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Assessing the Macroeconomic Impacts of Social Protection Investments in Morocco and Ivory Coast:
A dynamic CGE Modeling

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Abstract:

Social protection programmes play a crucial role in achieving inclusive growth and human development. Greater investment in social protection boosts income and improves people's well-being. This is why Morocco and Côte d'Ivoire have implemented various plans to strengthen their social protection systems and reduce social and regional disparities, thereby promoting better economic development. Thus, the main objective of this study is to assess the macroeconomic impact of investments in social protection and provide policy implications for the achievement of sustainable development goals in these countries. To this end, we use a computable general equilibrium (CGE) model following Decaluwé et al. (2013) and other works such as those by Marouani and Robalino (2008), Aka (2016), Coulibaly and Kouadio (2023), El Baouchari & Raouf, (2025). This model was calibrated using the social accounting matrices (SAM-Mor2019) of Morocco for 2019 and (SAM-Civ2013) of Côte d'Ivoire for 2013.

The results show that investment in social protection would have a positive impact on real GDP in Côte d'Ivoire in the short term and in Morocco in the long term if governments financed this policy by mobilising internal resources (taxes and social contributions) and external resources (debt and international aid), but would have a negative impact on public investment with a high cost on welfare in the short term. However, if governments finance this policy using mainly domestic resources, real GDP in Côte d'Ivoire would fall but household welfare would improve thanks to the positive externalities of public investment in both countries in the short and long term. In Morocco, social protection programmes can be financed by mobilising domestic resources. In Côte d'Ivoire, these programmes can be financed through the use of domestic resources, but also through moderate recourse to public debt and international aid due to the weakness of domestic fund mobilisation.

Keywords: Conditional Cash Transfer, Human capital, Social Protection, Healthcare, Dynamic Computable General Equilibrium Model, Poverty, Socioeconomic impacts, public policy, Ivory Coast, Morocco, Inequality, Welfare, Crisis

JEL Classification: I0, J24, C68, D63, E62, H31

I. Introduction :

Social protection programmes are increasingly common in low- and middle-income countries, with characteristics specific to the environment in which they operate (**Banerjee et al., 2024**). Today, social protection programmes cover around 2.5 billion people. More than 120 low- and middle-income countries manage cash transfer programmes for low-income families, and more than 70 manage social pension programmes (**World Bank, 2018**). These programmes have increasingly replaced general commodity subsidies, promising greater efficiency and a better ability to redistribute income to low-income families (**Gentilini et al., 2020**).

Public expenditure on social protection plays a crucial role in achieving inclusive growth and human development. Increasing household consumption boosts aggregate demand, helping economies recover from recessions and fostering growth through multiple channels. Evidence in the literature shows that higher investments in social protection effectively reduce poverty and inequality, promoting political stability by alleviating social tensions and conflicts. Moreover, the available evidence highlights the significant positive impact of cash transfer programs (or in-kind assistance) on human development and productivity. These programs can improve households' situations at different levels. First, they reduce child labor and increase school attendance (**Behrman et al., 2005; Sadoulet et al., 2004**) and, also, they can enhance the educational outcomes of poor households by boosting school enrollment and attendance. Moreover, they can affect human capital in the long term by promoting the enrollment of the beneficiaries' children in secondary school, providing them with a significant opportunity to attend universities (**Molina Millán et al., 2020; Sanchez Chico et al., 2020, El Baouchari & Raouf, 2024**). Third, these transfers could boost overall household consumption, savings, and investment in productive assets (**Attanasio & Mesnard, 2006; Attanasio et al., 2010; Gitter & Barham, 2009**). Further, they may promote short- and long-term poverty reduction and boost human capital, particularly children's (**Kisiwa et al., 2023, Molina Millán et al., 2020**).

Despite some progress since the launch of the 2030 Agenda in 2015, major gaps in social protection coverage and funding persist globally. While 23 low- and middle-income countries have achieved universal coverage for at least one benefit, the **ILO (2017)** reports that 4 billion people, or 55% of the world's population, still face daily risks due to lack of protection. Only 35% of children receive child benefits, 41% of women with newborns receive maternity benefits, 22% of unemployed people receive unemployment aid, and 28% of people with severe disabilities receive disability benefits. Older adults fare slightly better, with 68% receiving pensions, though these are often insufficient.

Notable initiatives include South Africa's Child Support Allowance, introduced in 2003 and now reaching 7.2 million children; China's Minimum Standard of Living programme, launched in the late 1990s and reaching 22.4 million people in 2006; Mexico's Oportunidades programme, launched in 1997 and now reaching over 5 million households; Brazil's Bolsa Familia, which covers 12 million households; Indonesia's Safety Net Scheme, introduced in 2005 and expected to reach 15 million households; and India's National Rural Employment Guarantee Scheme, expected to reach 26 million households a year (**ILO, 2009 ; Barrientos & Hulme, 2009; Bastagli et al., 2016**).

There is, therefore, every reason to invest in systems that protect people against the hazards of life (illness, accident, old age, unemployment). A growing body of work on developing countries shows the various positive impacts of social protection programmes, particularly income support programmes (**Mathers & Slater, 2014; Bastagli et al., 2016; Hemerijck et al., 2016**). Indeed, social protection increases labour productivity through better health and education outcomes (**Bastagli et al., 2016**), increased labour force participation (**Mathers & Slater, 2014**) and positive effects on the local economy through different channels and multiplier effects (**Thome et al., 2016**). It is thus important to consider the diversity of social protection developments in developing countries and to appreciate their influence according to specific national contexts (**Barrientos & Hulme, 2009**).

Skoufias et al. (2008) then find that social transfers significantly affect rural Mexico's total consumption and labor supply. Similarly, **Cunha (2014)** presents similar effects on consumption of in-kind and cash programmes across Mexico. **Blattman et al (2014)** study another type of lump-sum transfer programme on presentation of a business plan in Uganda. Young adults form groups and receive a one-off grant. The authors find a substantial increase in investment, labour supply and income four years later. However, the gains dissipate at the nine-year follow-up (**Blattman et al., 2020**) as the non-beneficiary group catches up. Although the two groups converge in employment, income and consumption levels, the subsidies have a lasting impact on asset stocks and skilled labour.

Likewise, **Skoufias et al (2008), Galiani et al (2016)** evaluate the impact of a Mexican programme (Adultos Mayores) which is a non-contributory cash transfer aimed at the elderly and find an increase in their consumption. On the other hand, in another study conducted in Indonesia, **Kyle (2018)** shows that the poor and vulnerable tend to prefer targeted social assistance programmes to large-scale energy subsidies, where the benefits accrue more to the middle class. However, in districts where local politicians are corrupt, vulnerable citizens support fuel subsidies, for which local corruption matters less.

Bertrand et al. (2021) experimentally examine a work program for young people in urban areas in Côte d'Ivoire. They find that while the programme has increased earnings, these account for only 53% of the transfer due to the crowding out of private employment. Unlike in many developed countries, the programme sets the workfare wage at a formal minimum wage. This suggests that workfare programmes may more effectively target properties where the formal minimum wage is lower and informal employment is less important.

During the extreme COVID-19 crisis, many developing countries responded by adapting their existing programmes to address the global health issue at hand. Côte d'Ivoire, for example, set up a solidarity fund worth 170 billion CFA francs to finance the most vulnerable populations as part of emergency humanitarian support, in particular by extending the scope of social safety nets (**Minister for the Budget and State Portfolio, 2020**).

Similarly, the Moroccan government launched an ambitious project to extend social protection by 2025, which unfolds in four progressive stages: the generalization of basic compulsory health insurance, family allowances, job loss indemnity, and the expansion of the pension scheme's membership to include employed individuals who do not currently receive a pension. In conjunction with this, the government allocated \$2.4 billion to the healthcare sector in 2022 (Note

of the Morocco Finance Bill 2023 presentation, pp. 79). This national project requires significantly more public spending on all social services, such as education, health, and cash transfer programs (approximately 51 billion MAD annually)¹.

In these countries, social protection systems face significant challenges, particularly in coverage and resource allocation. In Côte d'Ivoire, despite social reforms like the Social Scheme for the Self-Employed (RSTI) introduced in 2019, only 12% of the population has subscribed to the scheme, and just 7.7% of people over 60 receive a retirement pension. Public spending on social protection and healthcare remains low at 1.1% and 1% of GDP, respectively, highlighting the limited public support for social health insurance and welfare programs.

Similarly, Morocco faces significant resource gaps in its health and social protection systems. Although there has been a modest increase in health spending in recent years, only 7% of the state budget is devoted to health—falling short of the World Health Organization's recommended 12%. Public healthcare expenditure remains at 2.3% of GDP, while social protection spending, excluding health, stands at 4.5%. This is significantly lower than the global average of 12.9%. These statistics highlight the urgent need for increased investment and broader coverage to address socio-economic disparities in both countries.

Research question and objective

In this view, combating life's challenges necessitates substantial investment in social protection, which is a priority for developing economies. This is why Côte d'Ivoire and Morocco have implemented various plans to strengthen social protection systems and reduce social and regional disparities, promoting better economic development.

In this context, some crucial questions remain: What are the projected macroeconomic effects of social protection investments on GDP, employment, and fiscal balances in Morocco and Ivory Coast over the simulation period? How do different types of social protection investments compare in terms of their impacts on economic growth and poverty reduction in these countries? And finally, which social protection programs offer the highest marginal benefits in terms of key economic and social indicators per unit of public spending?

This paper seeks to answer these questions through the CGE model based on the Partnership for Economic Policy (PEP-1-t) model by Decaluwé et al. (2013) calibrated with SAM for Morocco and Ivory Coast to assess the impact of social protection investments on the allocation of production factors, economic growth, and household welfare. This study has two main objectives: to assess the macroeconomic impacts of social protection investments. Moreover, it highlights the policy implications for achieving sustainable development goals (SDGs) in these countries.

The results show that investment in social protection would have a positive impact on real GDP in Côte d'Ivoire in the short term and in Morocco in the long term if governments financed this policy by mobilising internal resources (taxes and social contributions) and external resources (debt and international aid), but would have a negative impact on public investment with a high cost on welfare in the short term. However, if governments finance this policy using mainly domestic

¹ <https://medias24.com/2021/02/22/generalisation-de-la-protection-sociale-un-cout-annuel-de-51-milliards-de-dh/>

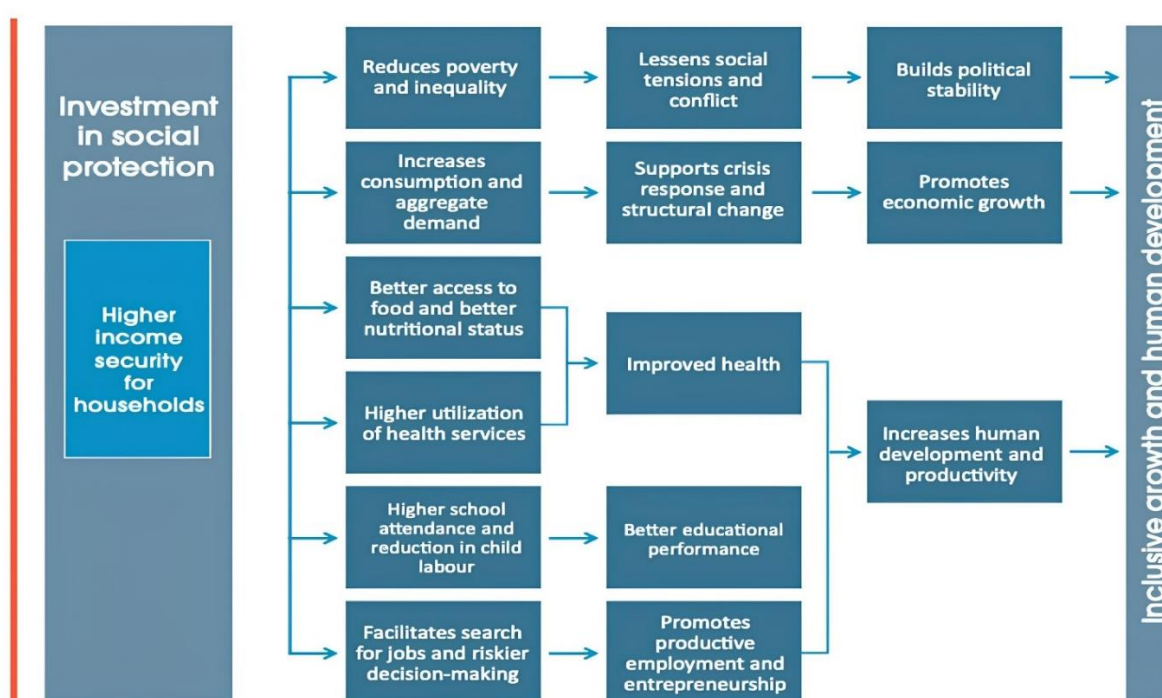
resources, real GDP in Côte d'Ivoire would fall but household welfare in both countries would improve thanks to the positive externalities of public investment in both the short and long term. In Morocco, social protection programmes could be financed by mobilising domestic resources. In Côte d'Ivoire, however, social protection programmes could be financed by using domestic resources, but also by moderate recourse to public debt and international aid due to the weakness of domestic fund mobilisation.

The remainder of this paper is presented as follows: Section 2 provides a review of the literature of the impact of social protection on economic growth; in Section 3, we provide a brief presentation of the methodological approach used and the related data. The results are presented in section 4, and in section 5, we conclude and give some policy recommendations.

II. Literature review:

Public expenditure on social protection plays a crucial role in achieving inclusive growth and human development. By increasing household consumption, it boosts aggregate demand, helping economies recover from recessions and fostering growth through multiple channels as depicted in Figure (1).

Figure (1): The effects of social protection on economic growth



Source: Ortiz et al. (2019) based on ILO (2016)

Evidence in the literature shows that higher investments in social protection effectively reduce poverty and inequality, promoting political stability by alleviating social tensions and conflicts. Moreover, the available evidence highlights the significant positive impact of cash transfer programs (or in-kind assistance) on human development and productivity. These programs can improve households' situations at different levels. First, they reduce child labor and increase school attendance (Behrman et al., 2005; Sadoulet et al., 2004; Schultz, 2004) and, also, they can enhance the educational outcomes of poor households by boosting school enrollment and

attendance. Moreover, they can affect human capital in the long term by promoting the enrollment of the beneficiaries' children in secondary school, providing them with a significant opportunity to attend universities (**Molina Millán et al., 2020; Sanchez Chico et al., 2020**). Third, these transfers could boost overall household consumption, savings, and investment in productive assets (**Attanasio & Mesnard, 2006; Gitter & Caldes, 2010**). Further, they may promote short- and long-term poverty reduction and boost human capital, particularly children's (**Kisiwa et al., 2023, Molina Millán et al., 2020**).

From the figure 3, **Mathers and Slater (2014)** elaborate on the direct and indirect impacts of social protection on economic growth at different levels. At the micro (household or individual) level, social protection helps prevent the loss of productive capital, accumulate assets, foster innovation, and influence labor force participation. Indirectly, it promotes increased investment in human capital. At the meso (community or regional) level, it triggers multiplier effects from local consumption and production, accumulates productive community assets, and influences labor markets, including potential inflationary effects on local wages. Finally, at the macro (national) level, social protection can enhance household productivity, stimulate aggregate demand, and support capital market growth through pension funds. Indirectly, it facilitates economic reforms, promotes social cohesion, reduces inequality, improves human capital, and may influence fertility rates.

- **Empirical studies :**

Chia et al. (1992) describes a social policy model based on a general equilibrium technique for Côte d'Ivoire with a 1986 SAM. The results account for the analysis of the fiscal incidence and highlight how the specificities of the Ivorian economy and tax system are at the heart of any evaluation of the distributional consequences. On targeting programs, the analysis shows that when general equilibrium effects are taken into account with a budget-neutral targeting program, it is impossible to increase household income. However, **Boeters et al. (2003)** analyze the effects of a social welfare reform in Germany. Unlike studies based on micro-simulation methods, the authors use a computable general equilibrium model (CGE) that incorporates a discrete choice model of labor supply to simulate a variety of reform scenarios. The simulation results show that equilibrium wage responses tend to mitigate the effects on labor supply. Furthermore, the simulations indicate that substantial effects on employment can only be expected from significant reductions in social benefits.

Marouani and Robalino (2008) develop a general equilibrium model to analyze the marginal and joint impacts that alternative education and social protection policies have on employment and unemployment by qualification level in Morocco. The simulations show that even under positive assumptions regarding economic growth, unemployment rates should remain close to current levels over the next decade. **Marouani and Robalino (2008)** assert that only an integrated set of policies affecting the macroeconomy, the investment climate, education systems, and social protection would enable the sustainable creation of good quality jobs. As for **Sharma et al. (2015)**, they attempt to assess the economic impact of some social protection programs in India. Using the framework of the Social Accounting Matrix (SAM), this study calculates the macroeconomic impact of three social security measures - the Mahatma Gandhi National Rural Employment Guarantee Act, the Indira Awas Yojana, and the National Social Assistance Programmes - in 2011-

2012. The results show that these programs have a significant impact on production in various sectors of the economy, on the incomes of different household categories, on employment, and on revenue generation for the government.

Chitiga et al. (2014) evaluate the general equilibrium effect of social grants in South Africa. A recursive micro-macro model is developed to quantify the impact of social subsidies on the South African economy. Global changes in labor supply and employment status, total consumption expenditures, and consumption by product are simulated at the macroeconomic level, as well as alternative adjustments in public revenues. Then, the induced prices, unemployment, income, and production affect household consumption patterns. **Nlemfu (2016)** examines the impact of social investments in the D.R. Congo. To this end, a recursive dynamic computable general equilibrium model was constructed and calibrated based on the 2013 social accounting matrix (SAM). Three scenarios are considered in the simulation plan: (i) an increase in investment expenditures in the education sector; (ii) an increase in the health sector; (iii) a combination of the first two. The results obtained measure the implications of these investments on production and poverty.

Aka (2016) attempts to engage the economic and political debate around the proposal of a basic income allocation in Côte d'Ivoire. The author uses a microsimulated computable general equilibrium (CGE) model to analyze the effects of a universal basic income allocation on the economy and households. The model is based on the 2003 social accounting matrix (SAM) of Côte d'Ivoire, which is derived from the 1998 household living standards survey consisting of 4,200 households and the 2003 national accounts data. The document uses a financing approach through value-added tax (VAT) to provide a feasible scenario. The results suggest that the macroeconomic impacts of the basic income allocation constitute a powerful social protection tool in the fight against vulnerability towards a welfare state.

Sabates-Wheeler et al. (2020) assess demographic and social changes for the needs and future social protection programs for the elderly in Rwanda. **Sabates-Wheeler et al. (2020)** use mixed research methods with a qualitative procedure and a computable general equilibrium (CGE) model to show that overall national statistics mask a large number of complex vulnerabilities faced by the elderly. These, combined with projections of changes in the Rwandan economy, suggest a growing and unmet need for social protection among the elderly population. **ITUC (2021)** describes the impacts of investments in social protection policies on the economies of eight countries across four continents such as Bangladesh, Colombia, Costa Rica, Georgia, Ghana, India, Rwanda, and Serbia. It uses the standard static and dynamic models of PEP 1-1 and PEP 1-t (**Decaluwé et al., 2013a, 2013b**). The results show that the simulated policy scenarios have a positive impact on economic activity. More specifically, at the macroeconomic level, the results show a significant increase in GDP, while at the microeconomic level, household income increases substantially among the poorest. Furthermore, the results show an increase in the number of jobs in economies where the workforce is growing. The positive effect of the simulated policies is evident in the eight countries analyzed, and even more so in the poorer economies, such as Rwanda, Ghana, Bangladesh, and India.

Handa et al. (2021) analyze the overall impact of cash transfer programs in three sub-Saharan African countries such as Ghana, Malawi, and Zimbabwe. The authors show the effects in nine major areas, including protection, production, and human development, using baseline and follow-up surveys on households from treatment and control groups. The most significant and consistent

effects are observed in Malawi, where the value of the transfers aligns with best international practices and where payments were made regularly during the studied period. All programs show a positive income multiplier, but the most significant multiplier is that of Malawi (2.94%). **Coulibaly and Kouadio (2023)** evaluate the future consequences on household income distribution in particular and the economy in general of the reduction of customs duties on remittances in Côte d'Ivoire. To do this, the chosen methodology is based on the construction of a dynamic computable general equilibrium model (CGE). The data necessary for the modeling comes from the social accounting matrix (SAM) for the year 2013. The results show, on the one hand, the negative macroeconomic consequences of a tax on transfers on the Ivorian economy and, on the other hand, the price on transfers showed an increase in the amounts received by the beneficiaries, as well as a significant increase in their well-being.

Mohammad Pour et al. (2024) examine the economic impact of increasing the share of the health sector in the Iranian government's budget. The model used in this study is a computable general equilibrium model calibrated using the social accounting matrix (SAM) from 2011. The effect of this simulation on the government's budget deficit, the production of different sectors of the economy, and the employment rate was studied. The results showed that the increase in the share of public spending in the health sector boosts demand in this sector and reduces government revenue by 0.012%. Moreover, the production of the healthcare sector has an effect on other sectors of the economy due to the increase in productivity and the efficiency of labor supply. In a study by **Handayani (2024)**, a computable general equilibrium (CGE) model is used to analyze the effectiveness of fiscal policy on social protection during the Covid-19 pandemic in Indonesia, focusing on economic growth, household income, and sectoral labor absorption from 2019 to 2021. Using the PEP-1-1 model, the research simulates social protection as a policy shock. The results reveal that the fiscal policy on social protection contributed to economic growth (an increase of 0.03%) and stimulated labor absorption in 24 sectors, with the banking and services sectors showing the highest employment growth, while the restaurant and air transport sectors decreased by 9%. Household income increased, particularly for upper-class independent entrepreneurs, non-agricultural entrepreneurs, managers, military personnel, professionals, technicians, and teachers (0.6%), while other groups experienced modest increases (0.1%).

In an article, **Adu-Ababio (2024)** calculates automatic stabilization in Ghana, South Africa, and Ecuador to explain how it protects against income and demand shocks. Furthermore, the author tests the fiscal policies of these countries to evaluate alternatives and welfare assurances. By adopting a discretionary approach for Ghana and introducing additional safety nets that improve well-being since the existing system fails stress tests. The use of a micro-simulation framework is justified as it allows for the isolation of the exact redistributive impact of policies and fiscal and social reforms in a changing environment where such policies are applied. Income stabilization ranges from 1% to 22%, while demand stabilization ranges from 4% to 25% in the three countries. **Adu-Ababio (2024)** formalizes a new concept of poverty stabilization that ranges from zero to 46% to measure vulnerability. The study's results reveal that the extent of income insurance needs to be improved in low- and middle-income countries.

The study results reveal that the extent of income insurance needs to be improved in low- and middle-income countries.

The empirical review presented earlier clearly demonstrates that investments in social protection have positive impacts on economic aggregates and household welfare. The next section will describe the methodology and data used to assess the impact of social protection policies in Morocco and Ivory Coast.

III. Methodology and data:

The methodological approach used to assess the impact of investment in social protection on the economies of Morocco and Côte d'Ivoire is based on a computable general equilibrium model (CGE model) following **Decaluwé et al (2013)**, **Marouani and Robalino (2008)**, **Aka (2016)**², **Coulibaly and Kouadio (2023)**, **El Baouchari and Raouf (2025)**. This approach takes place in two stages, as in **ITUC (2021)**. The first stage consists of defining the policy scenarios and determining the level of transfers and public spending on social protection from which each group of households' benefits. In the second stage, the estimated expansion of social protection policies and their injection amounts are introduced into the CGE model in order to assess the simulated impacts of the proposed social investment scenarios on the Moroccan and Ivorian economies as a whole. The various methodological components and the information they provide are summarised below, along with the data sources used and the scenarios implemented.

▪ SAMs for Morocco and Côte d'Ivoire

The general structure of a SAM was given by **Pyatt and Thorbecke (1976)**, **Pyatt and Round (1979)**, **Guyomard et al. (1996)**, **Isard et al. (1998)** and the majority of SAMs constructed are largely based on these works. The SAMs used as empirical bases for the computable general equilibrium model (CGEM) in our study are the 2019 matrix for Morocco (SAM-Mor2019), as in **El Baouchari and Raouf (2025)**, and the 2013 matrix for Côte d'Ivoire (SAM-Civ2013), as in **Coulibaly and Kouakou (2023)**. For modelling purposes, the initial SAM-Mor2019 and SAM-Civ2013 matrices were rearranged. This procedure aims to highlight the sectors considered to be important for the economy, but also because the Moroccan and Ivorian economies are mostly made up of medium-sized and small sectors (**AfDB, 2019; Aka and Diallo, 2011; Rahali, 2017**). Indeed, the accounting relationships of SAMs include the structure of production, the generation of income by factors of production, the distribution of income by institutions in exchange for factor services, the consumption of goods (final consumption products and services) by households, and savings and investment patterns. For the SAM-Mor2019, there are 73 sets of current accounts divided into seven main groups: 23 production sectors; 3 production factors; 3 groups of households; and other institutions, namely enterprises, general government and the rest of the world (table (1)). For the SAM-Civ2013, there are 87 sets of current accounts divided into seven main groups: 21 production sectors; 4 production factors; 9 household groups; and other institutions, i.e. enterprises, general government and the rest of the world (Table (1)). Finally, there is a consolidated capital account to capture the savings and investment flows of resident institutions and the rest of the world. The main data sources for the compilation of the SAM-Mor2019 are, the Input-Output (I-O) table of Morocco 2019; the National Survey on Household Consumption and Expenditure in Morocco (**ENCDM 2014**); the Labour Force Survey in

² Aka (2016) attempts to engage the economic and political debate around a brand-new proposal on a basic income allowance in Côte d'Ivoire. For this purpose, the author uses a static micro-simulated computable general equilibrium (CGE) model to analyse the effects of a universal basic income allowance on the economy and households. Although the time dimension is not taken into account, this study remains one of the starting points for work on social protection in Côte d'Ivoire.

Morocco (HCP) 2015 and the National Accounts statistics of Morocco. Those for SAM-Civ2013 are, the Côte d'Ivoire 2013 input-output (I-O) table; the Côte d'Ivoire 2013 household living standards survey (ENV).

Table (1) : Classification Schemes of the Accounts in the SAM-Mor2019 for Morocco

SAM Accounts	Elements/Classification Scheme
Activities (21)	Agriculture (2) Agriculture, forestry and related services ; Fishing, aquaculture Industry (7) Extraction industry ; Food and tobacco industries ; Textile and leather industries ; Chemical and paracheical industry ; Mechanical, metallurgical and electrical industry ; Other manufacturing industries, except petroleum refining ; Refining of petroleum and other energy products Private service (9) Electricity et Water ; Building and public construction ; Commerce ; Hotels et restaurants ; Transports ; Post and telecommunications ; Financial activities and insurance ; Real estate, rental and services rendered to businesses ; Education Market Public service (3) Public administration and social security ; Education Non-Market ; Health and social action
Factors of production (4)	Labour factor (3) Unskilled labor ; Medium-skilled labor ; Skilled labor Capital factor (1) Physical capital
Institutions (12)	Households and other Institutions
Households (3)	Poor households Medium households Rich households
Other Institutions (3)	Government, Corporations, Rest of the World
Capital Account (2)	Consolidated Gross Fixed Capital Formation (GFCF) and Stock Change (SC)

Source: authors.

The production account composed of 21 sectors is derived from the aggregation of the 40 sectors of the ERR 2019 for Morocco (table (2)) and composed of 23 sectors is derived from the aggregation of the 44 sectors of the TRE 2013 for Côte d'Ivoire (table (2)). For Morocco and Côte d'Ivoire, production factors are broken down into 3 and 4 types of labour category respectively, and for both countries into 1 type of capital factor category. Following Husain (2006), the classification of labour categories is based on skill level and location in order to capture a broad perspective of the labour market. The next block is households³, which have been classified into 3 categories (poor, middle class and rich) for Morocco and into 9 categories divided into urban and rural areas (excluding the unemployed and inactive) for Côte d'Ivoire. Household disaggregation for the SAM-Mor2019 is based essentially on the average per capita expenditure indicator from the ENCDM 2014 data, with poor households corresponding to the 1st and 2nd quintiles, average households to the 3rd quintile and rich households to the 4th and 5th quintiles. In addition, household disaggregation for the SAM-Civ2013 is based on the socio-professional categories of the 2015 ENV data, so rural households are classified into 5 main groups according to their agrarian occupation, namely coffee-cocoa farmers, farmers producing other cash crops, starch-producing farmers, farmers producing other food crops and agricultural workers. Rural households are then classified according to their occupation in the public or private sector,

³ The fact that the household account comprises 3 categories (poor, middle class and rich) for Morocco and 9 categories divided into urban and rural areas (with the exception of the unemployed and inactive) for Côte d'Ivoire remains a limitation of the work. Aware of this situation, we are continuing our research in order to achieve greater harmonisation in the construction of SAMs in the two countries.

including public sector employees, private sector employees (formal and informal), and the self-employed (formal and informal).

Table (2) : Classification Schemes of the Accounts in the SAM-Civ2013 for Ivory Coast

SAM Accounts	Elements/Classification Scheme
Activities (23)	Agriculture (6) Food-producing agriculture, Industrial agriculture and farming Livestock and hunting, Forestry and related agriculture, Coal, Fishing and fish farming Industry (5) Extraction products, Food industry, Textile, clothing, leather and footwear products, Other industrial activities, Petroleum Private service (9) Electricity and ice-cream, Water, Gas, Construction and real estate services, Trade, Hotels and restaurants, Transport, communication, postal and telecommunications services, Financial and business services, financial activities Public service (3) Public administration, education, health and social services
Factors of production (3)	Labour factor (2) Unskilled work, Skilled work Capital factor (1) Physical capital
Institutions (12)	Households and Other Institutions
Households (9)	Rural households (5) Coffee and cocoa farmers, other cash crop farmers, Starch crop farmers, Other food crop farmers, Agricultural workers Urban households (3) Public employees, Private employees (formal & informal), Self-employed (formal and informal) Unemployed and inactive
Other Institutions (3)	Government, Corporations, Rest of the World
Capital Account (2)	Consolidated Gross Fixed Capital Formation (GFCF) and Stock Change (SC)

Source: authors.

In fact, the size of a SAM depends on the availability of data and the motivation adopted to construct it (Husain, 2006). In principle, there is no limit to the fineness of detail, but in practice, the data and effort available to construct a SAM impose limits (King, 1981). The consolidated capital account (i.e. the investment vector) of a SAM is the main design limitation. However, it is common practice in constructing a SAM to consolidate financial transactions between the main institutions and production sectors of the economy, while there is virtually no information on the flow of funds between institutions, the behaviour of the money market, the financial market and the relationships between financial and non-financial institutions. Aggregating this information conceals vital data and reduces the scope for analysing the impact of financial sector reforms involving interest rates and debt control (Mujeri, 1998). It is therefore useful to present the main characteristics of the aggregate SAMs of Morocco and Cote d'Ivoire (appendices (1)). The SAMs of these two countries follow the fundamental economic accounting principle according to which each income or revenue corresponds to an expense (Decaluwé et al., 2001). This principle underpins the double-entry accounting procedures incorporated into the countries' macroeconomic accounts.

Cancellation of the TRO account: territorial corrections in Morocco and Cote d'Ivoire

The territorial adjustment (TRO) is an account that adjusts the direct purchases of non-residents on Moroccan and Ivorian territory and the purchases of residents outside the territories that do

not circulate via international trade. The SAMs must record the consumption of Moroccan and Ivorian residents in the various territories. However, the accounting data also include consumption by non-residents in Morocco and Côte d'Ivoire in the household current account and by Moroccan and Ivorian residents outside the territory in the Rest of the World account. There is therefore a risk of bias (overestimation or underestimation) in the calculation of consumption by residents in different territories, which requires a territorial correction (**Høst-Madsen, 1967**). First of all, it is necessary to ensure the total elimination of the TRO account, using a method that involves distributing the territorial correction according to the final consumption structure of households, eliminating the territorial correction row and column and rebalancing the SAMs (**Fofana and Diallo, 2015**).

Construction of the transfer matrix

SAMs summarise the formation of income for each economic agent. The formation of gross disposable income for agents in each country follows a sequence of accounts linked together by the balance that ensures equilibrium. In the matrices, the transactions that account for income formation, other than wages and operating income, are summarised by transfers, which correspond to certain transactions in the primary income allocation account, the secondary distribution of income account and the redistribution of income in kind account. The construction of the transfer matrices in the SAM-Mor2019 and SAM-Civ2013 are based essentially on the aggregation of the following accounts:

- Property income;
- Taxes, contributions, social benefits, other current transfers;
- Adjustment for changes in net equity of households in pension funds reserves.

These three accounts must be aggregated (the sum of the three matrices) to obtain the transfers to be introduced into SAM-Mor2019 and SAM-Civ2013:

$$\begin{pmatrix} \text{Property} \\ \text{Income} \end{pmatrix} + \begin{pmatrix} \text{Taxes, social contribution} \\ \text{and benefits} \\ \text{and other current transfers} \end{pmatrix} + \begin{pmatrix} \text{Adjustment for changes} \\ \text{in the rights of households} \\ \text{on pension funds} \end{pmatrix} = \begin{pmatrix} \text{Matrix of transfers} \\ \text{between agents} \end{pmatrix}$$

▪ Computable General Equilibrium Model (CGEM)

The model used in this research is the PEP-1-t model, which is an extension of the static PEP-1-1 model used by the Economic Policy and Poverty (PEP) research network at Laval University (Decaluwé et al., 2013). It is a recursive dynamic model. Indeed, unlike the inter-temporal dynamic model based essentially on inter-temporal optimisation, its resolution is sequential, i.e. once per period (Nlemfu, 2016). In other words, each period is solved as a static equilibrium, given the variables inherited from the previous period. Most of the assumptions of the PEP-1-t model are standard, however, our model has some specific features that are worth mentioning. The most important is the social protection programme through public transfers (social transfers) and public expenditure directed towards households, to which we make an adjustment to take account of the social situation in Morocco and Côte d'Ivoire.

Macroeconomic structure

Production and factors of production

Firms are assumed to operate in a perfectly competitive environment. Thus, the representative firm in each sector maximises its profits according to its production technology, while taking the prices of goods and services and factors as given (price-taking behaviour). At the first level (equations (1) and (2)), the sectoral output of each productive activity, j combines value added and total intermediate consumption in fixed shares.

$$VA_{jt} = v_j XST_{jt} \quad (1)$$

$$CI_{jt} = io_j XST_{jt} \quad (2)$$

At the second level, the value added of each industry is made up of labour and capital, according to a constant elasticity of substitution (CES) specification.

$$VA_{jt} = B_j^{VA} \left[\beta_j^{VA} LDC_{jt}^{-\rho_j^{VA}} + (1 - \beta_j^{VA}) KDC_{jt}^{-\rho_j^{VA}} \right]^{-\frac{1}{\rho_j^{VA}}} \quad (3)$$

Profit maximisation (or cost minimisation) by firms leads them to employ labour and capital up to the point where the value of the marginal product of each is equal to its price (respectively the wage rate and the capital rental rate). With a CES production function, this behaviour is described by the demand for labour⁴ relative to capital in equation (4).

$$LDC_{jt} = \left[\frac{\beta_j^{VA}}{1 - \beta_j^{VA}} \frac{RC_{jt}}{WC_{jt}} \right]^{\sigma_j^{VA}} KDC_{jt} \quad (4)$$

In accordance with the algebra of CES aggregation functions, $\rho_j^{VA} = \frac{1 - \sigma_j^{VA}}{\sigma_j^{VA}}$. At the last level, on the

value-added side, the different categories of labour, indexed as $l \in L = \{L_1, \dots, L_l\}$, are combined according to a CES technology (equation (5)), which reflects the imperfect substitutability between the different types of labour. The firm chooses the composition of its workforce in such a way as to minimise its cost given relative wage rates. The demand for labour of each type is derived from the first-order conditions for cost minimisation by the representative firm, subject to the CES technology (equation (6)).

$$LDC_{jt} = B_j^{LD} \left[\sum_l \beta_{lj}^{LD} LD_{ljt}^{-\rho_j^{LD}} \right]^{-\frac{1}{\rho_j^{LD}}} \quad (5)$$

$$LD_{ljt} = (B_j^{LD})^{\sigma_j^{LD}-1} \left[\frac{\beta_{lj}^{LD} WC_{jt}}{WTI_{ljt}} \right]^{\sigma_j^{LD}} LDC_{jt} \quad (6)$$

As with labour, the different categories of capital are assumed to be imperfect substitutes (equation (7)). The demand for each type of capital results from the minimisation of costs (equation (8)).

$$KDC_{jt} = B_j^{KD} \left[\sum_k \beta_{kj}^{KD} KD_{kjt}^{-\rho_j^{KD}} \right]^{-\frac{1}{\rho_j^{KD}}} \quad (7)$$

$$KD_{kjt} = (B_j^{KD})^{\sigma_j^{KD}-1} \left[\frac{\beta_{kj}^{KD} RC_{jt}}{RTI_{kjt}} \right]^{\sigma_j^{KD}} KDC_{jt} \quad (8)$$

Household and government income

Household income

⁴ The labour market is segmented into components in order to highlight the wage differentials observed in the Moroccan and Ivorian economies. Each labour market satisfies the neoclassical hypothesis of perfect competition: perfect homogeneity of the workforce, perfect sectoral and geographical mobility (Annabi et al., 2013 ; Decaluwé et al., 2013).

Household income, YH_{ht} , comes from three sources: income from labour, YHL_{ht} , income from capital, YHK_{ht} , and transfers received from other agents, $YHTR_{ht}$.

$$YH_{ht} = YHL_{ht} + YHK_{ht} + YHTR_{ht} \quad (9)$$

Each type of household receives a fixed share of the income from each type of work (equation (10)). Similarly, total capital income is distributed among agents, including households, in fixed proportions (equation (11)). These fixed shares are constant over time. Finally, transfer income is simply the sum of all transfers received by households of type, h (equation (12)).

$$YHL_{ht} = \sum_l \lambda_{hl}^{WL} \left[W_{lt} \sum_j LD_{ljt} \right] \quad (10)$$

$$YHK_{ht} = \sum_k \lambda_{hk}^{RK} \left[\sum_j R_{kjt} KD_{kjt} \right] \quad (11)$$

$$YHTR_{ht} = \sum_{ag} TR_{hagt} \quad (12)$$

By subtracting direct taxes, TDH_{ht} and transfers from households to government, TR_{gvht} we obtain the disposable income, YDH_{ht} of households of type h . Since household transfers to government are mainly contributions to various social programmes, our calculation of disposable income is consistent with the national accounts. The disposable income remaining after savings, SH_{ht} and transfers to other agents, TR_{agnght} is entirely to consumption, devoted CTH_{ht} (Decaluwé et al., 2013).

Government income

The total income of the government, YG_t , is given by the sum of capital income, YGK_t , transfer income, $YGTR_t$ revenues from taxes on household income, $TDHT_t$, taxes on products and imports, $TPRCTS_t$, and other taxes on production, $TPRODN_t$. As for other agents, capital income is a share, λ_{gvtk}^{RK} of total capital income (equation (14)). Taxes on products are made up of consumption taxes $TICT_t$, taxes and customs duties on imports, $TIMT_t$, and taxes on exports, (Decaluwé et al., 2013).

$$YG_t = YGK_t + YGTR_t + TDHT_t + TDFT_t + TPRODN_t + TPRCTS_t \quad (13)$$

$$YGK_t = \sum_k \lambda_{gvtk}^{RK} \left[\sum_j R_{kjt} KD_{kjt} \right] \quad (14)$$

$$YGTR_t = \sum_{agng} TR_{agngt} + Aid_t \quad (15)$$

$$TDHT_t = \sum_h TDH_{ht} \quad (17)$$

$$TDHT_t = \sum_f TDF_{ft} \quad (18)$$

$$TPRODN_t = TIWT_t + TIKT_t + TIPT_t \quad (19)$$

$$TPRCTS_t = TICT_t + TIMT_t + TIXT_t \quad (20)$$

Gross domestic product (GDP)

GDP at basic prices, GDP_t^{BP} is equal to the sum of the remuneration of production factors and net taxes on production (equations (21)). GDP at market prices is obtained by adding net taxes on products (equations (22)). GDP at market prices, GDP_t^{MP} can also be calculated from the point of

view of final demand, GDP_t^{FD} by adding household consumption expenditure, current public expenditure, investment expenditure, the value of exports minus that of imports (equations (23)).

$$GDP_t^{BP} = \sum_j PVA_{jt}VA_{jt} + TIPT_t \quad (21)$$

$$GDP_t^{MP} = GDP_t^{BP} + TPRCTS_t \quad (22)$$

$$GDP_t^{IB} = \sum_{ij} W_{it}LD_{ijt} + \sum_{ij} R_{kjt}KD_{kjt} + TPROD_{it} + TPRCTS_t \quad (23)$$

$$GDP_t^{FD} = \sum_i PC_{it} \left[\sum_h C_{iht} + CG_{it} + INV_{it} + VSTK_{it} \right] + \sum_i PE_{it}^{FOB} EXD_{it} + \sum_i e_i PWM_{it} M_{it} \quad (24)$$

Similarly, GDP at market prices calculated according to income is given by the sum of the remuneration of labour, that of capital, plus taxes on production and products.

Social protection and financing

Public transfers and expenditure on social protection

Government transfers to households are essentially social transfers, and so we have modelled them in the same way as direct taxes on income: if the y-intercept is not zero, $tr20_{hgvt}$ then the marginal rate, $tr2_{hgvt}$ is different from the average rate (equation (25)).

$$TR_{hgvt} = PIXCON_t^\eta tr20_{hgvt} + tr2_{hgvt} YH_{ht} \quad (25)$$

Furthermore, the budget allocated to the consumption of the product, i by the public administration, CG_{it} , is a proportion, γ_i^{GVT} of its total current expenditure on goods and services.

$$PC_{it}CG_{it} = \gamma_i^{GVT} G_{it} \quad (26)$$

Social protection is the set of public policies and programmes designed to reduce and prevent vulnerability throughout the life cycle. It can take the form of social transfers (Boeters et al., 2003 ; Sharma et al., 2015 ; Aka, 2016 ; Handa et al. 2021) or public social expenditure (Marouani and Robalino, 2008 ; ITUC, 2021 ; Mohammad et al., 2024).

Financing social protection

There are four ways in which national governments can finance investment in social protection: social contributions, taxation, public debt or international aid. Transfers from households to government are essentially social contributions, so we have modelled them in the same way as direct taxes on income : if the y-intercept is not zero, $tr10_{gvtht}$ then the marginal rate, $tr1_{gvtht}$ is different from the average rate (equation (26)).

$$TR_{gvtht} = PIXCON_t^\eta tr10_{gvtht} + tr1_{gvtht} YH_{ht} \quad (26)$$

Equations (27) to (28) describe the base on which the various taxes on production, TIP_{jt} and products, TIC_{it} are applied:

$$TIP_{jt} = ttip_{jt} PP_{jt} XST_{jt} \quad (27)$$

$$TIC_{it} = ttic_{it} \left[\left(PL_{it} + \sum_{ij} PC_{ijt} tmrg_{iji} \right) D_{it} + \left((1 + ttim_{it}) PWM_{it} e_i + \sum_{ij} PC_{ijt} tmrg_{iji}^C \right) M_{it} \right] \quad (28)$$

Taxes on household income are represented by a linear function of total income (equation (.)). Thus, if the y-intercept, $ttdh0_{ht}$ is non-zero, then the marginal tax rate, $ttdh1_{ht}$ is different from the average rate. Here again, the intercept can be partially or fully indexed to the consumer price index, $PIXCON_t^\eta$.

$$TDH_{ht} = PIXCON_t^\eta ttdh0_{ht} + ttdh1_{ht} YH_{ht} \quad (29)$$

$$TDF_{ft} = PIXCON_t^\eta ttdh0_{ft} + ttdh1_{ft} YH_{ft} \quad (30)$$

Aid is seen as a transfer from the rest of the world that enables states to finance social protection programmes and other current expenditure. This hypothesis implies an extension of the balance of payments from additional international aid (Bandara, 1995). This current account balance will be kept fixed in all scenarios in order to allow a valid comparison between social protection policies.

$$Aid_t = \phi_t^{Gov} YG_t$$

In our model, public debt, $Gdebt_{t+1}$ contracted in the period, $t+1$, is the difference between public savings and investment, including debt servicing. The amount of debt serviced is divided into two parts: the principal, i.e. the amount originally borrowed, $\xi_t^{Gdebt} GDP_t^{MP}$ and the interest, $ir_t \xi_t^{Gdebt} GDP_t^{MP}$ calculated by applying an interest rate to the principal.

$$Gdebt_{t+1} = (1 + ir_t) \xi_t^{Gdebt} GDP_t^{MP} + SG_{t+1} - I_{t+1}^{PUB}$$

The principal of the public debt is equal to the debt ratio, ξ_t^{Gdebt} multiplied by GDP at market prices, GDP_t^{MP} . This ratio is accompanied by a time index, in order to facilitate the simulation of scenarios in which the debt policy evolves over time.

Using a dynamic Computable General Equilibrium (CGE) model and assuming that the government implements a programme of cash and in-kind transfers for all households, three types of government closure rules describe the possibilities for financing this scheme: financing by reducing public spending on specific goods and services, financing by increasing taxes while maintaining a constant deficit, or increasing the public deficit.

Policy experiments and results discussion

This section presents the different experiences of social protection policies and analyses their effects using the CGE methodology presented in the previous section (.). Although the impacts of social protection investments on macroeconomic variables are the focus of this analysis, it is important that we also discuss the social effects, including household well-being. Section (.) describes the social protection policies considered in this study, while sections (.) and (.) present the macroeconomic and social impacts of the experiments.

Policy Experiments

We design options for social protection experiments enabling Morocco and Côte d'Ivoire to assess their impacts on economic growth, labour market participation and public finances in the short and long term. In addition to their impact on macroeconomic variables, we analyse the impact of these social policy experiments on household well-being (with reference to their income and consumption, for example). On the one hand, the social protection system consists of two options: public cash transfers and public social expenditure (table (3)). On the other hand, we combine the analysis with modes of financing social protection provided either by the means of the States of these countries or by external means (foreign aid and transfers or debt). Following the recommendations of ILO (2017), we opt for four modes of sustainable financing of social protection, including: (i) Social contribution; (ii) Additional taxation; (ii) External financing (foreign aid and transfers); and (iv) Public debt.

Table 3: Design of policy experiments

Scenarios	Description	Design	Mode of Financing
Scenario 1	Government cash transfer on social protection	1.a : Increase cash transfer from government to households by 1 % of GDP on 5 years 1.b : Increase cash transfer from government to households by 1 % of GDP on 10 years	Social contribution (1 %) & additional taxation (1 %) in 5 & 10 years
Scenario 2	Government cash transfer on social protection	2.a : Increase cash transfer from government to households by 2 % of GDP on 5 years 2.b : Increase cash transfer from government to households by 2 % of GDP on 10 years	Social contribution (2 %) & additional taxation (2 %) in 5 & 10 years
Scenario 3	Public spending on social protection	3.a : Increase public spending on social protection by 1 % of GDP on 5 years 3.b : Increase cash transfer from government to households by 1 % of GDP on 10 years	Public debt (1 %) additional taxation (1 %) in 5 & 10 years
Scenario 4	Public transfer & spending on social protection	4.a : Increase public cash transfer & spending on social protection by 1 % of GDP on 5 years 4.b : Increase public cash transfer & spending on social protection by 1 % of GDP on 10 years	External financing (1 %), public debt (1 %) additional taxation (1 %) in 5 & 10 years

Source: authors.

The first two scenarios focus on public cash transfers and include two sets of experiments. The first scenario focuses on an increase in public transfers of 1% of GDP over 5 and 10 years; the second scenario focuses on an increase in public transfers of 2% of GDP over 5 and 10 years. In scenarios 1 and 2, the countries adopt essentially internal financing methods combining social contributions and taxation. This is because social contributions are a special case of payroll taxes according to public finance theory (Musgrave et al., 1987) and are considered to be the financing of social protection (ILO, 2017; Ortiz et al., 2019). However, according to Baeza and Packard (2006), Levy (2008), Packard et al. (2019), a comprehensive social insurance support package should be financed by general tax revenues, as social contributions can have a negative impact on employment in the formal sectors. In scenario 3, we implement social protection policies through public spending according to two series of experiments. The first set of experiments focuses on increasing public spending on social protection by 1% of GDP over 5 years and the second on increasing public spending on social protection by 1% of GDP over 10 years. In scenario 3, countries adopt internal and external financing methods, using taxes and public debt. Financing public spending through public debt would ultimately force governments to raise taxes⁵ to pay it back (Barro, 1974; Krugman and Wells, 2013). Finally, scenario 4 models a combined increase in public cash transfers and public spending on social protection of 1% of GDP over 5 years (first series of experiments) and 10 years (second series of experiments). While socio-economic factors are important in explaining the demand for social protection spending, the ability to collect tax revenues⁶ in low and middle-income countries remains a challenge (Cogneau et al., 2021; Chancel et al., 2022). In these countries, donors⁷ play an important role in financing social protection expenditure and in defining policy priorities (Smith and Subbarao, 2003).

Results discussion

Scenario 1: Government cash transfers on social protection - with social contribution and taxes financing

⁵ All other things being equal, an expansionary fiscal policy leads to an increase in the budget deficit and public debt. And a higher debt will ultimately force the government to raise taxes to pay it off. Consumers anticipating that they will have to pay higher taxes in the future to repay the current public debt will reduce their current spending in order to save more (Krugman and Wells, 2013). This argument, first put forward by nineteenth-century economist David Ricardo, is known as Ricardian equivalence. This argument is often interpreted to mean that an expansionary fiscal policy will have no effect on the economy because far-sighted consumers will cancel out any attempt by the government to expand (Barro, 1974).

⁶ In terms of revenues, Africa lags behind all developed regions and many developing regions and many developing regions (Chancel et al., 2022). Many countries in Central, West and East Africa are characterised by low government revenues, below 20% of GDP. Only the richer countries of North and Southern Africa manage to collect more than 30% of their GDP in the form of taxes (General Government Revenue, 2019).

⁷ Dumont and Mesplé-Soms (2000) and Bourguignon and Sundberg (2006) show that, on a macroeconomic level, foreign aid can lead to balance of payments deficits, inflation and poor redistribution of resources. balance of payments deficits, inflation, poor redistribution of resources and income and income that can cause a crowding-out effect (Gupta, Powell and Yang, 2006; Foster, 2009).

Table (4) presents the macroeconomic results of policy experiments in social protection using public cash transfers in scenario 1. Under this scenario, we find that in Morocco, real GDP (MP) increases by 0.04% in the short term and 0.06% in the long term (scenario 1.a) and increases by 0.04% in the short term and 0.10% in the long term (scenario 1.b). In addition, real GDP (GP) increases by 0.01% in the short term and 0.07% in the long term (scenario 1.a) and increases by 0.01% in the short term and 0.11% in the long term (scenario 1.b).

Table (4) : Impacts on macroeconomic variables

Variables	Morocco					Cote d'Ivoire				
	Scenario 1.a			Scenario 1.b		Scenario 1.a			Scenario 1.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Gross output	101001	101043	0.042	101067	0.065	1800658	1800240	-0.023	1799791	-0.048
Short run	91756	91767	0.012	91767	0.012	1573171	1573224	0.003	1573224	0.003
Long run	110246	110320	0.067	110368	0.110	2028146	2027256	-0.044	2026359	-0.088
Employment	21093	21093	-0.001	21093	-0.002	443894	443800	-0.021	443795	-0.022
Short run	20301	20301	-0.001	20301	-0.001	387814	387594	-0.057	387594	-0.057
Long run	21885	21885	-0.002	21884	-0.003	499974	500007	0.007	499997	0.005
Public revenue	417979	419316	0.320	419704	0.413	10416078	10452355	0.348	10462654	0.447
Short run	388819	391067	0.578	391067	0.578	9100155	9166648	0.731	9166648	0.731
Long run	447138	447565	0.096	448342	0.269	11732001	11738062	0.052	11758661	0.227
Public saving	26148	27126	3.738	27400	4.787	310820	233769	-24.790	209230	-32.685
Short run	12239	13854	13.193	13854	13.193	271552	137485	-49.371	137485	-49.371
Long run	40058	40398	0.849	40946	2.218	350088	330053	-5.723	280974	-19.742
Private investment	313327	314239	0.291	314509	0.377	1361664	1355575	-0.447	1358137	-0.259
Short run	280282	281700	0.506	281700	0.506	1191992	1177828	-1.188	1177828	-1.188
Long run	346372	346778	0.117	347317	0.273	1531336	1533322	0.130	1538446	0.464
Public investment	16574	16588	0.082	16589	0.091	139924	140144	0.157	140218	0.210
Short run	15910	15940	0.190	15940	0.190	122247	122622	0.307	122622	0.307
Long run	17238	17235	-0.018	17238	0.000	157601	157665	0.041	157813	0.135
Real GDP (MP)	1313127	1313792	0.051	1314092	0.073	23904026	23899928	-0.017	23896734	-0.031
Short run	1192813	1193264	0.038	1193264	0.038	20884092	20881465	-0.013	20881465	-0.013
Long run	1433442	1434320	0.061	1434921	0.103	26923959	26918391	-0.021	26912004	-0.044
Real GDP (BP)	1214779	1215281	0.041	1215562	0.065	20529264	20518647	-0.052	20511962	-0.084
Short run	1103640	1103773	0.012	1103773	0.012	17935683	17925543	-0.057	17925543	-0.057
Long run	1325917	1326789	0.066	1327351	0.108	23122844	23111751	-0.048	23098380	-0.106

Notes: 1.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 1.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source: Simulation results.

In contrast to Morocco, real GDP (MP) falls by 0.01% in the short term and 0.02% in the long term (scenario 1.a) and falls by 0.06% in the short term and 0.05% in the long term (scenario 1.b) in Côte d'Ivoire. This downward trend is justified for both short-term and long-term real GDP in Côte d'Ivoire. On the one hand, the rise in real GDP (MP) does not lead to an increase in employment in the short and long term in Morocco (scenario 1.a and 1.b) and, on the other hand, the fall in real GDP (MP) does not lead to a fall in employment in the long term in Côte d'Ivoire (scenario 1.a and 1.b). Furthermore, due to the closure of the savings-investment equilibrium, the rise in total absorption in Côte d'Ivoire has a differentiated impact on national investment, as it falls by 0.44% in the short term and rises by 0.09% in the long term (scenario 1.a) and falls by 0.35% in the short term and rises by 0.14% in the long term (scenario 1.b). In Morocco, the average increase in total absorption has a fairly positive impact on national investment, with an increase of 0.35% in the short term and 0.05% in the long term (scenario 1.a) and 0.35% in the short term and 0.14% in the long term (scenario 1.b). The increase in total investment also depends on the increase in public savings, as public investment accounted for 20% of total investment in Côte

d'Ivoire in 2013 and represents a significant share in Morocco, with an average of around 32% of GDP between 2000 and 2019 (World Bank, 2013, 2019).

Table (5): Impact on household income, consumption, saving and welfare

Variables	Morocco					Cote d'Ivoire				
	Scenario 1.a			Scenario 1.b		Scenario 1.a			Scenario 1.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Income	331692	331854	0.049	331921	0.069	2628395	2642172	0.524	2646378	0.684
Short run	308181	308362	0.059	308362	0.059	2296335	2320810	1.066	2320810	1.066
Long run	355202	355346	0.041	355480	0.078	2960456	2963533	0.104	2971945	0.388
Consumption	238386	238381	-0.002	238394	0.004	1799032	1809940	0.606	1813288	0.792
Short run	221374	221286	-0.040	221286	-0.040	1571750	1591085	1.230	1591085	1.230
Long run	255397	255475	0.031	255502	0.041	2026314	2028796	0.122	2035492	0.453
Saving	33937.7	33932.9	-0.014	33933.5	-0.012	214742.8	215557	0.379	215791	0.488
Short run	31575.5	31556.5	-0.060	31556.5	-0.060	187613.1	189093	0.789	189093	0.789
Long run	36299.8	36309.3	0.026	36310.4	0.029	241872.6	242020	0.061	242488	0.255
Welfare	-	-	12.344	-	12.367	-	-	17.758	-	17.879
Short run	-	-	2.533	-	2.533	-	-	3.262	-	3.262
Long run	-	-	22.155	-	22.202	-	-	32.254	-	32.496

Notes : 1.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 1.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

At the same time, looking at the table (5) household income in both Morocco and Côte d'Ivoire increases by 0.04% and 0.10% respectively in the long term (scenario 1.a) and by 0.08% and 0.39% respectively in the long term (scenario 1.b). This is because the long-term rise in income leads to an increase in household consumption in both countries. As a result of the increase in income and consumption, total household welfare increases in Morocco and Côte d'Ivoire by 12.34% and 17.76% (scenario 1.a) and 12.37% and 17.88% (scenario 1.b) respectively.

Scenario 2 : Government cash transfers on social protection - with social contribution and taxes financing

In scenario 2, real GDP (MP) increases more in Morocco and decreases slightly more in Côte d'Ivoire. In fact, the decrease in the short term (0.02% in scenario 2.a and 2.b) as well as in the long term (0.04% in scenario 2.a and 0.09 in scenario 2.b) is explained by a less positive impact of social policy on output in the long term and employment at least in the short term. In fact, the increase in public revenue (0.01% in scenario 2.a and 0.46% in scenario 2.b), private investment (0.66% in scenario 2.a and 0.58% in scenario 2.b) and public investment (0.08% in scenario 2.a and 0.27% in scenario 2.b) in the long term are not sufficient to improve economic activity in Côte d'Ivoire. The case of Morocco is different, as the increase in output and private and public investment leads to a long-term improvement in economic activity. However, economic growth in the country has not improved employment conditions in the short term (0.002% in scenario 2.a and 2E-4% in scenario 2.b) and even in the long term (0.01% in scenario 2.a and 0.001% in scenario 2.b) due to an increase in social contributions. Consequently, the increase in public investment in Morocco is fuelled by public savings that rise by 26.37% in the short term and 4.43% in the long term (scenario 1.a) and by 10.22% in the short term and 1.72% in the long term (scenario 1.b). In Côte d'Ivoire, although public savings remained constant in the short term and fell by 11.71% (scenario 1.a) and 40.37% (scenario 1.b) in the long term, public investment did not fall, thanks to an increase in tax revenues.

Table (6): Impacts on macroeconomic variables

Variables	Morocco					Cote d'Ivoire				
	Baseline	Scenario 2.a			Scenario 2.b			Scenario 2.a		
		Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Gross output	101001	101133	0.130	101032	0.030	1800658	1799790	-0.048	1798862	-0.100
Short run	91756	91777	0.023	91757	0.001	1573171	1573274	0.007	1573274	0.007
Long run	110246	110488	0.219	110307	0.055	2028146	2026306	-0.091	2024450	-0.182
Employment	21093	21092	-0.004	21093	0.000	443894	443702	-0.043	443693	-0.045
Short run	20301	20301	-0.002	20301	0.000	387814	387360	-0.117	387360	-0.117
Long run	21885	21884	-0.006	21885	-0.001	499974	500044	0.014	500026	0.010
Public revenue	417979	421431	0.826	420070	0.500	10416078	10489438	0.704	10510252	0.904
Short run	388819	393315	1.156	391611	0.718	9100155	9234643	1.478	9234643	1.478
Long run	447138	449546	0.539	448528	0.311	11732001	11744233	0.104	11785860	0.459
Public saving	26148	28650	9.566	27118	3.706	310820	290326	-6.594	240158	-22.734
Short run	12239	15466	26.367	13490	10.216	271552	271552	0.000	271552	0.000
Long run	40058	41834	4.433	40745	1.717	350088	309099	-11.708	208763	-40.368
Private investment	313327	315688	0.753	314264	0.299	1361664	1351893	-0.718	1351270	-0.763
Short run	280282	283115	1.011	281433	0.410	1191992	1162316	-2.490	1162316	-2.490
Long run	346372	348260	0.545	347096	0.209	1531336	1541470	0.662	1540224	0.580
Public investment	16574	16604	0.182	16597	0.139	139924	140369	0.318	140519	0.425
Short run	15910	15970	0.380	15945	0.224	122247	123005	0.620	123005	0.620
Long run	17238	17238	0.000	17249	0.062	157601	157732	0.083	158033	0.274
Real GDP (MP)	1313127	1315053	0.147	1313612	0.037	23904026	23895995	-0.034	23889498	-0.061
Short run	1192813	1193712	0.075	1192939	0.011	20884092	20879543	-0.022	20879543	-0.022
Long run	1433442	1436394	0.206	1434286	0.059	26923959	26912446	-0.043	26899453	-0.091
Real GDP (BP)	1214779	1216343	0.129	1215228	0.037	20529264	20507272	-0.107	20493428	-0.175
Short run	1103640	1103905	0.024	1103726	0.008	17935683	17914605	-0.118	17914605	-0.118
Long run	1325917	1328781	0.216	1326730	0.061	23122844	23099938	-0.099	23072250	-0.219

Notes : 2.a : increase cash transfer from government to households by 2 % of GDP on 5 years ; 2.b : Increase cash transfer from government to households by 2 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

Household income, even when subject to social contribution constraints, increases by 0.12% in the short term and 0.16% in the long term (scenario 2.a) and by 0.12% in the short term and 0.10% in the long term (scenario 2.b) in Morocco and by 2.17% in the short term and 0.21% in the long term (scenario 2.a) and by 2.17% in the short term and 0.80% in the long term (scenario 2.b) in Côte d'Ivoire (table (7)). The increase in income in turn leads to an increase in total household consumption of 0.01% (scenario 2.a) and 0.10% (scenario 2.b) in Morocco and 1.23% (scenario 2.a) and 1.61% (scenario 2.b) in Côte d'Ivoire. Thus, the increase in income and growth generated in certain sectors of activity favours household well-being. Indeed, overall household well-being has improved slightly compared to scenario 1, due to the greater increase in social transfers (2%). For example, in Morocco it increases by 2.67% in the short term and 22.16% in the long term (scenario 2.a) and by 3.58% in the short term and 23.09% in the long term (scenario 2.b), and in Côte d'Ivoire by 4.03% in the short term and 32.33% in the long term (scenario 2.a) and by 4.03% in the short term and 32.83% in the long term (scenario 2.b).

Table (7): Impacts on household income, consumption, saving and welfare

Variables	Morocco					Cote d'Ivoire				
	Scenario 2.a			Scenario 2.b		Scenario 2.a			Scenario 2.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Income	331692	332150	0.138	332011	0.096	2628395	2656417	1.066	2664980	1.392
Short run	308181	308542	0.117	308547	0.119	2296335	2346104	2.167	2346104	2.167
Long run	355202	355758	0.156	355475	0.077	2960456	2966729	0.212	2983855	0.790
Consumption	238386	238402	0.007	238606	0.093	1799032	1821233	1.234	1828054	1.613
Short run	221374	221197	-0.080	221624	0.113	1571750	1611088	2.503	1611088	2.503
Long run	255397	255606	0.082	255589	0.075	2026314	2031377	0.250	2045019	0.923
Saving	33938	33929	-0.025	33974	0.106	214743	216390	0.767	216864	0.988
Short run	31576	31537	-0.121	31618	0.135	187613	190611	1.598	190611	1.598
Long run	36300	36321	0.058	36330	0.082	241873	242169	0.123	243117	0.514
Welfare	-	-	12.344	-	13.342	-	-	18.185	-	18.432
Short run	-	-	2.533	-	3.587	-	-	4.031	-	4.031
Long run	-	-	22.155	-	23.097	-	-	32.339	-	32.832

Notes : 2.a : increase cash transfer from government to households by 2 % of GDP on 5 years ; 2.b : Increase cash transfer from government to households by 2 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

Scenario 3 : Government spending on social protection - with public debt and taxes financing

The net impact of an increase in public spending on social protection financed by public debt and taxes translates into an increase in real GDP (MP) and real GDP (GP) of 0.05% and 0.01% respectively in the short term and 0.07% and 0.08% in the long term (scenario 3.a) and 0.05% and 0.10% in the short term and 0.13% and 0.13% in the long term (scenario 3.b) in Morocco. However, the impact on real GDP remains different in Côte d'Ivoire. Real GDP (MP) and real GDP (BP) respectively increase by 57.74% and 26.20% in the short term (scenarios 3.a and 3.b) and fall by 2.52% and 3.78% in the long term (scenario 3.a) and by 6.09% and 8.94% in the long term (scenario 3.b). This confirms the importance of production, employment and total investment on economic growth in both countries. In particular, output and overall investment increase in both the short and long term, but employment falls in both the short term (0.001% in scenarios 3.a and 3.b) and the long term (0.002% in scenario 3.a and 0.004% in scenario 3.b) in Morocco. At the same time, public revenues increase in the short term (0.59% in scenarios 3.a and 3.b) and in the long term (0.10% in scenario 3.a and 0.29% in scenario 3.b) in Morocco, but fall substantially in the short term (26.74% in scenario 3.a and 6.94% in scenario 3.b) and in the long term (27.82% in scenario 3.a and 4.62% in scenario 3.b) in Côte d'Ivoire. Thus, part of the financing of public spending on social protection through public debt will further deteriorate the Ivorian government's public finances due to the structural fragility of the economy. Like output and government revenue, overall household consumption falls in both the short term (12.67% in scenarios 3.a and 3.b) and the long term (0.93% in scenario 3.a and 4.07% in scenario 2.b). The fall in overall consumption also leads to a fall in the well-being of Ivorian households in the short term (5.42% in scenarios 3.a and 3.b) and an increase in the long term (26.68% in scenario 3.a and 25.18% in scenario 3.b), but less so than in the first two scenarios.

Table (8): Impacts on macroeconomic variables

Variables	Morocco					Cote d'Ivoire				
	Baseline	Scenario 3.a			Scenario 3.b			Scenario 3.a		
		Simulation	var (%)	Simulation	var (%)	Simulation	var (%)	Simulation	var (%)	Simulation
Gross output	101001	101050	0.048	101082	0.080	1800658	1717177	-4.636	1665592	-7.501
Short run	91756	91768	0.012	91768	0.012	1573171	1948105	23.833	1486248	-5.525
Long run	110246	110333	0.078	110396	0.136	2028146	1486248	-26.719	1844935	-9.033
Employment	21093	21093	-0.002	21093	-0.002	443894	429271	-3.294	426815	-3.848
Short run	20301	20301	-0.001	20301	-0.001	387814	501661	29.356	356881	-7.976
Long run	21885	21885	-0.002	21884	-0.004	499974	356881	-28.620	496748	-0.645
Public revenue	417979	419344	0.327	419767	0.428	10416078	10001073	-3.984	9828802	-5.638
Short run	388819	391094	0.585	391094	0.585	9100155	11533671	26.741	8468474	-6.941
Long run	447138	447595	0.102	448440	0.291	11732001	8468474	-27.817	11189129	-4.627
Public saving	26148	27483	5.106	27898	6.693	310820	501611	61.383	471320	51.638
Short run	12239	14467	18.199	14467	18.199	271552	271552	0.000	271552	0.000
Long run	40058	40500	1.105	41330	3.177	350088	176943	-49.458	116361	-66.762
Private investment	313327	314374	0.334	314719	0.444	1361664	1705297	25.236	1582658	16.230
Short run	280282	281902	0.578	281902	0.578	1191992	1191992	0.000	1191992	0.000
Long run	346372	346846	0.137	347536	0.336	1531336	1705297	11.360	1582658	3.351
Public investment	16574	16589	0.090	16590	0.097	139924	136702	-2.303	136603	-2.374
Short run	15910	15943	0.211	15943	0.211	122247	114653	-6.211	114653	-6.211
Long run	17238	17234	-0.023	17237	-0.008	157601	158751	0.729	158552	0.603
Real GDP (MP)	1313127	1313961	0.063	1314371	0.095	23904026	29594365	23.805	29113298	21.792
Short run	1192813	1193440	0.053	1193440	0.053	20884092	32942123	57.738	32942123	57.738
Long run	1433442	1434482	0.073	1435301	0.130	26923959	26246607	-2.516	25284472	-6.089
Real GDP (BP)	1214779	1215367	0.048	1215741	0.079	20529264	22441786	9.316	21845135	6.410
Short run	1103640	1103792	0.014	1103792	0.014	17935683	22635521	26.204	22635521	26.204
Long run	1325917	1326942	0.077	1327690	0.134	23122844	22248051	-3.783	21054749	-8.944

Notes : 3.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 3.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

In Morocco, household income and consumption fall at the same rate as employment in the short term. In addition, the growth rate of their consumption is relatively low in the long term compared to scenarios 1 and 2 due to the negative effects of the increase in public debt. Consequently, we find that the variation in the increase in Moroccan household consumption is 0.03% (scenario 3.a) and 0.04% (scenario 3.b) in the long term. The increase in long-term income seems to offset the pernicious effect of public debt on household well-being. Welfare improves by 2.43% (scenarios 3.a and 3.b) and 22.15% and 22.17% (scenarios 3.a and 3.b respectively). The way in which public spending on social protection is financed by public debt worsens the public finances of governments (even if Morocco fares better) and imposes short- and long-term expectations on households regarding their consumption and savings.

Table (10): Impacts on household income, consumption, saving and welfare

Variables	Morocco					Cote d'Ivoire				
	Scenario 3.a			Scenario 3.b		Scenario 3.a			Scenario 3.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Income	331692	331687	-0.001	331709	0.005	2628395	2469072	-6.062	2422572	-7.831
Short run	308181	308046	-0.044	308046	-0.044	2296335	2005223	-12.677	2005223	-12.677
Long run	355202	355328	0.036	355371	0.048	2960456	2932921	-0.930	2839921	-4.071
Consumption	238386	238342	-0.018	238346	-0.017	1799032	1685262	-6.324	1653961	-8.064
Short run	221374	221203	-0.077	221203	-0.077	1571750	1359482	-13.505	1359482	-13.505
Long run	255397	255481	0.033	255489	0.036	2026314	2011042	-0.754	1948441	-3.843
Saving	33938	33928	-0.028	33928	-0.030	214743	203830	-5.082	199402	-7.144
Short run	31576	31546	-0.092	31546	-0.092	187613	170583	-9.077	170583	-9.077
Long run	36300	36310	0.028	36309	0.025	241873	237078	-1.982	228220	-5.644
Welfare	-	-	12.289	-	12.298	-	-	12.129	-	9.879
Short run	-	-	2.425	-	2.425	-	-	-5.424	-	-5.424
Long run	-	-	22.152	-	22.172	-	-	29.682	-	25.181

Notes : 3.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 3.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

Scenario 4 : Public cash transfer and spending on social protection – with international aid, public debt and taxes financing

The table (11) shows the results of a combination of transfers and public spending on social protection financed by international aid, public debt and taxes. Output and employment fall by 5.49% and 8.02% respectively in the short term (scenario 4.a and 4.b) and by 4.01% and 0.35% and 9.20% and 0.64% respectively in the long term (scenario 4.a and 4.b respectively) in Côte d'Ivoire. The decline in output and employment leads to a long-term fall in real GDP (MP) and real GDP (GP) of 2.56% and 6.22% (scenarios 4.a) and 3.86% and 9.13% (scenarios 4.b) respectively in Côte d'Ivoire. This decline is also attributable to a reduction in public revenue of 6.27% in the short term (scenarios 4.a and 4.b) and 1.65% and 4.45% in the long term (scenario 4.a).

Table (11): Impacts on macroeconomic variables

Variables	Morocco					Cote d'Ivoire				
	Scenario 4.a			Scenario 4.b		Scenario 4.a			Scenario 4.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Gross output	101001	101021	0.020	101035	0.033	1800658	1716813	-4.656	1664219	-7.577
Short run	91756	91759	0.003	91759	0.003	1573171	1486866	-5.486	1486866	-5.486
Long run	110246	110284	0.034	110311	0.058	2028146	1946760	-4.013	1841573	-9.199
Employment	21093	21093	-0.001	21093	-0.001	443894	429213	-3.307	426745	-3.863
Short run	20301	20301	0.000	20301	0.000	387814	356717	-8.019	356717	-8.019
Long run	21885	21885	-0.001	21885	-0.001	499974	501709	0.347	496774	-0.640
Public revenue	417979	419390	0.338	419813	0.439	10416078	10033780	-3.670	9869200	-5.250
Short run	388819	391263	0.629	391263	0.629	9100155	8529264	-6.273	8529264	-6.273
Long run	447138	447518	0.085	448363	0.274	11732001	11538297	-1.651	11209136	-4.457
Public saving	26148	26945	3.045	27193	3.996	310820	446105	43.525	394968	27.073
Short run	12239	13589	11.028	13589	11.028	271552	271552	0.000	271552	0.000
Long run	40058	40300	0.606	40798	1.848	350088	159739	-54.372	57465	-83.586
Private investment	313327	313883	0.177	314069	0.237	1361664	1707966	25.432	1583386	16.283
Short run	280282	281161	0.313	281161	0.313	1191992	1191992	0.000	1191992	0.000
Long run	346372	346605	0.067	346978	0.175	1531336	1707966	11.534	1583386	3.399
Public investment	16574	16585	0.068	16587	0.080	139924	136851	-2.196	136805	-2.229
Short run	15910	15933	0.143	15933	0.143	122247	114896	-6.013	114896	-6.013
Long run	17238	17238	-0.002	17242	0.022	157601	158805	0.764	158714	0.706
Real GDP (MP)	1313127	1313514	0.029	1313712	0.044	23904026	29573327	23.717	32284939	35.061
Short run	1192813	1193105	0.024	1193105	0.024	20884092	32912867	57.598	39321453	88.284
Long run	1433442	1433923	0.034	1434318	0.061	26923959	26233787	-2.563	25248425	-6.223
Real GDP (BP)	1214779	1215045	0.022	1215219	0.036	20529264	22430678	9.262	21819912	6.287
Short run	1103640	1103712	0.007	1103712	0.007	17935683	22630396	26.175	22630396	26.175
Long run	1325917	1326377	0.035	1326725	0.061	23122844	22230960	-3.857	21009427	-9.140

Notes : 4.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 4.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation change with reference to baseline ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

In addition, output in Morocco increases due to a surplus of private and public investment. Output increases by 0.003% in the short term and 0.03% in the long term (scenario 4.a) and by 0.003% in the short term and 0.06% in the long term (scenario 4.b). The increase in production does not lead to an increase in the country's labour supply and wages. Overall, economic growth measured by real GDP (MP) and real GDP (BP) increases to around 0.03% in scenario 4.a and 0.06% in scenario 4.b. Then, public savings increase by 11.03% in the short term and by 1.85% in the long term (scenario 4.b). However, it is interesting to see that this social policy financed by public debt and international aid (in addition to direct and indirect taxes) improves the living conditions of Moroccan households compared with Ivorian households. The improvement in the living conditions of Moroccan households is reflected in the increase in their income and consumption in the short and long term.

Table (12): Impact on household income, consumption, saving and welfare

Variables	Morocco					Cote d'Ivoire				
	Scenario 4.a			Scenario 4.b		Scenario 4.a			Scenario 4.b	
	Baseline	Simulation	var (%)	Simulation	var (%)	Baseline	Simulation	var (%)	Simulation	var (%)
Income	331692	331828	0.041	331878	0.056	2628395	2479822	-5.653	2436430	-7.304
Short run	308181	308366	0.060	308366	0.060	2296335	2024351	-11.844	2024351	-11.844
Long run	355202	355290	0.025	355390	0.053	2960456	2935293	-0.850	2848510	-3.781
Consumption	238386	238438	0.022	238462	0.032	1799032	1693700	-5.855	1664936	-7.454
Short run	221374	221426	0.023	221426	0.023	1571750	1374396	-12.556	1374396	-12.556
Long run	255397	255451	0.021	255498	0.039	2026314	2013005	-0.657	1955477	-3.496
Saving	33938	33944	0.020	33947	0.028	214743	204514	-4.763	200234	-6.756
Short run	31576	31582	0.019	31582	0.019	187613	171862	-8.396	171862	-8.396
Long run	36300	36307	0.020	36313	0.036	241873	237166	-1.946	228606	-5.485
Welfare	-	-	12.312	-	12.322	-	-	12.469	-	10.300
Short run	-	-	2.504	-	2.504	-	-	-4.795	-	-4.795
Long run	-	-	22.120	-	22.140	-	-	29.733	-	25.396

Notes : 1.a : increase cash transfer from government to households by 1 % of GDP on 5 years ; 1.b : Increase cash transfer from government to households by 1 % of GDP on 10 years ; Var (%) : variation with reference to (...) ; Short run and long run denote respectively the short period (over 3 years) and the long period (over 20 years).

Source : Simulation results.

Thus, the rise in income leads Moroccan households to high short-term savings (0.02% in scenarios 4.a and 4.b) and long-term savings (0.02% in scenario 4.a and 0.04% in scenario 4.b). At the same time, the income and consumption of Ivorian households fall, leading to a deterioration in their well-being in the short term. However, in the long term, the well-being of Ivorian households tends to improve (29.73% in scenario 1.a and 25.40% in scenario 1.b). These results corroborate the view that the implementation of social protection programmes in emerging and developing countries remains a challenge due to a lack of funding from domestic resources (Tanzi and Zee, 2000; Aka, 2016; Cogneau et al., 2021; Banerjee et al., 2024). This situation leads the governments of these countries to resort to external resources such as foreign aid or public debt, which play an important role in financing social protection expenditure, but whose impact over time may prove less productive (Barrientos, 2004; Holmqvist, 2012, World Bank, 2012; George et al., 2021).

Conclusion and policy implications

Social protection programmes play a crucial role in achieving inclusive growth and human development. Greater investment in social protection boosts income and improves people's well-being. This is why Morocco and Côte d'Ivoire have implemented various plans to strengthen their social protection systems and reduce social and regional disparities, thereby promoting better economic development. Thus, the main objective of this research is to assess the macroeconomic impact of investments in social protection and provide policy implications for the achievement of sustainable development goals in these countries. To this end, we use a computable general equilibrium (CGE) model following Decaluwé et al. (2013) and other works such as those by Marouani and Robalino (2008), Aka (2016), Coulibaly and Kouadio (2023), Nabil and Radouane (2025, in progress). The model was calibrated using the social accounting matrices (SAM-Mor2019) of Morocco for 2019 and (SAM-Civ2013) of Côte d'Ivoire for 2013.

The results show that investment in social protection would have a positive impact on real GDP in Côte d'Ivoire in the short term and in Morocco in the long term if governments financed this policy by mobilising internal resources (taxes and social contributions) and external resources (debt and international aid), but would have a negative impact on public investment with a high cost on welfare in the short term. However, if governments finance this policy using mainly domestic

resources, real GDP in Côte d'Ivoire would fall but household welfare in both countries would improve thanks to the positive externalities of public investment in both the short and long term. In Morocco, social protection programmes could be financed by mobilising domestic resources. In Côte d'Ivoire, however, social protection programmes could be financed by using domestic resources, but also by moderate recourse to public debt and international aid due to the weakness of domestic fund mobilisation.

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Appendix

Table (A1) : The Aggregate SAM-Mor2019 for Morocco

SAM Accounts	Factor of production	Households	Firms	Gvt	Tax receipts	Rest of World	Activity (sectors)	Consumption Demand	Capital Account	Total Receipts
Factor of production							M-5 (4x21) Value added 1006442			V-24 (4x1) Receipts 1006442
Households	M-1 (3x4) Factor Return 666706	M-2 (3x3) Intra-HH Transfers 17375	V-8 (3x1) Dividend 76468	V-11 (3x1) Social Transfers 82279		V-16 (3x1) Remittances 75604				V-25 (3x1) Income 918432
Firms	V-1 (1x4) Factor Return 319569	V-4 (1x3) HH Transfers 31766	S-1 (1x1) Intr-Firms Transfers 62490	S-5 (1x1) Gvt Transfers 24593		S-9 (1x1) ROW Transfers 8779				S-12 (1x1) Income 447197
Gvt	V-2 (1x4) Factor Return 20167	V-5 (1x3) HH Transfers 81063	S-2 (1x1) Firms Transfers 29813	S-6 (1x1) Intra-Gvt Transfers 73738	V-14 (1x3) Gvt Receipts 229800	S-10 (1x1) ROW Transfers 5065	V-19 (1x21) Production Tax 13216			S-13 (1x1) Income 452862
Tax receipts		M-3 (3x3) Direct Tax 29290	V-9 (3x1) Firms Tax 67362					M-7 (3x21) Tax & Tariffs 133148		V-26 (3x1) Receipts 229800
Rest of World		V-6 (1x3) HH Transfers 4534	S-3 (1x1) Firms Transfers 28528	S-7 (1x1) Gvt Transfers 5014				V-21 (1x21) Imports of Final cons. 563942		S-14 (1x1) Income 602018
Activity (Commodity)								M-8 (21x21) Domestic Consumption 1791132		V-27 (21x1) Demand 1791132
Consumption Demand		M-4 (21x3) HH Consumption 660652		V-12 (21x1) Gvt Consumption 222967		V-17 (21x1) Exports 464897	M-6 (21x21) Intermediate Use 771474		M-9 (21x2) GFCF & SC 368232	V-28 (21x1) Income 2488222
Capital Account		M-5 (2x3) HH Saving 93752	V-10 (2x1) Firms Saving 182536	V-13 (2x1) Gvt Saving 44271		V-18 (2x1) Foreign Saving 47673			M-10 (2x2) Capital Saving 49552	V-29 (2x1) Savings 417784
Total Outlays	V-3 (1x4) Outlays 1006442	V-7 (1x3) Outlays 918432	S-4 (1x1) Outlays 447197	S-8 (1x1) Outlays 452862	V-15 (1x3) Outlays 229800	S-11 (1x1) Outlays 602018	V-20 (1x21) Outlays 1791132	V-22 (1x21) Outlays 2488222	V-23 (1x2) Investment 417784	

Sources : Author's illustration from SAM-Mor2019

Note: Gvt=Government ; HH=Households ; GFCF=Gross Fixed Capital Formation ; SC=Stock Change.

M=Matrix; V=Vector; S=Scalar elements; Dimensions (Row x Column) of corresponding matrices, vectors and scalars are shown in the parentheses ; The values are in million Dirham in current prices and show the sums of corresponding matrices, vectors or scalars.

Table (A2) : The Aggregate SAM-Civ2013 for Ivory Coast

SAM Accounts	Factor of production	Households	Firm	Gvt	Tax receipts	Rest of World	Activity (sectors)	Consumption Demand	Capital Account	Total
Factor of production							M-6 (3x23) Value added 17288816			V-21 (3x1) Receipts 17288816
Households	M-1 (9x3) Factor Return 8802284		M-5 (9x1) Dividend 4127775	V-9 (9x1) Social Transfers 7215308		V-14 (9x1) Remittance 13477				V-22 (9x1) Income 20158844
Firm	V-1 (1x3) Factor Return 7704430					S-5 (1x1) ROW Transfers 15400				S-7 (1x1) Income 7719829
Gvt	V-2 (1x3) Factor Return 752075				V-12 (1x5) Gvt Receipts 5557810	S-5 (1x1) ROW Transfers 2566510				S-8 (1x1) Income 8876396
Tax receipts		M-2 (5x9) Direct Tax 622713	V-7 (5x1) Firms Tax 1853330				M-7 (5x23) Production Tax 205855	M-9 (5x23) Tax & tariffs 2875912		V-23 (5x1) Income 5557810
Rest of World	V-3 (1x3) Factor Return 30027	V-5 (1x9) HH Transfers 4091206	S-1 (1x1) Firms Transfers 463154	S-3 (1x1) Gvt Transfers 101732				V-18 (1x23) Imports of Final cons. 8768784		S-9 (1x1) Income 13454905
Activity (sectors)								M-10 (23x23) Domestic Consumption 35293244		V-24 (23x1) Demand 35293244
Consumption Demand		M-3 (23x9) HH Consumption 13797925		V-10 (23x1) Gvt Transfers 1294480		V-15 (21x1) Exports 9033363	M-8 (5x23) Intermediate Use 17798572		M-11 (23x2) GFCF & SC 5013601	V-25 (23x1) Income 46937940
Capital Account		M-4 (3x9) HH Savings 1647000	V-8 (2x1) Firms Saving 1275570	V-11 (2x1) Gvt Saving 264875		V-16 (2x1) Foreign Saving 1826156			M-12 (2x2) Capital Saving 3731678	V-26 (2x1) Savings 8745278
Total Outlays	V-4 (1x3) Outlays 17288816	V-6 (1x9) Outlays 20158844	S-2 (1x1) Outlays 7719829	S-4 (1x1) Outlays 8876396	V-13 (1x5) Outlays 5557810	S-6 (1x1) Outlays 13454905	V-17 (1x23) Outlays 35293244	V-19 (1x23) Outlays 46937940	V-20 (1x2) Investment 8745278	

Sources : Author's illustration from SAM-Civ2013

Note: Gvt=Government ; HH=Households ; GFCF=Gross Fixed Capital Formation ; SC=Stock Change.

M=Matrix ; V=Vector ; S=Scalar elements ; Gvt : Government ; Dimensions (Row x Column) of corresponding matrices, vectors and scalars are shown in the parentheses ; The values are in million CFA Franc in current prices and show the sums of corresponding matrices, vectors or scalars.