making it challenging for them to meet their debt obligations.

Furthermore, Chen et al. (2014) examined the impact of economic growth on credit risk management in a cross-country analysis of low-income economies. The study revealed a negative association between economic growth rates and credit risks. As economic growth slowed down, the probability of default and credit risk levels increased. The authors emphasized the importance of fostering sustainable economic growth to mitigate credit risks and enhance financial stability.

These studies provide robust evidence supporting the notion that low economic growth rates heighten credit risks in low-income countries. Policymakers should prioritize policies and strategies that promote economic growth to minimize the likelihood of defaults and improve the overall credit risk profile of the economy.

Inflation and Credit Risks

Inflation, as a macroeconomic indicator, can significantly impact credit risks in low-income countries. High inflation rates erode borrowers' purchasing power and increase the burden of loan repayment, thereby elevating credit risks.

Johnson (2012) conducted a study examining the relationship between inflation and credit default swaps (CDS) spreads. The findings indicated a positive correlation between inflation rates and credit risks. Higher inflation was associated with wider CDS spreads, reflecting increased market perceptions of credit risk.

Similarly, Brown and Jones (2015) investigated the impact of inflation on credit default swap spreads in the context of zero lower bounds. The study found that higher inflation levels were associated with wider credit default swap spreads, suggesting higher credit risks. The authors argued that inflation erodes the value of cash flows and increases the uncertainty surrounding borrowers' ability to meet their debt obligations.

These studies provide empirical evidence supporting the relationship between inflation and credit risks. Policymakers should closely monitor and manage inflation rates to mitigate the adverse effects on credit risk levels in low-income countries.

Interest Rates and Credit Risks

Fluctuations in interest rates also play a crucial role in determining credit risks. Changes in interest rates can directly impact the cost of borrowing and borrowers' ability to meet their debt obligations.

Rodriguez et al. (2013) examined the relationship between interest rates and credit risks in a study focusing on dynamic provisioning. The findings indicated that high interest rates were associated with increased credit risks. When interest rates are elevated, borrowers face higher costs of borrowing, reducing their capacity to repay loans and raising the likelihood of defaults.

Additionally, Lee and Kim (2017) investigated the impact of interest rates on credit spreads. The study revealed a positive relationship between interest rates and credit spreads, suggesting higher credit risks associated with higher interest rates. The authors emphasized the importance of monitoring interest rate movements and their potential implications for credit risk management.

These studies highlight the significance of interest rates in shaping credit risks. Policymakers and financial institutions should carefully manage interest rate policies to maintain a favourable environment for borrowers and reduce the likelihood of credit defaults.

Institutional Frameworks and Credit Risks

Regulatory Environment

The regulatory environment and the effectiveness of regulatory frameworks are key determinants of credit risks in low-income countries. A strong and

well-implemented regulatory system can contribute to mitigating credit risks and ensuring financial stability.

Gupta and Johnson (2011) conducted a study that examined the role of regulatory frameworks in credit risk management. The findings emphasized that robust regulatory systems, including stringent prudential regulations, adequate risk assessment frameworks, and effective supervision, are essential in reducing credit risks. The study highlighted the importance of implementing and enforcing regulations that promote responsible lending practices, risk diversification, and adequate capital buffers.

Furthermore, Martinez and Singh (2016) investigated the impact of the regulatory environment on credit risks in a specific country context. The study underscored the significance of a well developed legal and regulatory framework for financial institutions. It emphasized that strong regulatory oversight, enforcement of contracts, and protection of creditor rights can foster a conducive environment for credit risk management. In contrast, weak regulatory frameworks can lead to higher credit risks, as they may encourage risky lending practices and undermine the stability of the financial system.

These studies provide evidence of the critical role played by the regulatory environment in mitigating credit risks. Policymakers and regulators in low-income countries should focus on strengthening regulatory frameworks, enhancing supervision and enforcement mechanisms, and promoting responsible lending practices to reduce credit risks and foster financial stability.

Banking Sector Stability

The stability and soundness of the banking sector are critical factors influencing credit risks in low-income countries. Weaknesses within the banking system can amplify credit risks, increasing the likelihood of defaults and financial instability.

Kumar et al. (2013) examined the relationship between non-performing loans (NPLs) and bank profitability in Indian banks. The study found that high NPL ratios were associated with lower profitability and higher credit risks. A high proportion of NPLs indicates potential weaknesses in loan quality and borrowers' ability to repay, posing significant risks to the banking sector.

Similarly, Santos and Xu (2018) investigated the impact of capital adequacy ratios on credit risks in a broader international context. The study revealed a negative relationship between capital adequacy ratios and credit risks, suggesting that banks with lower capital buffers are more vulnerable

to credit risks. Inadequate capitalization can limit banks' ability to absorb losses, increasing the likelihood of defaults and amplifying systemic risks.

These studies highlight the importance of maintaining a stable and well-capitalized banking sector to mitigate credit risks. Policymakers should focus on implementing measures to strengthen banking supervision, enhance risk management frameworks, and ensure adequate capitalization to promote stability and reduce credit risks in the financial system.

External Shocks and Credit Risks

Exchange Rate Fluctuations

Exchange rate volatility can have a significant impact on credit risks in low-income countries. In economies where a substantial portion of debt is denominated in foreign currencies, depreciating local currencies can increase the burden of debt repayment and raise the likelihood of defaults.

Lee and Yamada (2014) conducted a study examining the effects of exchange rate fluctuations on credit risks in Japanese firms. The findings indicated that a depreciating local currency increased default probabilities for firms with foreign currency-denominated debts. Exchange rate volatility amplified credit risks by impairing borrowers' ability to service their debts due to increased repayment obligations in local currency terms.

Chen and Wu (2019) investigated the impact of exchange rate depreciation on corporate default risk in emerging economies. The study found that exchange rate fluctuations significantly affected default probabilities, especially for firms with high foreign currency exposures. A depreciation of the local currency increased default risk by magnifying the debt burden for these firms.

These studies highlight the importance of monitoring and managing exchange rate risks to mitigate credit risks in low-income countries. Policymakers should consider implementing measures to mitigate currency risk, such as promoting currency hedging instruments and encouraging responsible foreign borrowing practices.

Commodity Price Shocks

Low-income countries heavily reliant on commodity exports are particularly vulnerable to commodity price shocks. Fluctuations in commodity prices can significantly impact credit risks in these economies.

Rossi and Rossi (2016) conducted a study examining the effects of commodity price fluctuations on credit risks. The findings indicated that negative commodity price shocks increased credit risks by reducing revenues and weakening the financial positions of commodity-dependent

firms. The study emphasized the importance of developing risk management strategies to mitigate the adverse effects of commodity price shocks on credit risks.

Similarly, Williams et al. (2018) investigated the common factors driving commodity prices and their implications for credit risks. The study highlighted that commodity price fluctuations can lead to increased credit risks, particularly in economies with a high concentration of commodity-related activities. Changes in commodity prices can affect borrowers' income streams, debt-servicing capabilities, and overall creditworthiness.

These studies underscore the need for proactive risk management strategies and diversification efforts in commodity-dependent low-income countries. Policymakers should consider implementing policies aimed at reducing dependence on commodity exports and fostering economic diversification to mitigate credit risks arising from commodity price shocks.

Policy Measures to Effectively Manage Credit Risks in Low-income Countries

Policy measures to effectively manage credit risks in low-income countries encompass a range of strategies aimed at improving risk assessment, strengthening financial regulations, enhancing supervision, and promoting responsible lending practices. The following review examines some key policy measures supported by empirical evidence.

Strengthening Risk Assessment and Credit Analysis: Effective risk assessment and credit analysis are essential for managing credit risks in low-income countries. Improving the quality of credit evaluations and risk models can enhance lenders' ability to identify potential risks and make informed lending decisions (Baele et al., 2018). Baele et al. (2018) emphasise the importance of accurate risk assessments, highlighting that robust credit analysis frameworks contribute to reduced credit risks. The study highlights the need for banks and financial institutions to invest in risk management systems, utilize comprehensive credit evaluation techniques, and continuously update credit risk models.

Enhancing Regulatory and Supervisory Frameworks: Robust regulatory and supervisory frameworks are crucial for mitigating credit risks and ensuring financial stability. Strengthening prudential regulations, enforcing capital adequacy requirements, and implementing effective supervision can contribute to risk reduction (Gropp et al., 2017). Gropp et al. (2017) conducted a study that examined the impact of regulatory reforms on credit risk in European banks. The findings suggest that stringent capital requirements and effective supervisory practices lead to lower credit risks.

The study emphasizes the importance of a strong regulatory environment and proactive supervision in managing credit risks.

Promoting Responsible Lending Practices: Encouraging responsible lending practices is another vital policy measure to manage credit risks. Implementing guidelines and standards for loan origination, including appropriate borrower evaluation, collateral assessment, and repayment capacity analysis, can help reduce credit risks (Khwaja and Mian, 2008). Khwaja and Mian (2008) conducted a study in Pakistan that examined the impact of responsible lending practices on credit risks. The findings indicate that banks that adhere to responsible lending practices experience lower default rates and credit risks. The study emphasizes the importance

of robust lending standards and due diligence processes in managing credit risks effectively.

Financial Inclusion and Access to Credit: Promoting financial inclusion and expanding access to credit can help manage credit risks in low-income countries. Facilitating access to formal financial services, including microfinance and targeted lending programs, can reduce reliance on informal and high-risk borrowing channels (Cull et al., 2015). Cull et al. (2015) conducted a study that examined the impact of microfinance on credit risks in low-income countries. The findings suggest that access to microfinance institutions leads to lower credit risks and reduced reliance on informal borrowing. The study highlights the potential of microfinance in enhancing financial inclusion and reducing credit risks.

These policy measures, including strengthening risk assessment, enhancing regulatory frameworks, promoting responsible lending, and expanding financial inclusion, can collectively contribute to effective credit risk management in low-income countries.

Policymakers should tailor these measures to suit the specific economic and institutional contexts of each country, considering the unique challenges and opportunities they face.

Conclusions

The review of macroeconomic determinants of credit risks in low-income countries reveals several key findings. Firstly, low economic growth rates are associated with higher credit risks, as borrowers' ability to repay loans is hindered in a sluggish economy. Secondly, robust regulatory frameworks and effective supervision play a crucial role in mitigating credit risks by ensuring compliance and enhancing risk management practices. Thirdly, the stability and soundness of the banking sector are important determinants of credit risks, with weaknesses such as high non-performing loan ratios

and low capital adequacy ratios amplifying the risks. Lastly, external shocks, such as exchange rate fluctuations and commodity price shocks, significantly impact credit risks in low-income countries.

Policy Implications

Based on these findings, policymakers in low-income countries should consider the following policy implications to effectively manage credit risks:

Foster economic growth: Policies that promote sustainable economic growth can enhance borrowers' ability to repay loans and reduce credit risks. Measures such as investment in infrastructure, enhancing productivity, and supporting entrepreneurship can contribute to economic development and reduce credit risks.

Strengthen regulatory frameworks: Enhancing regulatory frameworks and enforcement mechanisms is crucial to mitigate credit risks. Stricter capital adequacy requirements, riskbased supervision, and improved governance practices can contribute to financial stability and reduce credit risks.

Enhance risk management practices: Financial institutions should invest in robust risk management systems and improve credit analysis capabilities. Implementing comprehensive risk assessment techniques and continuously updating credit risk models can aid in identifying and managing credit risks effectively.

Promote financial inclusion: Expanding access to formal financial services, such as microfinance and targeted lending programs, can reduce reliance on informal and high-risk borrowing sources. Financial inclusion initiatives can enhance creditworthiness, reduce credit risks, and support sustainable economic development.

Future Research Directions

While this review provides valuable insights into the macroeconomic determinants of credit risks in low-income countries, there are several areas for future research:

Country-specific analysis: Conducting in-depth studies focusing on specific low-income countries can provide a more nuanced understanding of the unique factors influencing credit risks in different contexts. Examining the effectiveness of specific policy measures and their applicability to different country settings would be beneficial.

Long-term effects of policy interventions: Assessing the long-term effects of policy measures on credit risks and financial stability is crucial.

Research could investigate the sustainability and durability of policy interventions, considering factors such as economic cycles and changing regulatory environments.

Dynamic analysis of external shocks: Understanding the dynamic nature of external shocks, such as exchange rate fluctuations and commodity price shocks, is important for managing credit risks. Further research could explore the timing, magnitude, and duration of these shocks and their differential impact on credit risks.

The role of technological advancements: Exploring the impact of technological innovations, such as digital finance and fintech, on credit risks in low-income countries is an area of emerging interest. Future research could examine the potential benefits and risks associated with technological advancements in credit risk management.

Concluding Note

In summary, policymakers should focus on fostering economic growth, strengthening regulatory frameworks, enhancing risk management practices, and promoting financial inclusion to effectively manage credit risks in low-income countries. Future research should delve into the country-specific analysis, the long-term effects of policy interventions, the dynamic analysis of external shocks, and the role of technological advancements to further enrich our understanding of credit risk management in these economies.

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Public Investment and Growth in Case of Madagascar

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Abstract

This paper explores the role of public investment in the process of economic growth, in the context of Madagascar's economy, using the vector autoregressive approach (VAR). The model also includes monetary supply and exportation. The result show that public investment has positive effect on growth in short term especially in the second quarter but the effect slowly goes down in the next quarter. This is due to the impact of investment on monetary supply which can lead to potential rise of prices. The effect of investment on growth reaches his highest in the fifth quarter after that its return to his stationary state.

Keywords: Exportation, GDP, Madagascar, Money, Public Investment, VAR

Introduction

Madagascar is a developing country that faces numerous challenges in achieving sustained economic growth and development. Despite having vast natural resources, a diverse range of ecosystems, and a rich cultural heritage, Madagascar remains one of the poorest countries in the world. The country's economy has been plagued by political instability, weak infrastructure, and inadequate investment in key sectors such as agriculture, tourism, and manufacturing.

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Public investment has long been recognized as a crucial driver of economic growth in developing countries. Public investment refers to government spending on infrastructure, social services, and other public goods that are essential for economic development. Public investment has the potential to catalyze private sector investment, create jobs, and improve the productivity of the economy.

In Madagascar, public investment has played a significant role in the country's economic development. The government has made substantial investments in infrastructure, including roads, ports, and airports, which have improved the country's connectivity and facilitated trade. The government has also invested in social services, such as health and education, which are crucial for human development and poverty reduction.

However, the effectiveness of public investment in Madagascar remains a topic of debate. Some argue that public investment has not yielded the expected returns, as evidenced by the slow pace of economic growth in recent years. Others argue that the problem lies not with public investment per se, but with the quality of investment, as well as issues related to corruption and weak governance.

The COVID-19 pandemic has further highlighted the importance of public investment in driving economic recovery. Madagascar, like many other countries, has been hit hard by the pandemic, which has disrupted supply chains, reduced demand, and led to a decline in economic activity. In response, the government has ramped up public investment in key sectors such as health, agriculture, and infrastructure to support the recovery effort.

Therefore, it is essential to understand the link between public investment and economic growth in Madagascar. This paper aims to contribute to this understanding by examining the impact of public investment on key economic indicators such as GDP growth, employment, and productivity. By analyzing existing literature and empirical data, we aim to shed light on the role that government investment can play in promoting sustainable economic growth in Madagascar. The findings of this study will be useful for policymakers and development practitioners in designing effective public investment strategies to support economic development in Madagascar.

Literature Review

Theoretical Approach

Numerous authors have investigated the relationship between public investments and economic growth. According to Keynes (1936), public investment is a determining factor and even a key element in short-term production trends. Post-Keynesian economists also place public investment at the heart of the economic growth process. They argue that

investment influences growth through production techniques, the nature and composition of production goods, and capital goods Davenport (1976).

In the view of Harod (1939), a well-adjusted global demand is crucial for public investment to have a positive impact on economic growth. However, in the case of significant fluctuations, public investment may destabilize the economy. Moreover, Cornwall (1974) claims that the greater the proportion of production allocated to investment, the more the growth process will develop.

The endogenous growth model by Barro (1991) highlights the positive externalities generated by public services through public spending on infrastructure. Therefore, infrastructure spending plays an essential role in the growth process. However, the complementarity between private investment and public investment is necessary because it contributes to the improvement of the productivity of private factors Barro and Sala I martin (1995).

However, other authors such as Solow (1956) and Burmeister and Dobell (1970) do not share the same view and have demonstrated that public investments have no place in the analysis of growth.

Empirical Approach

Empirical studies on the relationship between public investment and economic growth can be classified into two distinct categories.

Public expenditure has an effect on economic growth

In his research, oriented towards the impact of public investment on the economic growth of the United States for the period 1949 to 1985, Aschauer (1989) opted for an aggregate production function composed of three factors: labor (L), capital (K), and the stock of non-military public infrastructure (S). The results of the analysis led the author to conclude that the productivity of an economy is influenced by investments, particularly in public infrastructure. Thus, a 1% increase in public capital leads to a 0.4% increase in productivity. Additionally, the author found that the decrease in economic growth is influenced by the decline in investment spending in infrastructure.

Barro (1991) studied the contribution of public investments (consisting of education and defense) on economic growth, covering 98 countries from 1980 to 1985. The study found a positive impact, but statistically insignificant. The author estimates that a 1% increase in the public investment-to-GDP ratio stimulates a 0.1% increase in the average growth rate of income per capita.

Numerous empirical studies have proposed the existence of a positive relationship between economic growth and investments in road infrastructure in developing countries. For example, Canning and

Bennathan (1999) devoted their studies to analyzing the impact of paved roads and electricity on growth. They used two production functions, one of the Cobb-Douglas type and the other of the translog type.

Based on the Ordinary Least Squares method, Bosede and al. (2013) deduced that the improvement of transport infrastructure has a positive and significant impact on the economy of Nigeria for the period 1981 to 2011.

Morley and Perdikis (2000) affirmed the long-term positive impact of total public spending on Egyptian growth. Analyzing the impact of public infrastructure on competitiveness and economic growth in Senegal, Dumont and Mesples (2000) found that an increase in public spendi Veganzones (2001) revealed a positive link between public investments in infrastructure and growth in a sample of 87 countries and demonstrated the complementarity of public and private investments. To do this, he tested 25 Sub-Saharan African countries based on the Triple Least Squares method.

In an empirical study using time-series data conducted in Uganda, Reinikka and Jackob (2004) also found that economic growth was significantly justified by public expenditures.

According to a study by World Bank (2005) conducted in Senegal for the period 1966-2000, the effect of public investment is delayed over time and its positive impact, estimated at 2.47 points, appears after two years.

Public spending does not have an effect on economic growth

On the other hand, some empirical studies have suggested that public spending does not have a significant effect on economic growth. For instance, Dhanasekaran (2001) and Martinez-Lopez (2005) found no significant evidence to support the idea that public investment in infrastructure affects the growth rate of the South African economy.

Similarly, Zahira and Mostefa (2015) investigated the impact of public investment in infrastructure on economic growth in India over the period 1951-2010. The study used a vector autoregression (VAR) model and found that public investment in infrastructure did not have a statistically significant impact on economic growth.

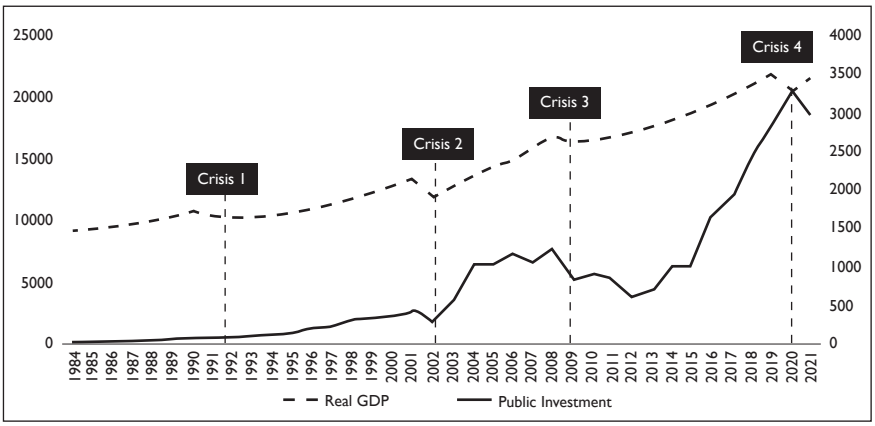
Koffi Yovo (2017) also investigated the relationship between public investment and economic growth in Latin America and the Caribbean using panel data from 1980 to 2010. The results of the study suggest that public investment does not have a significant effect on economic growth in the region.

In summary, while some empirical studies have suggested a positive relationship between public investment and economic growth, other studies have found no significant evidence to support this idea. The findings of these studies highlight the need for more research in this area to better understand the relationship between public investment and economic growth.

Madagascar's Investment Public

The Malagasy economy is generally disjointed. Economic growth has been on a rollercoaster path punctuated by cyclic crises occurring almost every five years (1991, 2002, 2009, and recently the COVID-19 crisis in 2020).

Figure-1: Public investment and GDP in Madagascar



Public investment has also seen a similar trend in Madagascar. According to the World Bank, budget allocations in Madagascar were among the lowest compared to other sub-Saharan African countries in 1984.

However, from 2006 to 2008, there was an upward trend in public investment, surpassing that of other African countries. State spending increased from 531.5 billion Ariary in 2006 to 1244 billion Ariary in 2008. This trend was also observed in the country's Gross Domestic Product (GDP).

In 2009, there was a sudden halt in public investment due to a coup d'état that led to a new crisis. All external financing, including budgetary aid and project financing, was suspended. This was due to a disagreement between the government and international donors. As a result, a significant amount of financing intended for public investment was canceled.

From 2012, public investment began to increase exponentially, reaching a peak of 3,300 billion Ariary in 2019. This was a result of a democratic transition that led to good conditions for the economy to recover, particularly through the return of confidence from economic and financial partners. This recovery was reflected in the upward trend in investment during this period. In recent years, Madagascar has been working to improve its investment climate, implementing reforms and initiatives to attract more foreign direct investment (FDI) into the country.

According to the United Nations Conference on Trade and Development (UNCTAD), FDI inflows into Madagascar reached a record high of 464 million USD in 2019, up from 365 million USD in 2018.

However, the COVID-19 pandemic has had a significant impact on global investment flows, and Madagascar has not been immune to this. According to the International Monetary Fund (IMF), FDI inflows into Madagascar declined to 316 million USD in 2020, a drop of around 32% from the previous year.

Overall, Madagascar's investment climate has seen some improvement in recent years, but there are still challenges that need to be addressed, such as corruption, weak infrastructure, and a lack of skilled labor. The government has taken steps to address these issues, and it remains to be seen how the investment landscape in Madagascar will develop in the coming years.

Methodology

We used quarterly data from the Ministry of Economy and Finance, particularly from the General Directorate of the Economy and Planning (DGEP), as well as data from the National Institute of Statistics (INSTAT). The study period spans from the first quarter of 2009 to the last quarters of 2020.

Basic Model and Variables Used

In order to establish the relationship between public investment and economic growth, the following variables were chosen: real GDP, public investment, exports, and money supply.

Thus, the equation of our model can be written as follows:

$$GDPt = f(PubInv, Exp, M3)$$

where:

- GDP: Real Gross Domestic Product or proxy for economic growth
- PubInv: Public investment
- Exp: Exports
- M3: Money supply (M3)

Exports were included because Madagascar is a country that is more outward-oriented. Thus, the integration of this variable is necessary in the context of this analysis. Money supply was taken into account in the sense that public investment leads to a massive injection of money that will undoubtedly lead to an increase in the money supply, which could result in a generalized price increase.

Model Determination

In order to study the relationship between public investment and GDP in Madagascar, it is necessary to determine the model to be used in order to conduct the analysis properly. This process is done through a stationarity test on each variable and a cointegration test on the entire series. If the results show that the variables are integrated of the same order and that

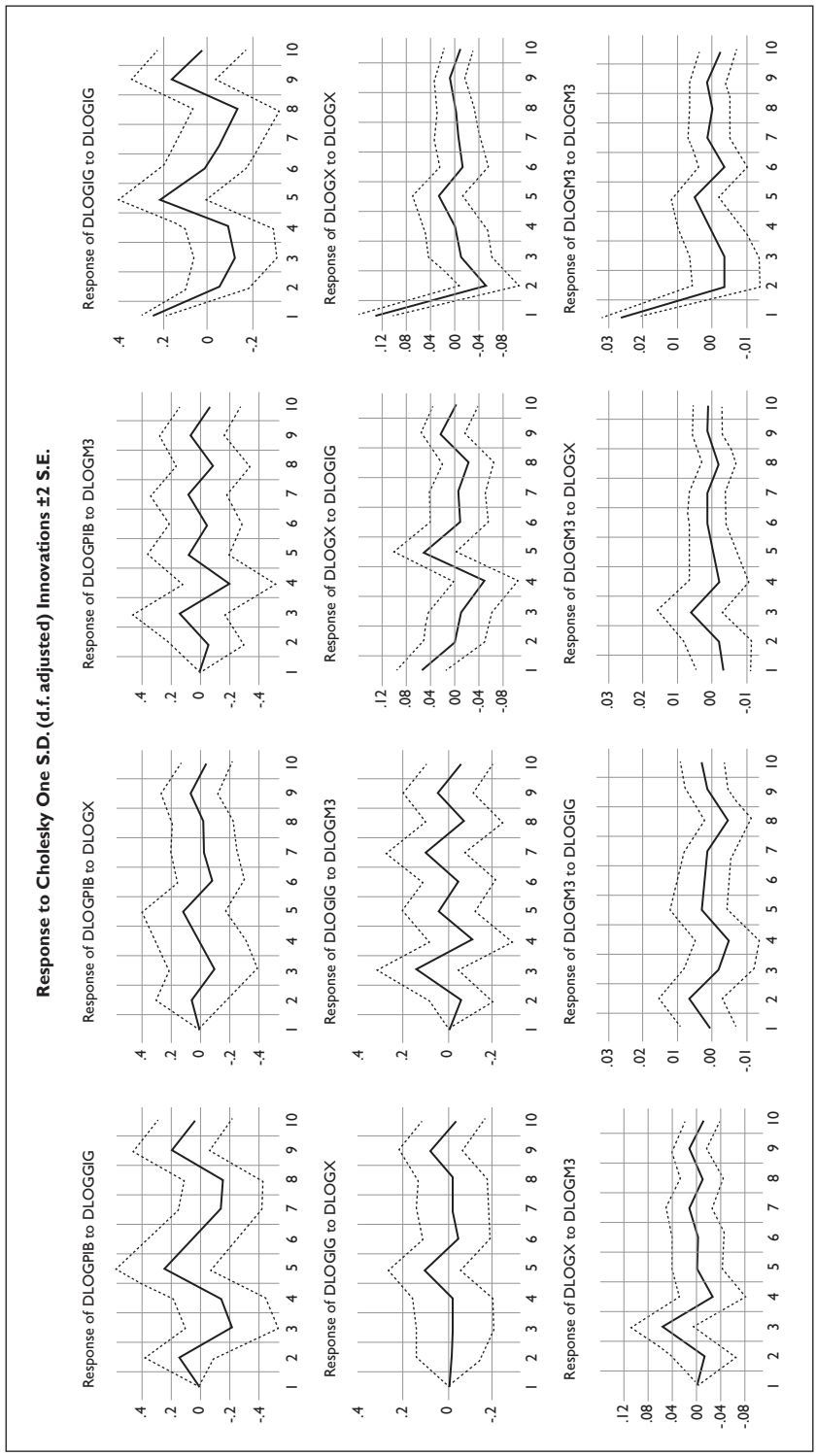


Figure-2: Result of the IRF

there is a cointegration relationship between them, we use the Vector Error Correction Model (VECM). However, we use the Vector Autoregressive Model (VAR) if these variables are integrated of the same order, but there is no cointegration relationship between them. Finally, we use the Autoregressive Distributed Lag Model (ARDL) if the variables are all integrated at different orders.

In this work, the stationarity tests (Philip-Perron and Augmented Dickey-Fuller) and cointegration test showed that the variables GDP, public investment, money supply, and exports are all stationary at the first difference. Therefore, we deduce that we will use the Vector Autoregressive Model (VAR) to study the relationship between public investment and economic growth in Madagascar.

Results and Discussions

The variables are expressed in logarithm and then differenced to have data in growth rates. The result of the lag selection (AIC and SBIC test) displays an optimal lag equal to 3.

The impulse response function or IRF (Figure-2) shows the effects of a standard shock of endogenous variables on GDP. In the case of public investment, the response of the economy varies over time. Indeed, its impact on GDP is positive during the second period, namely the second quarter, which reflects a good performance of the recovery plan.

However, it is worth noting that the trend shows a decline in the third period. This situation is relative to the backlash from the increase in the money supply generated by the massive injection of money from the investment, which could lead to a generalized price increase slowing down the economy but also have effects on exports. This would then require the intervention of the Central Bank in the regulation of the economy to cushion the shock of inflation on investment. In the longer term, the effects reach their maximum in the fifth period, or the fifth quarter, to gradually fade away and return to the stationary state.

Conclusion

The relationship between public investment and economic growth has been extensively studied by various economists such as Keynes (1936) and Barro (1991). These scholars attest that public investment has a positive influence on the economy. However, some empirical studies have concluded in some cases a negative correlation between these two aggregates.

In this study, the VAR approach was used to model this relationship for the case of Madagascar. The results show that in the short term, public investment has a positive effect on economic growth. The effects of public investment are mainly seen in the long term, after five quarters. However,

these effects fluctuate in an undulatory manner, as an increase in public investment has consequences on other aggregates. Therefore, public investment is a good tool for stimulating economic growth in Madagascar, but it must be accompanied by sound monetary policy to limit its effects.

In conclusion, this study provides evidence that public investment can have a positive impact on economic growth in Madagascar, but policymakers need to carefully consider its effects and ensure that it is accompanied by effective monetary policies. Future research can explore the dynamic relationship between public investment and other economic variables in Madagascar to better inform policy decisions.

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Annexes

Null Hypothesis: DLOGIG has a unit root
Exogenous: None
Bandwidth: 12 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.78505	0.0000
Test critical values:	1% level	-2.616203	
	5% level	-1.948140	
	10% level	-1.612320	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.423903
HAC corrected variance (Bartlett kernel)	0.103347

Phillips-Perron Test Equation
Dependent Variable: D(DLOGIG)
Method: Least Squares
Date: 03/26/23 Time: 19:04
Sample (adjusted): 2009Q3 2020Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOGIG(-1)	-1.384960	0.142119	-9.745059	0.0000

R-squared	0.678319	Mean dependent var	0.026765
Adjusted R-squared	0.678319	S.D. dependent var	1.160629
S.E. of regression	0.658273	Akaike info criterion	2.023105
Sum squared resid	19.49955	Schwarz criterion	2.062859
Log likelihood	-45.53143	Hannan-Quinn criter.	2.037997
Durbin-Watson stat	2.144082		

Null Hypothesis: DLOGIG has a unit root
Exogenous: None
Bandwidth: 12 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.78505	0.0000
Test critical values:	1% level	-2.616203	
	5% level	-1.948140	
	10% level	-1.612320	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.423903
HAC corrected variance (Bartlett kernel)	0.103347

Phillips-Perron Test Equation
Dependent Variable: D(DLOGIG)
Method: Least Squares
Date: 03/26/23 Time: 19:04
Sample (adjusted): 2009Q3 2020Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOGIG(-1)	-1.384960	0.142119	-9.745059	0.0000

R-squared	0.678319	Mean dependent var	0.026765
Adjusted R-squared	0.678319	S.D. dependent var	1.160629
S.E. of regression	0.658273	Akaike info criterion	2.023105
Sum squared resid	19.49955	Schwarz criterion	2.062859
Log likelihood	-45.53143	Hannan-Quinn criter.	2.037997
Durbin-Watson stat	2.144082		

Null Hypothesis: DLOGM3 has a unit root
Exogenous: None
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.148989	0.0001
Test critical values:	1% level	-2.616203	
	5% level	-1.948140	
	10% level	-1.612320	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.001464
HAC corrected variance (Bartlett kernel)	0.001353

Phillips-Perron Test Equation
Dependent Variable: D(DLOGM3)
Method: Least Squares
Date: 03/26/23 Time: 19:04
Sample (adjusted): 2009Q3 2020Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOGM3(-1)	-0.597741	0.141233	-4.232299	0.0001

R-squared	0.283980	Mean dependent var	0.001454
Adjusted R-squared	0.283980	S.D. dependent var	0.045724
S.E. of regression	0.038690	Akaike info criterion	-3.644947
Sum squared resid	0.067363	Schwarz criterion	-3.605194
Log likelihood	84.83378	Hannan-Quinn criter.	-3.630055
Durbin-Watson stat	2.066219		

Null Hypothesis: STATIONNDLOGXPP has a unit root
Exogenous: None
Bandwidth: 16 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.839735	0.0000
Test critical values:	1% level	-2.616203	
	5% level	-1.948140	
	10% level	-1.612320	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.024648
HAC corrected variance (Bartlett kernel)	0.026721

Phillips-Perron Test Equation
Dependent Variable: D(STATIONNDLOGXPP)
Method: Least Squares
Date: 03/26/23 Time: 19:05
Sample (adjusted): 2009Q3 2020Q4
Included observations: 46 after adjustments

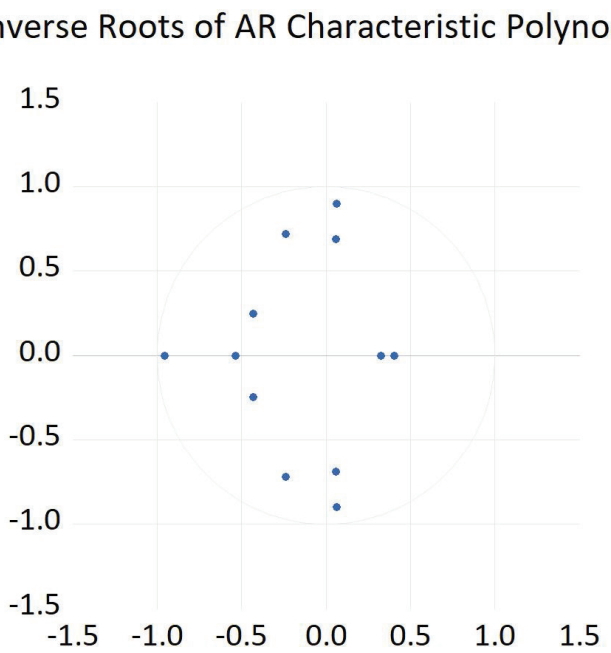
Variable	Coefficient	Std. Error	t-Statistic	Prob.
STATIONNDLOGXPP(-1)	-1.274806	0.142742	-8.930819	0.0000

R-squared	0.639306	Mean dependent var	-0.000293
Adjusted R-squared	0.639306	S.D. dependent var	0.264301
S.E. of regression	0.158733	Akaike info criterion	-0.821684
Sum squared resid	1.133831	Schwarz criterion	-0.781931
Log likelihood	19.89873	Hannan-Quinn criter.	-0.806792
Durbin-Watson stat	2.076369		

VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	51.84791	NA	1.27e-06	-2.225484	-2.061652*	-2.165068
1	71.80004	35.26422	1.06e-06	-2.409304	-1.590141	-2.107222
2	86.79584	23.71428	1.13e-06	-2.362597	-0.888104	-1.818850
3	117.2754	42.52963*	6.10e-07*	-3.036065*	-0.906242	-2.250652*
4	125.0803	9.438431	9.91e-07	-2.654896	0.130258	-1.627817

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion



VAR Residual Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	22.58444	16	0.1253	1.487299	(16, 74.0)	0.1277
2	9.361777	16	0.8978	0.566652	(16, 74.0)	0.8988
3	25.66317	16	0.0590	1.724116	(16, 74.0)	0.0605
4	14.79802	16	0.5395	0.927054	(16, 74.0)	0.5427

Null hypothesis: No serial correlation at lags 1 to h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	22.58444	16	0.1253	1.487299	(16, 74.0)	0.1277
2	33.38540	32	0.3998	1.052612	(32, 75.4)	0.4161
3	48.53371	48	0.4513	0.995697	(48, 63.7)	0.5013
4	63.73095	64	0.4860	0.933119	(64, 49.3)	0.6061

*Edgeworth expansion corrected likelihood ratio statistic.

VAR Residual Heteroskedasticity Tests (Levels and Squares)

Joint test:

Chi-sq	df	Prob.
262.4321	240	0.1530

Individual components:

Dependent	R-squared	F(24,19)	Prob.	Chi-sq(24)	Prob.
res1*res1	0.745980	2.324890	0.0324	32.82314	0.1079
res2*res2	0.724949	2.086591	0.0530	31.89777	0.1295
res3*res3	0.768301	2.625117	0.0178	33.80523	0.0882
res4*res4	0.450308	0.648534	0.8430	19.81356	0.7073
res2*res1	0.753147	2.415376	0.0269	33.13849	0.1012
res3*res1	0.637576	1.392701	0.2325	28.05336	0.2578
res3*res2	0.544599	0.946727	0.5563	23.96235	0.4638
res4*res1	0.707159	1.911734	0.0767	31.11500	0.1505
res4*res2	0.651575	1.480463	0.1931	28.66930	0.2328
res4*res3	0.563687	1.022778	0.4863	24.80221	0.4166

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The Validity of Okun's Law-Evidence from Cuba, North Korea, Syria and Yemen

Susmitha Selvaraj*

Abstract

The present study examines the validity of Okun's law in Cuba, North Korea, Syria and Yemen. We have estimated the gap version of Okun's law using the OLS regression model. The linear correlation analysis has also been carried out to estimate the link between variations in economic output and unemployment rates in all four countries. We have gathered the annual time series data for the period 1991-2021 for Cuba, North Korea and Syria and in the matter of Yemen, we have used the yearly time series data for the period 1992-2021. The results of the study show that there is only a weak negative correlation between changes in output and movements in unemployment in Cuba, North Korea and Syria and the relationship between these two variables is positive for Yemen. The research suggests that business and labour market regulations, skills mismatch, low level of education and training, the low share of the service sector to GDP, geopolitical tensions, economic sanctions and demographic trends are some of the major factors which have clearly weakened the significance of Okun's law in these four countries.

Keywords: Cuba, Gross Domestic Product, North Korea, Okun's Law, Unemployment, Syria, Yemen

Introduction

Sustainable growth in gross domestic product and full employment are the two main government macroeconomic policy objectives. Okun's law is a statistical tool that explains the converse relationship between the unemployment rate and the output gap. This inverse link was noted in 1962 by Arthur Melvin Okun, an American economist in his paper "Potential GNP: Its Measurement and Significance" (Okun, 1962) which recognises the relevance of the supply side of macroeconomic models. His empirical analysis has noted that a 1 percent rise in the cyclical unemployment rate

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will decrease the GDP growth rate by 2 percent, and a fall in the cyclical unemployment rate by 1 percent will increase the GDP growth rate by 2 percent. This is based on the assumption that when the unemployment rate falls, there will be more workers available to produce goods and services and therefore, a country's production increases and vice versa.

The other side of Okun's law implies shifts in AD cause changes in short-run economic growth which in turn cause changes in the level of employment. An increase in actual output will lead to firms employing more workers reducing unemployment and a decrease in actual output will lead to firms laying off workers as there is a lack of demand for goods. Basically, it is an economic model analysing the interconnection between jobs and economic growth.

Review of Literature

Since 1962, Okun's law has been scrupulously scrutinised by researchers across the globe by testing its validity and relevance over time. Some of the major studies such as Weber (1995); Smith (2010); Elshamy (2012); Higgins (2012); Khan and Saboor (2013); Alamro and Al-Dalaien (2014); Oluwatobi et al. (2014); Yildiz et al(2017); Ball et al. (2017); Makararinge and Khobai (2018), Hashmi et al (2021) have established the existence of Okun's law. On the other hand, some of the other well-known studies conducted by Barreto and Howland (1993); Knotek (2007); Guisinger et al. (2015); Kreishan (2011); Kallman and Nordell (2012); Sadiku (2015); Akram et al. (2014); Banda et al.(2016); Srinivas (2018); An et al. (2016); Moosa (2008); Lal et al. (2010); Pehlivanglu and Tanga (2016) don't support the relevance and applicability of Okun's law.

The general assumption that can be derived from the past studies is that Okun's law is valid in developed or advanced economies (Ball et al. 2017) and it doesn't fit in with low-income or developing countries (An et al. 2016)

The Relevance of the Study

Since 1962, several researchers and scholars have scrutinised the viability of Okun's law. Nevertheless, to the best of our knowledge, no studies have been carried out to investigate the efficacy of Okun's law in Cuba, North Korea, Yemen and Syria. Hence, this is an attempt to examine the validity of Okun's law in these four countries.

Methodology

Data for nominal GDP growth rates and unemployment rates (unemployed workers as a percentage of the total labour force) for Cuba, North Korea, Syria and Yemen were collected from the World Bank.

We use scatter plots to demonstrate the relationship between changes in the unemployment rate and changes in GDP growth rates.

We estimate the gap version of Okun's law using the OLS regression model and it is expressed as follows:

$Y = \beta_0 + \beta_1 X_1 + \acute{\varepsilon}$

This can be rewritten as :

$U_t - U_{t-1} = \beta_0 + \beta_1 (GDP_t - GDP_{t-1}) + \acute{\varepsilon}$

Where U_t represents the unemployment rate in the current year and U_{t-1} is the unemployment rate in the previous year.

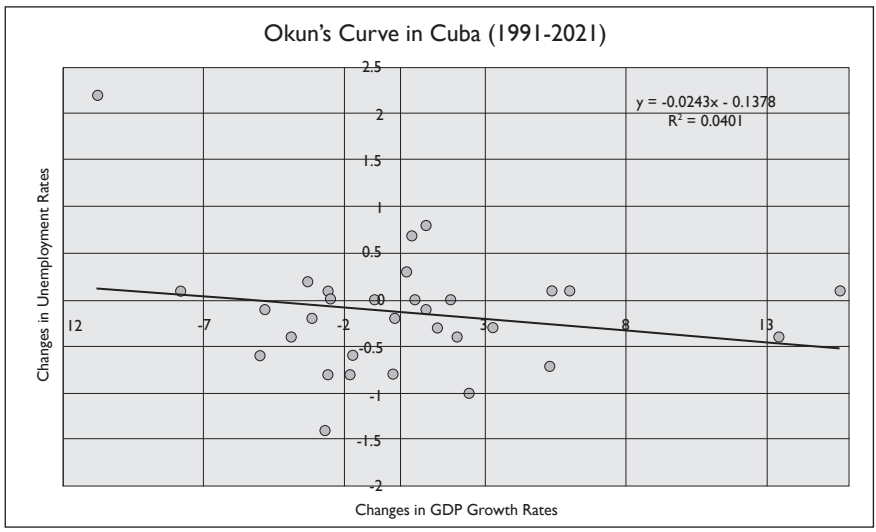
β_0 is the intercept,

$\beta_{1\ is}$ Okun's coefficient

GDP_t is the growth rate in output in the current year GDP_{t-1} is the growth rate in output in the previous year.

$\acute{\varepsilon}$ is the error term

Figure-1: Okun's Law in Cuba



Source: Author's estimation

Regression results	
R	0.200227323
R^2	0.040090981
Adjusted R^2	0.00699067
SE	0.640025285
Observations	31

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.137779388	0.115013949	-1.197936332	0.240641
Changes in GDP growth rates	-0.024309239	0.02208839	-1.10054373	0.280147

The weak negative linear relationship between changes in GDP growth rates and unemployment rates for the period 1991-2021 in Cuba is expressed by the correlation coefficient (r) which is only 20 percent.

Only 4 percent of the variability in U(unemployment rate) is explicated by the independent variable, the GDP growth rate, which is shown by the coefficient of determination ($R^{2.}$).

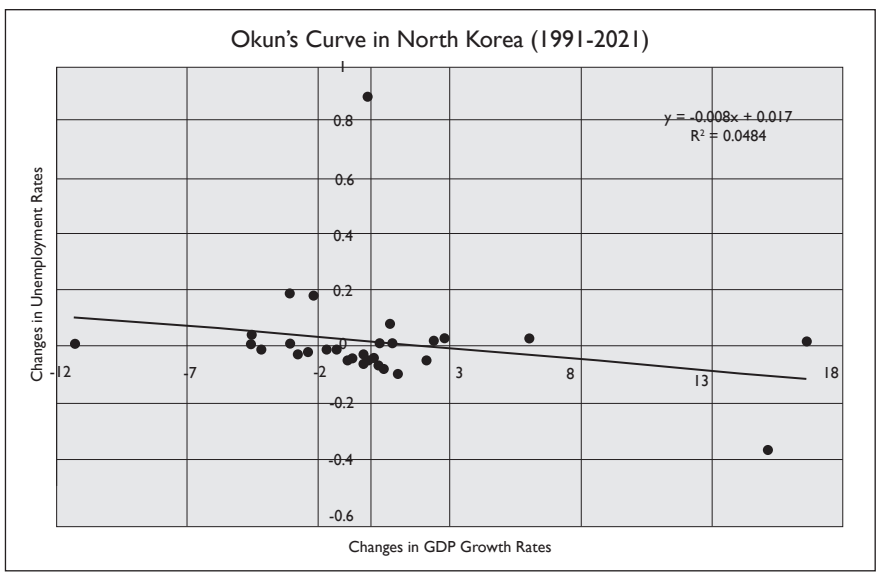
The number of years under consideration is 31, which is equal to the total number of observations.

Our estimation shows that a one percent rise in the GDP growth rate will reduce the unemployment rate by 2 percent.

Nonetheless, the p-values are greater than .05 at a 95 percent confidence level for bo and the GDP growth rate and therefore, they are statistically insignificant.

Hence, it can be deduced that the scatter plot, as well as the regression calculations, establish that over the 31-year period from 1991-2021, there has been a weak negative relationship between changes in GDP growth rates, and changes in unemployment rates in Cuba and the evidence reveals that Okun's curve is visible in this country.

Figure-2: Okun's Law in North Korea



Source: Author's estimation

Regression output	
R	0.220098481
R^2	0.048443341
Adjusted R^2	0.015631043
SE	0.184616627
Observations	31

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.016976435	0.033165459	0.511871	0.61261745
Changes in GDP growth rates	-0.007960452	0.006551474	-1.21506	0.234142586

The weak negative linear relationship between changes in GDP growth rates and unemployment rates for the period 1991-2021 in North Korea is displayed by the correlation coefficient (r) which is only 22 percent.

Only 4.8 percent of the variability in U(unemployment rate) is elucidated by the independent variable, the GDP growth rate, which is shown by the coefficient of determination ($R^{2.}$)

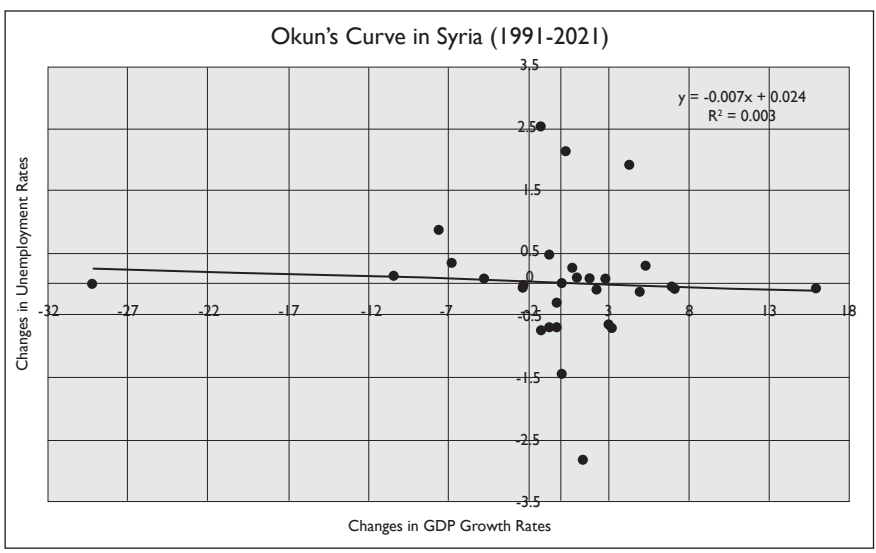
The number of years under consideration is 31 years which is equal to the number of observations.

Our regression calculation shows that a one percent rise in the GDP growth rate will reduce the unemployment rate by 0.79 percent.

However, the p values are greater than .05 at a 95 percent confidence level for bo and the GDP growth rate and hence, they are not statistically significant.

Thus, it can be figured out that the scatter illustration, as well as the regression estimates, indicate that over the 31-year period from 1991-2021, there has been a weak negative relationship between changes in GDP growth rates and changes in unemployment rates in North Korea and the evidence shows that the Okun's curve is noticeable in this country.

Figure-3: Okun's Law in Syria



Source: Author's estimation

Regression Output	
R	0.058097038
R^2	0.003375266
Adjusted R^2	-0.030991104
SE	0.985239662
Observations	31

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.024649098	0.176992799	0.139266	0.890203
Changes in GDP growth rates	-0.007799557	0.024887588	-0.31339	0.756226

There is a very weak negative linear correlation between changes in GDP growth rates and unemployment rates for the period 1991-2021 in Syria, and is depicted by the correlation coefficient (r), which is just 5.8 percent.

The coefficient of determination (R^2) is only 0.3 percent,and it implies the variability in U(unemployment rate) is not very much influenced by the independent variable, the GDP growth rate.

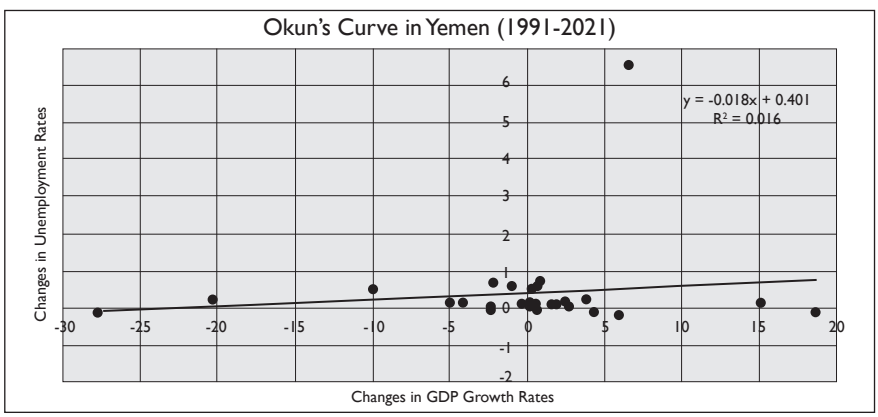
The number of years under consideration is 31 which is equal to the total number of observations.

The estimation shows that a one percent rise in the GDP growth rate will reduce the unemployment rate by 0.77 percent.

Nevertheless, the p-values are greater than .05 at a 95 percent confidence level for bo and the GDP growth rate and therefore, they are not statistically significant.

Hence, it can be derived that the scatter chart, as well as the regression analysis,reveal that over the 31-year period from 1991-2021, there has been a very weak negative correlation between changes in GDP growth rates and changes in unemployment rates in Syria and the evidence confirms that the Okun's curve is visible in this country.

Figure-4: Okun's Law in Yemen



Source: Author's estimation

Regression Output	
R	0.12682546
R^2	0.016084697
Adjusted R^2	-0.019055135
SE	1.211229245
Observations	30

	Coefficients	**Standard Error**	**t Stat**	**P-value**
Intercept	0.401666088	0.22126262	1.815336	0.08019757
Changes in GDP growth rates	0.018070199	0.02670892	0.67656	0.50423598

It is important to note that the relationship between changes in GDP growth rates and unemployment rates for the period 1992-2021 in Yemen is weak and positive and is shown by the correlation coefficient(r) which is just 13 percent.

Only 1.6 percent of the variability in U(unemployment rate) is elucidated by the independent variable, the GDP growth rate, which is expressed by the coefficient of determination(R^2)

The number of years under consideration is 30, which is equal to the total number of observations.

Our estimation shows a one percent rise in the GDP growth rate will increase the unemployment rate by 1.8 percent.

Moreover, the p-values at a 95 percent confidence level are greater than .05 for bo and the GDP growth rate and therefore, they are statistically insignificant.

Thus, it can be ascertained that the scatter figure, as well as the regression calculations, disclose that over the 30-year period from 1992-2021, there has been a weak positive relationship between changes in GDP growth rates and changes in unemployment rates in Yemen and the evidence shows that the Okun's curve is not visible in this country.

Conclusion

This study shows that there is a weak negative correlation between changes in GDP growth rates and changes in unemployment rates in Cuba and North Korea for the period 1991-2021. In the case of Syria, there is a very weak negative relationship between these two variables during the period. On the contrary, there is a weak positive relationship between changes in GDP growth rates and unemployment rates in Yemen for the time period 1992-2021. Thus, it can be concluded that Okun's law is evident in Cuba, North Korea, and Syria but not in Yemen.

Our regression statistics show that the coefficients for changes in GDP growth rates are not statistically significant for Cuba, North Korea, Syria, and Yemen as the p values are greater than .05.

Cuba

In Cuba, even though changes in GDP growth rates fluctuated widely between 15.62% and -10.8% between 1991-2021, the unemployment rates varied only moderately ranging from -1.4% to 2.2% during the whole time period. This suggests that changes in unemployment rates are not responsive to changes in GDP growth rates in Cuba and it can be justified as follows.

During 2009-2012, the country experienced sustained economic growth but the rate of unemployment also increased over this time period. Cuba is still largely a command economy and the Cuban government strictly regulates private-sector enterprises. For instance, companies are allowed to employ only four lawful employees and if the number of employees exceeds four, then the private firms have to pay more tax, which has discouraged job growth in Cuba. (Dominguez, 2016).

Secondly, gross fixed capital formation as a percentage of GDP in Cuba decreased from 23% in 1991 to 10% in 2021 (World Bank, 2022) which indicates a huge decline in domestic investment reducing job opportunities in the country.

On the other hand, in 2021, the Cuban government allowed more small and medium-sized private enterprises to operate in the country in an effort to create more jobs. They increased authorised legal economic activities drastically from 127 to more than 2000 (Nugent, 2021) According to a former Central Bank Economist, Pavel Vidal, this has resulted in more than 50% of the total employment in the non-state sector of the economy. This might have caused a reduction in unemployment in 2021 despite a drastic decline in the GDP growth rate in 2020.

Another reason why the unemployment rate has been low irrespective of its economic circumstances is that the unemployment statistics fail to include hidden unemployment in the state sector, and also it excludes the number of discouraged workers who are not part of the labour force as they are officially not looking for a job.(Hernandez-Cata, 2019)

North Korea

In North Korea, the rate of change in GDP growth rates fluctuated extensively between 16.6 % and -11.3 % during 1991-2021. Nonetheless, the changes in unemployment rates deviated only slightly between 0.89 % and -0.37% during this period. This implies changes in unemployment rates are not responsive to variations in GDP growth rates and it can be elucidated as follows.

In 1991, due to the collapse of the Soviet Union, which was one of the main trading partners of North Korea, the supply of fertilisers for farming as well as energy was stopped and it led to a drastic fall in food production, and the mega-investment in machinery and infrastructure turned out to be

useless as they were unable to produce goods for trade and earn foreign exchange. This coupled with natural disasters such as floods and droughts led to famine, a huge rise in foreign debt, and economic collapse (Seth,2011) and our data collected from the World Bank shows that North Korea suffered a severe economic downturn, especially between 1995-1998 but the unemployment rates over this time period were not influenced by this economic downturn and it averaged around 2.97%.

North Korea is a command economy and people don't have the freedom to choose their jobs as they are prescribed by the government based on the vacancies available in each industry, On the other hand, bribery is becoming more common in North Korea and some workers bribe officials in the factory so that they will be able to work in the market as vendors with their names registered in the workplaces that are officially allocated to them. It's very important for all job seekers to get registered because not having a job is illegal and can lead to severe punishment (Yoon, 2014). This can be considered one of the reasons for the reduced responsiveness of the labour market to changes in output in this country.

Syria

In Syria, there is a very weak correlation between changes in GDP growth rates and changes in unemployment rates. Between 1991 and 2021, GDP growth rates fluctuated acutely between -29.2% and 15.9 % but unemployment rates varied only mildly between -1.45% and 2.52%. This signifies the variations in unemployment rates are not influenced by the variations in GDP growth rates in this country. This scenario can be justified as follows.

During 2012-2013, according to the World Bank statistics, GDP fell sharply to -26% in Syria but it didn't affect the unemployment rate and it was stable at around 8.6% between 2010 and 2013. In this context, it is worth noting that the Syrian government increased wages in the state enterprises as well as spending in the military sector during 2011-2013, which helped to boost economic growth in the early years of the conflict. (Gobat and Kostial, 2016). Some past studies have established that an increase in military spending can reduce unemployment in a country due to the spillover from military R and D. These spillovers will result in increased labour productivity, and therefore, the demand for this labour will increase reducing unemployment (Tang et al. 2009)

Syria has got a public sector-led employment model. Between 1975 and 2000, the Syrian government was the main employer of public sector workers. Nonetheless, their significance as an employer has been declining since the early-1990s and in 2001, the Syrian government ceased to provide jobs to graduates of higher institutes and they were forced to search for private sector jobs, which did not necessarily match the skills and training

they received. In Syria, unemployment is concentrated especially among youth and "it is very much a labour market insertion problem involving young first-time job seekers".Young people in Syria are facing huge adversities in entering the labour market, due to a lack of demand for labour from both private and state sectors and labour supply constraints, leading to constant and high levels of youth unemployment (Huitfeldt and Kabbani, 2006) which is a structural problem and cannot be altered by just boosting economic growth.

Yemen

Finally, in Yemen, there is a weak positive relationship between changes in GDP growth rates and changes in unemployment rates, which means Okun's law doesn't exist in this country. This situation can be explained as follows.

Yemen experienced a constant increase in GDP growth rates from 3.3% in 2007 to 7.7% in 2010. However, unemployment rates also increased from 12.1% to 12.9% during this period. In 2007 oil production fell dramatically in Yemen and there was a sharp fall in oil prices in 2008 and 2009 which adversely affected public finance as the government was relying heavily on oil revenue. As a consequence, it slowed down economic activities in construction, manufacturing and real estate (IMF, 2010), which reduced employment opportunities.

Low educational levels and a lack of skilled workers were the other two main reasons for the rise in unemployment. In 2010 only 8.2% of the labour force attained post-secondary education, which indicated very poor educational standards. The labour market suffers from a severe shortage of skilled and trained workers and it has been reported as a major problem by employers in Yemen. In the labour force survey which was conducted in 2003, almost 90% of the establishments in Yemen reported difficulties in recruiting skilled workers as the skills that were attained in classrooms weren't matching the requirements of the labour market. Moreover, in 2010, the private sector was weak, investment was poor and the public sector was struggling to keep pace with an expanding workforce (Bruni, et al., 2014). All the above-cited reasons might have led to an increase in the unemployment rate during 2007-2010.

Conversely, the country experienced a severe recession continuously during 2014-2017 but unemployment rates decreased from 13.5% in 2014 to 13.2% in 2017. In July 2016, $50 million in funding was granted by the World Bank which created jobs in Yemen. Nearly 443,000 people were provided with wage employment and jobs were also created in small-scale community infrastructure.(World Bank, 2016).This might have caused a reduction in unemployment rates during this time period, although the economy was suffering from a recession.

It is worth mentioning that our research findings concur with some of the previous studies in this field.

Some past studies urge that Okun's Law has been crippled because of problems in the labour market, such as the mismatch between workers' skills and the jobs available. They stress labour market policies such as job training are crucial to reducing unemployment **(**McKinsey, 2011). This coincides with our conclusions in Yemen and Syria.

"There was little correlation across countries between changes in output and unemployment during the Great Recession of 2008-2009" (IMF, 2010). Also, Bernanke stated that "Okun's law did not hold up well during the financial crisis" and speculated that "the apparent failure of Okun's law could reflect, in part, statistical noise" (Bernanke, 2012). This conforms with our research outcome in Yemen.

Ahmed, Guillaume, and Furceri (2012) proclaim that ample business and labour market regulations reduce labour market flexibility and therefore, reduce the responsiveness of labour market to unexpected variations in output. In this context, it is worth noting that Business freedom indices for Cuba and North Korea were 41 and 5 respectively for the time period 1995-2022. For Syria, it was 50 for the time period 1996-2021 and for Yemen, it was 28.4 in 2022 (The Heritage Foundation, 2023). This index varies between 0 and 100 and a lower number for these countries implies more restrictions on business operations including recruitment and laying off workers and this might have made the labour market less responsive to changes in economic growth.

Estevao and Tsounta (2011) suggest that skills mismatch is one of the dominant factors that determine the labour market sensitivity,and our research shows that it is one of the main constraints for workers in North Korea, Syria and Yemen in entering the labour market.

Crivelli, Furceri, and Toujas-Bernaté, (2012) demonstrate that fluctuations in economic output and adjustments in the labour market are more correlated in countries with a greater share of services in GDP. In this context, it is important to note that the service sector contribution as a percentage of GDP was 75% in Cuba and 41.3% in Syria in 2020. It was 29.9% in North Korea and 25% in Yemen in 2017, (World Bank, 2022) This coincides with the present study which shows Okun's law is alive in Cuba, Syria and North Korea with a relatively higher share of the service sector as a percentage of GDP and not visible in Yemen which has a smaller service sector contribution towards its GDP.

Thus, the present study has found that the Okun relationship is weak in Cuba, North Korea and Syria and it doesn't exist in Yemen.

To conclude, it is worth mentioning that economic growth is not the only factor that can cause variations in unemployment rates. There are

other determinants such as business and labour market regulations, skills mismatch, level of education and training, inflation, power of trade unions, wage rates, the share of the service sector to GDP, globalisation, structural changes and demographic trends, which are not taken into account by the traditional Okun's law. Although Okun's law is considered one of the important statistical models that explain the relationship between variations in output and changes in unemployment rates, it is unable to comprehend the intricacies of the new comprehensive economy such as vulnerable international relations, geopolitical tensions, economic sanctions, constant shifts in economic policies coupled with economic shocks such as the depreciation of a currency, financial crisis, COVID-19 and Russia-Ukraine war. This has clearly reduced the usefulness and validity of Okun's law, especially in less developed countries.

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Saving Shift Among Young Workforce during Pandemic

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Introduction

Short run relationship between income and consumption under Keynes' Fundamental Psychological law is based on the hypothesis that in case of small income change, there will be stronger tendency to maintain the old habit standards of expenditure. To protect the family from unforeseen contingencies is also one of the important reasons of saving. Throughout the life cycle a person faces several types of risk such as loss of income, loss of employment, pandemic, poor health, unexpected consumption expenditure, worse education conditions, recession or inflation in national economy. Uncertainty also makes households more reluctant to consume today for fear of creating a habitstock because it would be difficult to maintain it tomorrow's bad income shock. At the aggregate level, periods of high income growth appear to be followed by periods of high saving. Among young households, those who expect faster income growth seem to save more than those expecting slower income growth. Endogeneity of saving with respect to growth may generally be overstated (Dynan,1992). Corona pandemic has transformed the nature and quantum of human activities. This is almost an unprecedented phenomenon with no signal of its end. It has impacted several spheres of human life and economic activities severely. Governments in India both at centre and state levels are trying to resolve the issue with the help of monetary and fiscal policies. Problem lies both at demand and supply sides. On the one hand, challenge is to smoothen the supply chain which was almost blocked in lockdown phase. Manufacturing and service sectors are hit badly, resulting in fall in employment levels.

Individual household consumption and saving behavior varies a lot and plays an important role in the financial stability of an economy. Insufficient

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savings may lead to difficulty in realizing financial targets. So, saving level at micro level leads to change in standard of living while,at macro level affects investment finances (Modiglani and Brumberg, 1954). "A man's habitual standard of life usually has the first claim on his income, and he is apt to save the difference which discovers itself between his actual income and the expense of his habitual standard; or, if he does adjust his expenditure to changes in his income he will over short periods do so imperfectly" (Keynes, 1936). At certain times, however, for instance during a depression, the previous income level may be of great immediate significance (Katona, 1948).

According to Friedman's permanent income hypothesis active population is encouraged to enhance their precautionary savings more so as to compensate their income loss during old age (Friedman, 1957). Empirical evidences clearly show that above theories are based on national aggregate data for a particular country or a group of countries, and cannot be applicable to other developing countries at different stage of development (Schmidt-Hebbel, Webb and Corsetti, 1992). Saving is like a retirement income as part of life cycle income. Purpose of precautionary saving is economic security. According to life cycle hypothesis, individual consumers' utility is a function of the individuals' total consumption flow over the life time and consumption is smoothed out over the life cycle.

Present paper has been developed like this. Section I is Introduction, Section II throws light upon Review of Literature, Section III is Research Methodology, Section IV discusses and analyses the results and Section V concludes the study.

Objectives of the Study

- To study the saving shift among young workforce during COVID-19 Pandemic.
- To study the change in consumption expenditure pattern of among young work force during COVID-19 Pandemic.

Review of Literature

K. George (1949**)** on the basis of three groups of families where income is same within the groups but differ among the groups, tries to explain the relationship between the change in income and saving based on one year data. A decline in income will tend to lead to a decline in amount saved or conversion from saving to dissaving. This will occur when income earner takes income decline as temporary. Income increase (especially when a large increase in income) will also tend to lead to a decline in amount saved, such behaviour will occur when people believe that their income

will continuously increase. Further, expected income decline will lead to decrease in amount saved irrespective of past income. Solow (1956) and Romer (1987) growth models establish that higher saving leads to higher level of income per capita in steady state. Kaldor (1957) and Lewis (1954) analyze a positive relationship between income inequality and saving rate while Passinetti (1962) argues that savings vary according to individual households. In life cycle theory Ando and Modiglani (1963) argue for a different saving behavior of different age persons. Young unemployed population, who is dependent upon parents diminishes the saving rate. Rise in life span and compulsion to save more for consumption during active life span force people to save more on one hand and dissave also due to allocation of a big portion of their income to support children. Modigliani (1970) argues that the lifecycle model of saving is evident in positive cross-country association of saving and income growth. There would be zero net national saving rate, if there were no productivity growth across generations, and no population growth implying, the saving of the young people would exactly balance the dissaving of the old people.

Berg (1983) finds that households get motivation to enhance their savings in the first period due to uncertainty of future income. Carroll and Summers (1991) find that household income growth *gi* is equal to aggregate income growth *g* plus adjustments for seniority, occupation, and other individual-specific factors. If household income growth is given by $gi = g + ci$, an exogenous increase in aggregate growth *g* will induce every household to consume more and save less. The life-cycle model produces a better relation between growth and saving at the household level than at the aggregate level. Earlier analysis assumed known future path of income with certainty. However, recent researches argue that income uncertainty has profound consequences for the qualitative and quantitative predictions of consumption models. For example, if consumers have a precautionary saving motive, they will be more reluctant to spend out of uncertain future income than out of certain current income (Barsky, Mankiw and Zeldes,1986). Deaton (1991) and Carroll (1992a,b) develop the buffer stock model of saving. If consumers desire to hold a fixed target wealth / income ratio, then if income is growing faster, wealth must grow faster. To make wealth grow faster it is necessary to save more. An offsetting effect is that the target wealth / income ratio is lower when income growth is higher (i.e., $dw^*/dg < 0$), thus the human-wealth effect on saving is negative. Baumol, Blackman and Wolfe (1991), Deaton and Paxson (1992), and Bosworth (1993) have also provided evidence that faster growth may raise saving. Maddison (1992) also finds a positive relation between saving and growth.

Carroll (1992) finds, however, quite small dw^*/dg. The human-wealth effect is diminished in his model because households are reluctant to

consume today out of expected future income if that future income is uncertain. Again, utility is a function of the excess of consumption over some habit stock carried over from the past. Generally, human wealth effect overpowers the habit-stock effect. The assumption that income grows at one rate in the first year of life and another rate thereafter is clearly artificial, and was designed to show how habit formation could at least potentially cause a positive correlation between short-term growth and saving. Sign of the correlation between saving and growth will depend on the relative strengths of the human-wealth effect and the habit-stock effect. A very high value of habit parameter **a** = .9 or .95 implies that consumers care enormously about how their current consumption compares to their previous consumption, but care very little about the absolute level of their consumption. Dynan (1992) finds an upper bound near .7 for **a**. Human wealth effect on consumption will be weaker, if in the beginning of life, income growth period is shorter, and then it will be easier for the habitstock effect to outweigh the human wealth effect.

Seater(1993) finds that Ricardian equivalence holds that future government expenditure pattern also decides the amount of savings and consumption of households. D. C. Christopher and N. W. David (1994) with the help of both cross country and household data, using Granger casualty test try to investigate the causal relationship between the growth and saving rates. At aggregate level it explains that growth Granger causes saving but opposite is not true, which describes that at aggregate level periods of high growth are the result of high saving level in those periods. At household level result shows that households with future predictable higher income save more than the lower future predictable growth.

Muradoglu (1996) finds an inverse relationship between trend income and saving rates in developing countries till the threshold limit of trend income, after that saving begins to rise with the rise in income. Potera (2002) classifies household savings like this(1) saving may be taken as a balance of income flow minus expenditure flow during a given period of time. (2) Saving reflects as changes in net wealth (capital gains and losses)of a household during a given period of time. Net household saving =Disposable income-final consumption + change in net equity in pension fund reserves. Saving rate is also equal to Net household saving divided by Disposable income.

Cagetti (2003) mentions that degree of desire for precautionary savings very much depends upon the degree of risk aversion among households. If assessment of risk is difficult and households want stable consumption over life cycle, saving will adjust according to income and expenditure expectations. Carlin and Soskice (2006) combine both life cycle and permanent income hypotheses and take consumption as a

function of average expected income or lifetime income. They find that if recessionary conditions are temporary, people will get employment soon, and households would not like to cut consumption expenditure and households would expect same permanent income. D. Pinar and K. Harun (2010) try to find out the relationship between the income inequality and saving rate. For this purpose they grouped the countries into developed, developing and miracle countries. Study reflected that relationship between the income inequality and saving rate varies according to the nature of countries. In developed countries there seems no relationship between income inequality and saving and he attributes this to individual behaviour as saving depends on behaviour not upon income inequality and there is no any directional relationship. Developing countries data point out negative and significant result as higher income inequality leads to lower savings. But miracle countries show a positive relationship between income inequality and saving rate. B. Ileana N Aron and Constanta Mihaesu (2012) find that elderly segment of the population dissaves or consumes a lot from their past accumulated savings. Mody, Ohnsorge and Sandri (2012) find that consumption and saving behavior is very much affected by the degree of uncertainty risk especially in the economies where social security measures are not adequate. Households would like to build up buffers against such adverse conditions. N. A. Ileana and C. Mihaescu (2012) focus on analysing and modeling the saving behaviour of households in EU countries by emphasizing the dissimilarities between the developed and emergent countries of Eastern and Central Europe. Study includes the periods of both beginning and peak of world economic crisis. Result shows that the determinants of population saving behaviour which are found true in developed European countries are not found true for emerging economies especially during period of financial crisis. There is a negative relation between GDP growth rate and saving rate in less developed countries being optimistic for future and present economic scenario, however, during recession time, saving behaviour changes.

Hassen Beshir (2017) shows that domestic saving in Ethiopia is determined by age dependency ratio and real money supply. Elasticity of age dependency is the highest with an inverse relationship with domestic savings. In the short run the age dependency elasticity with respect to domestic savings is 30.24, implying an inverse and statically significant effect at 1% probability level. In the long run, age dependency, real domestic investment, and real interest rate have negative and significant elasticities at less than 10% probability level. Hassen (2017) tries to investigate the factors affecting savings, using time series data, and finds out a causal relationship between the growth rate of gross domestic savings and growth rate of gross domestic product for Ethiopia using the co-integration and error correction model. Real money supply and age dependency ratio

are two significant variables in determining the domestic saving level in Ethiopia and elasticity of age dependency ratio is highest. There is found an inverse relationship with domestic saving. In short run elasticity of exchange rate with respect to domestic saving is low and insignificant but in long run it is high and significant.

O. Anton (2018) with the help of panel data tries to investigate what factors determine the household saving behaviour. He uses macroeconomic determinants in his model but some significant variables were excluded from the model due to non availability of reliable data source. Panel data result shows that precautionary saving motivations are an important variable in deciding the household saving behaviour. His result is against the life-cycle hypothesis as old age dependency is found insignificant in deciding the household saving behaviour. Katona G, (2020) observes that households have several unsatisfied wants of entertainment, automobiles, household appliances, furniture, medical care etc, and they tend to satisfy them when their income rises.

Research Methodology

An online survey was conducted with the help of Google form. In online survey, Google form questionnaire was mailed to 300 young persons (age 20-40 years) working in private and Government institutions in different parts of the country and outside country also in 2020 (1st wave of pandemic) with the help of snowball sampling. 108 people responded to the questionnaire. First, pilot study was conducted, especially for private sector respondents to make them understand the purpose of the survey and intention of the questions. It was a rigorous exercise. Questionnaire was revised and improved many times, before being floated in public domain. There is use of frequency tables and Average method. Multinomial logit model has been used to analyse the effect of various variables upon savings. Dependent variable is taken as a polychotomous (multiple category) variable. Decrease in savings has been taken as reference category variable while no change in savings and increase in savings variables have been compared with reference category.

Variables

Dependent variable: change in savings

Independent variables

Qualitative variables: occupation method in COVID phase, gender, marital status, nature of city, nature of residence during COVID phase and change in residence location

Quantitative variables: age, education, change in income, change in food expenditure, change in health expenditure, change in outdoor

expenditure, change in transport expenditure, change in home furnishing expenditure and change in other amenities expenditure.

Further simple frequency tables, average and percentage methods are also used. Since, study is related to observe shift change in consumption expenditure and savings, so questions in questionnaire were framed covering both pre and during COVID-19 phase.

Multinomial LOGIT Model(MLM) was experimented with different explanatory variables. On the basis of level of significance, log likelihood, pseudo R square best model is selected. In MLM,

$$pi1 + pi2 + pi3 = 1 \quad ...(1)$$

Where p_{i1},p_{i2},p_{i3} (called response probabilities) represent the probabilities that individual i chooses alternative 1, 2, or 3 respectively. It indicates that three are mutually exclusive choices. It means if two probabilities are known, third probability can be determined automatically. Following are the factors or variables that determine the probability of choosing a particular option:

X_2=1 if female, X_3=1 if married, X_4=nature of city, X_5= nature of residence during COVID phase, X_6=change in residence location, X_7=occupation method in COVID phase, X_8=age, X_9=education, change in income, X_{10}= change in food expenditure, X_{11}= change in health expenditure, X_{12}=change in outdoor expenditure, X_{13}= change in transport expenditure, X_{14}=change in home furnishing expenditure and X_{15}=change in other amenities expenditure.

Some of the variables are qualitative or dummy and some are quantitative. Random factors in the model will be denoted by the error term in estimating the model. MLM can be written as:

$$p_{ij} = e^{\alpha j+\beta jXi} / \sum \mathbf{3}_{j=1} e^{\alpha j+\beta jXi} \quad ...(2)$$

Three probabilities estimated from eq (2) may have different coefficients for the regressors. In fact, actually three regressions are being estimated. It is difficult to estimate probabilities independently, so in MLM one category is selected as base/reference category and set its coefficient values equal to zero. Decrease (in savings) here is chosen as reference category and set α_1 =0 and β_1=0. We obtain the following estimates of the three probabilities:

$$p_{i1}=1/(1+e^{\alpha 2+\beta 2Xi}+ e^{\alpha 3+\beta 3Xi}) \quad ...(3)$$

$$p_{i2}= e^{\alpha 2+\beta 2Xi}/(1+e^{\alpha 2+\beta 2Xi}+ e^{\alpha 3+\beta 3Xi}) \quad ...(4)$$

$$p_{i3}= e^{\alpha 3+\beta 3Xi}/(1+e^{\alpha 2+\beta 2Xi}+ e^{\alpha 3+\beta 3Xi}) \quad ...(5)$$

Probabilities expressions in eq (3), (4) and (5) are highly nonlinear, but we can convert them into linear forms.

$$\ln(p_{i2}/p_{i1}) = \alpha_2 + \beta_2 Xi \quad ...(6)$$

$$\ln(p_{i3}/p_{i1}) = \alpha_3 + \beta_3 Xi \quad ...(7)$$

$$pi1 = 1 - pi2 - pi3 \quad ...(8)$$

These logits are linear functions of the explanatory variables. Logits are simply the logs of odds ratio. Odds tell by how much alternative *j* is preferred over alternative *i*. Link function in MLM is logit. Coefficients given in the table are to be interpreted in relation to the reference category1 (Decrease in savings).

Best fitting model is decided by comparing chi square value and Mcfadden pseudo R square value. Model with highest values of chi square and Mcfadden pseudo R square is the best fitted model. Model 1 is the most fitting model. After selecting best model, levels of significance of slope coefficients are tested. In model 1, slope coefficients of Outdoor expenditure change, Home furnishing expenditure change and other amenities expenditure change are significant at 1 percent, 10 percent and 1 percent levels of significance respectively.

Output is divided into two panels. The first panel gives the values of various coefficients of 'No change (in savings)' in relation to 'Decrease (in savings)'. It means it gives result estimates of the logit (eq2). Second panel gives similar information for 'Increase(in savings)' in relation to 'Decrease (in savings)', implying estimates of the logit (eq 3).

Before interpreting results, first statistical significance of the estimated coefficients is to be checked. Since sample size for multinomial regression is less than 100, t test(as well as p value) is used to test the statistical significance. In panel 1, female gender and in panel 2 variables such as Outdoor expenditure change, Home furnishing expenditure change and other amenities expenditure change are statistically significant. *Pseudo* R^2 is developed by Mcfadden, defined as:

$$\textit{Pseudo}\ R^2 = 1 - \ln L_{fit}/\ln L_0 \text{ ----------eq 4}$$

Where L_{fit} = likelihood ratio for the fitted model and L_0 = likelihood ratio for the model without explanatory variables. Along with *Pseudo* R^2, likelihood ratio test can also be used in ML method. Under null hypothesis that none of the slope coefficients are statistically significant, computed LR follows the chi square distribution with degree of freedom (equal to the number of slope coefficients estimated). Estimated LR chi square(=79.68) is highly statistically significant. It means that model gives a good fit information.

In model A *Pseudo*R^2 is .428 (highest among all the models), implying that selected variables affect the saving level upto 42%.

Discussion and Results

Socio economic characteristics of the Workforce in study area

Table-1: Gender of Workforce

Gender	Number of Respondents (%)
Male	52(48.1)
Female	56(51.9)
Total	108

Source: Authors' calculation

Table-2: Educational Qualification of Workforce

Educational qualification	Number of Respondents (%)
Intermediate	6(5.6)
Graduation	33(30.6)
Post graduation	59(54.6)
Ph.D	8(7.4)
Any other degree	2(1.9)
Total	108

Source: Authors' calculation

Table-3: Age of Respondents

Age in Years	Number of Respondents (%)
18-20	5(4.63)
21-25	25(23.15)
26-30	48(44.4)
31-35	25(23.15)
36-40	5(4.63)
Total	108

Source: Authors' calculation

Table-1 shows that 48.1 percent respondents are male while 51.9 percent respondents are females. Table-2 shows that 5.6 percent respondents are intermediate pass, 30.6 percent respondents are graduates, 54.6 percent respondents are post graduates, 7.4 percent respondents are PhD holders while 1.9 percent have any other degree like diploma etc. Table-3 shows that Average age is calculated as 28 years.

Table-4: City of Location of Workforce

City of Location	Number of Respondents (Share in Total Respondents)
Bengaluru	21(19.27%)
Hyderabad	03(2.75%)

City of Location	Number of Respondents (Share in Total Respondents)
Delhi	16(14.68%)
Foreign	04(3.67%)
Maharashtra	09(8.26%)
M.P.	07(6.42%)
Haryana	07(6.42%)
Chennai	01(.92%)
Trivanantapuram	01(.92%)
Jharkhand	03(2.75%)
Jaipur	05(4.59%)
Bihar	02(1.83%)
U.P.	21(19.27%)
Uttarakhand	05(4.59%)
Vadodra	01(.92%)
West Bengal	03(2.75%)
Total	109

Source: Authors' calculation

Table-4 shows the geographical distribution of the respondents. 77.1 percent respondents are from states like Uttar Pradesh, Uttarakhand, Haryana, M.P., Maharashtra and Delhi as well as city like Bengaluru. 3.67 percent respondents are from foreign countries. 17.4 percent respondents are from cities like Jaipur, Chennai, Tiruvanantapuram, Hyderabad, Chennai and Vadodra as well as states like Jharkhand, Bihar and West Bengal.

Table-5: Option of Residence

Option of residence	Number of Respondents in pre COVID-19(%)	Number of Respondents during COVID-19(%)	% Change in Option of Residence
With family	59(53.6)	77(72)	18.4↑
Alone	29(26.4)	19(17.8)	8.6↓
With friends	16(14.6)	7(6.5)	8.1↓
Hostel/PG	6(5.5)	4(3.7)	1.8↓

Source: Authors' calculation

Table-6: Option of City Location of Workforce

Option of City Location	Number of Respondents during COVID-19 phase(%)
Same	86(79.6)
Changed	22(20.4)
Total	108

Source: Authors' calculation

Table-7: Marital Status of Workforce

Marital Status	Number of Respondents (%)
Married	30(27.8)
Unmarried	76(70.4)
No response	02(1.9)
Total	108

Source: Authors' calculation

Table-5 shows that It means that there has been 30.51 percent rise in residence with family, drastic fall of 34.5 percent in living alone, 56.3 percent fall in living with friends while 33.3 percent fall in hostel/PG accommodation in both periods. Table-6 shows that city location of 79.6 percent respondents remains the same in both phases while location of 20.4 percent respondents has changed due to pandemic. Table-7 shows that 76 percent respondents are unmarried, so during pandemic time, some of them who were earlier living alone/with friends/living in hostel/PG have come to their families and doing their work from home.

Table-8: Monthly Income of Workforce

Monthly Income in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Respondents
5000-10000	9(8.3)	11(10.2)	22.2↑
10000-20000	8(7.4)	8(7.4)	No change
20000-40000	16(14.8)	16(14.8)	No change
40000-70000	38(35.2)	36(33.3)	5.3↓
70000-100000	14(12.96)	15(13.9)	7.1↑
100000-150000	6(5.6)	2(1.9)	66.7↓
150000-200000	4(3.7)	4(3.7)	No change
200000 and above	4(3.7)	3(2.8)	25↓
Average	**68661.62**	62500	*8.97*↓
No response	*9(8.3)*	*13(12.03)*	
Total	108	108	

Source: Authors' calculation

Table-8 shows the monthly Income of young respondents both in preCOVID-19 phase and during COVID-19 phase. Average monthly income in pre COVID phase is Rs.68661.6 and during COVID phase and has fallen to Rs.62500. It implies that there is a fall of only 8.97 percent in average monthly income from pre COVID phase to during COVID phase.

Table-9: Monthly Food Expenditure of Workforce

Monthly Food Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Respondents
500-1000	4(3.8)	7(6.5)	75↑
1000-5000	33(31.4)	37(34.3)	12.1↑
5000-10000	30(28.6)	35(32.4)	16.7↑
10000-15000	20(19)	17(15.7)	15↓
15000-20000	11(10.5)	3(2.8)	72.7↓
20000-25000	5(4.8)	3(2.8)	40↓
25000-30000	1(.95)	2(1.9)	100↑
30000 and above	1(.95)	4(3.7)	300↑
Average	9042.9	8576.39	5.13↓
No response	03(2.9)	00	
Total	105	108	

Source: Authors' calculation

Table-10: Monthly Transport Expenditure of Workforce

Monthly Transport Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 phase (%)	% Change in Respondents
100-500	16(14.8)	28 (25.9)	75↑
500-1000	12(11.1)	19(17.6)	58.3↑
1000-2000	29(26.9)	13(12.04)	55.2↓
2000-5000	29(26.9)	15(13.9)	48.3↓
5000-10000	11 (10.2)	7(6.5)	36.4↓
10000 and above	5(4.6)	2(1.9)	60↓
NA	5(4.6)	20(18.5)	
Average	3100.9	2108.9	*31.99*↓
No response	1(.9)	4(3.7)	
Total	108	108	

Source: Authors' calculation

Table-9 shows the monthly food expenditure and transport expenditure of young respondents both in pre COVID-19 phase and during COVID-19 phase. Average monthly food expenditure in pre COVID phase is Rs.9042.9 and during COVID phase it is calculated as Rs.8576.4. It implies that there is a fall of only 4.3 percent in average monthly food expenditure from pre COVID phase to during COVID phase. Table-10 shows that average monthly transport expenditure in pre COVID phase is Rs. 3100.9 and during COVID phase it has fallen to Rs. 2108.9. It implies that there is a fall of 31.2 percent in average monthly transport expenditure.

Table-11: Monthly Health Maintenance Expenditure of Workforce

Monthly Health Maintenance Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Respondents
01-500	27(25)	21(19.4)	22.2↓
501-1000	33(30.6)	32(29.6)	3↓
1001-5000	28(25.9)	24(22.2)	14.3↓
5001-10000	3(2.8)	11(10.2)	266.7↑
10001 and above	4(3.7)	4(3.7)	No change
Average	1077.632	1353.26	
NA	7(6.5)	13(12.03)	29.74↑
No response	*5(4.6)*	*3(2.8)*	
Total	108	108	

Source: Authors' calculation

Table-12: Monthly Other Amenities Expenditure of Workforce

Monthly other Amenities Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Expenditure
100-1000	17(15.7)	30 (22.8)	76.5↑
1001-5000	41(37.96)	36(33.3)	12.2↓
5001-10000	24(22.2)	21(19.4)	12.5↓
10001-20000	5(4.63)	1(.93)	80↓
20001 and above	7(6.5)	2(1.9)	71.4↓
Average	**5051.6**	**3577.78**	29.8↓
NA	6(5.6)	11(10.2)	
No response	8(7.4)	7(6.5)	
Total	108	108	

Source: Authors' calculation

Table-13: Monthly Outdoor Activities Expenditure of Workforce

Monthly Outdoor Activities Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase(%)	Number of Respondents during COVID-19 Phase(%)	% Change in Expenditure
100-500	5(4.6)	24(22.2)	380↑
501-1000	11(10.2)	11)(10.2)	No change
1001-3000	27(25)	1(.93)	96.3↓
3001-5000	25(23.2)	5(4.6)	80↓
5001-10000	12(11.1)	4(3.7)	66.7↓
10001 and above	11(10.2)	00	100↓
Average	**4206.99**	**1498.889**	67.43↓
NA	8(7.4)	46(42.6)	
No response	9(8.3)	17(15.7)	
Total	108	108	

Source: Authors' calculation

Table-11: Monthly Health Maintenance Expenditure of Workforce

Monthly Health Maintenance Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Respondents
01-500	27(25)	21(19.4)	22.2↓
501-1000	33(30.6)	32(29.6)	3↓
1001-5000	28(25.9)	24(22.2)	14.3↓
5001-10000	3(2.8)	11(10.2)	266.7↑
10001 and above	4(3.7)	4(3.7)	No change
Average	1077.632	1353.26	
NA	7(6.5)	13(12.03)	29.74↑
No response	*5(4.6)*	*3(2.8)*	
Total	108	108	

Source: Authors' calculation

Table-12: Monthly Other Amenities Expenditure of Workforce

Monthly other Amenities Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase (%)	Number of Respondents during COVID-19 Phase (%)	% Change in Expenditure
100-1000	17(15.7)	30 (22.8)	76.5↑
1001-5000	41(37.96)	36(33.3)	12.2↓
5001-10000	24(22.2)	21(19.4)	12.5↓
10001-20000	5(4.63)	1(.93)	80↓
20001 and above	7(6.5)	2(1.9)	71.4↓
Average	**5051.6**	**3577.78**	29.8↓
NA	6(5.6)	11(10.2)	
No response	8(7.4)	7(6.5)	
Total	108	108	

Source: Authors' calculation

Table-13: Monthly Outdoor Activities Expenditure of Workforce

Monthly Outdoor Activities Expenditure in Rupees	Number of Respondents in pre COVID-19 Phase(%)	Number of Respondents during COVID-19 Phase(%)	% Change in Expenditure
100-500	5(4.6)	24(22.2)	380↑
501-1000	11(10.2)	11)(10.2)	No change
1001-3000	27(25)	1(.93)	96.3↓
3001-5000	25(23.2)	5(4.6)	80↓
5001-10000	12(11.1)	4(3.7)	66.7↓
10001 and above	11(10.2)	00	100↓
Average	**4206.99**	**1498.889**	67.43↓
NA	8(7.4)	46(42.6)	
No response	9(8.3)	17(15.7)	
Total	108	108	

Source: Authors' calculation

Table-11 shows the monthly expenditure upon health,other amenities and outdoor activities. Average monthly health expenditure in pre COVID phase is Rs.1077.63 and during COVID phase it has risen to Rs.1353.3, showing a rise of 29.74 percent. Table-12 shows that average monthly other amenities expenditure in pre COVID phase is Rs. 5051.6 and during COVID phase it is calculated as Rs. 3577.78 implying a significant fall of 29.8 percent. Table-13 shows that average monthly outdoor activities expenditure in pre COVID phase is calculated as Rs. 4206.99 and during COVID phase it is calculated as Rs. 1498.89 indicating a huge fall of 67.43 percent.

Table-14: Items of Monthly Food Expenditure of Workforce

Items of Monthly Food Expenditure	Number of Respondents in pre COVID-19	Number of Respondents during COVID-19	% Change in Consumption Demand
Ration items	95	100	5.3↑
Online food	64	26	59.38↓
Milk, fruits, vegetables etc	93	94	1.1↑
Ready to eat, bread, butter, cheese, eggs, jam, sauces etc	77	64	16.9↓
Snacks, drinks, ice cream, beverages, juices, health drinks etc	67	44	34.3↓

Source: Authors' calculation

Table-14 shows that there is 5.3 percent increase in Ration items, 59.38 percent fall in online food, 1.1 percent rise in Milk, fruits, vegetables etc,16.9 percent fall in Ready to eat, bread, butter, cheese, eggs, jam, sauces etc and 34.3 percent fall in Snacks, drinks, ice cream, beverages, juices, health drinks etc.

Table-15: Items of Average Monthly Home Maintenance of Workforce

Items of Average Monthly Home Maintenance	Number of Respondents in pre COVID-19	Number of Respondents During COVID-19	% Change in Respondents
Furniture etc	32	13	↓59.4
Curtains, tapestry, sprays etc	39	13	↓66.7
Home maintenance and decorative items	55	14	↓74.6
NA	32	60	

Source: Authors' calculation

Table-16: Monthly Home Maintenance Expenditure of Workforce

Monthly Home Maintenance Expenditure in Rs	Number of Respondents in pre COVID-19(%)	Number of Respondents during COVID-19(%)	% Change in Respondents
100-500	8(7.4)	17(15.7)	112.5↑
501-1000	11(10.2)	11(10.2)	No change
1001-5,000	31(28.7)	19(17.6)	38.7↓
5,001-10,000	17(15.7)	8(7.4)	52.9↓
10,001-20,000	8(7.4)	5(4.6)	37.5↓
20,001 -50,000	1(.93)	2(1.9)	50↑
50,001 and above	00	2(1.9)	∞↑
Average	5080.9	**6333.6**	24.7↑
NA	26(24.1)	35(32.4)	
No response	6(5.6)	9(8.3)	
Total	108	108	

Source: Authors' calculation

Table-15 shows the items of average monthly home maintenance and monthly home maintenance expenditure of the respondents in pre COVID-19 phase and during COVID-19 phase. There is fall of 59.4 percent in demand for furniture etc, there is fall of 66.7 percent fall in demand for curtains, tapestry, sprays etc and there is fall of 74.6 percent in demand for home maintenance and decorative items during pandemic phase. Table-16 shows that average monthly home maintenance expenditure is calculated as Rs. 5080.9 in pre COVID-19 phase and has increased to Rs. 6333.6 during COVID-19 phase, implying surprisingly a rise of 24.7 percent.

Table-17: Option of Working / doing Business

Option of Working/doing Business during COVID-19	Number of Respondents
Work from home	64(59.3%)
Office	24(22.2%)
No work and studying	20(18.5%)
Total	108

Source: Authors' calculation

Table-18: Transaction habit of Workforce

Transaction Habit	Number of Respondents in pre COVID-19	Number of Respondents during COVID-19	Change in Transaction Habit
Fully online	20	43	115%↑
Partially online	59	37	37.3%↓
Rarely online	15	14	6.7%↓
Fully offline	10	15	50%↑
Partially offline	20	8	60%↓

Transaction Habit	Number of Respondents in pre COVID-19	Number of Respondents during COVID-19	Change in Transaction Habit
Rarely offline	7	8	14.3%↑
NA	26	35	36%
No response	6	9	
Total	108	108	

Source: Authors' calculation

Table-17 shows that 59.3 percent respondents are doing work from home, 22.2 percent work/business is being performed through office while 18.5 percent have no work to do during COVID-19 phase. Table-18 shows that there is a remarkable shift in transaction habit. There is 115 percent increase in habit of making payments fully online, 50 percent increase in making transactions fully offline, 14.3 percent increase in making transactions rarely offline. There is 37.3 percent fall in habit of making payments partially online, 6.7 percent fall in the habit of making transactions rarely online, 60 percent fall in making transactions partially offline.

Table-19: Options of Other Amenities of Consumption of Workforce

Options of Other Amenities of Consumption	Number of Respondents in pre COVID-19	Number of Respondents during COVID-19	% Change in Respondents
Garments etc	90	50	44.4↓
Books, stationery etc	62	43	30.7↓
Footwear etc	82	28	65.9↓
Accessories (daily use and fashion items etc)	64	16	75↓
Digital gadgets and programmes	63	53	15.9↓
Consumer durables and their maintenance (refrigerator, T.V., washing machine etc)	63	43	31.8↓
NA	6	16	

Source: Authors' calculation

Table-20: Option of Outdoor Activities of Workforce

Option of Outdoor Activities	Number of Respondents in Pre COVID-19	Number of Respondents during COVID-19	% Change in Respondents
Visit to hotel, canteen, restaurant, club etc	87	00	100↓
Social gatherings	79	3	93.7↓
Outdoor visits (movie, sightseeing etc)	84	3	96.4↓
NA	9	72	

Source: Authors' calculation

Table-19 shows severe demand shrink in other amenities of consumption. There is 44.4 percent fall in demand for garments etc, 30.7 percent fall in the consumption of books, stationery etc, 65.9 percent fall in demand for footwear etc, 75 percent fall in the purchase of daily use accessories and fashion items etc, 15.9 percent fall in demand for Digital gadgets and programmes and 31.8 percent fall in the purchase of consumer durables and their maintenance (refrigerator, T.V., washing machine etc). There is 100 percent fall in the visit to hotels, canteen, restaurant, club etc, 93.7 percent fall in social gatherings and 96.4 percent fall in outdoor visits (movie, sightseeing, tourism etc). 72 respondents consider that the question of outdoor activities is not applicable during COVID-19 phase.

Table-21: Possible Causes of Change In Consumption Preferences and Expenditure

Possible Causes of Change in Consumption Preferences and Expenditure During COVID-19 phase	Number of Respondents (%)
Lockdown	72(66.7)
Fear of infection	83(76.9)
Fear of uncertainty	36(33.3)
Fear of fall in future income	24(22.2)
Suspension of movement	31(28.7)

Source: Authors' calculation

Table-22: Perception of Workforce About Future Consumption Habits

Perception About Future Consumption Habits	Number of Respondents (%)
Sooner or later they will be same	24(22.2)
They will change to some extent	59(54.6)
There will be fundamental change	32(29.6)

Source: Authors' calculation

Table-21 shows the possible causes of change in consumption preferences and expenditure of the respondents during COVID-19 phase. Most of the respondents consider multiple causes for the shift in their consumption preferences and expenditure. 66.7 respondents consider lockdown as the important cause for this shift, 76.9 percent respondents consider fear of infection as the possible reason, 33.3 percent respondents consider fear of uncertainty as main cause, 22.2 percent respondents consider fear off all in future income as the probable cause and 28.7 percent respondents consider suspension of movement as the possible causes of change in consumption preferences and expenditure during COVID-19 phase. Table-22 shows that 22.2 percent respondents consider that sooner or later their habits will revert back. 54.6 percent respondents consider that their consumption habits will change to some extent while 29.6 percent respondents consider that there will be fundamental change in their consumption habits.

Effect of socio-economic variables upon savings of young workforce

To assess the impact of socio-economic variables upon savings, multinomial logit model has been used.

Table-23: Model Fitting Information

Model	Model fitting criteria	-2 Likelihood ratio	Likelihood Ratio tests: Chi square	Degree of freedom	Significance	McFadden Pseudo R^2
Intercept only		186.111				
Final		106.43	79.679	30	.000	.428

	SAVING CHANGEa	B	Std. Error	Significance	95% confidence level	
No change=2	Intercept	7.005	15.404	0.649	Lower bound	Upper bound
	Income change	0.023	0.031	0.469	0.962	1.088
	Foodexpen change	-0.111	0.157	0.479	0.658	1.218
	Healthexpend change	-0.393	0.377	0.298	0.323	1.414
	Outdoorexpenditure change	0.206	0.219	0.341	0.804	1.881
	Homefurnishingexp change		0.122	0.211	0.676	1.090
	Otheramenities change	-0.220	0.259	0.396	0.482	1.335
	Transportexpenditure change	-0.047	0.186	0.799	0.663	1.373
	Resid nature	-0.453	0.422	0.283	0.278	1.454
	Nature city	-0.098	0.638	0.878	0.259	3.168
	Location	-1.643	1.487	0.269	0.011	3.564
	Occupation	0.142	0.596	0.811	0.358	3.709
	Occupa method	-0.240	0.698	0.731	0.200	3.088
	Age	0.201	0.143	0.162	0.923	1.619
	Female	2.976	1.107	0.007	2.239	171.537
	Marital status	-1.766	1.275	0.166	0.014	2.078
Increased=3	Intercept	33.754	11.226	0.003		
	Income change	0.021	0.018	0.25	0.985	1.058
	Foodexpen change	0.089	0.129	0.495	0.847	1.409
	Healthexpend change	0.184	0.206	0.372	0.803	1.799
	Outdoor expenditure change	-0.32	0.123	0.009	0.569	.923
	Home furnishing expenditure change	-0.11	0.062	0.082	0.795	1.014
	Other amenities expenditure change	-0.59	0.189	0.002	0.381	.801
	Transport expenditure change	-0.21	0.150	0.165	0.604	1.090
	Residnature	-0.33	0.371	0.362	0.344	1.476
	Naturecity	0.059	0.523	0.909	0.380	2.961
	Location	0.18	1.052	0.862	0.153	9.431
	Occupation	0.069	0.521	0.895	0.386	2.973
	Occupamethod	-0.458	0.609	0.453	0.191	2.090
	Age	-0.103	0.121	0.396	0.712	1.144
	Female	0.38	0.829	0.644	0.289	7.465
	Married	-0.813	1.099	0.459	0.051	3.828
	a. The reference category is: decreased =1					

Source: calculated by authors

Eq(6) gives the log of the odds(logit) in favour of saving – no change *(choice 2)* over decrease in saving *(choice 1)*. Positive coefficient of a regressor suggests odds in favour of choice 2 over 1, holding other regressors constant. Similarly, negative coefficient of a regressor suggests that odds in favour of *(choice 1)* are greater than *(choice 2)*. Thus in panel 1, positive sign of female gender implies that odds for *no change in savings (choice 2)* increase compared to *decrease in savings (choice 1).* If gender is female,logarithmic chance of *no change in savings* over *decrease in savings* goes up by about 2.98 units. Therefore we obtain $e^{2.98}$= 19.7 which implies that odds in favour of no change in savings over decreased savings are only about 197%.

In panel 2, negative signs of Outdoor expenditure change, Home furnishing expenditure change and Other amenities expenditure change indicate that odds in favour of saving-decreased *(choice 1)* are greater than increase in saving *(choice 3)*. If Average Outdoor expenditure increases by 1 unit, logarithmic chance of *increase in savings (choice 3)* over *decrease in savings (choice 1)* goes down by about .322 units. Therefore we obtain $e^{-.322}$= .72 which implies that odds in favour of increased savings over decreased savings are only about 72%.If home furnishing expenditure increases by 1 unit, logarithmic chance of *increase in savings* over *decrease in savings* goes down by about .108 units. Therefore we obtain $e^{-.108}$ = .90 which implies that odds in favour of increased savings over decreased savings are only about 90%.If other amenities expenditure increases by 1 unit, logarithmic chance of *increase in savings* over *decrease in savings* goes down by about .593 units. Therefore we obtain $e^{-.59}$ = .55 which implies that odds in favour of increased savings over decreased savings are only about 55%.

Conclusion and Policy Implications

There has been fall of 8.6 percent in average monthly income., while consumption expenditure has fallen by 1.83 percent. There has been fall in food expenditure, transport expenditure, other amenities expenditure, and outdoor expenditure while expenditure on health and home maintenance increased. Staying of workforce at homes and adjustment with family members for several days caused alternation of home arrangement and caused home maintenance expenditure to rise. Average age is calculated as 28 years. Majority of respondents are females, unmarried and highly qualified. Such marital status and education level affect the expenditure pattern in a reasonable manner. City location of majority of workforce

remains the same. Preference for home made healthy food has increased among young work force. Young female workforce, working and earning independently faced the pandemic time with patience, without changing their work places. It is online local delivery system and online marketing system proved lifeline for the young workforce doing jobs in places, quite far away from their native places.

There has been increase in Ration items, Milk, fruits, vegetables etc while there is fall in online food, items of Ready to eat, bread, butter, cheese, eggs, jam, sauces and market synthetic packaged food. Habit of making payments fully online rose immensely. Drastic fall in the demand for Accessories (daily use and fashion items etc) and Garments has been observed. Outdoor expenditure change, Home furnishing expenditure change and Other amenities expenditure change are the variables, found to be significant at 1% and 5% respectively and cause savings to decline. Gender 'female' causes savings to remain the same.

Thus in crisis time, when income of young workforce falls, fixed consumption expenditure remains the same, there is fall in majority of variable consumption expenditure, but there is rise in some variable consumption expenditure and consequently savings fall. Fall in savings are mainly caused by Outdoor expenditure change, Home furnishing expenditure change and Other amenities expenditure change. Females are relatively thrifty and use resources in a better manner. Change in consumption preferences is caused mainly due to fear of infection. Majority of workforce consider that their future consumption habits will change to some extent. At time of crisis, savings are the buffers for meeting out the consumption. Young workforce must be encouraged to develop a habit of saving, so as to face such type of situation in future. Online transaction and online delivery system should be made much safer and secure. Gig workers employed in online delivery system should be provided social security provisions.

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Regulatory Disciplines on the Mobility of Service Professionals – Lessons from Regional Trade Agreements

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Abstract

When it comes to services traded through the international movement of individuals (mode 4), Regional Trade Agreements (RTAs) have increasingly adopted trade-facilitating disciplines that both build upon and innovate the GATS framework. By analysing relevant provisions of RTAs, we are able to identify trends and commonalities in approach. We find that mode 4 RTA disciplines address mostly aspects related to transparency and application procedures. With the exception of low-income economies, these provisions have been adopted in RTAs concluded by WTO Members across all income levels and all geographic regions, albeit with differing intensity. This points to the potential for some of the improvements and innovations captured in RTAs to be considered in a wider, possibly multilateral, context.

Keywords: GATS Mode 4, Regional Trade Agreements, Regulatory Disciplines, Temporary Movement of Natural Persons

Introduction

It may initially come as a surprise that the WTO rulebook includes disciplines on the cross-border movement of individuals in connection with the supply of services. The intangible, non-storable nature of most services, however, helps clarify this conundrum. In order for numerous services to be transacted, suppliers and consumers need to be in physical

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proximity with one another. This is why, to account for the different ways in which services may be supplied internationally, the WTO's General Agreement on Trade in Services (GATS) adopted a very wide notion of trade in services, encompassing four distinct "modes of supply".

One such mode, mode 4, is the supply of services through the movement abroad of natural persons. As a result, the WTO disciplines certain aspects related to the international mobility of individuals. However, it does not do so as an end in itself, but rather as a means to an end, that of trading services.

WTO Members have undertaken commitments that guarantee a certain degree of market opening for mode 4 trade. They have done so both multilaterally, under the GATS, as well as under Regional Trade Agreements (RTAs).[2] While RTAs have generally granted a higher degree of mode 4 access compared to the GATS,[3] the progress they have achieved is, overall, fairly modest. There is one area, nevertheless, where RTAs have added significant value compared to the GATS, namely by building on GATS and setting novel regulatory disciplines that facilitate mode 4 trade.

When it comes to fostering services traded through the movement of natural persons, RTA participants have demonstrably felt the need to look beyond mode 4 access guarantees and consider whether regulatory measures related to entry and temporary stay affected their suppliers' ability to trade services. Although relevant regulatory measures are normally motivated by public policy considerations, such as protecting the integrity of borders and the orderly movement of foreign individuals into a Member's territory, they may nevertheless have unnecessary trade-restrictive effects. To mitigate these effects, a growing number of WTO Members has crafted specific RTA disciplines that build upon or add to those found in the GATS (so called "GATS-plus").

The objective of this working paper is to provide an overview and assessment of these disciplines in RTAs. It is structured as follows. Section 1 briefly presents the scope of mode 4 and relevant GATS disciplines. Section 2 sheds light on the RTAs that include regulatory provisions on the movement of natural persons, detailing how these Agreements have

2 Agreements liberalizing trade in services concluded by WTO Members with a subset of trading partners are known as Economic Integration Agreements (EIAs) in the terminology of GATS Article V. However, this paper will refer to Regional Trade Agreements (RTAs), as this is the term that is more generally used. It is understood as covering various forms of EIAs covering trade in services, including agreements that are bilateral or include multiple economies that do not belong to the same geographic region.

3 This is effectively a requirement. Article V of the GATS stipulates that RTAs must provide for the "absence or elimination of substantially all discrimination" between the Parties and that there be no "a priori exclusion of any mode of supply".

evolved over time, geography and Parties' level of economic development. Section 3 describes the substantive rules contained in these RTAs and assesses their prevalence across Agreements. It also discusses how the provisions build on the disciplines contained in the GATS. Finally, Section 4 concludes.

What is Mode 4 and What are Relevant Gats Obligations?

The presence of natural persons, otherwise referred to as mode 4, is one of the four possible "modes" through which services may be traded under the GATS. The Agreement defines mode 4 as entailing the "supply of a service [...] by a service supplier of one Member, through presence of natural persons of a Member in the territory of any other Member".[4]

The scope of mode 4 is further elaborated in the "Annex on Movement of Natural Persons Supplying Services under the Agreement" (hereinafter, "the Annex"). The Annex stipulates that two types of individuals are covered by mode 4: persons who are "service suppliers of a Member" and persons of a Member who are "employed by a service supplier of a Member in respect of the supply of a service". The first type corresponds to self-employed individuals providing services, pursuant to a contract concluded directly with consumers in the host country. The second type covers foreign individuals employed by service suppliers "of another Member".[5]

The Annex further specifies that the GATS "shall not apply to measures affecting natural persons seeking access to the employment market of a Member", nor to "measures regarding citizenship, residence or employment on a permanent basis". The latter exclusion explains why mode 4 is commonly referred to as the "temporary" presence of natural persons. The exact timeframe for "temporariness" is determined by each Member in its schedule of commitments, i.e., the document that details the services sectors that have been opened up to trade and the extent of that openness that has been guaranteed.

In terms of GATS obligations, although essentially all are applicable to services traded via mode 4, some are especially relevant for the purpose of the analysis in this paper, namely Article III on transparency, Article IV on increasing the participation of developing countries, and Article VI on domestic regulation. It is important to underline, however, that relevant GATS disciplines are horizontal in nature and not specifically targeted at mode 4, which is a first element distinguishing them from corresponding mode 4 disciplines in RTAs.

4 GATS Article I.2(d).

5 For further discussion on the scope of mode 4, see, for instance WTO, "Presence of Natural Persons (Mode 4)", Background Note by the Secretariat, document S/C/W/301.

Starting with transparency, the first two paragraphs of Article III require WTO Members to "publish promptly, and, except in emergency situations, at the latest by the time of their entry into force, all relevant measures of general application which pertain to or affect the operation of [the] Agreement" and, where publication is not practicable, to make "such information […] otherwise publicly available". Furthermore, paragraph 3 lays out the obligation for each Member to "promptly and at least annually inform the Council for Trade in Services of the introduction of new, or any changes to existing, laws, regulations or administrative guidelines which significantly affect trade in services covered by its specific commitments".

Article III also contains an obligation, under paragraph 4, for all Members to "respond promptly to all requests by any other Member for specific information on any of its measure of general application" and establish "enquiry points to provide, upon request, specific information to other Members on all such matters […]". Building upon this obligation on enquiry points, Article IV:2 requires instead the establishment of "contact points", stipulating that "developed country Members, and to the extent possible other Members, shall establish contact points […] to facilitate the access of developing country Members' services suppliers to information" related to their markets. The key distinction between these two obligations is that enquiry points, which have to be set up by all Members, respond to enquiries coming from Members (i.e., governments), whereas contact points, which are to be established only by developed Members, serve the information needs of service suppliers, and only those from developing Members, by facilitating access to relevant information. The fact that only specific sets of Members are bound by, and benefit from, these obligations is a second aspect that differentiates the provisions of the GATS from those found in RTAs, which, as will be discussed in Section 3, may apply to all Parties to a specific RTA, irrespective of their level of development.

When it comes to the disciplines on domestic regulation contained in Article VI, two provisions may be viewed as relevant. First, paragraph 1, which requires Members, in sectors where they have undertaken specific commitments, to ensure that "all measures of general application affecting trade in services are administered in a reasonable, objective and impartial manner". This particular discipline has not been further elaborated for mode 4 application in RTAs, possibly because several relevant measures may be specific to given individuals, rather than "of general application". Second, paragraph 3, which stipulates that, "when authorization is required for the supply of a service on which a specific commitment has been made", Members' competent authorities shall "within a reasonable period of time after the submission of an application considered complete […], inform the applicant of the decision concerning the application" and, at the request of the applicant, "provide, without undue delay, information concerning

the status of the application". As will be explained further below, this GATS provision applies only in instances where an "authorization to supply a service" is at play and a specific commitment exists for the sector in question, whereas corresponding mode 4 disciplines in RTAs do not generally require that these two conditions be fulfilled.[6] This is the third distinguishing feature of RTA and GATS provisions

Occurrence of Mode 4 Regulatory Disciplines in RTAs

Since the creation of the WTO in 1995 and up to the end of 2021, 115 WTO Members[7] have concluded and notified to the WTO 183 RTAs covering trade in services (also referred to as "services RTAs").

Of these RTAs, 100, signed by 72 Members[8], include regulatory disciplines related to mode 4: these are the 100 Agreements we examine in this paper (also referred to as "our sample"), and are listed in Annex 1.

In our analysis, whenever a Member has included a mode 4 discipline in more than one of its RTAs, this is only counted once. Hence, the information by Member reveals the percentage (or number) of Members that have included a specific discipline at least once in their Agreements.

It is important to note that relevant RTA disciplines apply to cross-border movements of individuals that include, but are not limited to, mode 4 of the GATS. In fact, many Agreements include disciplines in a stand-alone chapter[9], on the "temporary movement of businesspersons", which is intended to facilitate the cross-border mobility of given categories of individuals irrespective of their sector of activity, and therefore not exclusively in the services sector. As such, RTA provisions cover both "pure" mode 4, related to the supply of services, as well as movements of businesspeople in non-services sectors. In the discussion that follows, we will refer to "mode 4", for ease of reference, but our analysis is applicable to all kinds of temporary business mobility. Indeed, it is notable that, in their RTAs, WTO Members have recognized that facilitating international mobility is essential for trade beyond just trade in services.

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6 The "authorisation" referred to in RTAs is for entry and stay into the territory of the other Party(ies).

7 For the purpose of the analysis, EU Member States are counted individually, i.e., 28 Members until 31 December 2020, and 27 thereafter. The United Kingdom was originally a Party to the EU–Japan and U-Canada Agreements, but it ceased to be an EU Member State on 31 January 2020 and, following the end of the transition period with the EU on 31 December 2020, ceased to be a Party to both of these Agreements.

8 The total number of Members concerned would be 73, but Macao, China's only Agreement with mode 4 disciplines, concluded with Hong Kong, China, foresees the applicability of relevant disciplines only to Hong Kong, China. Hence, the total number of Members is 72.

9 Although in the majority of cases these disciplines are included in a separate section or chapter of RTAs, in some instances they are found in schedules of commitments, under "Additional Commitments". In this regard, it should be noted that our analysis has focused exclusively on mode 4 disciplines, and has not considered their possible interaction with other RTA provisions.

Chronological Occurrence

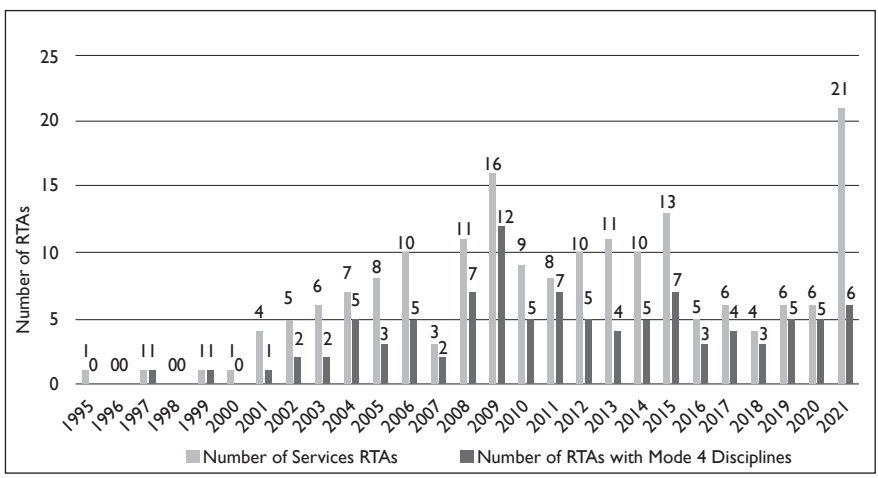
The increase in the number of services RTAs over the past twenty years has been accompanied by the progressive adoption of GATS-plus mode 4 obligations in these Agreements.

While disciplines on mode 4 can be found in a few of the services RTAs concluded soon after the creation of the WTO in 1995, with the first RTA of this kind being the Canada-Chile Agreement of 1997, it is only starting in 2004 that the practice accelerated and deepened. Before then, only 16 WTO Members had concluded an RTA with GATS-plus regulatory obligations on mode 4. By 2010, this figure had doubled to 32 Members, and it had more than doubled again, to 72 Members, by 2021.[10]

Since 2004, GATS-plus mode 4 disciplines are found in the majority of the RTAs that entered into force each year (except for the years 2005, 2013 and 2021), with peaks exceeding 80% in 2011, 2019 and 2020, as Figure-2.1A shows.

EU-Canada Agreements, but it ceased to be an EU Member State on 31 January 2020 and, following the end of the transition period with the EU on 31 December 2020, ceased to be a Party to both of these Agreements.

Figure-2.1A: RTAs with Mode 4 Disciplines, by Year



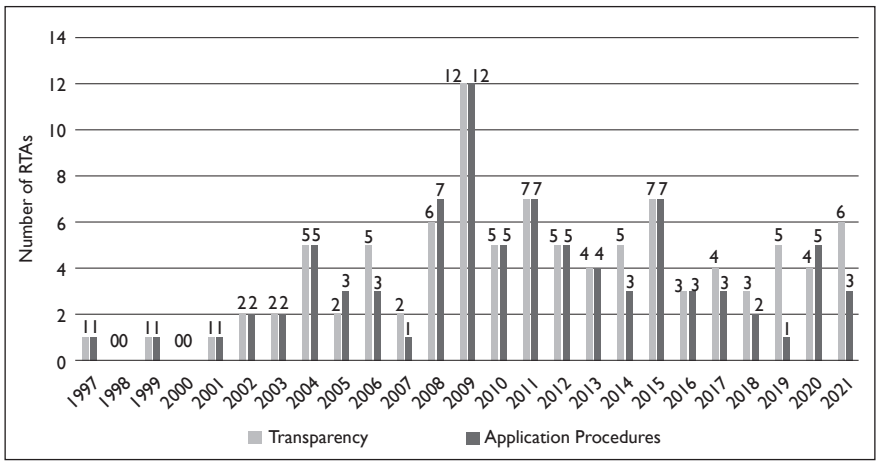
As will be discussed in more detail in Section 3, mode 4 regulatory disciplines in RTAs are of two main kinds: those related to transparency and those concerning application procedures. As Figure-2.1B illustrates, whereas virtually all RTAs in our sample contain transparency provisions[11], disciplines on application procedures are included in slightly fewer Agreements (86). Specifically, our analysis shows that, whereas in the

10 The data for 2021 is not fully representative as it is heavily influenced by the numerous RTAs concluded that year by the United Kingdom following its withdrawal from the European Union.

11 97 out of 100 RTAs, signed by 68 Members, include transparency disciplines.

"early years" all Agreements tended to include both kinds of provisions, this trend has somewhat tapered off over more recent years. In fact, after 2016, provisions on application procedures have been less frequently incorporated in new RTAs than transparency procedures, with 2020 as the only exception.

Figure-2.1B: RTAs with Mode 4 Disciplines, by Main Kind, by Year



We have also identified two additional types of mode 4 disciplines that have been included in RTAs, namely those concerning "application of measures" and recourse to dispute settlement. As Figure-2.1C illustrates, 55% of the Agreements in our sample include an obligation for the "expeditious" application of mode 4 measures[12], and 70% stipulate conditions to access dispute settlement.

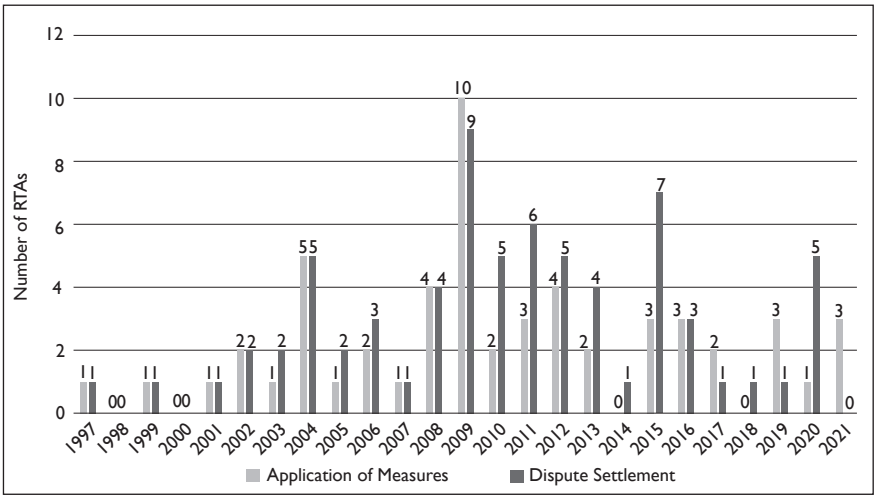
We do not analyse these latter two types of disciplines in further detail. The provisions on expeditious application exhibit very limited variation and are very broadly drafted, rendering a deeper assessment futile. The disciplines on dispute settlement, instead, are quite unique in that they do not add value to the mode 4 disciplines of the GATS. In fact, the purpose of these disciplines is to limit recourse to the RTA dispute resolution system, whereas no comparable conditionalities exist under the GATS. 70%[13] of RTAs with mode 4 disciplines set two conditions to access the Agreements' dispute settlement system, namely that the matter involve a pattern of

12 Counted under this category are also provisions requiring that measures concerning the movement of natural persons be applied in a manner that avoids unduly impairing trade.

13 Although the China-New Zealand RTA contains disciplines on access to dispute settlement, it does not condition this access on the fulfilment of specific conditions. As such, it has not been included in this analysis.

practice and that affected natural persons exhaust available domestic administrative remedies first.[14] With regard to the latter condition, the vast majority of RTAs include a time period when remedies are considered to be exhausted.[15]

Figure-2.1C: RTAs with Mode 4 Disciplines on Application of Measures and Dispute Settlement, by Year



Income-level Occurrence[16]

With the notable exception of low-income economies, WTO Members across all other income levels have included mode 4 disciplines in their RTAs, with high-income economies accounting for the bulk of these Members. Indeed, as Figure-2.2A illustrates, out of all the high-income Members with services RTAs, 79% have included mode 4 provisions in at least one of their Agreements. When it comes to Members in the upper-middle income group, this share falls to 46%, and it stands at 58% for Members in the lower-middle income group. It should be noted, however,

14 See, for instance, Hong Kong, China-Australia (2020), Chapter 10, Article 10.7.

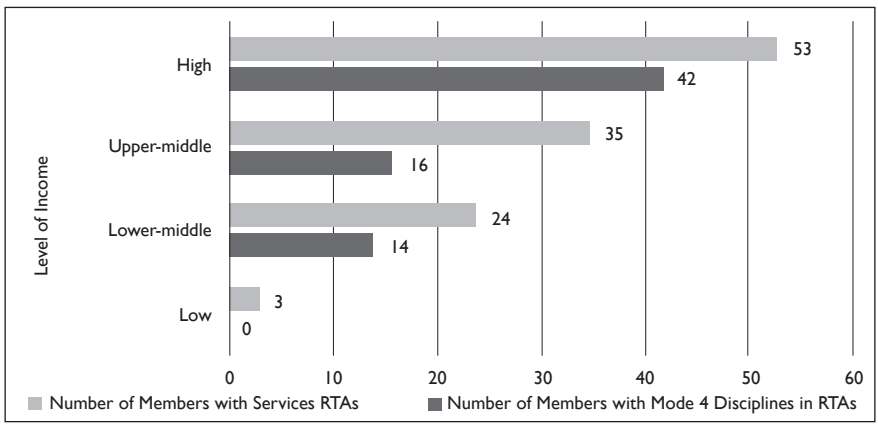
15 In fourth-fifth of these Agreements this period is set as a specific length of time (12 months in 37 RTAs, 6 months in 17, and 24 months in one instance) and in a few cases as a "reasonable period of time" (see, for instance, Peru-Australia (2020), Chapter 11, Article 11.9.2). 13% of RTAs with a remedy exhaustion clause, however, set no particular timeframe (see, for instance, Indonesia-Australia (2020), Chapter 12, Article 12.8).

16 Following the classification of income groups by the World Bank, the mode 4 RTAs in our analysis involve 42 high-income economies, 16 upper-middle-income economies, 14 lower-middle-income economies, and no low-income economies. For further information on the World Bank classification of income groups, see https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html.

that these figures provide no indication of the breadth of scope of the specific disciplines adopted.

Agreements concluded between high- and upper-middle income economies are the most numerous (33), followed by RTAs concluded exclusively among high-income Members (25), RTAs between high- and lower-middle income Members (16), Agreements among upper-middle income Members (12) and Agreements concluded among upper-middle- and lower-middle income Members (9). In addition, some RTAs (5) include Members from all income levels, such as CPTPP.

Figure-2.2A: Members with Mode 4 Disciplines in RTAs, by Income Level

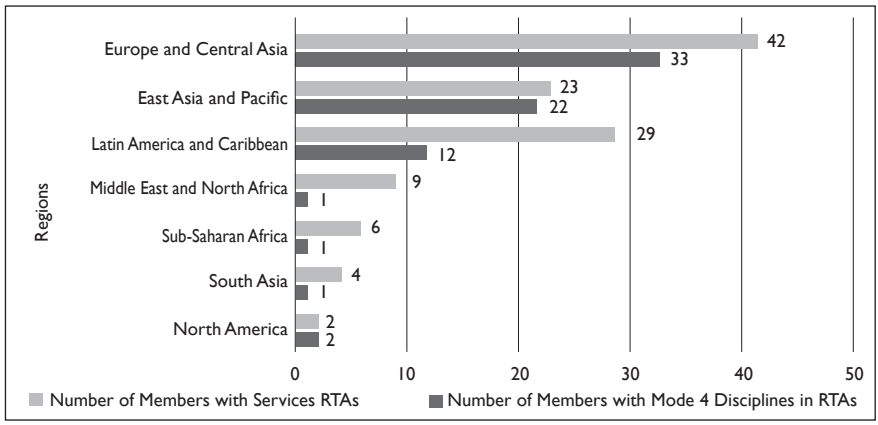


Regional Occurrence[17]

Mode 4 regulatory disciplines are found in RTAs adopted across all regions of the world, although with different intensity. As Figure-2.3A illustrates, Members from the Middle East & North Africa (11%), Sub-Saharan Africa (17%) and South Asia (25%) are relatively less represented, even if the information for these groupings cannot be taken as representative of broader regional trends given that each comprise only one Member when it comes to mode 4 RTA disciplines. On the other hand, all Members from North America that have signed a services RTA have included mode 4 regulatory disciplines. Members from the East Asia and Pacific region (96%), Europe and Central Asia (79%) and Latin America and the Caribbean (41%) come next. Our analysis also reveals that the kinds of disciplines included sometimes depend on the RTA partner's region, as is discussed in more detail in Section 3.

17 Following the classification of regional groups by the Work Bank, the mode 4 RTAs in our analysis involve 22 economies in East Asia & Pacific; 33 economies in Europe & Central Asia; 12 economies in Latin America & Caribbean; two economies in North America; and one economy each in Middle East & North Africa, South Asia, and Sub-Saharan Africa. For further information on the World Bank classification for income and regional groups, see https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html.

Figure-2.3A: Members with Mode 4 Disciplines in RTAs, by Geographic Region



Typology of Regulatory Disciplines

As discussed in Section 2.1, mode 4 regulatory disciplines in RTAs are of two main kinds: those related to transparency and those concerning application procedures. They are analysed in more detail in the sub-sections below.

Transparency

Virtually all RTAs that include disciplines on the temporary entry and stay of natural persons[18] and more than 90% of Members that have concluded these RTAs[19] include GATS-plus disciplines on transparency. These disciplines fall within one or more of the types described in Box 3.1.

Box 3.1 Types of Transparency Disciplines

Discipline	Description
Publish information	Provide, publish online, or otherwise make publicly available explanatory material or information on requirements or/and procedures for the temporary entry of natural persons. In some instances, this is complemented by an indication of the specific information to be published (e.g., fees, review and appeal procedures, timeframes).
Publish modifications	Upon modification or amendment of requirements and procedures for temporary entry of natural persons, ensure that the updated information is published or that the other Party is informed.

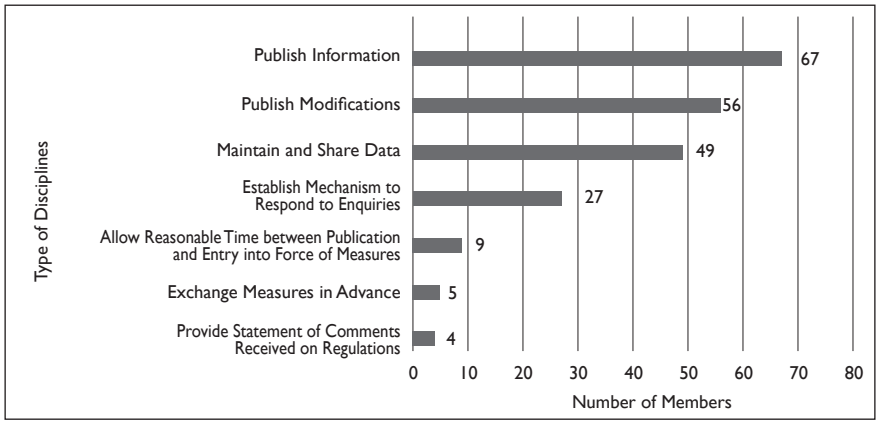
18 The only exceptions are PACER Plus (2020), Nicaragua–Chinese Taipei (2008), and Thailand-Australia (2005).

19 Four Members (Samoa, Solomon Island, Tonga, and Vanuatu) are Parties only to the PACER Plus Agreement. As this Agreement does not contain transparency provisions, the share of Members having included transparency provisions is smaller than the share calculated in terms of Agreements.

Discipline	Description
Maintain and share data	Collect, maintain and (upon request) make available to the other Party, often in accordance with domestic law, information relating to the granting of temporary entry authorization to persons of the other Party to whom immigration documentation have been issued.
Establish mechanism to respond to enquiries	Establish/maintain appropriate mechanisms to respond to enquiries from interested persons regarding measures affecting temporary entry.
Allow reasonable time between publication and entry into force of measures	To the extent possible, allow reasonable time between publication of final regulations affecting temporary entry of natural persons and their date of entry into force.
Exchange measures in advance	Prior to the entry into force of the RTA, exchange information on current procedures relating to the processing of applications for temporary entry of natural persons.
Provide statement of comments received on regulations	If comments are received regarding a proposed regulation on temporary entry of natural persons, publish a concise statement addressing those comments at the time the final regulation is adopted.

Figure-3.1A presents the number of Members that have included mode 4 transparency disciplines in their RTAs.

Figure-3.1A: Members with Mode 4 Transparency Disciplines in RTAs, by Type



As illustrated in the Figure, the mode 4 transparency discipline most frequently incorporated in RTAs involves the obligation to publish information. Almost all (99%) Members with transparency obligations[20] include this kind of discipline. The degree of stringency varies somewhat,

20 Unless otherwise indicated, percentages in this Section are calculated out of the total number of Members with mode 4 transparency disciplines in RTAs, i.e., 68, also referred to as "the Members concerned".

however, with the firmer disciplines, which have been adopted by the vast majority of the Members concerned, setting either a specific timeframe for publication[21] or providing very limited scope for discretion in terms of when publication is to occur.[22]

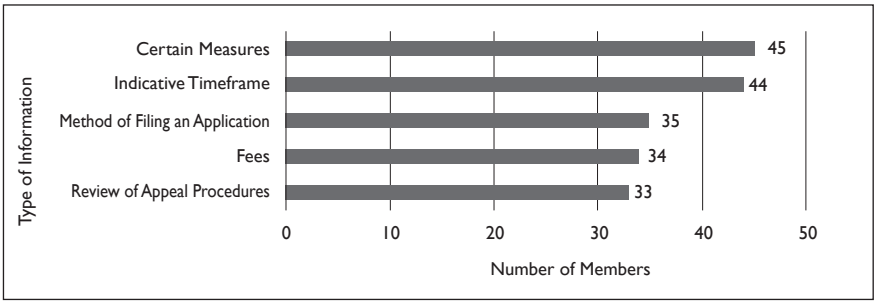
In this regard, it is notable in that, in Article III:1, the GATS already contains an obligation for Members to publish all relevant measures of general application that affect the operation of the Agreement. Nevertheless, RTAs may be argued to offer "GATS-plus" obligations by prescribing that publication concern specifically "explanatory material or information on requirements or/and procedures" related to the "temporary entry of natural persons".

Furthermore, while most RTAs contain a general requirement to publish this information, some additionally include an indicative list specifying the type of information that is to be published.[23]

Although the first RTA with a requirement to publish information on a specific mode 4 measure was concluded relatively early on, in 2006, between Japan and Malaysia, the inclusion of a more detailed indicative list is a fairly new practice.[24]

Figure-3.1.1A details the number of Members that have included the requirement to publish various specific types of information in their RTAs.

Figure-3.1.1A: Members with Mode 4 Transparency Disciplines Requiring the Publication of Specific Information, by Type of Information



21 Most Members set the timeframe at 45 days, 3 months, 6 months, or 12 months. See for instance, China-Costa Rica (2011), Chapter 9, Section C, Article 104.1(a).

22 For example, with the stipulation "upon the date of entry into force of this Agreement" as found in Japan-Mongolia (2016), Chapter 8, Article 8.5.1.

23 Out of the 90 RTAs (signed by 67 Members) that indicate a requirement to publish information, 27 (signed by 51 Members) include an indicative list of the specific information to be published. Seven of these 27 RTAs list a significant number of information elements, namely: UK-Iceland, Liechtenstein, and Norway (2021); European Union-United Kingdom (2021); United Kingdom-Japan (2021); Peru-Australia (2020); European Union-Japan (2019); Türkiye-Serbia (2019); and Türkiye-Singapore (2017).

24 EU-Japan (2019) was the first Agreement to include an indicative list of more than three specific types of information.

Out of the 51 Members that have undertaken such an obligation, as the Figure illustrates, the specific information to be published concerns certain measures (e.g., extensions and renewals, requirements for accompanying spouses) in 88% of cases, indicative timeframes to process applications (in 86% instances), method of filing an application (69%), fees (67%) and review or appeal procedures (65%).[25]

The second most agreed upon transparency discipline is the obligation to publish modifications to existing requirements and procedures, and in some instances to inform the other RTA Party(ies), which has been adopted by 82% of the Members concerned. Bearing in mind that the various options are not mutually exclusive, and, in some instances, have been used in combination, 41 Members have agreed to publish such information "immediately" or "promptly", 12 have committed to doing so within a 3 months' timeframe[26], two have indicated a 30-day timeframe[27], whereas another seven, keeping more flexibility, have not indicated any timeframe for publication.

Again, these disciplines build upon a pre-existing GATS obligation, in Article III:3, which stipulates that "promptly and at least annually" Members notify "the introduction of any new, or changes to existing, laws, regulations or administrative guidelines which significantly affect trade in services" covered by their specific commitments. However, for the purpose of our analysis we consider that corresponding RTA disciplines go further, by including an explicit reference to mode-4 related requirements and procedures, and by not circumscribing the obligation only to those sectors included in Members' services schedules.

Provisions to establish an "appropriate mechanism" to respond to enquiries from interested persons have been included in the RTAs in our sample by 40% of the Members concerned. Once more, the GATS does contain a similar provision, in Article IV:2, that requires developed Members to establish contact points to facilitate the access of developing country Members' services suppliers to specific information. However, we consider the equivalent RTA provisions to be GATS-plus as they are explicitly focused on mode 4-related requirements, expressly require that a response be provided to interested persons and extend the obligation to set

25 When assessed in terms of the Agreements, rather than Members, the corresponding figures are 67% referring to certain measures, 56% to indicative timeframes, 37% to method of filing an application, 22% to fees, and 19% to review or appeal procedures.

26 These 12 Members are Parties to two Agreements, i.e., Malaysia-Australia (2013), Chapter 10, Article 10.9.4; and ASEAN–Australia–New Zealand (2010), Chapter 9, Article 8(c).

27 New Zealand and Malaysia, in the Agreement they have signed with each other (New Zealand-Malaysia (2010), Chapter 9, Article 9.7(c)).

up "mechanisms" to all RTA Parties, to the benefit of all service suppliers regardless of level of development.[28]

As discussed, three of the four most common mode 4 transparency provisions in RTAs build upon GATS obligations. However, RTA Parties have also agreed to totally novel disciplines, that find no equivalent in the GATS.[29]

This is the case notably for disciplines mandating the maintenance, and sharing with the other Party(ies), of data about natural persons who have been granted temporary entry, which have been adopted by a remarkable 72% of Members concerned, in 47 RTAs.

Other "novel" transparency disciplines are also found in RTAs, although they have been undertaken by a more limited number of Members. These are disciplines to allow a reasonable time between the publication of new measures and their entry into force (adopted by 13% of Members concerned); providing for information on pertinent measures to be exchanged before the RTA enters into force (7%); and directing the publication of a concise statement addressing any comments received regarding a proposed regulation (6%). The lower incidence of these provisions is not really surprising, given the increased scrutiny of domestic regulatory processes they imply and the fairly burdensome implementation they require for the authorities concerned if they are not pre-existing regulatory mechanisms. Still, this is also part of what may render them especially valuable from a trade facilitation perspective.

Looking at how different combinations of transparency provisions have been used in RTAs, our analysis reveals that the obligations to publish information and to maintain and share data are those most frequently used together. This combination of obligations was first found in the RTA concluded between two high-income economies, Canada and Chile.[30] Subsequently, a further 43 RTAs, involving 47 other Members from all income levels, have included these same two transparency provisions.[31]

When it comes to RTAs that include a wider set of transparency obligations, comprising at least four different disciplines, the first such occurrence was an Agreement concluded again between two high-income economies, i.e., the United States and Singapore, in 2004. A further five

28 Some RTAs only mandate the establishment of mechanisms to respond to enquiries from the Parties, rather than from service suppliers. This is an obligation that, although not specifically aimed at mode 4 measures, WTO Members are already required to respect in view of the mandate to establish "enquiry points", in GATS Article III:3.

29 It needs to be acknowledged that many of the Members that acceded to the WTO after its creation have unilaterally agreed to GATS-plus regulatory disciplines, both on transparency and application procedures, although none of these provisions are specific to mode 4.

30 Canada-Chile (1997), Chapter K, Article K-04.

31 18 of the 43 RTAs comprise additional transparency disciplines beyond these two.

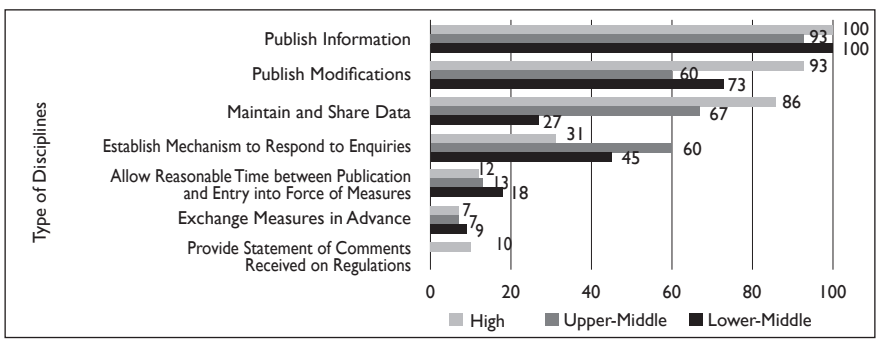
RTAs have adopted a similarly expansive set of disciplines, one concluded between high income economies, one between upper- and lower-middle income economies, and the other three agreed by Parties from high- and lower-middle income economies.[32]

In our sample, 53 RTAs include at least one of the "novel" transparency disciplines.[33] These Agreements have been signed between economies at all income levels. More specifically, 16 are between high- and upper-middle income groups, 10 are Agreements exclusively between high-income economies, 9 among upper-middle income economies only, another 9 between upper- and lower-middle income economies[34] and 8 between high- and lower-middle income Members. The remaining one Agreement was concluded amongst Members of all income levels.[35]

Obligations that build upon the transparency disciplines found in the GATS[36] are included most often in Agreements between high and upper-middle income economies (16), among high income countries (15), and between high and lower-middle income countries (7). Agreements among economies from all income levels (3) and between upper-middle income economies (3), instead, include such obligations more rarely.

Figure-3.1B analyses the individual transparency disciplines adopted by Members depending on their level of income.

Figure-3.1B: Members with Mode 4 Transparency Disciplines in RTAs, % by Income Level



32 India is Party to four of these Agreements and is the only Member from the lower-middle income group to include a set of at least four transparency disciplines.

33 As discussed,"novel" obligations are those to maintain and share data on the natural persons who have been granted temporary entry, allow reasonable time between publication and entry into force of measures, exchange measures in advance and provide statement of comments received on regulations.

34 In our sample there are a total of 9 RTAs concluded between upper- and lower-middle income economies, implying that all include at least one of these "novel" obligations.

35 Korea, Republic of-Central America (2019).

36 These are the obligations that mandate the publication of information, the publication of modifications or the establishment of mechanisms to respond to enquiries.

As the Figure illustrates, the most frequently included discipline, to publish information, was adopted by economies across all income levels, with high and lower-middle income Members fully represented. In terms of what specifically needs to be published, information on fees[37] and on appeals and review procedures[38] are elements not found in any of the RTAs to which lower-middle income Members are Parties.

High-income Members have included disciplines mandating the publication of modifications to relevant measures and requiring the maintaining and sharing of data comparatively more frequently than economies in other income groups. Moreover, only high-income Members have included provisions mandating the Parties to publish a concise statement addressing the comments received from interested persons on proposed regulations.

Conversely, it is lower-middle and especially upper-middle income Members have been relatively more frequent adopters of disciplines directing the establishment of mechanisms to respond to enquiries from interested persons. The under representation of high-income Members might be due to the fact that, under the GATS, developed country Members already have an obligation to set up somewhat similar mechanisms, although these are not specifically related to mode 4 enquiries, only facilitate access to information and are exclusively to the benefit of suppliers from developing Members.

Finally, disciplines requiring a reasonable time between publication of measures and their entry into force and those providing for measures to be exchanged in advance are relatively more prevalent in RTAs signed by lower-middle income Members.

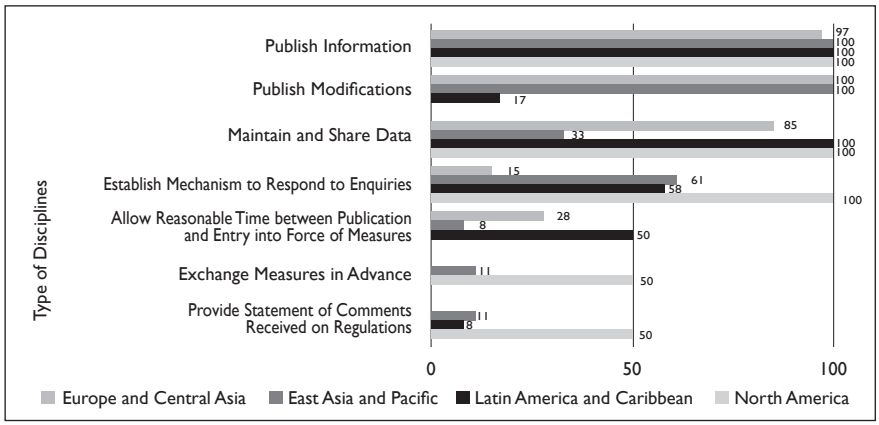
Figure-3.1C presents information about the geographical distribution of mode 4 transparency disciplines.

As previously mentioned, given that the South Asia, Sub-Saharan Africa, and Middle East and North Africa groupings each comprise only one Member with mode 4 RTA disciplines, the information cannot be taken as representative of broader regional trends and has been omitted from Figure-3.1C.

37 Six RTAs specify a requirement to publish information on fees, namely: UK-Iceland, Liechtenstein, and Norway (2021); EU-UK (2021); UK-Japan (2021); Türkiye-Serbia (2019); EU-Japan (2019); and Türkiye-Singapore (2017).

38 Five RTAs specify a requirement to publish information on review and appeal procedures, namely UK-Iceland, Liechtenstein, and Norway (2021); EU-UK (2021); UK-Japan (2021); Türkiye-Serbia (2019); and EU-Japan (2019).

Figure-3.1C: Members with Mode 4 Transparency Disciplines in RTAs, % by Geographic Region



Nevertheless, it is noteworthy that the only Member from Sub-Saharan Africa and the sole one from South Asia have included, in the Agreement they have concluded with each other,[39] one of the stricter transparency disciplines, namely that providing for reasonable time between the publication of new measures and their entry into force.

For the remaining geographic areas, our analysis shows that the two most common transparency provisions have been incorporated in the RTAs of most regions, with the exception of the North America, and Latin America & the Caribbean groupings, which have adopted the obligation to publish modifications appreciably more rarely. Looking in more detail at what specifically needs to be published under the discipline on publication of information, our analysis reveals that Members in the Europe and Central Asia region have included a reference to timeframes, specific measures, fees, and review and appeal procedures significantly more frequently than other regions, whereas the American continent is virtually absent for the three latter types of information and the East Asia and Pacific region also significantly underrepresented in the latter two types.

Turning to disciplines on maintaining and sharing data, these are markedly less common in the East Asia and Pacific region. The obligation to establish a mechanism to respond to enquiries, instead, is noticeably more absent from RTAs concluded by economies in the Europe and Central

Asia region, while omnipresent in the Agreements signed by North American Members. Finally, disciplines requiring that there be a reasonable

39 India-Mauritius (2021), Annex 10.

time between the publication and entry into force of new measures, that measures be exchanged prior to the RTA's taking effect, and that a statement be published addressing any comments received are virtually absent from RTAs across all regions, except for North America.

At a more granular level, trends can also be observed with regard to specific Members. For instance, out of the 21 services RTAs signed by the EU, only three adopt mode 4 provisions, all of which include transparency disciplines. The first such Agreement is the one concluded with Canada,[40] which contains obligations to publish information and share data on the natural persons who have been granted temporary entry and stay. In two subsequent RTAs, with other high-income Members (i.e., Japan[41] and the United Kingdom[42]), the EU deepened the transparency disciplines it adopted. For example, the EU-Japan Agreement further elaborates on the information to be published in an indicative list[43] and mandates the Parties to inform each other "promptly" if new requirements and procedures are introduced, or the requirements are amended.

Similarly, an illustrative list of the information to be published is included in almost all the RTAs signed by the United Kingdom, and specifically those with the EU, Japan and Iceland, Liechtenstein, and Norway. The RTA the UK has concluded with Canada, instead, does not include such a list, but does adopt other transparency provisions.

The United States, which has signed 11 RTAs covering services trade, has included mode 4 disciplines in only three, namely those concluded with, respectively, Chile, Singapore and Mexico-Canada.[44] The Agreements with Chile and Singapore include some of the "novel" transparency disciplines, such as the obligation to provide the interested persons with a concise statement addressing any comments received on proposed regulations.[45] In

40 European Union-Canada (2017), Chapter 10, Article 10.4.

41 European Union-Japan (2019).

42 European Union-United Kingdom (2021).

43 See European Union-Japan (2019), Chapter 8, Article 8.23, which states that "the information shall include, where applicable, categories of visa, permits or any similar type of authorization; documentation required and conditions to be met; methods and place of filing an application; application fees and indicative timeframe of processing of an application; the maximum length of stay for each type of authorization; conditions for available extensions or renewal; rules regarding accompanying depends; review or appeal procedures; and relevant laws of general application concerning entry and temporary stay of natural persons."

44 All subsequent RTAs concluded by the United States do not include any mode 4 regulatory disciplines. For further discussion on this issue, see, for instance, Carzaniga, A. (2009), " A warmer welcome? Access for natural persons under PTAs", in 'Opening Markets for International Trade in Services ', Marchetti, J.A. and M. Roy (eds).

45 See United States-Singapore (2004), Chapter 11, Article 11.5.2; and United States–Chile (2004), Chapter 14, Article 14.8.2. It should be noted that this is an absolute requirement in the US-Singapore Agreement, whereas in the US-Chile Agreement, the Parties are required to do so to the extent possible and upon request.

addition, the two RTAs require the Parties to publish and make available information in a consolidated document; establish a mechanism to respond to enquiries from service suppliers; allow reasonable time between the date of publication of regulations and their date of entry into force; and share, upon request, data on the natural persons who have been granted temporary entry. The Agreement between the United States, Mexico and Canada adopted only one "novel" discipline, that to share data on the natural persons who have been granted temporary entry. [46]

Our analysis also reveals situations where given disciplines are always, or nearly always, included in the RTAs signed by a particular Member. For instance, in all its six Agreements with mode 4 disciplines, Hong Kong, China has incorporated the obligation to publish information.[47] It is noteworthy that in four of Hong Kong, China's RTAs, the other Party has undertaken no transparency obligation, yet Hong Kong, China has done so unilaterally, through scheduling.[48] In addition, in these four RTAs Hong Kong, China has additionally agreed to publish information online, on the "website of the visa/permit issuing authority".[49]

The five RTAs containing regulatory disciplines on mode 4 that India has signed,[50] all comprise an obligation on the Parties to allow reasonable time between publication and entry into force of mode 4 related measures.

Looking at Latin America, Peru has concluded 12 Agreements covering mode 4 disciplines, and all 12 mandate the publication of information and the establishment of a mechanism to respond to enquiries. In addition, nine of these 12 Agreements place an obligation on the Parties to maintain and share data on the natural persons who have been granted temporary entry.[51] Similarly, Mexico has concluded eight Agreements with mode 4 disciplines, and all except one incorporate the obligation to maintain and share relevant data.[52] Chile has concluded 16 Agreements that include mode 4 disciplines, 14 of which comprise a requirement to publish information,

46 United States-Mexico-Canada Agreement (2020), Chapter 16, Article 16.5.2.

47 Five of those six Agreements further specify the information to be published, including indicative timeframes to process applications.

48 The four Agreements in question have been concluded with: ASEAN; Georgia; Macao, China; and Chile. Hong Kong, China's transparency disciplines have been included in its schedule of commitments, rather than in the framework provisions of the RTA.

49 These are the only four RTAs in our sample of 100 which include the requirement to publish information on an official website.

50 India has signed a total of six services RTAs, and only the ASEAN-India Agreement (2015) does not include regulatory disciplines on mode 4, even if it comprises a specific Annex on the "Movement of Natural Persons".

51 This is absent in CPTPP (2018), Peru-Singapore (2009), and Peru-Australia (2020).

52 The one exception is CPTPP (2018)

and to maintain and share data on natural persons who have been granted temporary entry.[53] In addition, two of its Agreements contain the obligation to provide interested persons with a concise statement addressing any comments received on proposed regulations.[54]

Conversely, our analysis also points to instances where the mode 4 transparency disciplines adopted by certain Members in their RTAs are very diverse. For instance, China has concluded 10 RTAs with mode 4 disciplines that exhibit quite different transparency obligations: the Agreements signed with Latin American Members include the obligations to publish information, maintain and share data and establish a mechanism to respond to enquiries,[55] the RTAs with, respectively, Georgia, Mauritius and Singapore include only an obligation to publish modifications, whereas the three Agreements with Australia, Iceland, and the Republic of Korea mandate the Parties to publish information, publish modifications, and establish a mechanism to respond to enquiries from mode 4 service suppliers.

In sum, out of the 100 RTAs that include mode 4 regulatory disciplines, 97 adopt transparency disciplines. Of these 97, the majority are concluded between high and upper-middle income economies or exclusively between high income Members. The two most frequently included type of transparency disciplines mandates the Parties to publish information and to publish modifications to relevant requirements and procedures, which may offer only rather limited value added compared to the GATS. Our analysis also reveals, however, that "novel" transparency disciplines are also present in RTAs, mostly found in those concluded between high and lower-middle income Members. With respect to geographic areas, a fairly varied picture emerges, with different types of disciplines prevalent in different regions.

Application Procedures

Out of the 100 RTAs with mode 4 regulatory disciplines, 86, concluded by 70 Members,[56] have included obligations related to application procedures.

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53 The two exceptions are the Trans-Pacific Strategic Economic Partnership (2006); and the Agreement concluded with Hong Kong, China. At the time of writing, CPTPP is not yet in force for Chile and therefore it has not been taken into account in the analysis.

54 Australia-Chile (2009), and United States-Chile (2004). The obligation in the Australia-Chile Agreement concerns both "proposed and existing regulations", whereas in the US-Chile Agreement it only relates to proposed regulations.

55 These disciplines have been included in most of RTAs signed by Latin American economies, with partners from across different regions.

56 The number of Members with disciplines on mode 4 application procedures would actually be 71, but PACER Plus, Vanuatu's only Agreement with mode 4 disciplines, is not yet in force for the country. We have therefore excluded Vanuatu from the count

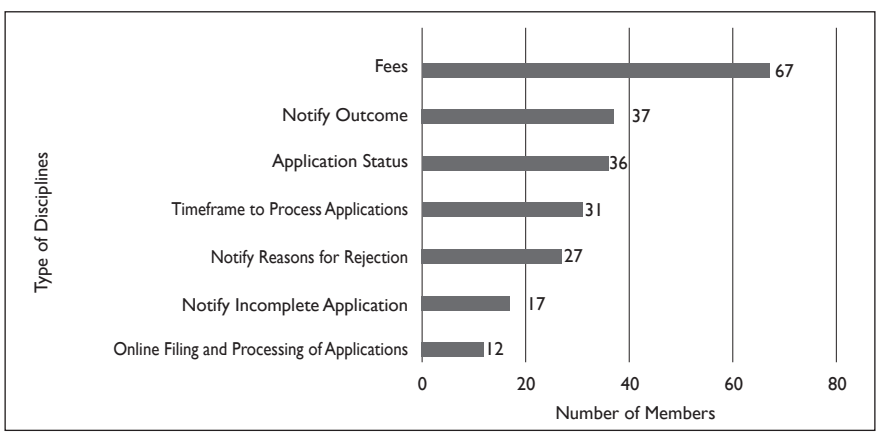
These disciplines fall within one or more of the types describe in Box 3.2.

Box-3.2: Types of Disciplines on Application Procedures

Discipline	Description
Fees	Set fees so that they are not an unjustified impediment to entry and temporary stay of natural persons/do not unduly impair or delay trade/are approximate to cost of services rendered/are fixed according to the administrative cost involved/are reasonable/are in accordance with domestic laws.
Notify outcome	Decide applications and notify the decision to the applicant promptly/ within a reasonable time/without undue delay/ within a fixed timeframe.
Application status	Upon request, provide information to the applicant concerning the status of the application.
Notify reasons for rejection	Where the authorization for temporary entry is refused, inform the applicant (and the Party). Some Agreements require the Parties to provide information on available review or appeal procedures and/or opportunities to resubmit the application.
Timeframe to process applications	Process applications, including requests for extensions of visas and permits (as applicable), expeditiously/as expeditious as possible/ promptly/without undue delay.
Notify incomplete application	Where information or documents for the application are incomplete, or if additional documents are required to process the application, notify the applicant. Some Agreements require that time be provided to remedy the incomplete application.
Online filing and processing of applications	Accept and process applications in electronic format/provide facilities for the online lodging and processing of applications.

Figure-3.2A illustrates the number of Members that have included disciplines related to application procedures in their RTAs.

Figure-3.2A: Members with RTA Discipline on Mode 4 Application Procedures, by Type



As the Figure shows, the obligation on fees has been agreed upon by the highest number of Members with RTA disciplines on application

procedures (96%).[57] Given the many variations that this provision exhibits in the various RTAs, it is analysed in further detail in Section 3.2.1 below.

The second most frequently incorporated discipline binds the Parties to notify applicants of the outcome of an application process. This obligation exhibits different formulations in terms of the specific timeframe to decide on applications and notify outcomes, ranging from the specification of a fixed, explicit period,[58] to requiring that this be done "promptly", "without undue delay", "as expeditiously as possible" or "within a reasonable period of time", to the absence of any time qualifier. The most frequently encountered discipline, possibly due to the relative flexibility it provides, requires that the decision be taken within a "reasonable period of time"[59], whereas the least prevalent is the obligation to do so "promptly" or "without undue delay".[60]

It is important to note that GATS Article VI:3 does contain an obligation to inform the applicant of the decision concerning an application within a "reasonable period of time". However, the GATS obligation applies in cases "where authorization is required for the supply of a service on which a specific commitment has been made". For the purpose of our analysis, we consider that, in spite of the similarities, this type of RTA discipline, which is explicitly related to applications for entry and temporary stay and not contingent on the existence of a specific commitment, amounts to a GATS-plus discipline.

Moving to the next most common provision, over half of the Members in our sample have agreed to provide, on request, information about the status of an application. This discipline is included in 41 RTAs, although the exact formulations of this discipline vary across Agreements. Bearing in mind that the different formulations are not mutually exclusive, 30 RTAs require the Parties to provide such information "without undue delay", seven "within a reasonable period of time" and the remaining four to do so "promptly". It bears pointing out that GATS Article VI:3 also provides that, at the request of the applicant, Members "provide, without undue delay, information concerning the status of the application". However, for

57 Unless otherwise indicated, percentages in this Section are calculated out of the total number of Members with disciplines on application procedures, i.e., 70, also referred to as "the Members concerned".

58 17 Members, in 14 RTAs, include this fixed timeframe. Most set the timeframe at 10, 30 or 45 days, but in one Agreement this is set at "15 to 40 days" and in another at 90 days. Two of these 14 RTAs include a fixed timeframe only for deciding applications, which does not necessarily place an obligation on the Parties to notify the outcome within the same timeframe; regardless, for the purpose of our analysis, we have counted these two RTAs as part of this category.

59 This formulation has been included by 28 Members, in 24 RTAs.

60 15 Members, in nine RTAs, have adopted this formulation.

the same reasons indicated above, we consider this RTA obligation as an improvement over the corresponding GATS discipline.

Next come provisions pledging a specific timeframe to process applications, which have been adopted by about half of the Members concerned. About another half (27) of Members has agreed to the obligation to inform the applicant (and the Parties) of the reasons for rejection.[61] Eleven of these 27 Members additionally agreed to provide information on available review or appeal procedures, or the afford the opportunity to resubmit an application.[62]

Relatively fewer Members, i.e., a quarter of those with "procedural" disciplines, agreed to notify the applicant if an application is incomplete, with some additionally providing an opportunity to remedy the situation. By far the least frequent discipline is the requirement to provide facilities for the online filing and online processing of applications, included by 17% of the Members concerned.[63]

Looking at the RTA disciplines on application procedures depending on the Parties' level of income, our analysis reveals that these have been included across all income levels. Specifically, they have

been incorporated in 31 RTAs concluded between high- and upper-middle income economies, 18 signed among high-income economies, 15 agreed between high- and lower-middle income economies, 9 concluded between upper- and lower-middle income economies, and another 10 signed among upper-middle income economies. The remaining three RTAs[64] include economies from all income levels. Out of a total of 86 relevant RTAs, 13 have incorporated only one type of discipline on application procedures, the one related to fees.

Figure-3.2B presents information about the specific procedural disciplines adopted by Members in each income group, as a share of the number of Members from that income level with such disciplines.

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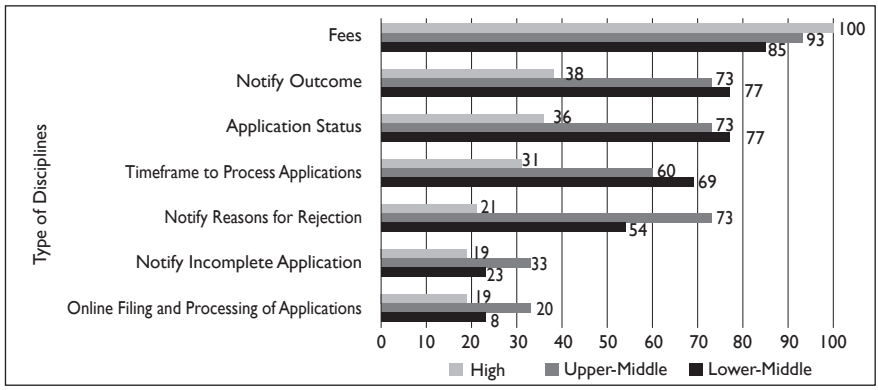
61 They have done so in 33 RTAs, of which 22 include disciplines to notify both the applicant and the other Party(ies), 11 comprise disciplines to notify the applicant (in four cases to do so upon request, and in three cases to the maximum extent possible).

62 For instance, India-Mauritius (2021) includes a discipline that the applicant be notified, "as far as possible", of the reasons for rejection and be given the possibility to resubmit an application. (Annex 10, Article 11.3)

63 The first RTA to include such an obligation was the 2003 Agreement concluded between Singapore and Australia (Chapter 11, Article 14). This requirement was subsequently included in another eight Agreements, with different levels of stringency (two adopt a hard "shall provide" obligation, one mandates the Parties to "consider providing" the online processing of applications, three use "where possible" or "shall endeavour to" and another three indicate "shall endeavour to, to the extent possible").

64 PACER Plus (2020); CPTPP (2018); and ASEAN-Australia-New Zealand (2010).

Figure-3.2B: Members with RTA Disciplines on Mode 4 Application Procedures, % by Income Level



The Figure shows that while all high-income Members with "procedural" mode 4 disciplines have included obligations related to fees, these economies are relatively underrepresented with regard to all other types of disciplines, especially for obligations concerning the timeframe to process applications and notification of the reasons for rejection of an application. Our analysis further reveals, however, that when high-income Members have agreed to procedural disciplines, they have included relatively more stringent variants. For example, out of the 17 Members that agreed to discipline to notify the outcome of an application within a fixed timeframe, 11 are high income Members.[65]

Upper-middle income Members have, instead, included relatively more often disciplines prescribing the notification of the reasons for rejecting an application. Similarly, these Members have also comparatively more frequently adopted the obligation to notify incomplete applications, and to provide facilities for the online filing and processing of applications.

Finally, lower-middle income economies have, in relative terms, incorporated most frequently disciplines to notify the outcome of applications,[66] to set a processing timeframe, and to provide information on the status of applications. This income group is, instead, especially underrepresented when it comes to providing for the online filing and processing of applications.[67]

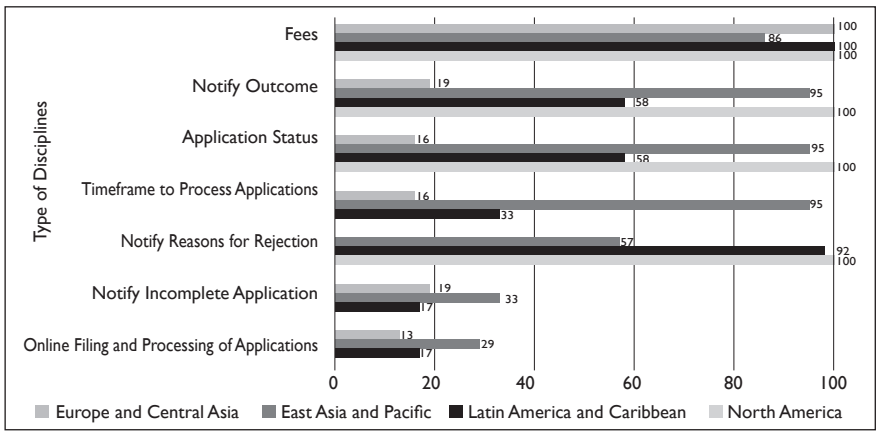
65 The remaining six are upper-middle income Members. Lower-middle income economies have no representation for this type of discipline.

66 However, none of these Members has agreed to notify outcomes within a specified timeframe. Instead, nine refer to "within a reasonable period of time", two indicate "promptly/without undue delay", and one stipulates "as expeditiously as possible".

67 Furthermore, in the few instances when this provision is included by a lower-middle income Party, it is couched in best endeavour terms (i.e., "to the extent possible"). See, for example, Indonesia-Australia (2020), Chapter 12, Article 12.3.4.

Figure-3.2C illustrates the geographical distribution of disciplines on application procedure.

Figure-3.2C: Members with RTA Disciplines on Mode 4 Application Procedures, % by Geographic Region



As discussed earlier, the presence of only one economy with mode 4 RTA disciplines in, respectively, the South Asia, Sub-Saharan Africa, and Middle East and North Africa groupings implies that the information for these Members is not necessarily indicative of broader regional trends and therefore it is not analysed nor included in Figure-3.2C. Still, it should be noted that the one Member from Sub-Saharan Africa and the sole one from South Asia have, in a recent Agreement signed with each other, included a number of procedural disciplines, notably to notify the outcome, notify the reasons for rejection of an application, notify the incompleteness of an application, provide, without undue delay, information on the application status, and provide for an expeditious processing of applications.[68]

For the remaining geographic areas, our analysis shows that provisions on fees have been incorporated in the RTAs of all regions, with a somewhat lower representation for the East Asia and Pacific grouping. This regional grouping is also slightly less present when it comes to notifying the reasons for rejecting an application, but it has otherwise incorporated relatively more frequently the disciplines to process applications within a given timeframe, notify the incompleteness of an application, and provide for

67 Furthermore, in the few instances when this provision is included by a lower-middle income Party, it is couched in best endeavour terms (i.e., "to the extent possible"). See, for example, Indonesia-Australia (2020), Chapter 12, Article 12.3.4.

68 India-Mauritius (2021), Annex 10, Article 11. Mauritius has concluded two RTAs that include mode 4 disciplines but has incorporated provisions on application procedures only in one.

online filing and processing.[69] When it comes to the obligation to notify the outcome of an application, Members from the East Asia and Pacific region have tended to include comparatively more flexible obligations.[70]

With the exception of the disciplines on fees, Members from the Europe and Central Asia group are fairly significantly underrepresented across all other procedural disciplines, with no representation when it comes to notifying the reasons for rejection.[71]

Economies from the Americas have also included many of these disciplines relatively infrequently, except for the obligation to notify the reasons for rejecting the application, where both regions are proportionately overrepresented,[72] and the obligations to notify the outcome of an application and provide information on the application status, which are always present for North American Members. It should nevertheless be noted that, despite having adopted the obligation to notify outcomes comparatively more rarely, Latin American economies are Parties to nearly half of the Agreements that have adopted the firmest variant of this obligation by indicating a fixed timeframe.[73]

Our analysis also reveals some Member-specific trends for mode 4 procedural disciplines. For instance, out of the three RTAs with mode 4 disciplines signed by the EU, only one addresses application procedures, and only includes disciplines on fees.[74] Similarly, the United Kingdom has concluded four RTAs with mode 4 disciplines, but only two include disciplines on application procedures; while one of these Agreements incorporates only disciplines on fees, the other contains a wider set of obligations.[75]

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69 In eight of the nine Agreements with these disciplines, at least one Party is from the East Asia and Pacific region, and five of these Agreements are exclusively between Members from this region.

70 Of all the 28 Members from all regional groups that have agreed to notify outcome within the accommodating "reasonable period of time", 19 are from the region. Similarly, of the 15 Members that agreed to notify the outcome "promptly" or "without undue delay", seven are from this region.

71 This is reflective of the fact that, in its Agreements, the EU has only undertaken procedural obligations concerning "fees".

72 For instance, 92% of Latin American Members have included this provision in their RTAs

73 Out of the 14 RTAs which include this type of discipline, in seven Agreements at least one Party is from Latin America. Of these seven RTAs, three are with Members from the same region, other two are with economies from North America, and the remaining two are with economies from the East Asia and Pacific region.

74 See EU-Canada (2017), Chapter 10, Article 10.3.3.

75 See UK-Iceland, Liechtenstein, and Norway (2021), Chapter 3, Section 3.4, Article 3.22.2. The Agreement comprises provisions to notify outcomes within a fixed timeframe, to provide for the online filing and processing of applications, and to notify incomplete applications.

In all of its three Agreements with mode 4 disciplines, the United States has included disciplines on fees and requiring that the applicant be notified in writing of the reasons for rejection (and that the other Party(ies) be also notified, "promptly").[76] When it comes to fees, the recently signed

Agreement between the United States, Mexico and Canada adopted one of the firmest obligations, providing that application fees be limited to the "approximate cost of services rendered", whereas other two Agreements take a more flexible approach.

India has included procedural disciplines in all five of its RTAs with mode 4 disciplines, four of which are with economies from the East Asia and Pacific region. All these five Agreements include the discipline to notify the outcome of an application, although none adds any time qualifiers, and two additionally include disciplines on notifying outcomes, providing information on the status of applications, notifying reasons for rejection, processing applications within a certain timeframe, and notifying the incompleteness of an application.[77]

Out of its 10 RTAs with mode 4 disciplines, China has incorporated disciplines on application procedures in eight. All but one include the discipline to notify the outcome of an application, and in three of these Agreements this needs to be done within a fixed timeframe, with the Agreement between China and New Zealand incorporating the absolute shortest time period, of 10 days.[78] Three Agreements include three or more additional disciplines on application procedures.

Australia has concluded 13 RTAs with mode 4 regulatory disciplines, and all address application procedures. Eleven of these RTAs contain four or more different disciplines on application procedures, with five providing for the online filing and processing of applications. Similarly, Peru's 12 Agreements with mode 4 disciplines all cover application procedures. Each one incorporates certain types of disciplines, namely those on fees and mandating notification of the outcome of applications, with 42% of the RTAs adopting the firmest manifestation of the latter discipline, i.e., within a fixed timeframe. In addition, 11 of the 12 Agreements incorporate the discipline to provide information on the application status, while only one

76 See US-Mexico-Canada (2020), Chapter 16, Article 16.4; US-Singapore (2004), Chapter 11, Article 11.4; and US-Chile (2004), Chapter 14, Article 14.3.

77 See India-Mauritius (2021), Annex 10, Articles 4.2 and 11; and India-Malaysia (2011), Chapter 9, Article 9.7.

78 See China-New Zealand (2008), Chapter 10, Article 128.2. The provision further states that, if the decision cannot be made in that period, the Parties shall inform the applicant of when a decision will be made.

Agreement includes the discipline to provide facilities for online filing and processing of application "where possible".[79]

To recap, out of the 100 RTAs that include mode 4 regulatory disciplines, 86 have incorporated provisions on application procedures. By far the most commonly adopted provision concerns the setting of fees, which, along with the obligations to process applications within a given timeframe, notify when applications are incomplete, notify the reasons for rejecting an application and providing for the online filing and processing of applications, are brand new additions to current GATS provisions. Other disciplines, namely the obligation to notify the outcome of an application and to provide information about the status of the application, instead, build on pre-existing GATS disciplines. Members at all income levels and across all geographic regions have included given disciplines on application procedures in their RTAs, albeit with some notable variations.

Application fees

As discussed above, 67 Members have adopted disciplines regarding the setting of fees to process applications for temporary entry and stay of foreign natural persons. Our analysis reveals that five different kinds of disciplines concerning fees are found in RTAs, as outlined in Box 3.2.1.[80]

Box 3.2.1: Types of Disciplines on Fees

Discipline	Description
Reasonable	Fees are reasonable.
Proportional to cost incurred	Fees are limited to the approximate cost of services rendered/determined according to the administrative cost involved.
Not unduly impair or delay trade	Fees do not unduly impair or delay trade.
In accordance with domestic laws	Fees are in accordance with domestic laws and regulations.
Not an unjustifiable impediment	Fees do not in themselves represent an unjustifiable impediment to entry and temporary stay of natural persons.

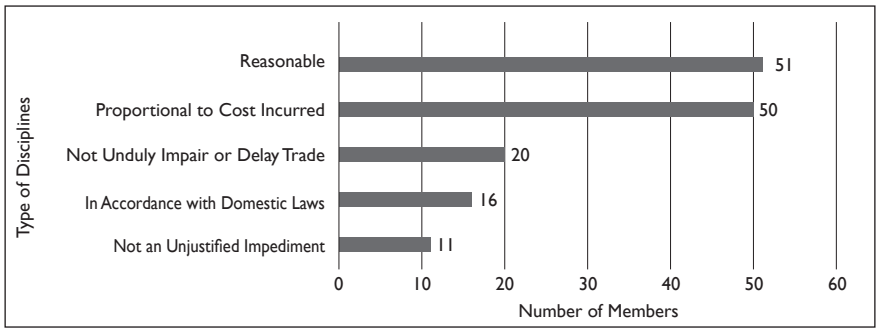
Figure-3.2.1A presents the number of Members that have included the various types of mode 4 disciplines on fees in their RTAs.[81]

79 See Peru-Singapore (2009), Chapter 12, Article 12.5.1. The provision further specifies the type of permit covered by the discipline (i.e., the employment pass in the case of Singapore; and labour contracts in the case of Peru).

80 RTAs actually include six different approaches to determine fees. However, for the purpose of our analysis, we consider two of these, i.e., "approximate cost of services rendered" and "according to the administrative cost involved" as falling under the same approach. It should be noted that if an Agreement comprises two or more different approaches, each is counted separately under the respective type.

81 Percentages in this Section are calculated out of the total number of Members with disciplines on fees, i.e., 67, also referred to as "the Members concerned".

Figure-3.2.1A: Members with Mode 4 RTA Disciplines on Fees, by Type



As illustrated, the most frequently included type of obligation requires that fees be reasonable and has been adopted by nearly three-fourth of the Members concerned. This is hardly surprising, given that it entails a fair scope for discretion. 88% of high-income Members with disciplines on fees, and 73% of lower-middle income economies, have included this variation, whereas upper-middle income Members have done so comparatively less frequently (57%). The first RTA to incorporate this type of discipline was the one concluded by New Zealand and Malaysia in 2010.

The second most often agreed upon discipline is the much more stringent obligation that the Parties set application fees in a manner that is directly proportional to the "cost incurred". Up until 2003, this was the only type of discipline on fees found in RTAs. This obligation has been incorporated by Members from all income groups, with the utmost prevalence amongst high-income Members (86%) and upper-middle income economies (79%), and a much lower representation for lower-middle income Members (27%).

The fairly flexible obligation to set fees so that they not to "unduly impair or delay trade" has been included by around one-third of Members with disciplines on fees. The United States-Singapore RTA of 2004 was the first Agreement to include this kind of obligation;[82] it was subsequently incorporated in 16 other RTAs. These Agreements have been concluded by Members from all income levels, although upper-middle income economies adopt them relatively more frequently (43%), followed by high-income economies (29%) and finally by lower-middle income countries (18%).

The looser obligation to set fees in accordance with domestic laws and regulations has been adopted by less than a quarter of all relevant Members, mainly by lower-middle income economies (64%). By way of comparison, only 14% of upper-middle and high-income Members have included this obligation.

82 United States-Singapore (2004), Chapter 11, Article 11.4.4. The Agreement requires that fee be fixed so as to "avoid unduly impairing or delaying trade in goods or services or conduct of investment activities".

Finally, the obligation to set fees in a manner that is "not an unjustified impediment to the movement of natural persons" is found least frequently in RTAs and has been included only by 16% of Members who agreed to RTA disciplines on fees. Lower-middle income Members have incorporated this type of obligation relatively more frequently, followed by upper-middle income Members and, lastly, by high-income economies.

When it comes to geographical occurrence, and again bearing in mind the limits of representativeness for certain regions that we discussed previously, all Members from the Americas have incorporated disciplines to set fees proportionally to the costs incurred in at least one of their RTAs.[83] This has also been the case for 91% of Members from Europe and Central Asia, but much less frequently for economies in the East Asia and Pacific region (33%). Our analysis further reveals that the discipline to set fees in accordance with domestic laws has been incorporated exclusively by Members from the East Asia and Pacific region.

In sum, RTA disciplines concerning application fees have been agreed by a significant number of Members, across all regional groups and income levels, with many Members choosing to adhere to the firmest type of the obligation.

Conclusions

As our paper has illustrated, RTAs have made significant advances compared to the GATS when it comes to regulatory disciplines related to mode 4 trade. Although the GATS does contain a number of obligations that are applicable to pertinent aspects of mode 4, these disciplines are rather limited in range, and in no way specific to trade through this mode of supply.

GATS-plus mode 4 obligations have become an increasingly frequent feature of RTAs, and their inclusion in these Agreements has accelerated and deepened from the mid-2000s. They address essentially issues related to transparency and application procedures. With the exception of low-income economies, WTO Members across all income levels have incorporated these disciplines in their RTAs. They have also been adopted by Members from all geographic regions, albeit with differing intensity.

RTAs disciplines have improved on the GATS in two ways: first, by building upon existing GATS obligations and tailoring them to measures affecting entry and temporary stay, or expanding the scope of their application; and second, by developing brand new regulatory disciplines for mode 4, that find no correspondence in the current WTO framework.

83 It should be noted that, out of all RTAs that include this firm discipline on fees, half have been concluded exclusively among Latin American Members (22 out of 44 RTAs).

However, it is important to recall that not all mode 4 disciplines included in RTAs necessarily add value compared to the provisions contained in the GATS, as is notably the case for those stipulating conditions for access to mode 4-related dispute settlement.

Finally, an assessment of the specific RTA provisions points significant variation in the types of disciplines adopted and their degree of stringency. Still, the breadth of the disciplines adopted, their adoption by Members at different levels of income and from diverse geographic regions, and their progressive and increasing uptake also illustrate the scope for some of the improvements and innovations captured in RTAs to be considered in a wider, possibly multilateral, context.

Annex 1
RTAs with Mode 4 Disciplines

	Name of the Agreement	Year of Entry into Force
1	United Kingdom - Iceland, Liechtenstein, and Norway	2021
2	United Kingdom - Japan	2021
3	China - Mauritius	2021
4	European Union - United Kingdom	2021
5	India - Mauritius	2021
6	United Kingdom - Canada	2021
7	Hong Kong, China - Australia	2020
8	Peru - Australia	2020
9	United States - Mexico - Canada (USMCA)	2020
10	Indonesia - Australia	2020
11	Pacific Agreement on Closer Economic Relations (PACER Plus)	2020
12	EU - Japan	2019
13	Türkiye - Serbia	2019
14	Hong Kong, China - Georgia	2019
15	ASEAN - Hong Kong, China	2019
16	Republic of Korea - Central America	2019
17	China - Georgia	2018
18	EFTA - Philippines	2018
19	Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)	2018
20	EU - Canada	2017
21	Hong Kong, China - Macao, China	2017
22	Türkiye - Singapore	2017
23	Peru - Honduras	2017
24	Republic of Korea - Colombia	2016
25	Japan - Mongolia	2016
26	Costa Rica - Colombia	2016
27	Canada - Republic of Korea	2015
28	Japan - Australia	2015

	Name of the Agreement	Year of Entry into Force
29	Australia - China	2015
30	Republic of Korea - New Zealand	2015
31	Republic of Korea - Vietnam	2015
32	China - Republic of Korea	2015
33	Mexico - Panama	2015
34	Iceland - China	2014
35	Switzerland - China	2014
36	Canada - Honduras	2014
37	Hong Kong, China - Chile	2014
38	Republic of Korea - Australia	2014
39	Malaysia - Australia	2013
40	Canada - Panama	2013
41	New Zealand - Chinese Taipei	2013
42	Costa Rica - Peru	2013
43	Japan - Peru	2012
44	Chile - Nicaragua (Central America)	2012
45	Mexico - Central America	2012
46	Panama - Peru	2012
47	Peru - Mexico	2012
48	Hong Kong, China - New Zealand	2011
49	India - Japan	2011
50	Peru - Republic of Korea	2011
51	China - Costa Rica	2011
52	Canada - Colombia	2011
53	EFTA - Colombia	2011
54	India - Malaysia	2011
55	Peru - China	2010
56	New Zealand - Malaysia	2010
57	ASEAN - Australia - New Zealand	2010
58	Republic of Korea - India	2010
59	Chile - Guatemala (Central America)	2010
60	Canada - Peru	2009
61	Peru - Singapore	2009
62	China - Singapore	2009
63	Australia - Chile	2009
64	Japan - Switzerland	2009
65	Japan - Vietnam	2009
66	Panama - Nicaragua (Central America)	2009
67	Panama - Honduras (Central America)	2009
68	Panama - Guatemala (Central America)	2009
69	Colombia - Northern Triangle (El Salvador, Guatemala, Honduras)	2009
70	Chile - Colombia	2009
71	Peru - Chile	2009
72	Nicaragua - Chinese Taipei	2008

	Name of the Agreement	Year of Entry into Force
73	El Salvador - Honduras - Chinese Taipei	2008
74	Japan - Indonesia	2008
75	China - New Zealand	2008
76	Japan - Philippines	2008
77	Chile - Honduras (Central America)	2008
78	Panama - Costa Rica (Central America)	2008
79	Chile - Japan	2007
80	Japan - Thailand	2007
81	Guatemala - Chinese Taipei	2006
82	Japan - Malaysia	2006
83	Republic of Korea - Singapore	2006
84	Panama - Singapore	2006
85	Trans-Pacific Strategic Economic Partnership	2006
86	India - Singapore	2005
87	Japan - Mexico	2005
88	Thailand - Australia	2005
89	United States - Singapore	2004
90	Republic of Korea - Chile	2004
91	Mexico - Uruguay	2004
92	Panama - Chinese Taipei	2004
93	United States - Chile	2004
94	Panama - El Salvador (Central America)	2003
95	Singapore - Australia	2003
96	Chile - Costa Rica (Central America)	2002
97	Chile - El Salvador (Central America)	2002
98	Dominican Republic - Central America	2001
99	Chile - Mexico	1999
100	Canada - Chile	1997

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