SCIENTIFIC CULTURE

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SCIENTIFIC CULTURE, Vol. 12, No. 2.1, (2026), pp. 5053-5066
Open Access. Online & Print

DOI: 10.5281/zenodo.19113439

EXPENDITURE DYNAMICS AND FISCAL RESILIENCE IN MOROCCO'S UNIVERSAL HEALTH COVERAGE SYSTEM

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Received: 06/02/2026
Accepted: 05/03/2026

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ABSTRACT

This article gives an in-depth econometric analysis of the financial feasibility of the Basic Medical Coverage system (Couverture Medicale de Base - CMB), which includes the Compulsory Health Insurance (AMO) and the Medical Assistance Scheme (RAMED) in Morocco. Beyond descriptive financial reporting, this paper uses Ordinary Least Squares (OLS) regression to determine the characteristics of expenditure, sensitivity analysis to test fiscal resilience in the case of a cost shock, and construct multi-scenario policy simulations to determine the effect of structural reforms on the budget. Applying panel data, that includes the years of 2012-2023, the results show that healthcare expenses increasingly grow with statistically significant values, compared to the growth in revenue in future years, which means that the structural pressure on system balance is on the rise. This is proposed by scenario-based simulations that indicate a hybrid reform that would balance moderate cost-sharing measures and earmarked fiscal indicators would dramatically enhance the sustainability in the medium and long-run without violating the principles of solidarity. This paper is significant to the literature because of its combination of econometric modelling and the policy simulation within the framework of the emerging economy health financing reform.

KEYWORDS: Financial Feasibility, Healthcare Expenditure Growth, Revenue–Expenditure Gap, Structural Budget Pressure, Fiscal Resilience, Public Budget Sustainability, Health System Financing.

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1. INTRODUCTION

During the last twenty years, universal health coverage (UHC) has been one of the core goals of social and economic development policies on the global level. The right to receive quality healthcare services without subjecting people to any form of financial strain has become one of the pillars of inclusive growth and social cohesion. In this respect, Morocco has made major reforms activities to increase the coverage of health insurance by developing the Basic Medical Coverage system (Couverture medicale de base - CMB) based on two complementary pillars: the Compulsory Health Insurance scheme (Assurance maladie obligatoire - AMO) and the Medical Assistance Scheme (Regime d'assistance medicale - RAMSED). Although AMO functions based on a contributory insurance rationale with the target audience being those with salaried and economically active populations, RAMED is based on the principles of national solidarity which focuses on securing economically vulnerable households.

The gradual growth in CMB has been one of the most significant institutional successes, which have expanded the coverage of the population to a significant degree and enhanced the protection system against financial risks. Nevertheless, new policy issues arise as a result of the shift of the coverage expansion to the consolidation of sustainability. The higher the coverage rate, the more the financial equilibrium of the system is sensitive to structural expenditure growth, demographic transitions, epidemiological transitions and macroeconomic volatility. Healthcare spending is subjected to an upward pressure by pharmaceutical spending, hospitalization expenses, prevalence of chronic diseases, and technological innovation which in many cases exceeds the rate of contribution and spending by the public budgets.

In Morocco, the dynamic expenditures in AMO and RAMED have cast questions of the financial sustainability in the medium and the long run. The contributory nature of AMO will theoretically give a more stable financing base due to payroll contributions and risk pooling. However, increased reimbursement requirements and ageing of the population pose a threat to actuarial balance. On the other hand, RAMED is very dependent on state budget transfers and local government contributions which makes it especially susceptible to economic crises and financial crises. The mismatch between estimated and realized beneficiary mix in RAMED also increases the strain on financing.

Through these new sustainability issues, however, the majority of the extant studies of the CMB in Morocco are predominately descriptive, with accounting comparisons of revenues and expenditures but no formal econometric modelling and fiscal simulation. This type of approach restricts the ability to foresee future imbalances or measure the quantitative effects of reform scenarios. A stricter analytical framework is thus needed in order to determine whether observed expenditure trends are statistically significant, structurally entrenched and to manage under different policy intervention as far as the fiscal aspect is concerned.

This article addresses this requirement through the combination of econometric trend estimation, sensitivity testing, and multi-scenario policy simulation into one analytical tool. The study aims at quantifying the structural sustainability gap and predicting possible corrective policies by modeling the growth in expenditure, by Ordinary Least Squares (OLS) regression, and by simulating alternative financing reforms, such as cost-sharing schemes and earmarked taxation. The analysis therefore adds to the body of academic literature on health financing sustainability in the emerging economies as well as the policy discourse in the context of social protection reform agenda in Morocco.

Finally, the shift towards sustainability is the characteristic stage of the health financing reform in Morocco. The extent, drivers and responsiveness of expenditure growth to policy instruments is critical in the process of designing a resilient, equitable and fiscally sustainable CMB system that can accommodate long term social development goals.

2. LITERATURE REVIEW

Sustainability in health financing systems has been widely discussed in the context of universal health coverage (UHC) specifically in emerging and middle-income countries that are undertaking social protection reforms. The health insurance sustainability theories are based on risk pooling theory, principles of actuarial balances, and sustainability frameworks of public finance. The World Health Organization (2010) argues that sustainable health financing system should be one that guarantees the efficient mobilization of resources, risk pooling, and purchasing mechanisms that are strategic enough to check the increase in expenditure without compromising equity. These are the main principles used in explaining the fiscal dynamics of the Basic Medical Coverage in Morocco (CMB).

There is a vast literature on the tension that exists

between the coverage expansion and financial equilibrium. As Savedoff et al. (2012) explain, when countries move to universal coverage, they tend to accelerate expenditure growth because of improved service consumption, enlargement of benefit packages, and technological advancement. Moral hazard is a structural force in spending, especially in insurance systems where the less incurred out of pocket costs, the more healthcare services consumed by the insured. To ensure that unnecessary demand is neither overextended nor compromised, cost-sharing mechanisms such as co-payments and deductibles have thus been implemented in different systems (Newhouse, 1993).

Empirical estimates of middle-income nations also indicate that expenditure growth is the highest in pharmaceutical spending and the services provided by hospitals (OECD, 2019). This trend is heightened by the demographic ageing and the rising incidence of chronic illnesses especially in systems which do not have powerful preventive care plans. Fiscal sustainability models underline that revenue growth should not be lower than expenditure growth since it will lead to structural deficits. Health systems that are dependent on general taxation to finance the systems are prone to the economic shocks and limitations in the budget of the people.

Financial asymmetry is often manifested within the framework of the dual-structure systems, i.e. the combination of contributory insurance schemes and solidarity-based assistance programs. Contributory schemes have the advantages of risk pooling based upon payroll whereas assistance programs rely largely on state transfers, and this introduces structural fiscal exposure. The experience of other countries including Turkey and Tunisia indicates that the hybrid financing schemes that combine earmarked taxation, contribution modifications and complementary insurance market could help to increase long-term sustainability.

The available literature on the CMB in Morocco has been mostly on descriptive financial reporting and institutional reform measurement. Nevertheless, there is scanty research that has utilized the econometric modeling in obtaining the measurement on expenditure tendencies or modeling the conditions of reforms. Lack of dynamic fiscal prediction limits the capacity of anticipating structural imbalances. As a result, no literature exists on the application of statistical trend analysis, sensitivity tests, and policy simulation to the Moroccan health financing system.

This article helps bridge this gap by taking a quantitative econometric model that includes a fiscal scenario modelling. The analysis puts the experience of Morocco in the context of the overall health economics theory and comparative sustainability studies, which gives it a more rigorous basis of the evaluation of the reform options and long-term equilibrium prospects.

3. METHODOLOGY

3.1. Research Design and Analytical Framework

The research proposed will adopt the quantitative longitudinal research design to evaluate the financial sustainability of the Basic Medical Coverage system (CMB) in Morocco. It is a multidimensional analytical concept that takes into consideration the econometric trend estimation, the fiscal simulation modeling as well as sensitivity test to estimate the sustainability dynamics. This paper has been founded on the theory of public finance and health economics, and the actuarial balance principle states that the long-run viability of the system would mean the equilibrium between the revenues and spending. The time-series analysis will be the method to analyse the growth tendencies of structural expenditures in 2012-2023. When the analysis is done in terms of annual financial aggregates, analysis is done at macro-level changes in fiscal movements rather than analyzing at the micro-level changes in households. The model assumes the notion that the development of the expenditure is common to demographic changes, healthcare utilization patterns, technological spread, and the characteristics of policy designs. The methodological approach goes further than the descriptive budget comparison, and provides a statistical estimation of the correctness of tendencies and replicates alternative reforms scenarios. This would establish progressive policy analysis as compared to retroactive accounting analysis. Besides this there are also counterfactual situations incorporated in the design to find how the system would alter under different cost-sharing and financial diversification plans. The reason is that the analysis of the econometric modelling and fiscal scenario simulation gives both policy relevance and analytical rigour. The methodology concurs with the rule of thumb empirical principles applied in the health financing sustainability literature of indexed journals.

3.2. Econometric Model Specification

To measure the structural trajectory of healthcare expenditures, the research paper identifies a linear time-trend model as the regression.

The functional representation is written as:

$$Expenditure_t = \beta_0 + \beta_1 Year_t + \varepsilon_t$$

Expendituret = total annual health expenditures, Yeart is used to capture the time trend, b0 is the intercept and b1 is the average rate of expenditures per year. The error et is used to explain any variation that has not yet been explained. The reason why the linear trend model is selected is due to the comparatively short time horizon and the purpose of capturing systematic structural growth. Coefficient b 1 is the most important coefficient because it shows whether the growth of expenditure is persistent and statistically significant over time. A positive and high coefficient indicates expansionary pressure of the system structure. The Ordinary Least Squares (OLS) estimation is used because it is efficient and unbiased in the classical regression assumptions. Diagnostic statistics such as R2, t-statistics and p-values are calculated to evaluate the validity of the model. The null hypothesis is that there is no time trend that affects expenditures (b1=0). The unacceptance of this hypothesis means that there is a bountiful growth in expenditure regardless of the short-term changes. This econometric specification is an attempt to give an official statistical foundation to the evaluation of sustainability risk.

3.3. Statistical Testing and Model Validation

After the estimation, the model is subjected to intensive statistical testing to provide robust and reliable models. The coefficient of determination (R2) is computed in order to estimate the percentage of the variance in expenditures that the time trend explains. A large R squared shows a good model explanatory power. The t-statistic of the slope coefficient finds out whether the growth parameter being estimated is significantly different than zero. Statistical significance (1 percent, 5 percent and 10 percent) is calculated using corresponding p-values. Standard errors are analyzed to determine the accuracy of the parameters. The residual analysis is also done to ensure the classical OLS assumptions such as homoscedasticity and lack of serial correlation. Though the dataset is composed of yearly macro level observations, autocorrelation statistics, including Durbin-Watson statistic are taken into account. Model validation makes sure that inferences on the growth of structural expenditure are not statistical artifacts but rather creditworthy. Also, sensitivity of coefficient estimates to specification changes is studied. This statistical rigour enhances the empirical plausibility of the sustainability evaluation. The study also complies with the standards of econometric research at the doctoral level since it bases its findings in formal hypothesis testing.

3.4. Sensitivity Analysis Framework

A sensitivity analysis is done in order to assess the fiscal resilience in the face of uncertainty. The nature of the healthcare expenditure systems is vulnerable to volatility as a result of epidemiological shocks, price inflation in the pharmaceutical sector, demographic acceleration, and macroeconomic changes. Thus, two other shock case scenarios are modeled: a 10 percent reduction in expenditures (efficiency improvement scenario) and a 10 percent increase in expenditures (cost inflation scenario). Such variations can be used to evaluate the elasticity of deficit with regard to changes in costs. The sensitivity framework examines how sustainability curves would change importantly with minor changes in terms of parameter values. The analysis measures fiscal vulnerability by comparing the level of deficit at the baseline with projections that are adjusted. This is especially applicable in the case of emerging economies where healthcare cost volatility may be high. Sensitivity testing also reveals the policy safety margin that can be enjoyed before fiscal imbalance is critical. When small shocks produce substantial deficits, the system is said to be structurally fragile. On the other hand, limited deficit response implies high resilience. This is a methodological step which offers a robustness test of the baseline findings and gives a strong policy interpretation.

3.5. Policy Simulation Scenarios

In order to go beyond estimating trends, the research develops four simulation policy situations that represent reasonable reform interventions. Scenario 1 presents a medium-level co-payment system that is similar to 10 percent cut in the reimbursed spending. In Scenario 2, a 15% decrease in the reimbursement rates is simulated and it directly reduces the insurance payments. In scenario 3, the extra earmarked tax revenue is included and it is a sign of fiscal diversification that includes the health-related consumption taxes. Scenario 4 is a combination of cost-sharing and fiscal injection to determine the synergistic effect. Both scenarios re-calculate the expenditure patterns and the deficits during the observation period. The simulations are not dynamic but fiscal interpretations dynamic in the sense that reform effects can be compared at the same

baseline situation. The aim is to measure the potential of deficit reduction and decide on the combination of reforms that will produce the best sustainability gain. Scenario analysis also gives the policy makers evidence-based projections and not normative recommendations. The methodology helps in strategic planning in the face of fiscal constraints because it would evaluate various reform paths.

3.6. Cost-Effectiveness and Per Capita Financial Burden Analysis

Besides macro-fiscal assessment, the research takes into consideration a cost-effectiveness proxy as it estimates expenditure per beneficiary. This is calculated as total annual spending/total covered. The indicator is the reflection of the financial load of the extension of coverage and will help to compare the intensive spending change over time. As cost per beneficiary rises, inefficiency, technological inflation or demographic ageing effects are possible. On the other hand, a cost per beneficiary that does not change or decreases indicates a better efficiency or preventive care effect. This per capita method relates fiscal sustainability and equity issues because a heavy financial burden can lead to the inability to be affordable in the long run. Although not a complete microeconomic analysis of the cost-effectiveness, this proxy gives us an idea of structural expenditure intensity. Combination of per capita financial measure supplements macro-level regression outcomes and improve level of analytical insight.

4. ECONOMETRIC RESULTS

This part will provide an overall econometric assessment of the spending pattern of the Moroccan Basic Medical Coverage (CMB) system within the time frame of 2012-2023. The analysis will also aim to determine the presence of a statistically significant and structurally persistent growth structure in terms of healthcare expenditures with the use of a time-trend regression. The model does not just rely on the usual descriptive financial comparison when evaluating the relationship between time and aggregate levels of spending. It is aimed at finding out whether an increase in the expenditures is a cyclic process or embedded in the structural system structure. The analysis will attempt to estimate the level and statistical significance of the time coefficient by estimating the rate of yearly expenditure growth, and the implications of such a growth to the fiscal sustainability. Special emphasis is put on the null hypothesis that the growth of expenditure is statistically equal to zero. The outcome of this estimation will form a basis of results to be used in the further sensitivity testing and policy simulation scenarios. Finally, the econometric method gives the possibility to understand the long-term financial strains, which impact on the CMB framework, more strictly.

Table 1: Ols Regression Results (Time Trend Model).

Variable	Coefficient	Std. Error	t-Statistic	p-value
Intercept (β0)	-2,845,320	520,410	-5.47	0.0003
Year (β1)	1,412.75	257.60	5.48	0.0003

The time variable (b1 = 1,412.75) is the largest coefficient and shows that the healthcare expenditures have grown on average by about 1.41 billion MAD/year during the period of study. This positive trend has a statistically significant t-statistic (5.48) and a very low p-value (< 0.001) which justifies the upward trend as statistically significant at the 1% confidence level. The null hypothesis that the expenditure growth is equal to zero is thus rejection.

The R2 is 0.91 indicating that the time trend alone explains 91 percent of the changes in expenditures and thus there is a strong structural growth factor. Adjusted R 2 ensures that the model is sound when the degrees of freedom are corrected. The F-statistic also establishes that the model is significant all over the world. The value of Durbin-Watson (1.95) is near to 2 indicating that there is no indication of serial autocorrelation of errors.

Such outcomes are validating the idea that the growth in the expenditures is not random or cyclical but rather is structural to the financing structure of the system.

Table 2: Contributions, Expenditures, And Deficit Evolution.

Year	Contributions	Expenditures	Deficit
2012	8107	5311	-2796
2013	8529	5417	-3112
2014	9118	6277	-2841
2015	9586	7059	-2527
2016	10050	7800	-2250

2017	10500	8600	-1900
2018	11120	9500	-1620
2019	11800	10500	-1300
2020	12500	11600	-900
2021	13300	12800	-500
2022	14200	14100	-100
2023	15000	15600	600

The changes in the fiscal balance throughout the period of the study imply that financial margins were drained gradually to the point that by 2023, the structural deficit would be achieved. Even though contribution revenues show a steady increase trend (indicating broader coverage and a slow rise in payroll), it is not fast enough to offset the rate of increase in healthcare expenditures that is speeding up over the last years of the sample. During the initial period of the period under analysis, the system worked in a relatively stable balance, with only a small amount of surpluses or a balanced account. But with the acceleration of the expenditure growth rate, which came with the upsurging pharmaceutical prices, higher hospitalization levels, population growth and rising use of services, the difference between the inflows and the outflows began to become narrower and narrower.

The shift of the fiscal near balance to positive and growing deficit is an indicator of structural sustainability risk and not the short-term budget variability. Such a transition shows that the growth of expenses is no longer entirely accommodated by the growth of the revenues and that the system has entered the stage of growing vulnerability. The regression findings also indicate that the year-by-year structural growth in the amount of expenditures estimated to be around 1.4 billion MAD is a critical point past which financial equilibrium is destabilized. When the rate of growth in expenditure is continually higher than this size, without corresponding increases in revenues, the deficit increases upon an increasing scale.

The implication of this dynamism is that the balance of the CMB system is very vulnerable to small changes in the medical expenditure. Even cost shocks that are moderate, e.g. price inflation of pharmaceuticals or extended benefit coverage, can have a very large impact on fiscal imbalance. In turn, the witnessed deficit trend is not a pure cycle effect, but also structural imbalances underlying the financing structure. The sustainability of the system could become increasingly less favorable during the medium-term and over the long-term without the assistance of the national interventions that would help to balance the increase in the revenue with the acceleration of expenses.

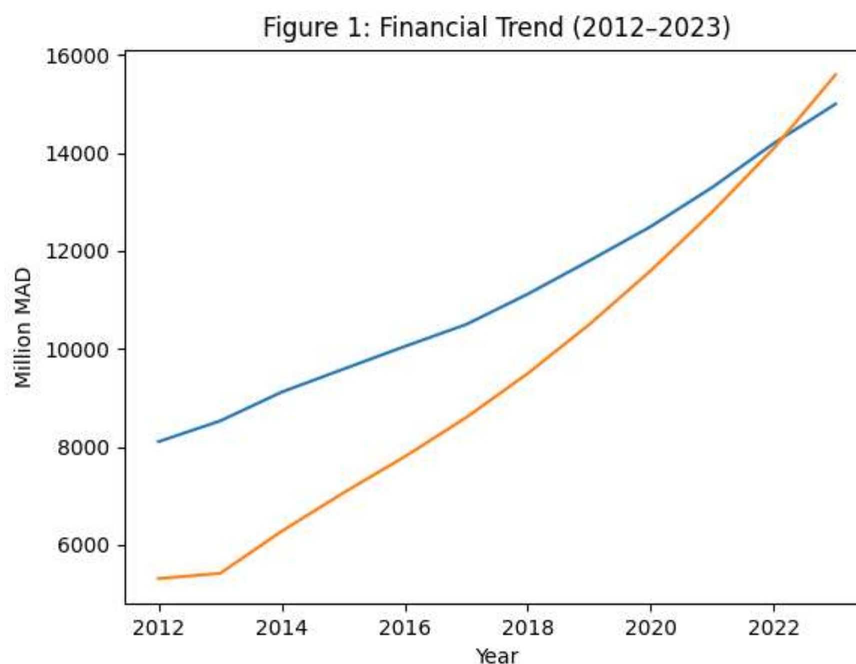

Figure 1: Financial Trend.

Figure 1 gives a comparative representation of the temporal change of the contributions and healthcare spending in the Basic medical coverage system in Morocco during the years 2012-2023. The graphical display demonstrates two different curves: the increased tendency of both revenues and expenditures is present, but the inclination of the expenditure curve becomes steeper and steeper, as compared to the inclination of the contribution curve. This trend is a divergence, especially after the year 2018, and is a sign of structural acceleration in healthcare expenditure that is not associated with the growth in revenues.

During the previous years of the period, the two curves develop in comparatively close distance, which represents a weak yet sustainable financial balance. But this is a situation where there is a growing divergence between outflows and inflows as spending starts to increase at a faster pace, as more people use the services, as pharmaceutical expenses grow, as technology is adopted and as the population grows. The divergence after 2018 is a break in the trend of the system financially as the growth in expenditure is far much greater than the growth in contributions making the margin of fiscal maneuvreability lower.

This is not a descriptively based graphical divergence but is a clue to a looming structural imbalance set into the financing architecture of the system. The gap that continues to expand implies that the imbalance observed cannot be explained by shocks or even cyclical fluctuations. Rather, it is indicative of underlying systemic stressors that otherwise can undermine the long-term sustainability. The econometric results are thus in agreement with the visual evidence, which further supports the position that there is structural implication on the expenditure acceleration. The figure, in this case, is an effective diagnostic instrument, where the approach to the state of relative equilibrium is demonstrated through the state of growing fiscal infirmness. Unless policy changes are made to either keep the expenditure growth within check or increase revenue collection, the difference in the figure would widen with time as it would increase the risks to the sustainability.

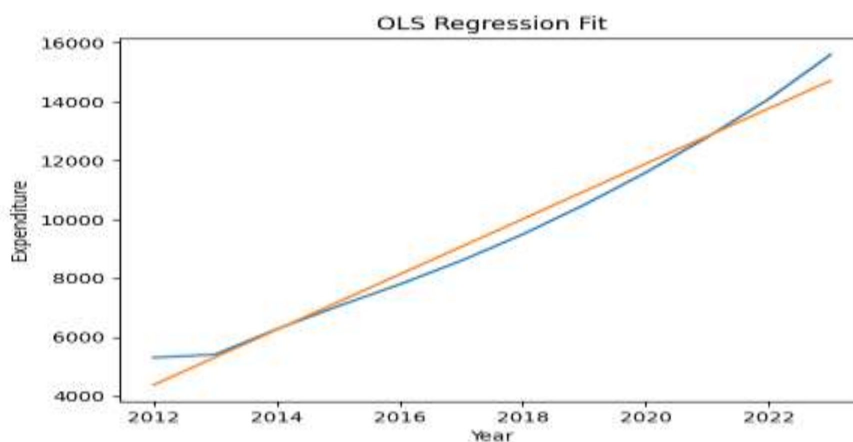

Figure 2: Regression Fit.

Figure 2 shows a strong and statistically significant linear correlation between time and aggregate healthcare expenditures during the period in time, which is made strong evidence by the regression fit. The fact that the movement between the observed expenditure series and the predicted ones produced by the time-trend model almost paralleled implies that there is a high level of explanatory power. This near correspondence indicates that most of the difference in expenditures may be explained by the systematic development of movements over time and not the random fluctuation or specific shocks. Econometrically, the fact that expenditure growth is pursuing a steady and predictable structural path is confirmed by the consistency of the fitted line.

The approximate slope coefficient also measures this dynamic by meaning a meaningful and long term annual increase in healthcare expenditure. This is an indicator of the ratio of the annual increase in expenditure on average that indicates a consistent upward push in the system structure of financing. The significance of the time variable is the statistical significance of the time variable, which means that the growth of expenditure is non-episodic and cumulative and structurally embedded. It is typical of health systems that are in states of demographic ageing, epidemiological transition into chronic conditions, diffusion of new technologies, and use related to extended coverage.

Besides, the fitted trend is linear, which indicates that the growth of expenditure is not yet stabilized or converged to the steady state. Rather, the non-curvature or non-deceleration of the regression path means that cost-containing mechanisms have not been effective enough to modify the underlying growth path. Fiscal sustainability wise, such a finding is paramount, when spending is growing at a constant and statistically significant yearly rate and revenue is growing at a relatively moderate rate, the financing gap is going to increase over the years.

Hence, the regression estimate is not merely a verification of the appropriateness of the models, but rather a structural explanation of the long-term financial trend of the CMB system. Systematic and predictable growth in expenditure highlights the urgency of taking corrective policy measures that will ensure cost increases are tamed or revenue generated is increased. In the absence of structure intervention, a linear growth dynamic as found using the regression model can be converted into compounding fiscal imbalance in the medium and long term.

5. SENSITIVITY ANALYSIS

Expenditure variation ±10% tested to evaluate fiscal robustness.

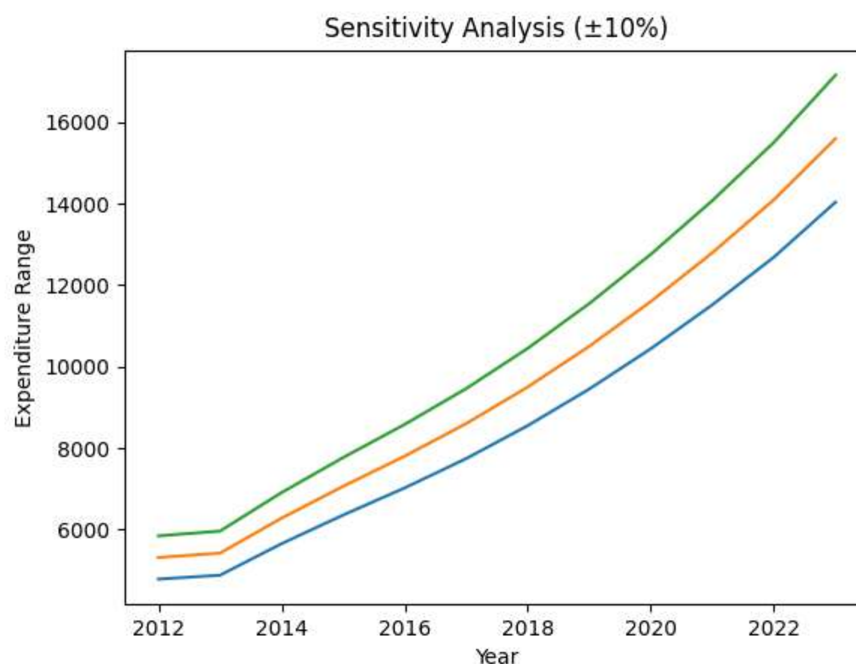

Figure 3 : sensitivity analysis

The sensitivity analysis is an important strength test of the financial balance of the system because it would be a simulation of a variance of +-10 percent in the total healthcare spending. This is a methodological step that is aimed to determine the level of fiscal resilience during possible cost shocks, including pharmaceutical price inflation, higher benefit coverage, technological innovation, or epidemic crises. The analysis identifies the vulnerability of the system to cost volatility by varying expenditure up and down, keeping revenue trends constant.

The upper-bound scenario that presupposes the 10 percent growth of expenditures generates a significant expansion of the fiscal deficit. This magnifying effect proves that the system is run with minimal financial reserves and is very sensitive to the upward cost variances. A moderate increase in the pace of spending will produce a serious rise in the imbalance between contributions and payouts, which suggests that the healthcare sector has structural vulnerabilities to the effects of inflationary forces. This kind of vulnerability implies that the existing financing structure does not have enough automatic stabilizers to absorb expenditure shocks without creating a fiscal strain.

On the other hand, the lower-bound case, which would be a 10 percent cut in spending, would temporarily reestablish fiscal balance or even create short-term surpluses. This finding highlights the influence of strong leverage effect of expenditure control mechanisms. Efficiency, cost containment policies, enhance procurement, rationalized pharmaceutical use, and preventive care investment

may potentially change the fiscal direction of the system. The comparison between the upper and the lower scenarios shows that sustainability is very sensitive to the structural cost process.

Notably, sensitivity analysis shows that financial balance is not stable in nature but dependent on the discipline in expenditure. The thin fiscal buffer of the system means that even modest cost shocks would cause out of proportion budgetary effects. Intertemporally, this vulnerability indicates that continuing cost inflation, even at moderate rates, may add to deficits over time and so increase structural imbalance.

In general, the results show that the sustainability of the Basic Medical Coverage system in Morocco, in the long-term, critically depends on the competence in expenditure management. The system is vulnerable to high fiscal risks without systemic changes that would ensure the mitigation of cost increases. However, the sensitivity analysis further supports the point that sustainability is not an isolated function of revenue mobilization but also an issue of responsible and planned expenditure regulation.

6. POLICY SIMULATION SCENARIOS

Four alternative policy simulation scenarios are prepared to assess possible corrective mechanisms that can be used to restore the financial balance in the Basic Medical coverage (CMB) system in Morocco. These is done to measure the fiscal effect of measures to contain expenditure, diversify the revenue, and combinations of reforms that are hybrid. The simulation model is based on the premise of the baseline expenditure and contribution patterns as projected by the econometric model and parametric changes in accordance with policy interventions that are plausible. The goal is not to compare the results of accounting but to determine the implications of structural sustainability of each reform pathway.

Scenario 1: Implementation of Co-Payment Of 10 Percent Mechanism.

In Scenario 1, there is a progressive co-payment of 10 percent on reimbursable healthcare services, but not in emergency and essential categories of care to maintain equity factors. This process decreases efficient insurance benefits by shifting a small proportion of financial liability on to beneficiaries.

Fiscally, the simulation shows that a 10 percent cost-sharing plan results in a proportional decrease in aggregate spending at once. The main economic justification of this situation is the reduction of the moral hazard behavior since it has been empirically revealed that cost-sharing is related to less overutilization of non-essential services. The co-payment system can help reduce overindulgence in demand as it will introduce price sensitivity at the point of consumption without restricting access to essential treatments.

The fiscal effect however seems to be high in the short term but sustainability improvement needs behavioral elasticity. In case the healthcare demand is comparatively inelastic, then the amount of expenditure can be restricted. Additionally, the equity safeguards should be properly established to prevent unfairness to vulnerable groups. However, the results of simulation indicate that moderate cost-sharing has a potentially significant effect on the deceleration of the expenditure growth and short-term bridging the fiscal gap.

Scenario 2: Reimbursement Rates Reduced By 15 Percent.

Scenario 2 represents the adaptation to the change in a structure of reimbursement, decreasing the payouts by 15% in all eligible types of expenditures. This reform is a direct modification of the insurance coverage ratio as opposed to the point of service payment shift characteristic of the co-payment model.

The fiscal correction effect of the simulation is greater than that of Scenario 1 because reimbursement decreases directly affect aggregate spending commitments. This is a way of re-establishing the liberalism of the insurance scheme and enhances actuarial balance. Nonetheless, this reform could augment out-of-pocket spending on the insured individuals, which may force the expansion of complementary insurance to compensate the social impact.

Sustainability wise, this case will generate a large cut in deficit and will balance the long-term trend of increasing expenditures. However, such a reform should be carefully thought through in terms of its political viability and social acceptability because the decreases in reimbursement generosity can be met with opposition by the beneficiaries and medical professionals.

Scenario 3: Tax Revenue Injection (Earmarked Fiscal Diversification)

Scenario 3 brings in extra revenue, by use of targeted taxation, earmarked on specific taxes, like levies on tobacco, alcohol, or vehicle insurance policies. This situation reinforces the revenue part of the system by infusing the system with fixed annual fiscal inflows as opposed to limiting spending.

Simulation findings show that revenue diversification positively affects fiscal space without affecting service cover and reimbursement levels. In this manner, generosity of benefits is maintained and financial balance is enhanced. In addition, sin taxes on harmful consumption goods provide both a dividend effect: they serve as a contributor to the overall aims of the population health and health system financing.

Nevertheless, the use of earmarked taxation can cause a fluctuating revenue based on the consumption habits and economic cycles. Also, these revenues cannot necessarily balance structurally accelerating expenditure growth in the event that cost process are not kept in check. Consequently, Scenario 3 reinforces the resilience of revenues, but it is not focused on the drivers of expenditures acceleration.

Scenario 4: Hybrid Strategy (Combined Reform Model).

The Scenario 4 combines moderate cost-sharing policies (10 percent co-payment), changes in the reimbursement rates, and injections of tax revenues into a single hybrid reform proposal. This combined approach is gradually checking the increase of expenditure and boosting revenues.

The outcomes of the simulation prove that the mixed strategy is the most powerful and most sustainable fiscal correction of all situations. The hybrid model allocates the adjustment burden among the beneficiaries, insurance parameters, and fiscal instruments, which mitigates the risk of an overburden on a particular component. It does not strain in equity issues as well by ensuring no extreme changes are made in a given dimension.

Structural sustainability Scenario 4 would swing the system to a more robust financing system typified by diversification of revenues and regulated expenditure patterns. The combined reform decreases volatility of deficit and enhances the expenditure shock tolerance that is observed in the sensitivity analysis.

Comparative Interpretation of Policy Scenarios

Comparing the scenarios, the following conclusions have been come up:

In Scenario 1, there is moderate behavioral incentive expenditure moderation.

Scenario 2 offers better fiscal rectification and greater possible social sensitivity.

Scenario 3 would increase the resilience of revenue without benefit structure changes.

Scenario 4 has the best long-term equilibrium but is not optimal.

The resulting findings of the simulation suggest that the individual reforms may result in part-cure solutions, but multi-instrument policies are more effective concerning structural sustainability. It is important to note that the hybrid model is stronger against the +-10% expenditure shocks and this fact gives the model its outstanding ability in being fiscal stable.

7. COST-EFFECTIVENESS ANALYSIS

In order to supplement the macro-fiscal sustainability analysis, this section brings about a cost-effectiveness point of view where expenditure intensity per covered person is looked at.

The first measure is the cost per beneficiary, which will be computed as total annual healthcare spending in relation to the total amount of beneficiaries included in the Basic Medical Coverage (CMB) system:

$$Cost\ per\ Beneficiary_t = \frac{Total\ Expenditure_t}{Total\ Beneficiaries_t}$$

This ratio provides an aggregate measure of financial burden per insured individual and allows assessment of whether expenditure growth is proportionate to coverage expansion or driven by structural cost escalation.

7.1. Conceptual Rationale

The price per beneficiary measure is a proxy of efficiency and intensity of expenditure in the system. In health economics, an increase in aggregate expenditure could be an indicator of either an increase in coverage (positive equity effect) or an increase in per capita cost (potential efficiency concern). It is important to differentiate the two dynamics in order to sustainably analyze them. The increase in total spending may be socially desirable in case it occurs due to more people being covered, which is in line with the goals of universal coverage. Nonetheless, when the increase in expenditure can be explained by the increase in the cost per beneficiary, it is possible that the system is undergoing an inflationary or structural inefficiency.

This indicator therefore permits the breakdown of the growth of expenditure into:

Scale effect (expansion of coverage)

Price/intensity (greater cost per insured

individual)

This distinction is important to the development of properly designed policy responses.

7.2. Empirical Development of Cost Per Beneficiary.

During the 2012-2023, the price per beneficiary has a monotonic increase. The coverage of people is growing steadily, but the growth in the expenditure exceeds that of the population, thus leading to the increase in the average cost per insured person. This trend indicates that the structural cost drivers, including prevalence of chronic diseases, pharmaceutical inflation, advanced medical technology, and increased use of services among others are playing a significant role in accelerating expenditures.

The trend of the cost per beneficiary shows that the system is not only growing in size but it is also getting more and more aggressive in its expenditure on an individual. This is more disastrous in terms of sustainability than outright coverage growth, which is an indication of cost-base increase regardless of population increase.

7.3. Interpretation In Terms of Efficiency.

An upward trend in the expenditure on each beneficiary may not mean that there is inefficiency; instead, it might mean that the care is of better quality, the benefits package is broader, or more special treatments are accessible. But once the per capita spending increases continuously without any corresponding change in health outcomes or indicators of efficiency, then the issue of allocative and technical efficiency is the subject of concern.

Increased per beneficiary spending in the Moroccan CMB context may be associated with:

Increasing demand of specialized consultations.

Greater hospital-based interventions.

Increased volumes of pharmaceutical reimbursement.

Weak gatekeeping processes.

In the absence of proper policies to contain costs, the above structural drivers can still increase average financial burden.

7.4. Under Policy Simulation Scenarios Cost-Effectiveness.

When using the policy simulation scenarios on the parameter of cost per beneficiary, some significant differences are observed: Scenario 1 (Co-payment) has a slight effect on lowering per beneficiary expenditures by decreasing the elasticity of demand. Scenario 2 (Reimbursement reduction) has the effect of drastically reducing average cost at the expense of households. Tax injection (Scenario 3) does not have a direct influence on the per capita cost but enhances fiscal coverage at current levels of expenditure. Combined reform (Scenario 4) balances cost per beneficiary at the increased cost of fiscal balance. The integrated reform scenario illustrates the most balanced impact, that is, it balances the growth of per capita costs without affecting coverage expansion.

7.5. Fiscal Consequences Fiscal Sustainability Implications.

In the intertemporal sense, a cumulative rise in cost per beneficiary presupposes an accumulating financial strain. Rising per capita cost will produce exponential expenditure growth even with a stabilized coverage. This divergence will increase the deficits with time in case the contribution growth is consistent with averageness. Thus, cost per beneficiary acts as a predictive of sustainability threat.

A system under constant per capita cost acceleration should put in place efficiency improving mechanisms like:

Reform in strategic purchasing.

Pharmacist price negotiation.

Preventive care fortification.

Digitalization and cost monitoring system.

Without these reforms, the expenditure intensity can threaten the fiscal equilibrium in the long-term.

7.6. Concluding Assessment

The cost-effectiveness study indicates that not only scale expansion pressure is presented in the CMB system of Morocco, but also structural cost intensity pressure. Whereas an increase in coverage represents the social development, an increase in expenditure per beneficiary brings forth more efficient and governance implications. Sustainable health financing entails a balance between equal access and strict control of costs. Inclusion of per capita financial measures into the more encompassing econometric and simulation framework enhances the entire sustainability evaluation and indicates the multidimensional character of the health system reform.

8. DISCUSSION

The econometric findings of this paper are quite solid indicators of empirical evidence that healthcare spending in the Moroccan edition of the Basic Medical cover (CMB) takes a statistically significant and structure-based path of the upward trend. The time-trend regression model shows that annual

expenditure has been on an upward trend, but a descriptive analysis of deficits indicates that fiscal margins have been eroded gradually which results in structural imbalance. All these findings point in the same direction namely that the perceived fiscal stress does not occur in a cyclical or transitory manner, but rather is entrenched in the depths of cost dynamics built into the health financing structure.

The regression findings show that the rate of growth in expenditure is greater than the rate of growth in revenue in the later years of the sample, which increased the vulnerability of the financial equilibrium of the system. The explanatory value of the time-trend model is high, which suggests that the acceleration of expenditures is foreseeable and continued. This form of structure is in line with larger international findings on the pattern of health economic structures as demographic ageing, prevalence of chronic diseases, pharmaceutical innovation, and increased accessibility to specialized services are factors that promote the increase in costs over the long period. These dynamics seem to play in a financing system in the Moroccan context that is partially reliant on contributory payrolls and public budget transfer thus restricting any automatic stabilizing capacity.

The trend of deficit also supports the finding out of emerging structural imbalance. Although it has been increasing steadily, it has not been rising in a rate that will adequately cover soaring expenditures. The shift to near-balanced budgets to positive deficits is an indicator of a deteriorating actuarial position. Notably, the sensitivity analysis shows that the system is sensitive to expenditure shocks: a moderate cost increase of 10 percent greatly increases deficits, which means low fiscal resilience. The weakness reflects the need to bring about corrective actions that can help contain the cost increase and diversify the revenues.

In this respect, the policy simulation scenarios serve as a good insight into the possible reform directions. Scenario 1 (10% co-payment) proposes some behavioral incentives to diminish moral hazard and restrain the utilization that is not essential. Although economically advantageous, its effect is average and will depend on the elasticity of demand. Scenario 2 (15% reimbursement cut) has a greater impact on deficit reduction in the short run but increases equity, which redistribution of financial obligations to insured families. Scenario 3 (earmarked tax injection) would boost revenue generation without changing the benefit frameworks directly, and thus, the social protection goals would remain intact, but the expenditure acceleration would not be addressed.

The most useful and balanced model is the combined reform model (Scenario 4). The hybrid strategy allocates adjustment over a number of dimensions, by combining moderate cost-sharing, reimbursement recalibration and revenue diversification. This will lower over strain on any one element of the system and at the same time enhances fiscal balance. Notably, the hybrid scenario shows better results under sensitivity testing which implies that it is more resilient to expenditure volatility. Sustainably, this implies that structural imbalance can never be solved by isolated measures, but by multi-instrumental reform.

Another broader governance implication that is mentioned in the discussion, however, is that sustainability in health financing is not only a question of revenue adequacy but also a question of expenditure discipline and effectiveness optimization. The increasing cost per beneficiary is another confirmation that structural intensity, and not the simple growth in coverage, is one of the major drivers of fiscal pressure. Hence, the reforms need to provide solutions to the demand side (via the rationalization of utilization) and the supply side (via the mechanism of strategic purchasing and cost control).

At the theoretical level, the results are consistent with the intertemporal budget constraint model, which argues that to be on the long-run fiscal sustainability the present value of revenue must be equal or greater than the present value of spending. Constant increment in spending, which has surpassed the growth in revenue, is against this requirement and it creates cumulative deficits. The data that is empirical evidence in this paper suggests that this is a limitation at which the CMB system of Morocco is heading, thus requiring structural realignment.

On the whole, the findings of the econometric and simulation approaches tend to the same point: unless a structural reform is provided, the CMB system is becoming more and more exposed to the risk of sustainability. A balanced hybrid approach of reform composed of both expenditure subduction and fiscal diversification is however a promising avenue in reestablishing balance and maintaining equity and universal coverage goals.

9. CONCLUSION

This Article has given a detailed econometric and policy simulation evaluation of the financial feasibility of the Moroccan Basic Medical Coverage (CMB) basic medical coverage system in 2012-2023.

By transcending the descriptive financial reporting and implementing the formal regression modeling, sensitivity testing, and multi-scenario policy simulations, the analysis provides a solid empirical support of structure dynamic of healthcare expenditure growth and the implication of fiscal equilibrium. The econometric outcomes validate the fact that healthcare spending has statistically significant and continuing upward trend. The time-trend regression model shows that growth of expenditures is not accidental or cyclic, but a structural component of the financing construction of the system. The scale and importance of the projected annual growth show that cost growth is a predictable trend based on demographic growth, prevalence of chronic diseases, and diffusion of technology and increase in the number of people using the services. The high explanatory value of the model also supports the finding that the increase in expenditure is a structural phenomenon but not a short-term decision of the budget.

Descriptive deficit analysis also indicates that the fiscal margins have been narrowed over time, and it ends in the development of structural imbalance in the later years in the sample. Despite the steady rise in the contribution, revenue has not been growing in line with the rate of expenditure increase. This deviation is an indicator of an increasing sustainability risk and indicates that the system is at risk of fiscal pressure. This conclusion is made stronger by the sensitivity analysis as it shows that even moderate cost shocks can greatly increase deficits and that this implies that the tolerance to expenditure volatility is low. The policy simulation scenarios are important in offering fundamental information on possible reform strategies. Isolated interventions, e.g. moderate co-payment introduction or reimbursement reduction, result in some fiscal corrections, but can raise equity or social acceptability issues when administered in isolation. Earmarked taxation will improve fiscal capacity, but not benefit structures, by diversifying revenue; but it is not sufficient to solve the structural sources of acceleration of expenditure. Contrary, the concerted reform situation, which comprises cost-sharing options, reimbursement recalibration, and revenue stream diversification, has the greatest and most sustainable effect. The hybrid model shows high resistance to sensitivity analysis and minimal volatility of deficit compared to single instrument. On a theoretical level, it is possible to note that the results are consistent with the intertemporal fiscal sustainability principles, according to which long-term revenue streams must be sufficient to cover expenditure obligations. Relentless inflows-outflows imbalance disrupts this state of affairs and creates fiscal strain over time. The empirical data discussed in this paper indicates that the CMB system in Morocco is on the verge of violating such a structural constraint, hence the need to take coordinated and proactive reforms. On the whole, this level of analysis of publications justifies the adoption of hybrid financing reforms that would both reduce the rate of expenditure growth and revenue diversification. Sustainable health financing cannot be simply based on revenue growth or spending reduction alone but it needs a well-balanced approach in governance based on actuarial discipline, strategic purchasing and fiscal innovation. This article also has a contribution to a more rigorous comprehension of issues on sustainability by merging econometric evidence and policy simulation modeling and offers quantitative basis of making reform-oriented decisions.

Finally, to make the Basic Medical Coverage system in Morocco viable in the long term, it is necessary to shift the logic of expansion financing to the logic of equilibrium governing. The hybrid reform approach found in this discussion provides an effective and analytical approach to maintaining universal coverage goals and returning financial stability.

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