



Which Factors Are Associated with Government Final Consumption Expenditure in Mauritania? An ARDL Analysis (1986–2020)

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Abstract: This article analyzes the macroeconomic, financial, and demographic factors associated with government final consumption expenditure in Mauritania (1986–2020). Using World Development Indicators data, the study applies an Autoregressive Distributed Lag (ARDL) bounds testing procedure (Pesaran et al., 2001) and an error correction model. Explanatory variables include real GDP per capita, natural resource rents, urbanization, external debt service, trade openness, and foreign direct investment. The bounds test confirms the existence of a long-run relationship among the variables. Estimates indicate that trade openness has a statistically significant positive long-run association with public consumption. Conversely, natural resource rents and urbanization display statistically significant negative associations, while external debt service is negative at the 10% level. No significant long-run relationships are found for real GDP per capita or foreign direct investment. The error correction coefficient indicates that about 66.98% of deviation from long-run equilibrium is corrected annually. Diagnostic tests do not indicate serial correlation, heteroskedasticity, non-normality, or misspecification, while CUSUM/CUSUMSQ tests confirm parameter stability. Overall, these findings highlight how external exposure, demographic concentration, and fiscal constraints shape public consumption dynamics in Mauritania.

Keywords: Government final consumption expenditure, ARDL, Trade openness, Natural resource rents, Debt service, Urbanization, Mauritania.

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1. Introduction

General government final consumption expenditure plays a central role in the functioning of the economy. Unlike investment spending aimed at building long-term infrastructure, this component comprises purchases of goods and services required for the government's day-to-day operations and for the provision of non-market services to the population. In developing economies, the evolution of recurrent expenditures raises specific challenges. They directly determine the operational capacity of public services while simultaneously impacting the balance of public finances. Understanding the drivers of their trajectory sheds light on budgetary management in contexts characterized by acute resource constraints.

Mauritania has a distinctive economic structure that shapes the management of its public finances. Heavily dependent on natural resource extraction—particularly iron, gold, copper, and fisheries—the economy remains vulnerable to fluctuations in global commodity prices. This susceptibility to external shocks is compounded by rapid urbanization around major centers like Nouakchott and Nouadhibou, openness to international trade, and the persistent burden of external debt servicing. In such an environment, the structure of state revenue fluctuates between ordinary taxation and extractive rents, potentially creating specific pressures regarding the financing of recurrent public expenditures.

Literature regarding the determinants of public spending in Africa and globally reveals a wide range of findings. Existing studies most often focus on aggregate public spending or investment budgets, showing effects that vary depending on the country, time period, or model specifications. However, research specifically examining general government final consumption expenditure as a share of GDP remains limited. Regarding Mauritania, the specific literature remains limited and fails to jointly analyze the macroeconomic, demographic, and financial factors influencing this particular component of government expenditure.

From a theoretical standpoint, two analytical frameworks provide useful reference points. Wagner's Law (1883) posits a positive relationship between the level of economic development and the expansion of the public sector, suggesting that rising per capita income stimulates the demand for public services. Meanwhile, the compensation hypothesis formulated by Rodrik (1998) argues that economies exposed to external shocks expand public consumption to reduce household vulnerability and mitigate risks. These two analytical lenses make it possible to examine the interplay between income, openness, and structural factors.

The aim of this article is to analyze the macroeconomic, financial, and demographic determinants of general government final consumption expenditure in Mauritania. The research addresses a central question: what factors are associated with variations in final public consumption in the country, and how do their effects play out in the short and long term?

To answer this question, the model employs six explanatory variables: the logarithm of real GDP per capita, natural resource rents as a percentage of GDP, the urban population share, external debt service relative to GNI, trade openness, and net foreign direct investment inflows. Theoretically, a positive effect is anticipated for GDP per capita, urbanization, and—more cautiously—natural resource rents. A negative effect is expected for debt service, given the financial constraint it imposes on the budget. Regarding trade openness and FDI, the divergent findings in the literature suggest that theoretical expectations remain ambiguous. The analysis relies on annual data from the World Bank (World Development Indicators) covering the period 1986–2020. The dependent variable is general government final consumption expenditure as a percentage of GDP. The econometric estimation employs the Autoregressive Distributed Lag (ARDL) approach developed by Pesaran, Shin, and Smith (2001)—adapted for series integrated of order $I(0)$ and/or $I(1)$ —to simultaneously examine short- and long-term dynamics.

This study sheds empirical light on the management of public finances in Mauritania. Its contribution lies primarily in the choice of the dependent variable, which focuses on final public consumption rather than an aggregate measure of total expenditure. It also integrates—within a single model—variables representing income, natural resources, openness, debt, urbanization, and FDI. Finally, the use of an ARDL model makes it possible to assess the speed of budgetary adjustment and to distinguish between short-term responses and long-term equilibrium relationships.

The remainder of the article is organized into four sections. The second section presents a review of the empirical literature. The third details the methodology and data. The fourth sets out the econometric results and discusses them. The final section concludes and outlines the main economic policy implications.

2. Review of Empirical Literature

It is essential to distinguish between general government final consumption expenditure, total public expenditure, and investment spending, as their economic determinants may differ. The empirical literature identifies several categories of determinants of public consumption and, more broadly, of the size of public expenditure, including income, natural resources, urbanization, debt service, trade openness, and foreign direct investment. An analysis of existing studies reveals some heterogeneity in results, attributable to the diversity of countries studied, the time periods covered, and the definitions applied to the dependent variable.

In line with Wagner's law, real GDP per capita is one of the theoretical and empirical determinants most frequently examined to explain changes in the size of the public sector. Ofori-Abebrese (2012), whose study focuses specifically on public consumption as a share of GDP in Ghana, finds a negative effect of real GDP on this share, suggesting that public consumption does not consistently grow faster than national output. By contrast, Lamartina and Zaghini (2011) identify a positive long-term relationship between real GDP per capita and aggregate public expenditure across 23 OECD countries. Mohsen (2022) also finds a positive long-term relationship between national income and public expenditure in Côte d'Ivoire, while Jibir and Aluthge (2019) report a positive GDP coefficient for Nigeria, although their study focuses on the overall size of the budget rather than on final consumption alone.

Natural resource rents can increase the government's financing capacity and support public consumption. In the case of Algeria, Demchri and Zakane (2018) and Khlifi (2021) highlight the sensitivity of the public budget to oil tax revenues and global oil prices. In Nigeria, Jibir and Aluthge (2019) identify a positive long-term relationship between oil revenues and public expenditure, whereas Aladejare (2019) employs a nonlinear ARDL model to capture the budget's asymmetric responses to changes in oil prices. However, a distinction must be made between actual budgetary revenues and economic rents as a share of GDP, the latter reflecting resource potential rather than direct government revenue.

Demographic factors—specifically population size and urbanization—drive increased demand for infrastructure and administrative services. Aregbeyen and Akpan (2013) find that a larger population, concentrated primarily in urban areas, is associated with higher public expenditure in Nigeria. Firoj et al. (2018) also highlight the positive impact of urbanization on the size of public expenditure in Bangladesh. Ofori-Abebrese (2012) confirms the role of demographic dynamics as a factor influencing public consumption.

Debt servicing—including debt owed by the public sector and debt guaranteed by the state—can crowd out certain categories of expenditure by reducing available fiscal space. In a study of 47 developing countries, Mahdavi (2004) shows that the debt burden alters budget composition by reducing capital expenditure and certain non-wage current expenditures. Mbewe (2024) observes a

negative long-term relationship between debt service and education expenditure across 15 countries in sub-Saharan Africa and South America. Similarly, Aregbeyen and Akpan (2013) find that debt service reduces various components of public expenditure in Nigeria.

The empirical findings on the impact of trade openness are mixed. Cameron (1978) and Rodrik (1998) argue that more open economies expand the size of their public sectors to mitigate the effects of external shocks. By contrast, Aregbeyen and Akpan (2013) in Nigeria and Ofori-Abebrese (2012) in Ghana find that greater trade openness reduces public consumption as a share of GDP. One possible explanation lies in the loss of tariff revenue associated with trade liberalization, particularly when customs duties account for a significant portion of government revenue.

Empirical studies on foreign direct investment (FDI) point primarily to reallocative effects on public expenditure. For 25 OECD countries, Gemmell et al. (2008) show that FDI does not affect the overall size of the public sector but shifts the composition of expenditure toward the social sector, at the expense of productive expenditure categories. Using a panel of 104 countries, McCloud et al. (2018) identify a short-term compensatory response in public consumption—particularly strong in developing countries and conditioned by the level of law and order—followed by a negative long-term relationship. Finally, Kahn and Zimbalist (2022) find that, in Mexico, FDI shocks stimulate public investment at the expense of operating expenditure excluding personnel costs.

Overall, the empirical literature remains highly heterogeneous with respect to the expenditure indicators used, the estimation periods, and regional economic structures. The existing literature remains limited regarding the determinants of general government final consumption expenditure, expressed as a share of GDP, in low-income, resource-dependent economies, particularly in the case of Mauritania. Against this backdrop, an ARDL model provides a suitable framework for jointly examining the determinants of public consumption and distinguishing between their short- and long-term effects in Mauritania.

3. Methodology

3.1 Data Description

This study uses time-series data covering the period 1986–2020 to analyze the determinants of general government final consumption expenditure in Mauritania. The data are drawn from the World Bank's World Development Indicators (WDI) database, which is widely recognized for the reliability and international comparability of its indicators. To facilitate the interpretation of the coefficients in elasticity terms, a logarithmic transformation was applied only to the GDP per capita variable. The other variables were retained in levels to preserve the statistical consistency of the analysis.

Table 1. Description of the variables used in the study

Variable	Description	Source
GFCE	General government final consumption expenditure (% of GDP).	World Bank's Database
LGDP	GDP per capita (constant 2015 US\$).	World Bank's Database
NRR	Total des bénéfices tirés des ressources naturelles (% du PIB)	World Bank's Database
URBAN	Urban population (% of total population).	World Bank's Database
DSERV	Public and publicly guaranteed debt service (% of GNI).	World Bank's Database

OPEN	Commerce de marchandises (% du PIB)	World Bank's Database
FDI	Foreign direct investment, net inflows (% of GDP).	World Bank's Database

3.2 Regression specification

To analyze the factors associated with changes in general government final consumption expenditure in Mauritania, our model draws on key theoretical foundations and empirical findings concerning the determinants of public consumption. Specifically, it draws on Wagner's law and empirical studies examining the roles of per capita income, natural resource rents, urbanization, external debt service, trade openness, and foreign direct investment in shaping public consumption (Wagner, 1883; Rodrik, 1998; Mahdavi, 2004; Gemmell et al., 2008; Ofori-Abebrese, 2012; Aregbeyen and Akpan, 2013; McCloud et al., 2018; Kahn and Zimbalist, 2022). The estimation of short- and long-term relationships among the variables is based on the Autoregressive Distributed Lag (ARDL) approach proposed by Pesaran et al. (2001).

The econometric specification used to analyze the determinants of public consumption in Mauritania is given by:

$$GFCE_t = C + \beta_1 LGDPPC_t + \beta_2 NRR_t + \beta_3 URBAN_t + \beta_4 DSERV_t + \beta_5 OPEN_t + \beta_6 FDI_t + \varepsilon_t$$

where β_1, β_2 and β_3 are expected to be positive, β_4 is expected to be negative, and the expected signs of β_5 and β_6 are ambiguous; ε_t denotes the error term.

The equation above describes the long-term relationship between public consumption and its main determinants in Mauritania.

The ARDL-ECM model associated with this equation can be written as follows:

$$\begin{aligned} \Delta GFCE_t = & \sum_{i=0}^p \gamma_t LGDPPC_{t-i} + \sum_{i=0}^p \pi_t NRR_{t-i} + \sum_{i=0}^p \varepsilon_t URBAN_{t-i} + \sum_{i=0}^p \rho_t DSERV_{t-i} \\ & + \sum_{i=0}^p \omega_t OPEN_{t-i} + \sum_{i=0}^p \omega_t FDI_{t-i} + \delta ECM_{t-1} + \varphi_t \end{aligned}$$

where Δ denotes the first-difference operator, and p represents the optimal number of lags selected for the dependent variable. The coefficients $\gamma_t, \pi_t, \varepsilon_t, \rho_t$ and ω_t measure the short-term effects of the explanatory variables. The coefficient δ represents the speed of adjustment toward equilibrium and is expected to be negative and statistically significant. The term ECM_{t-1} denotes the lagged residual from the long-term relationship. φ_t is the short-term error term.

We will also conduct standard diagnostic tests to assess the absence of residual autocorrelation and heteroskedasticity, as well as the normality of the residuals, thereby assessing the adequacy of the model specification. Furthermore, parameter stability will be assessed using the CUSUM and CUSUMSQ tests.

4. Results and discussion

The estimation strategy adopted in this study relies on the ARDL approach. Implementing this technique requires meeting strict validity conditions beforehand. To this end, two preliminary checks are systematically conducted: first, analyzing the order of integration of the series using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests; and second, examining the

cointegration property among the variables via the Bounds Test. Meeting these methodological prerequisites ensures the robustness of the estimates and the reliability of the econometric results.

4.1 Stationarity

To determine the order of integration of the variables, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are applied, including a constant and a deterministic trend. This step makes it possible to verify the stationarity of the series and ensure that no variable is integrated of order two, $I(2)$ —a necessary condition for applying the Bounds Test approach proposed by Pesaran et al. (2001). This approach is suitable for models in which variables are integrated of order $I(0)$ and/or $I(1)$.

The results presented in Table 2 show perfect agreement between the two tests. The variables GFCE, LGDPPC, NRR, DSERV, and OPEN are non-stationary in levels but become stationary after first differencing; they are thus integrated of order $I(1)$. Conversely, the variables URBAN and FDI are stationary in levels and are therefore integrated of order $I(0)$. The set of variables thus exhibits an order of integration limited to $I(0)$ and $I(1)$, with no $I(2)$ series. Consequently, this structure satisfies the prerequisite for applying the ARDL Bounds Testing approach.

Table 2. Results of the ADF and PP Unit Root Tests

Tests	Variables	statistic (Level)	statistic (1st differnece)	MacKinnon 5%	Order of integration
Augmented Dickey-Fuller test	GFCE	-2.536627	-5.482770	-3.540328	I(1)
	LGDPPC	-2.194568	-5.461554		I(1)
	NRR	-1.951459	-5.923164		I(1)
	DSERV	-2.524264	-9.356186		I(1)
	URBAN	-6.457336			I(0)
	OPEN	-3.412943	-4.307543		I(1)
	FDI	-4.408818			I(0)
Phillips-Perron test	GFCE	-2.650769	-5.487606	-3.544284	I(1)
	LGDPPC	-2.199560	-5.461952		I(1)
	NRR	-1.957438	-5.923342		I(1)
	DSERV	-2.544464	-9.350465		I(1)
	URBAN	-6.259069			I(0)
	OPEN	-3.130089	-4.307557		I(1)
	FDI	-4.408934			I(0)
Notes: I(0) means that the variable is stationary in level without differentiation, and I(1) denotes that it has been differentiated only once to make it stationary.					

4.2 Bounds test

Table 3 presents the results of the Bounds Test applied to the ARDL model to verify the existence of a long-run relationship between the variables. The F-statistic ($F = 9.79$) significantly exceeds the upper critical bound at the 1% level ($I(1) = 3.99$), leading to the rejection of the null hypothesis of no long-run relationship. These results confirm the existence of a cointegration relationship between the dependent variable and the explanatory variables, thereby justifying the estimation and interpretation of the ARDL model's long-run coefficients.

Table 3. Bounds Test

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	9.798983	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

4.3 Selection of the Optimal ARDL Model

Appendix I reports the key goodness-of-fit indicators for the selected ARDL model. The coefficient of determination ($R^2 = 0.966$) indicates that the model accounts for approximately 96.6% of the variation in general government final consumption expenditure observed in the sample. The adjusted coefficient of determination (Adjusted $R^2 = 0.915$) also confirms a high level of model fit. The F-statistic ($F = 18.74$, $p < 0.001$) indicates that the explanatory variables are jointly significant in the estimated equation. Furthermore, the Durbin-Watson statistic, at 2.166, is close to the reference value of 2 and does not, at first glance, suggest a significant first-order autocorrelation problem.

4.4 Robustness tests

The reliability of the ARDL estimates is corroborated by a series of diagnostic tests, the results of which are presented in Table 4. Regarding serial autocorrelation of the residuals, the Breusch-Godfrey statistic does not reject the null hypothesis of independence ($p=0.84$). In terms of specification, Ramsey's RESET test ($p=0.11$) provides no evidence of functional form misspecification. Assumptions regarding the error distribution are also satisfied: the Jarque-Bera statistic confirms the normality of the residuals ($p=0.58$), while White's ($p=0.54$) and ARCH ($p=0.63$) heteroskedasticity tests confirm the homoscedasticity of the error variance. These results confirm the robustness of the model and the validity of the statistical inferences.

Table 4. Diagnostic and Robustness Tests of the Estimated ARDL Model

Statistical test	Statistic (p-value)	Decision rule	Null hypothesis
Ramsey RESET	3.00 (0.11)	Prob > 0,05	Model is correctly specified
Serial correlation LM (Breusch-Godfrey)	0.18 (0.84)	Prob > 0,05	No serial correlation
ARCH	0.23 (0.63)	Prob > 0,05	No ARCH effects (Homoscedasticity)
WHITE	0.96 (0.54)	Prob > 0,05	Homoscedastic errors
Jarque-Bera	1.07 (0.58)	Prob > 0,05	Residuals are normally distributed
Notes: Values in parentheses are the corresponding p-values. The null hypothesis is not rejected when the p-value exceeds 0.05.			

As for the stability of the long-run parameters, this is confirmed by the Brown-Durbin-Evans stability tests: both the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) statistics remain within the critical bounds at the 5% significance level (Figures 1 and 2), ruling out any structural break over the sample period.

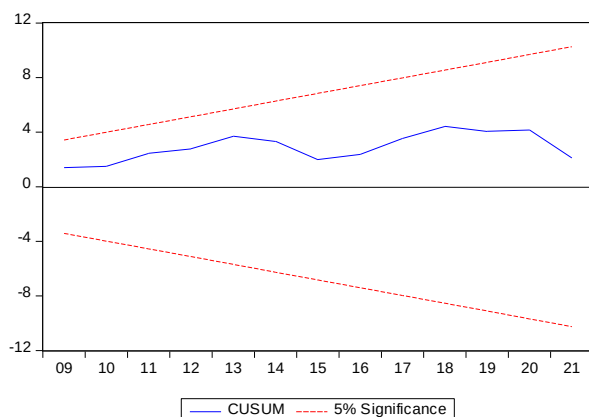


Figure 1. CUSUM test

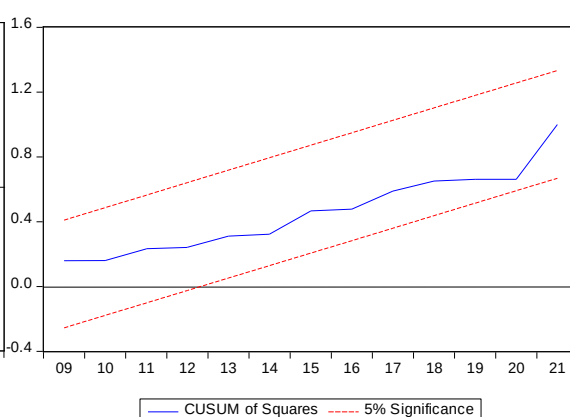


Figure 2. Square CUSUM test

4.5 Long-run Coefficients and Error-Correction Model

Table 5 presents the long-run estimates from the ARDL model. The only variable significantly and positively associated with general government final consumption is trade openness (OPEN). Conversely, natural resource rents (NRR), urbanization (URBAN), and external debt service (DSERV) are negatively and statistically significantly associated with general government final consumption expenditure, although the effect of DSERV is significant only at the 10% level. Finally, real GDP per capita (LGDPPC) and foreign direct investment (FDI) have statistically insignificant coefficients in the long run.

The long-run estimates reveal contrasting effects whose interpretation should be grounded in Mauritania's structural and socioeconomic context. The main mechanisms that may help explain the signs and magnitudes of the estimated coefficients are presented below:

- Trade openness shows a positive coefficient, highly significant at the 1% level. A one-percentage-point increase in trade openness is therefore associated, in the long run, with an increase of approximately 1.13 percentage points in general government final consumption expenditure as a share of GDP. This result aligns with Rodrik's (1998) compensation hypothesis. In a vulnerable economy like Mauritania—dependent on global prices for iron ore, copper, and fish—external shocks are frequent. A plausible interpretation is that exposure to external shocks may be accompanied by an increase in certain public expenditures aimed at mitigating their impact. This interpretation is also consistent with Cameron's (1978) analysis of exposure to international markets.
- Natural resource rents show a negative coefficient, significant at the 1% level. This negative sign may seem paradoxical for an economy heavily dependent on extractive activities. One possible explanation lies in a denominator effect: during periods of mining expansion, rapid GDP growth may dilute the relative share of public consumption. This finding aligns with literature showing fiscal responses to natural resource shocks may be nonlinear. For instance, Aladejare (2019) highlights asymmetric budgetary reactions to resource shocks. This finding also qualifies the evidence reported by Demchri and Zakane (2018) in Algeria and Jibir and Aluthge (2019) in Nigeria, where oil revenues are positively associated with the size of public spending.
- Urbanization shows a negative coefficient that is significant at the 1% level. A one-percentage-point increase in the urban population share is associated with a decrease of approximately 1.90 percentage points in general government final consumption expenditure as

a share of GDP. This result diverges from much of the existing empirical literature. Such a relationship could reflect economies of scale in the provision of certain public services as the population concentrates in major urban centers. This finding is consistent with the conclusions of McCloud et al. (2018) and Zakaria and Shakoore (2011), who highlight a negative effect of urbanization on public consumption and expenditure.

- External debt service shows a negative coefficient, significant at the 10% level. This relationship is consistent with the budget constraint hypothesis. The obligation to service debt reduces the fiscal space available to the Mauritanian government. Such a constraint may reduce the resources allocated to current general government final consumption expenditure, excluding interest payments. This result aligns directly with the work of Mahdavi (2004), who observed a shift in the composition of the budget away from current expenditure in 47 developing countries. It is also consistent with the findings of Mbewe (2024) and Aregbeyen and Akpan (2013) regarding the constraining role of debt service.
- GDP per capita and foreign direct investment (FDI) do not have statistically significant long-term effects. Regarding income, the estimates provide no statistical evidence supporting Wagner's law in its strict form for general government final consumption expenditure in Mauritania. As for FDI, the positive but statistically insignificant coefficient provides no evidence of a direct long-term effect on general government final consumption expenditure. These findings align with Ofori-Abebrese (2012) in the context of Ghana, as well as with a body of literature (Gemmell et al., 2008; McCloud et al., 2018; Kahn & Zimbalist, 2022) that finds no uniform effect of FDI on the size of public consumption but highlights—depending on the context—its influence on the composition of public expenditure.

Table 5. Long-run coefficients and ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.133681	0.309211	0.432330	0.6726
NRR	-1.572834	0.277000	-5.678090	0.0001
URBAN	-1.900531	0.403692	-4.707879	0.0004
DSERV	-2.243160	1.091465	-2.055183	0.0605
OPEN	1.133638	0.180357	6.285530	0.0000
IDE	0.081194	0.191737	0.423464	0.6789
C	-0.585817	2.095622	-0.279543	0.7842
ECM = GFCE - (0.1337*LGDP - 1.5728*NRR - 1.9005*URBAN - 2.2432*DSERV + 1.1336*OPEN + 0.0812*IDE - 0.5858)				

4.6 Short-run coefficients

The short-run results (Appendix II) reveal distinct dynamics depending on the determinants considered. The coefficient on the error-correction term, CointEq(-1), estimated at -0.669829 and highly significant ($p < 0.001$), confirms the existence of an adjustment mechanism toward the long-run equilibrium relationship. Its value, falling between -1 and 0, indicates monotonic convergence, free from oscillation or overshooting. Approximately 66.98% of temporary deviations of general government final consumption expenditure from its long-run equilibrium path are corrected in the following period, reflecting a relatively high speed of adjustment.

5. Conclusion

This study aims to analyze the macroeconomic, financial, and demographic determinants of general government final consumption expenditure in Mauritania, seeking to identify the factors associated with variations in this ratio and to clarify the interplay of their short- and long-term effects. The analysis relies on annual World Bank data covering the 1986–2020 period. Estimation is based on the Autoregressive Distributed Lag (ARDL) methodology applied to general government final consumption expenditure expressed as a percentage of GDP.

The long-run estimation reveals contrasting effects depending on the variables considered. Trade openness shows a positive and statistically significant association with general government final consumption expenditure, which may reflect a compensatory response to vulnerability to external shocks. Conversely, natural resource rents and urbanization exhibit significant negative coefficients. The negative relationship observed for rents could stem from a denominator effect linked to the expansion of mining GDP, while the result regarding urbanization is consistent with the existence of economies of scale in the provision of public services within major urban centers. Public and publicly guaranteed debt service also shows a negative association—significant at the 10% level—reflecting the constraining effect of debt repayment on fiscal space. Finally, GDP per capita and foreign direct investment do not yield significant long-term coefficients, providing no statistical evidence in support of Wagner's Law regarding this specific expenditure component.

In dynamic terms, the model highlights an effective adjustment mechanism toward the long-term equilibrium. The coefficient of the error-correction term stands at -0.669829 , indicating that nearly 66.98% of the previous period's disequilibrium is corrected annually, ensuring monotonic convergence toward the equilibrium path. Standard diagnostic tests reveal no major statistical specification issues—whether regarding residual autocorrelation, heteroscedasticity, normality, or functional form—while stability tests confirm the stability of the estimated parameters.

These results suggest several policy directions for the management of Mauritania's public finances. The sensitivity of government final consumption to trade openness highlights the need to strengthen fiscal smoothing mechanisms to shield operating expenditures from global market volatility. The negative relationship associated with natural resource rents underscores the importance of decoupling recurrent expenditure planning from fluctuations in extractive revenues, thereby preventing shocks in the mining sector from creating structural imbalances. Finally, the constraining burden of public and publicly guaranteed debt service on government final consumption argues for prudent debt management aimed at preserving the fiscal space required for the smooth operation of essential public services.

This study has certain real limitations. The analysis relies on an annual sample of 35 observations, which limits the statistical power of some inferences. The dependent variable addresses government final consumption at an aggregate macroeconomic level, without distinguishing between the wage bill and purchases of goods and services, or breaking down sectoral budgets. Lastly, while the ARDL approach models enduring statistical associations, it does not establish strict causal relationships.

These constraints open up stimulating avenues for further research building upon this work. One initial approach would involve using disaggregated data to examine the components of current expenditure separately—specifically employee compensation and intermediate consumption—or to analyze the sectoral distribution across education, health, and general administration. Another promising avenue lies in incorporating institutional and governance variables, or in explicitly accounting for structural breaks associated with budgetary reforms.

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Appendix I. Estimation Results of the Selected ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GFCE (-1)	0.330171	0.092668	3.562928	0.0035
LGDPPC	-0.350234	0.093925	-3.728864	0.0025
LGDPPC(-1)	-0.225323	0.120579	-1.868674	0.0844
LGDPPC(-2)	0.058455	0.124493	0.469542	0.6465
LGDPPC(-3)	0.606646	0.136086	4.457827	0.0006
NRR	-0.121697	0.094362	-1.289692	0.2196
NRR(-1)	-0.211843	0.090639	-2.337213	0.0361
NRR(-2)	-0.168833	0.107252	-1.574163	0.1395
NRR(-3)	-0.551158	0.096590	-5.706133	0.0001
URBAN	2.020749	2.390167	0.845442	0.4132
URBAN(-1)	-3.293780	2.549187	-1.292090	0.2188
DSERV	0.040670	0.455143	0.089356	0.9302
DSERV(-1)	-1.543204	0.425456	-3.627178	0.0031
OPEN	0.352024	0.087042	4.044279	0.0014
OPEN(-1)	0.110495	0.099273	1.113042	0.2858
OPEN(-2)	-0.113662	0.088431	-1.285317	0.2211
OPEN(-3)	0.410487	0.078224	5.247606	0.0002
IDE	-0.161275	0.064927	-2.483933	0.0274
IDE(-1)	0.001367	0.062542	0.021862	0.9829
IDE(-2)	0.214293	0.075271	2.846956	0.0137
C	-0.392397	1.400004	-0.280283	0.7837
R-squared	0.966475	Mean dependent var		0.164397
Adjusted R-squared	0.914899	S.D. dependent var		0.049555
S.E. of regression	0.014456	Akaike info criterion		-5.361506
Sum squared resid	0.002717	Schwarz criterion		-4.418754
Log likelihood	112.1456	Hannan-Quinn criter.		-5.040001
F-statistic	18.73878	Durbin-Watson stat		2.165640
Prob(F-statistic)	0.000002			

Appendix II. Selected short-run dynamic coefficients from the ECM equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDPPC)	-0.350234	0.062265	-5.624885	0.0001
D(LGDPPC(-1))	-0.665101	0.078737	-8.447158	0.0000
D(LGDPPC(-2))	-0.606646	0.086356	-7.024966	0.0000
D(NRR)	-0.121697	0.049460	-2.460499	0.0286
D(NRR(-1))	0.719990	0.078091	9.219923	0.0000
D(NRR(-2))	0.551158	0.069902	7.884686	0.0000
D(URBAN)	2.020749	0.353385	5.718267	0.0001
D(DSERV)	0.040670	0.221055	0.183979	0.8569
D(OPEN)	0.352024	0.048041	7.327555	0.0000
D(OPEN(-1))	-0.296826	0.045574	-6.512985	0.0000
D(OPEN(-2))	-0.410487	0.053419	-7.684317	0.0000
D(IDE)	-0.161275	0.034203	-4.715252	0.0004
D(IDE(-1))	-0.214293	0.036483	-5.873807	0.0001
CointEq(-1)*	-0.669829	0.060994	-10.98193	0.0000