

# Does the BARS curve exist in the case of newly democratized countries: the story of macroprudential policy switching

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## Abstract

**Purpose** – The study aims to examine the validity of the Barro (1989), Armev (1995), Armev and Armev (1995), Rahn and Fox (1996), and Scully (1994, 1995) (BARS) theory during macroprudential policy regimes and determine the level of government expenditure's impact on growth in newly democratized African and Asian countries from 1983 to 2023.

**Design/methodology/approach** – The methodology involves selecting the appropriate transition variable, determining whether government spending and economic growth are linear, and determining the transition function's order. The wild cluster bootstrap-Lagrange Multiplier (WCB-LM) test evaluates the model, while the panel smooth transition regression model with two regimes checks its validity.

**Findings** – The study found nonlinear effects of government expenditure on economic growth, with a threshold level of a 29.32% share of gross domestic product for newly democratized African countries and a 19.63% share for newly democratized Asian countries in a macroprudential policy regime above which government expenditure caused growth to decline. The findings confirm the BARS theory.

**Originality/value** – The current study tested the BARS U-shaped hypothesis in newly democratized countries. Unlike the traditional growth-spending analyses, it incorporates macroprudential policy switching under the time-varying cyclically adjusted primary balances (CAPB) by investigating the fiscal-macroprudential interactions and sectoral employment. It offers a novel perspective on how policy coordination fosters stability and inclusive growth in transitioning democracies. For policymakers, formulating coordinated macroprudential and fiscal policies through prudent spending, service sector investment and the time-varying CAPB would foster employment, enhance resilience, and promote sustainable growth in newly democratized economies by balancing stability and expansion.

**Keywords** Africa, Asian, Economic growth, Government expenditure, Macroprudential policy

**Paper type** Research article

## 1. Introduction

The world is grappling with a number of issues, [1] including economic, environmental, health, geopolitical, food and water provision issues and those that stem from global crises, climate change, pandemics, conflict/wars, and food and water security. Depending on the state of the economy, these crises demand more government intervention. On the other hand, there are global fiscal imbalances and public expenditure crises because of the rapidly spreading government debt, particularly in African countries, as indicated in the [ADBG \(2024\)](#), with the total external debt rising from \$1.12 trillion in 2022 to \$1.152 trillion at the end of 2023. The government efforts for inclusive growth and development call for the need to spend more on technological development, infrastructure investment, and the growth of small and medium-sized businesses. Given the bad impact of the recent crises such as COVID-19, there were swift



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responses by increasing government expenditure to boost growth and implementing prudential policies of a conventional, unconventional, and macroprudential nature.

The main issue is that in African countries, excessive increases in government expenditure seem to not translate to growth, but rather fuel public debt (Afonso and Jalles, 2016). This study seeks to investigate the validity of the BARS [2] theory in newly democratized African [3] countries (Newly democratic African countries (NDAC)) and compare the findings with those categorized as newly democratized Asian [4] countries (Newly democratic Asian countries (NDASC)), following what has been done by Ngcobo *et al.* (2025). However, their focus was on public debt, as newly democratized countries were defined as countries that gained independence from 1950 onwards. We restricted this study to only countries with the right to vote. Despite the existing empirical literature on expenditure growth, expenditure effects remain disputed due to politics, institutions, and capacity limits. This study sought to investigate the effectiveness of fiscal policy intervention on growth expansion, focusing on NDAC and NDASC, as their independence raised rational expectations from the citizens for inclusive growth, and the promotion of equality; however, persistent inefficiencies and weak fiscal institutions in Africa have inhibited potential growth (IMF, 2015; van de Walle, 2001).

While some Asian countries were able to yield high growth from democratic transitions, coupled with stronger fiscal discipline and targeted investment in infrastructure and human capital (Gupta *et al.*, 2015; Haggard and Kaufman, 2012), the economic divergence in these regions raised concern about whether the benefit comes from gaining independence in transforming an inclusive environment and being a driver of growth, or whether the impact is conditioned by their regional development trajectories and fiscal policy design. That is the reason why this study seeks to compare NDAC with NDASC while, on the other hand, the economic question arises about the impact of macroprudential policies, such as bank regulations or financial market oversight on government spending outcomes, and whether switching policies leads to differing growth effects. These regions, particularly the selected countries, are found to share similar patterns on the use of macroprudential policies; these countries converged on a macroprudential toolkit that marries Basel-aligned liquidity/capital standards with borrower-based limits and systemic/countercyclical buffers to tame credit booms and real estate (BIS, 2018; IMF, 2024).

This study builds on the work documented by Buthelezi and Nyatanga (2023a, b) that used South Africa as a case study over the period 1994 to 2021. The starting point for his study is that we dive into nonlinearity and further explore the expenditure-growth relationship in the NDAC and NDASC, considering policy switching over the period 1985–2023. For policy switching, we considered before and after macroprudential policy adoption, dividing the time span into 1985–1999 and 2000–2023, focusing on policy change dates following the data compiled by Alam *et al.* (2019), to address potential country-specific issues. We also adopted the fiscal consolidation, including time-varying cyclically adjusted primary balances (CAPB) for government expenditure. This study seeks to use the Panel smooth transition regression (PSTR) model to test the following hypotheses: (1) The BARS curve does not exist for the NDAC, (2) the NDASC are much better in terms of growth than the NDAC, (3) macroprudential policies play no role in triggering the expenditure-growth relationship in both regions, and (4) fiscal consolidation is not beneficial to growth in these regions.

This paper contains 5 sections that offer an introduction and literature review and provide an overview of the PSTR model, the findings, and policy implications.

## 2. Literature review of the government-growth relationship

### 2.1 Theoretical literature

The current analysis follows the nonlinearity approach proposed by Barro (1989), Armey (1995), Armey and Armey (1995), Rahn and Fox (1996), and Scully (1994, 1995), known as the BARS inverted U-curve, suggesting that public spending initially boosts growth before slowing it down. The mathematical expression for the BARS curve is:

$$y = a + \beta'_0 F - \beta_1 F^2 \quad (1)$$

Equation (1) shows that real gross domestic product (GDP)  $y$  is influenced by government expenditure  $F$ , with  $\beta_0$  and  $\beta_1$  representing the link between the BARS theory and PSTR, portraying extreme values associated with the regression coefficient. A non-existent public sector leads to low productivity and zero output, while government intervention boosts growth until maximum value, implying a positive effect on growth as private sector expenditure's marginal productivity equals government expenditure (Barro, 1989; Armey, 1995; Rahn and Fox, 1996). Tabassum's (2015) study reveals that increasing government expenditure can reduce economic growth, as the law of diminishing returns suggests, with a negative coefficient of  $F^2$ . Government spending can impede growth by promoting activities that hinder economic growth, such as transfer payments and taxation, which discourage productive behaviour like hard work and investment (Vedder and Gallaway, 1998). Transfer payments also discourage job seekers, reducing production. Government spending can stimulate economic growth by providing public goods, and intervening to address market failure, but can discourage talented individuals from pursuing worthwhile projects. The study argues that if the private sector were to manage public goods like roads, sanitation, and education, the quality of these services would be compromised (Di Matteo, 2013).

## 2.2 Empirical literature

The literature on this subject matter has produced a strong paradox, as there are studies that find nonlinear relationships (Chen and Lee, 2005; Rana and Hasan, 2016; Kimaro *et al.*, 2017; Zungu *et al.*, 2020; Noura and Kouni, 2021; Jain *et al.*, 2021; Rahman, 2023; Arawatari *et al.*, 2023). Even in the nonlinearity studies, some support the BARS inverted U-shape (Pelin and Taner, 2017), while others find the U-shape applicable (Phan, 2019). Some groups of studies find the relationship to be linear, reporting a positive relationship (Ghali, 1999; Okunlola *et al.*, 2024; Abdullahi *et al.*, 2024), while others find it negative (Makhoba *et al.*, 2019; Nuru and Gereziher, 2020). Lastly, Barro (1990) claims the relationship to be inconclusive.

Studies conducted during pre-financial crises, such as Landau's (1983) cross-country study, confirmed a negative correlation between government expenditure and growth. The paradox began with the study by Ram (1986) and Shantayanan *et al.* (1996), which was conducted in 115 countries using the ordinary least squares and 43 developing countries, claiming that government expenditure contributes to growth. However, Barro (1990) emphasized the inconclusive findings of the impact of government expenditure on economic growth using an endogenous-growth model, contradicting previous research such as that of Landau (1983), Ram (1986), and Shantayanan *et al.* (1996). Pevcin (2004) confirmed the BARS inverted U-shape in 12 European countries from 1995 to 1996, while Loizides and Vamvoukas (2005) used Granger causality to analyse data from Greece, the UK, and Ireland.

The study contradicts Pevcin's (2004) findings, suggesting that government sized Granger leads to economic growth in the short and long terms, while the study by Mitchell (2005) contradicts these findings by Loizides and Vamvoukas (2005), showing that altering government expenditure negatively impacted economic growth in 15 European Union countries and the US over 3 decades, aligning with Shantayanan *et al.* (1996). Chen and Lee's (2005) study contradicted Mitchell's (2005) finding, revealing a nonlinear relationship in Taiwan, supporting the BARS curve. These studies, prior to financial crises, contradicted each other claiming both linearity and nonlinearity, while after the financial crisis Wu *et al.* (2010) found a positive correlation between government spending and economic growth, confirming the reciprocal causal relationship between government spending and economic expansion, confirming the study by Loizides and Vamvoukas (2005). Then, Afonso and Furceri (2010) and Dudzevi *et al.* (2018) found a negative correlation between government spending and economic growth, confirming Mitchell's (2005) thesis for European economies.

Rana and Hasan's (2016) study confirmed the BARS inverted U-shape, while Pelin and Taner's (2017) found a U-shaped relationship between government expenditure and economic growth, indicating the need for further research on optimal public spending thresholds, and contradicting Kimaro *et al.*'s (2017) study. Santos' (2018) study supports the BARS theory by comparing West African government expenditure growth from 1980 to 2015, contradicting previous research that found a U-shape and linearity (Chen and Lee, 2005; Rana and Hasan, 2016).

The study by Makhoba *et al.* (2019) and Nguyen and Bui (2022) used the Johansen vector error correction model and generalized method of moments (GMM) for South Africa and 16 Asian emerging markets. The findings contradict, as Makhoba *et al.* (2019) documented that government expenditure contributes to growth, while Nguyen and Bui (2022) find that it has a negative impact on growth, emphasizing the need to tackle corruption to promote economic growth in these regions. Jain *et al.* (2021) and Arawatari *et al.* (2023), using the GMM and heterogeneous-agent approach in BRICS and the USA, both found the existence of the BARS inverted U-shape relationship in these countries. However, their findings contradict documents by Pelin and Taner (2017) and Phan (2019). The study by Geng *et al.* (2024) found that military expenditures in 48 Islamic countries hinder economic growth, contradicting previous studies showing nonlinearity and positive relationships. A further paradox emerged following Rahman's (2023) study, which validated Keynesian theory and Wagner's Law, while Okunlola *et al.* (2024) found that government expenditure does not positively impact growth in 5 Economic Community of West African States countries.

### 3. Methodology

This paper adopted panel data from 15 NDAC and 8 NDASC from 1985 to 2023 to test the validity of BARS during the macroprudential policy regime and compare it with the non-prudential policy regime. This study utilized the PSTR model, following Rana and Hasan (2016) and Zungu and Greyling (2022). The study of Zungu and Greyling (2022) aimed to test the validity of the BARS curve; however, we aimed to incorporate macroprudential policy concepts to trace how they triggered the government-growth relationship. GDP at constant prices (2010) is used to capture economic growth ( $y$ ) and government final consumption expenditure (% of GDP for government expenditure ( $F$ )) in understanding the current stage of the BARS in the world of crises and policy switching, while time-varying CAPB for government spending (TVP) and time-varying CAPB for total government revenue (TVPR) aim to capture fiscal consolidation and to broaden the definition of government expenditure and economic growth. Fiscal consolidation used a discretion of fiscal authorities; variables would be computed following Buthelezi and Nyatanga (2023a, b). The time-varying CAPB variable analyses government fiscal policy by examining the cyclically adjusted primary balance for expenditure, accounting for economic fluctuations. This study is the first to incorporate time-varying CAPB for government expenditure and total government revenue in expenditure-growth literature, aiming for intriguing findings. The study investigates the impact of macroprudential policy on the government-growth relationship using three instruments: financial institution-targeted instruments (FIMs) (FIM), general countercyclical capital buffer requirements (GCM), and macroprudential index (0–12) (MI12). FIM and GCM enhance financial stability for government growth by directing resources to critical sectors and ensuring banks build capital during growth phases, preventing excessive risk and maintaining credit flow, while enabling consistent, sustainable economic growth. The model controls for import + export/GDP to capture trade openness (OPEN), gross fixed capital formation (I), employment in the service sector (EMSS), government effectiveness (GF), and corruption control (CC). The variables were selected based on theoretical underpinnings of the government-growth relationship.

### 3.1 Panel smooth transition regression (PSTR) model

The paper employs the PSTR model developed by [González et al. \(2005\)](#) to examine the nonlinear relationship between government size and economic growth in newly democratized countries. The PSTR model, with two extreme regimes, demonstrates the threshold effect of government expenditure ( $F_{it}$ ) on economic growth ( $y_{it}$ ) in a single transition function:

$$y_{it} = \mu_i + \lambda_t + \beta'_0 x_{it} + \beta'_1 x_{it} g(F_{it}, \gamma, C) + \varepsilon_{it} \quad (2)$$

Where the scalar is  $y_{it}$  which is government expenditure that serves as the dependent variable, while  $\lambda_t$  and  $\mu_i$  take for the fixed individual effect and time effect. The panel's time dimension and cross-section are denoted by  $t = 1, \dots, T$ , and  $i = 1, \dots, N$ , respectively, with  $\varepsilon_{it}$  representing the error term. The regression coefficient's extreme values,  $\beta_0$  and  $\beta_0 + \beta_1$ , represent the lower and high bounds, respectively. The transition function,  $g(F_{it}; \gamma, c)$ , is a continuous and normalized function restricted between 0 and 1, based on threshold variables  $F_{it}$ .  $x_{it}$  a  $k$ -dimensional vector of time-varying exogenous variables ( $FIM, GCM, MI12, TVP, OPEN, I, EMSS, GF, CC$ ). Jansen and Teräsvirta (1994, 1996) suggest  $g(F_{it}; \gamma, c)$ , which are the effective regression coefficients for time  $t$  and individual  $i$ , and are determined by the transition variable  $F_{it}$ . More technical details of the model can be found in the paper published by [González et al. \(2005\)](#) and [Zungu and Greyling \(2022\)](#).

## 4. Empirical analysis: data analysis and interpretation of results

The study examined data processes and found that stationarity was not significant due to nonlinear relationships. The  $p$ -value of the Jarque-Bera test was less than 10% for all variables, rejecting the normality hypothesis. The study acknowledges data transitions and nonlinearity relationships. Dealing with multiple countries emphasizes the need for testing for cross-section dependency and cointegration. Following [Friedman's \(1937\)](#), [Frees's \(1995\)](#), and [Pesaran's \(2004\)](#) recommendations, the variables used in the study are evaluated, with Pedroni cointegration and cross-sectional-dependence results for both regimes. The Pedroni tests reject the null hypothesis of no cointegration and cross-sectional dependency on variables. The PSTR was estimated following three steps: determining the appropriate transition variable, assessing linearity, and selecting the transition function's order and robustness assessments using wild cluster bootstrap and wild-bootstrap.

### 4.1 Testing for the pre-test of the PSTR model and the estimated threshold

All the variables proposed to be used in this study were included as potential transition variables in our model for PSTR pre-estimation [5]. The results of the Lagrange Multiplier (LM) confirm that government spending is the most appropriate variable for this model in both regions, as the  $p$ -values of the LM F-test (LMF) are below 10%. We then used government expenditure to test homogeneity against economic growth, which further confirmed the existence of nonlinearity between two variables in both regions, as the  $p$ -values of LM\_F and LM\_X are  $9.933e-40$  and  $2.111e-28$  for NDAC and  $10.984e-32$  and  $7.883e-12$  for Newly democratize European countries (NDEC). The results support the existing literature ([Santos, 2018](#); [Phan, 2019](#); [Jain et al., 2021](#); [Zungu and Greyling, 2022](#)). The transition results reveal that the optimal transition variable lies in the second regime, distinguishing low and high government expenditure levels during the non-prudential policy phase. These findings were validated using Wald cluster bootstrap (WCB) and Wald bootstrap for no remaining nonlinearity and parameter consistency following [Teräsvirta \(1994\)](#) and [González et al. \(2017\)](#). The  $p$ -value of the WCB confirms the parameter consistency in both the regions, and both the prudential regime and non-prudential regime confirm parameter consistency.

The study reveals the threshold level of a 29.32% share of GDP in prudential policy, a 25.10% share of GDP in non-prudential policy for NDA countries and a 19.63% share of GDP in a prudential regime and a 14.29% share of GDP in a non-prudential policy for NDEC in a

macroprudential policy regime, above which government expenditure caused growth to decline. The calculated mean of government final consumption expenditure as a % of GDP to compare against the threshold of this study reveals that all countries in these regimes, except Botswana and Bhutan, are below the estimated threshold, showing that an expenditure above 29.32% for African countries and 19.63% for Asian countries has potential growth benefits from government expenditure.

4.2 Empirical results of the PSTR

The study confirms the nonlinear impact of government expenditure on economic growth in both regions, with fluctuations shifting from  $\beta_{0j} + \beta_{1j}$ , affecting growth at the endogenous location parameter  $c$ . The homogeneity of the subject matter allows for the estimation of the PSTR model as it shown in Table 1, showing that government expenditure positively influences economic growth in newly democratized African and Asian countries. This is captured by  $\beta_{0j}$  at lower regimes, and  $\beta_{0j}$  of government expenditure in both policy regimes in models i, ii, iii, and iii. The study reveals that high government expenditure ( $\beta_{0j} + \beta_{1j}$ ), beyond a certain threshold, significantly hinders economic growth in both the NDAC and NDASC across both prudential and non-prudential regimes in all PSTR models. The study reveals that the invented U-curve's BARS only holds in the prudential policy period in NDAC, indicating some linearity. This raises questions about the relationship between government-growth in African countries. The prudential regime shows an inverted U-shape, while the non-prudential

Table 1. Government expenditure and economic growth in African and Asian countries: PSTR

|                | Newly democratic African countries (NDAC) |                   |                                        |                   | Newly democratic Asian countries (NDASC) |                   |                                        |                   |
|----------------|-------------------------------------------|-------------------|----------------------------------------|-------------------|------------------------------------------|-------------------|----------------------------------------|-------------------|
|                | Model i: Prudential policy regime         |                   | Model ii: Non-prudential policy regime |                   | Model iii: Prudential policy regime      |                   | Model iv: Non-prudential policy regime |                   |
|                | LR                                        | HR                | LR                                     | HR                | LR                                       | HR                | LR                                     | HR                |
| F              | 7.01**<br>(1.90)                          | -3.87**<br>(1.28) | 2.43<br>(4.89)                         | -0.80**<br>(0.34) | 3.24**<br>(1.23)                         | -2.67**<br>(0.13) | 2.43 **<br>(0.84)                      | -3.42**<br>(1.90) |
| FIM            | 2.00**<br>(0.79)                          | -2.90**<br>(1.10) | -                                      | -                 | 2.44**<br>(1.02)                         | 3.43 **<br>(1.50) | -                                      | -                 |
| GCM            | 1.59**<br>(0.30)                          | 2.60**<br>(0.40)  | -                                      | -                 | 1.87**<br>(0.24)                         | 1.54 **<br>(0.40) | -                                      | -                 |
| MI12           | 1.80**<br>(0.65)                          | -2.90<br>(3.39)   | -                                      | -                 | 2.90**<br>(1.20)                         | 0.78 **<br>(0.10) | -                                      | -                 |
| TVP            | 3.60**<br>(0.13)                          | 2.78***<br>(0.45) | 1.56<br>(2.87)                         | 2.98**<br>(0.24)  | 2.90**<br>(0.30)                         | 3.40 **<br>(1.91) | 2.90 *<br>(0.50)                       | 2.33**<br>(1.00)  |
| OPEN           | 3.89**<br>(1.47)                          | 1.80 **<br>(0.18) | 2.10**<br>(0.33)                       | 3.75**<br>(0.73)  | 1.44**<br>(0.48)                         | 1.55 **<br>(0.27) | 3.84 **<br>(0.45)                      | 0.90*<br>(0.20)   |
| I              | 4.54**<br>(2.00)                          | 2.54<br>(3.43)    | 3.45**<br>(0.30)                       | 2.01**<br>(1.00)  | 2.29**<br>(0.80)                         | 2.40**<br>(0.13)  | 0.42 **<br>(0.24)                      | 2.44 **<br>(0.51) |
| EMSS           | 3.06**<br>(1.30)                          | 4.98**<br>(0.56)  | 3.50**<br>(1.28)                       | 1.78**<br>(0.09)  | 2.74**<br>(0.74)                         | 2.90 **<br>(1.48) | 2.41 **<br>(0.24)                      | 3.41**<br>(1.23)  |
| GF             | 2.55**<br>(0.50)                          | 2.76**<br>(0.67)  | 2.09**<br>(0.39)                       | 1.50**<br>(0.78)  | 1.87**<br>(0.20)                         | 0.48**<br>(0.09)  | 2.90**<br>(1.04)                       | 2.30**<br>(1.03)  |
| CC             | 2.00 **<br>(0.20)                         | 1.98**<br>(0.89)  | 1.56**<br>(0.27)                       | 2.98**<br>(0.45)  | 2.70**<br>(0.74)                         | 2.80 **<br>(1.18) | 0.89 **<br>(0.12)                      | 2.00**<br>(0.83)  |
| DUM            | Yes                                       | No                | yes                                    | No                | Yes                                      | No                | yes                                    | No                |
| # of countries | 14                                        |                   |                                        |                   | 8                                        |                   |                                        |                   |

Note(s): The \*\*\*/\*\*/\* denotes the level of significance at 1%, 5 and 10%, respectively. LR and HR means lower and high regime

Source(s): Authors' calculation based on WDI (2024) data

regime is insignificant. The impact of government expenditure on economic growth is dominant in prudential regimes in both region then the non-prudential policy regimes, with a two-fold higher impact than non-prudential policy regimes. The lower bounds are 7.01 and 2.43, respectively, while the upper bounds are 3.87 and 0.88. However, the impact in Asian countries is less severe, with upper bounds of 3.24 and 2.43 in the lower and non-prudential policy regimes, respectively. The logic behind the inverted U-shaped relationship between government expenditure and economic growth in newly democratized African and Asian countries is due to economic development and fiscal policy dynamics. Increased spending initially stimulates growth through infrastructure, education, and health services. However, excessive government expenditure without efficiency can lead to inefficiencies.

Post-dependent African countries struggle with economic growth due to corruption and bureaucratic inefficiencies. Governments may implement austerity measures or improve spending quality to recover growth rates. Strategic investment leads to initial growth, but potential mismanagement can lead to decline. Policy reform can enhance efficiency and productivity. The findings align with theoretical and empirical literature, as documented by [Barro \(1989\)](#), [Armey \(1995\)](#), [Scully \(1994\)](#), and [Rahn and Fox \(1996\)](#), as well as studies by [Arawatari et al. \(2023\)](#), [Olumide et al. \(2020\)](#), and [Zungu and Greyling \(2022\)](#) for US, Economic Community of West African States (ECOWAS), and African emerging economies, respectively.

Unlike what has been done in the existing literature, this study expands the expenditure-growth definition by incorporating macroprudential policy tools like FIMs (FIM), general countercyclical capital buffer requirements (GCM), and macroprudential index (0–12) (MI12), which promote financial stability and sustainable growth and help governments assess systemic risk, fostering a resilient financial environment. The study reveals that FIM positively impact economic growth in low government expenditure levels in newly democratized African countries, but negatively in high regimes, while positively affecting growth in newly democratized Asian countries. FIM encourages private sector investment during low government expenditure but can exacerbate inflation and reduce capital availability [6]. This is in support of the findings documented by [Luu et al. \(2024\)](#). The General Countercyclical Capital Buffer (GCM) boosts growth in democratized African and Asian countries by ensuring that banks maintain sufficient capital reserves, promoting lending and investment, and reducing financial crises, regardless of government expenditure regimes. This is in support of the findings documented by [You et al. \(2023\)](#). The findings for the macroprudential index [7] (MI12) show that macroprudential policy significantly impacts economic growth in newly democratized African countries, with positive effects in lower regimes and negative effects in high regimes. Both lower and higher government spending regimes positively impact economic growth. A macroprudential index in African countries stabilizes financial markets under low government expenditure but may limit credit flow during high expenditure periods. These results are in line with the study documented by [Rami \(2024\)](#).

Time-varying CAPB for government expenditure (TVP) positively impacts economic growth in democratized African and Asian countries by enabling governments to adjust fiscal policies, promote sustainable public spending, manage deficits, and invest in infrastructure. The findings support the document by [Buthlezi and Nyatanga \(2023a, b\)](#) for South Africa. Trade openness ([TRP] OPEN) is introduced to regulate trade in countries with unique economic landscapes. TRP significantly improves growth, indicating the need for strengthened trade policies. TRP allows countries to access larger markets, specialize, increase efficiency, encourage competition, drive innovation that would attract foreign investment, enhance productivity, and promote economic diversification. The findings are in line with findings reported by [Malefane and Odhiambo \(2018\)](#) for South Africa and [Hyun et al. \(2024\)](#) for ASIAN countries. Investment (I) significantly impacts economic growth, with varying effects across regions. In a prudential policy regime in democratized Africa, investment becomes insignificant due to excessive public spending. However, investment

remains significant in African and Asian countries, boosting growth through infrastructure improvement, productivity increase, technological advancements, and job creation. Our findings align with [Wolassa's \(2012\)](#) findings for South Africa and [Abduvaliev's \(2023\)](#) for Tajikistan. Employment (EMSS) in the service sector enhances economic growth by creating diverse job opportunities, promoting innovation, and boosting productivity. Increased consumer spending stimulates the demand for goods and services, leading to higher incomes, improved living standards, and industry expansion consistent with studies by [Ngcobo et al. \(2025\)](#) and [Mqolombeni et al. \(2023\)](#).

Finally, the study reveals that, for both regimes, government effectiveness (GF) and CC significantly boost economic growth in both non-prudential and prudential policy regimes across the region. These measures offer various benefits to the economy, such as promoting stability, investor confidence, fair competition, innovation, productivity, transparency, accountability, public trust, sustainable development, and improved quality of life. Our findings align with the findings documented by [Md Rafayet et al. \(2017\)](#) and [Mahran \(2023\)](#).

These results demonstrate the validity of the BARS curve in both regions, the newly democratized African and Asian countries, irrespective of whether macroprudential policies have been adopted or not. These further rule out the question of whether the adoption of macroprudential policies triggers the relationship between government expenditure and economic growth. For countries like Kenya, Mauritius, South Africa, India, and South Korea, the effectiveness of the relationship is strengthened by time-varying CAPB for expenditure and revenues, alongside the growth-enhancing role of service sector employment ([IMF, 2015, 2024](#); [BIS, 2018](#)). These findings further complement the insights drawn by [Haggard and Kaufman \(2012\)](#) on the concept of democratization during the third wave, while [Gupta et al. \(2015\)](#) noted the political economy of public investment decisions in emerging democracies. Governance factors and trade, such as government effectiveness, the control of corruption, and trade openness, significantly play a crucial role in the transition to the upward side of the U-curve. This demonstrates that fiscal-macroprudential coordination, together with trade openness and institutional quality, can drive inclusive and sustainable growth in these regions, while safeguarding financial stability.

#### 4.3 Sensitivity analysis and robustness checks: Bayesian System GMM

The study employs the Bayesian System GMME for robustness and introduces time-varying CAPB for government revenue and inflation rate, enhancing fiscal policy responsiveness to economic fluctuations, thereby maintaining fiscal discipline, supporting essential services, and fostering sustainable economic growth. The GMM model estimation involves careful consideration of the lag length, ensuring  $T$  isn't greater than  $N$ , and selecting the appropriate instrument amongst the exogenous and lagged instruments for accurate results. To meet the GMM conditions, we reduced  $T$  for newly democratized African countries (NDAFC) and NDEC to start from 1995 to 2000 and 2017–2023, respectively, and set one lag for yearly differences in data. Beyond this condition, again for the GMM, it is also crucial to check for the validity of the model by impeding the AR (1) and AR (2) as this matters in the GMM for the validity of the instruments, since the error term should not be serially correlated. Under AR (1) the aim is to test the null hypothesis that there is no first-order autocorrelation in the error term. However, based on the Arellano–Bond GMM, an order correlation in the differenced residuals is not expected, since the differencing induces AR (1) correlation. Then the testing procedure moved to AR (2), testing the null hypothesis of no second-order autocorrelation in the error term. The AR (2) is crucial, as it shows that there is evidence of second-order autocorrelation in the differenced results, which implies that instruments (lagged levels) are correlated with the error term. Unlike what we did in the baseline model, which is capable of identifying the lower and the high regime within the system, for the GMM model the variable to capture government spending would be squared to capture the nonlinearity, following what has been done in the literature ([Jain et al., 2021](#); [Arawatari et al., 2023](#)).

The study reveals that government expenditure's impact on economic growth is nonlinear across both regions, regardless of the model or variable used. Equations 5 to 8 present the results of the robustness and sensitivity models. Despite different models and variables, the study reveals the same results. These results show that, for NDAC in the prudential policy regime, government expenditure has a massive contributory impact on economic growth compared to its impact during the non-prudential policy regime. However, as the level of government expenditure increases, the impact converges to negative, reversing its hindering of economic growth. These results are similar to those of the NDASC, except that for NDAC, a massive impact is seen at the non-prudential policy regime model.

$$y = 3.24F^{**} - 1.43F^{2**} + 2.44FM^{***} + 1.87IGCM^{**} + 2.90MI12^{*} \\ + 2.82TVPR^{***} + 1.44OPEN^{**} + 2.29I + 2.74EMSS^{**} + 1.87GF^{**} \\ + 2.70CC^{**} - 1.24INFL^{*} \quad (3)$$

$$AR(1) : p - value 0.008 : AR(2) : p - value 0.180$$

$$y = 2.43F^{**} - 0.98F^{2**} + 2.40TVPR^{**} + 3.84OPEN^{**} + 0.42I + 2.41EMSS^{**} \\ + 2.41GF^{**} + 0.89CC^{**} - 0.43INFL^{*} \quad (4)$$

$$AR(1) : p - value 0.093 : AR(2) : p - value 0.304$$

$$y = 2.67F^{*} - 1.39F^{2**} + 3.43FM^{**} + 1.54IGCM^{**} + 0.78MI12^{**} \\ + 3.40TVPR^{***} + 1.55OPEN^{**} + 2.40I^{*} + 2.90EMSS^{**} + 0.48GF^{**} \\ + 2.80CC^{*} - 2.17INFL^{*} \quad (5)$$

$$AR(1) : p - value 0.005 : AR(2) : p - value 0.139$$

$$y = 3.42F^{***} - 1.89F^{2***} + 2.33TVPR^{**} + 0.90OPEN^{**} + 2.44I^{**} \\ + 3.41EMSS^{**} + 2.30GF^{**} + 2.00CC^{**} - 0.98INFL^{*} \quad (6)$$

$$AR(1) : p - value 0.002 : AR(2) : p - value 0.240$$

The findings align with the theoretical and empirical literature, as documented by Barro (1989), Armeý (1995), Scully (1994), and Rahn and Fox (1996), as well as studies by Arawatari *et al.* (2023), Olumide *et al.* (2020), and Zungu and Greyling (2022) for US, ECOWAS, and African emerging economies, respectively.

All variables used to capture macroprudential policy, such as the FIM, GCM, and MI12, are in line with the findings reported in our baseline model, showing that the policy instruments contribute to economic growth in both the NDAC and NDASC, and the impact is statistically significant across the board. This finding supports the results documented by Luu *et al.* (2024). Despite different models and variables, the study reveals that the time-varying capital account balance (CAPB) positively impacts growth in all models and regions by enhancing government revenue, enabling increased public spending, and promoting effective policies that stimulate economic growth (Buthelezi and Nyatanga, 2023a, b). OPEN, EMSS CC, and GF were found to retain similar impact, aligning with the impact reported in the baseline

model. These results further signify that the impact is stable and is not sensitive to the model and variable included in the model. These results support the findings reported in the literature, such as the studies by [Wolassa \(2012\)](#), [Abduvaliev \(2023\)](#), [Ngcobo et al. \(2025\)](#), [Mqolombeni et al. \(2023\)](#), [Md Rafayet et al. \(2017\)](#), and [Mahran \(2023\)](#).

Despite different models and variables adopted, investment remains insignificant in the African model. The logic behind investment being statistically insignificant for African countries model. This could be due to structural issues, governance challenges, weak institutional frameworks, and poor infrastructure that limit the efficiency of capital allocation. High inflation in Africa can decrease investor confidence, reduce returns, and redirect resources from unproductive investments, weakening the overall economic growth impact. This has been confirmed by our results, as we find that inflation is associated with a negative impact on economic growth in both the NDAC and NDASC. These results are in line with the findings documented by [Asongu and Nchofoung \(2021\)](#) for sub-Saharan Africa.

## 5. Conclusion and policy recommendations

The study assessed the BARS inverted U-curve's applicability in macroprudential policy regimes in newly democratized African and Asian countries, comparing the results with non-prudential regimes covering the period 1983–2023. These countries, characterized by independence and voting rights, primarily utilize fiscal policy for infrastructure investment, entrepreneurship, and government expenditure. The study aims to determine the threshold level of government expenditure in selected countries to establish the limit beyond government expenditure to boost growth. It compares macroprudential and non-prudential policy regimes to understand whether these policies trigger the expenditure-growth relationship in the selected countries. This will help policymakers understand the impact of macroprudential policies on economic growth, especially in countries with high levels of government expenditure.

The study incorporates time-varying CAPB for government expenditure and total government revenue, marking it as the first study to adopt these variables. The study reveals a nonlinear relationship between government expenditure and economic growth in both prudential and non-prudential policy regimes in these regions, consistent with previous studies by [Arawatari et al. \(2023\)](#), [Olumide et al. \(2020\)](#), and [Zungu and Greyling \(2022\)](#) for the US, ECOWAS, and emerging markets, respectively. The study reveals that government spending above 29.32% of GDP negatively impacts growth in newly democratized African countries under a prudential policy regime, while government size below 19.63% of GDP is detrimental to growth in Asian countries.

The study reveals that newly democratized African and Asian countries' economies are below the estimated thresholds, except for Botswana, and Bhutan, indicating the existence of the BARS theory. The logic behind the inverted U-shaped relationship between government expenditure and economic growth suggests that initial investments in public goods and infrastructure have a positive impact. However, as expenditure increases beyond optimal levels, diminishing returns, inefficiency, and political influences can decrease the positive impact on growth, and potentially lead to negative effects. The study further reveals that time-varying CAPB for government expenditure and total government revenue variables significantly contributes to economic growth in both regions. Policymakers should balance public spending to maximize economic benefits and avoid inefficiencies. Governments should invest in infrastructure and education, especially in Africa and Asia. A Countercyclical Automatic Stabilization Policy-based approach can enhance the effectiveness of government expenditure. By adjusting fiscal policies, governments can stimulate growth during downturns and prevent inflation during booms. This dual strategy fosters sustainable economic growth, ensuring that government-spending contributes positively to overall performance, while mitigating the potential negative impacts of overspending.

### Author contributions

LTZ: Conceptualization; LTZ: Methodology; LTZ: Software; NM and NN: Validation; LTZ, NM and NN: Formal analysis; LTZ, NM and NN: Investigation; LTZ, NM and NN: Data curation; LTZ: Writing – original draft; LTZ, NM and NN: Writing – review and editing; LTZ, NM and NN: Visualization.

### Data availability statement

Publicly available datasets were analysed in this study. These data can be found here [World Development Indicators]. Available online World Development Indicators. (2024), “World Bank, Washington”, D.C., available at: <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed 24 May 2024). Further enquiries can be directed to the corresponding author.

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### Notes

1. Barro (1989), Armeý (1995), Armeý and Armeý (1995), Scully (1994, 1995) and Rahn and Fox (1996).
2. Benin, Botswana, Burkina Faso, Cote d’Ivoire, Egypt, Kenya, Mali, Mauritius, Mozambique, Namibia, Niger, Senegal, Sierra Leone, South Africa, and Tanzania.
3. India, Korea, Philippines, Indonesia, Malaysia, Bangladesh, Nepal, Bhutan.
4. Appropriate transition, homogeneity test, and transition order.
5. Financial institution-targeted instruments (FIMs) and guarantees enhance economic growth by enhancing credit access, fostering entrepreneurship, innovation, incentivizing SMEs, job creation, and overall economic development.
6. A macroprudential index evaluates financial system stability, aiding regulators in mitigating risks, promoting sustainable economic growth, and boosting investor confidence, while a high index may indicate excessive regulatory constraints.
7. Note: Equations (3) and (4) contain the results of the prudential and non-prudential policy regimes in the NDAC, while 5 and 6 are the results for the NDASC.

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