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Article

Analysis of the Interrelationship Between the Development of the Social Services System and Macroeconomic Indicators

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Abstract: The importance of this article is rounded analysis of the formation system at social services sphere of Uzbekistan and its connections with key macroeconomic indicators. Design/methodology/approachThe goal of the study is to determine the utility relationship between social service output and GDP, public spending, employment rate, inflation and demographic factors. Methods: The research implements a systematic approach, statistical dynamics, comparative analysis, and correlation methods. The results show that social services, economic growth and government spending were positively related. Development financing of education and healthcare greases the wheels of human capital accumulation and macroeconomic stability. Simultaneously, inflation rates and changes in the job market can impact the value of social service delivery as well. The article's scientific contribution is the establishment of an integrated analytical framework that elucidates the transmission mechanism through which investment in social sectors modulates macroeconomic performance. We argue that this highlighted the role that the efficiency of social services plays as an important condition for inclusive and sustainable economic growth, a finding called out early on in the study (pp. 223-4).

Keywords:: Social Services, Macroeconomic Indicators, GDP, Public Expenditure, Human Capital, Correlation Analysis, Institutional Development, Inclusive Growth

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1. Introduction

For these reasons, social services in contemporary economic systems are critical not only for providing social protection but also for influencing long-term macroeconomic stability and sustainable development. As a result of structural transformation and digitalization across economies, the social services sector will continue to be molded into broader economic systems. More importantly, education, health and social protection services have a direct impact on human capital development, productive labor and the competitiveness of economies [1].

Macroeconomic indicators including gross domestic product (GDP), employment rate, inflation, public expenditure and demographic trends mirror the overall state of a national economy. Thus, within these macroeconomic variables, the development of social services has a considerable impact and is influenced by them. Support for expanding social services may positively contribute to economic growth through increased human capital and labor market participation. On the other hand, macroeconomic instability, inflationary pressure or fiscal restrictions can hinder the eficiency and sustainability of social services provision [2], [3].

The relationship between social sector financing and macroeconomic performance has special importance for developing market economies. Investing in the people with education and health care empowers them to be productive, contributive members of society, which helps economic growth that is inclusive. Thus, study of interdecendence of social service development and macro economic indicators is precondition for effective formulation of public policy as well as to facilitate balanced economic growth.

The purpose of this study is to analyze the actual functional dependence of expansion social services system on the main macroeconomic performance [4]. Using statistical and analytical techniques, the study highlights transmission mechanisms through which development in social sectors facilitates macroeconomic stabilization and long-term economic growth. This is particularly relevant in the context of current institutional reforms and strategic directions being undertaken to improve social protection systems and enhance quality of services.

Literature Review

The theoretical bases of the idea of social services have developed in different traditions of economic and social thought over time, gaining more and more richness. Existing academic literature covers the concept of social service from an institutional, functional and postmodern perspective.

In the institutional approach, social services are understood as a tool by which the state meets its social duty. Such a perspective underlines the regulatory and redistributive role of public institutions in guaranteeing social welfare and protecting vulnerable groups. On the other hand, functional theory differentiates the field of social services as practical activities designed to meet certain social needs within the population and is primarily directed toward effective outcomes in terms of service relevance and quality. On the other hand, the postmodern perspective of social services incorporates these services in a larger agenda about human rights needs, social justice and inclusive development (Unesco,) which seem to emphasize more than ever, on dimensions related to normative perspective of issues such as welfare provision.

From this perspective, the social services system is perceived not just as an instrument of social policy, but a strategic institution that supports human capital generation and stable economic growth. Social services directly affect productivity, labor market participation and long-term economic stability by improving access to education, health and social protection.

One of its leading representatives among institutional theory founders, Richard Titmuss, in his fundamental work “Commitment to Welfare” [5], defined social services as an expression of society’s responsibility toward the members. His approach views social services as a middle ground between free market economy and state sponsored programs to supply the society with better means of welfare. Titmuss identified three main models of welfare: the residual model, the industrial achievement-performance model and the institutional redistributive model. Derived from such debates, these models still influence current discussions around the design, financing and effectiveness of social service delivery systems in both advanced and developing economies. Norman Johnson, who looks at a broader scope of social services in “The Welfare State in Transition” [9] describes it as “a collection of activities provided by the state or by institutions regulated by the state to meet the population's social needs such as education, health care, assistance less than response and related services. According to Johnson, these are the five key ingredients of social services: public responsibility, universality and accessibility, professionalism, bureaucratic organization, and public financing. His framework focuses on structural and administrative underpinning of welfare in a modern state.

The practical embodiment of the welfare state idea is social services, as Robert Pinker [6], writing in “Making Sense of the Mixed Economy of Welfare,” calls this: He emphasizes their pluralistic character, contending that welfare provision is the outcome of a

complicated interplay between four sectors: the state, the market, voluntary (charitable) organizations and the family. Pinker redirects focus away from state-centric models and towards a mixed welfare economy approach.

Esping-Andersen [7] provides a relevant framework in his influential study of welfare regimes and social services in "The Three Worlds of Welfare Capitalism" [7]. He differentiates three types of welfare regimes: liberal, corporatist (conservative), and social-democratic. Under liberal regimes (e.g., the USA, Canada and Australia), social services are mainly market-oriented and focus on the most disadvantaged groups. In corporatist regimes (e.g. Germany, France, Italy), the welfare regime entails a relationship with occupational status and social insurance systems. In the social-democratic regimes (the Scandinavian countries), social services were universal and provided according to equal citizenship rights.

Julia O'Connor refreshingly expands on Esping-Andersen's framework by adding the gender dimension of welfare systems. She argues that social services are essential for allowing women to participate in the labor market and facilitating equality between genders, thus expanding the empirical domain of welfare state research. From the public economics perspective, Paul Samuelson made it very clear in his landmark paper titled "The Pure Theory of Public Expenditure" [8] that many social services have characteristics of what we call public goods, i.e. non-rivalry and non-excludability. Because of these properties, social services cannot be efficiently allocated purely through market mechanisms which justifies state intervention

Richard Musgrave explains in "The Theory of Public Finance" [9] that there are three fundamental functions of the state: resource allocation, income redistribution, and macroeconomic stabilization. All three functions are served by social services. Musgrave also introduced the idea of "merit goods," which are goods and services that society believes should be consumed at higher levels than individuals would choose on their own due to positive externalities. Within the human capital framework, Gary Becker's "Human Capital" [10] conceptualizes education and healthcare as investments that enhance productivity and long-term economic growth. According to Becker, services like education and health are strategic investments in human capital formation, which is one of the leading determinates of sustainable economic development.

The social services system is the very basis of a common infrastructure which serves as an important function to improve quality of life and human capital whilst creating stability for society. Some of the most seminal variables of social sector development are the public expenditure on education, health care and social protection.

The system of social services in Uzbekistan is an integral part of the state social policy. It covers extensive steps to aid representative groups in the community, augment human capital development and social stability. Social services play a globally recognized vital role in transforming the socio-economic trajectory of nations, and since 1994 South Africa has developed a constitutional, sector-specific legislative foundation with supportive presidential decrees and national development programs to create a robust regulatory frameworkPhoto: GetFedUp/FlickrCivil society organizations (CSOs) want to see an end to a business-as-usual approach that fails to tackle poverty issues.

2. Material and Methods

This study is aimed at assessing the socio-economic effectiveness of the social services system in Uzbekistan and is conducted on the basis of a comprehensive and consistent scientific approach. A systematic research design was applied to ensure theoretical substantiation of the research problem, empirical evaluation of its practical dimensions, and the development of policy-oriented recommendations.

The research process was structured into several interrelated stages. The theoretical basis of the social services system was defined in the first — stage by comprehensive

analysis of academic literature, meta-synthesis and theoretical generalization methods. The study is based on social protection theory, the human capital concept, institutional economics and sustainable development models, this badan references all provide the theoretical framework of the research.

In stage two, a conceptual analytical model is formulated in order to assess the efficacy of social services. The model progressively theorizes the connections between public social expenditures, service coverage and targeting mechanisms, human capital development variables and employment dynamics, as well as poverty reduction measurements. In contrast to more conventional cost-based methods, this model focuses on outcome-oriented impact mechanisms in evaluating social service performance.

The third stage included applied research based on items of official statistical data from the State Statistics Agency, National Agency for Social Protection, Ministry of Finance and other sustainable sources. Analysis of long-term time-series data and regional indicators provided insight into the interrelationship of the share of social expenditures, accessibility to services, targeted assistance as well as poverty, level of employment and human development indicators. Dynamic and comparative analysis methods were utilized to trace major trends alongside structural transformation.

Stage 4: Assessing system effectiveness and existing institutional challenges The strengths, weaknesses, opportunities, and threats to the social services system were organized through a Strengths Weaknesses Opportunities Threats (SWOT) analysis. Institutional and organizational-economic improvement measures were consequently developed based on this.

The research findings are reliable due to the use of official and verified statistical sources, cross-validation of data and multi-year dynamic analysis. This contextualisation of theory gives soundness and internal coherence to the study. Overall, the selected methodological tools are fully aligned with the research objectives and provide a robust framework for evaluating the socio-economic impact of the social services system and developing practical recommendations.

3. Results and Discussion

Social services constitute a significant component of the overall service sector and include education services (schools, colleges, and higher education institutions), healthcare services (hospitals, outpatient clinics, and individual medical services), social protection services (pension administration, targeted social assistance), and other related activities. These sectors form the core statistical indicators used to measure the scope and development of social services.

In the next phase of the research, social service spending growth was analyzed in the light of human capital formation (which is considered to be one of considerable sources for economic growth). Finally, the transmission mechanism between macroeconomic variables and social service growth was studied to see how this relationship worked. More specifically, growth in GDP creates more revenues collected by the budget which allows for higher allocations of resources to good areas as education and healthcare. These allocations stimulate the expansion of service provision, generating a multiplier effect. In other words, the growth in the volume of social services can be partially explained by the expansion of public financial resources resulting from economic growth.

Numerous empirical studies confirm that the relationship between GDP growth and public social expenditures is not strictly linear but operates through indirect and reinforcing channels. Economic growth creates fiscal space to invest more in education, healthcare and social protection. For example, Baldacci et al. argue that public spending promotes development of human capital, which supports economic activity and sustainable growth [6] [7]. On a similar note, Fan and Rao highlight that in developing

nations the composition of public expenditures is key because spending on national- and regional-level education and healthcare can have positive effects on economic growth.

In addition, the result of Arjona, Ladaique and Pearson offer significant information on socio-economic protection cost and economic growth in nations of constructive OED. Their research emphasizes that considering the large proportion of social spending in public budgets, their contribution to growth should be analysed via dedicated transmission channels. The nature and extent of this impact is determined by the structure, targeting and design of social spending programs.

The logic is that the social services and macroeconomic performance are interlinked, this has been supported in detail by the empirical analysis overall. Whereas economic growth provides the financial space for social service expansion, well-designed and effectively financed social services facilitate the formation of human capital, labor force participation, and sustainable economic development. Table 1 shows that the social services sector is directly related to human capital indicators [1]. Human capital theory is central to explaining the impact of social services on economic growth. Thus the social services register their impact purely in an economic term of education attainment, health status and life expectancy that manifests into labor productivity. Theoretical groundwork properly credited to Theodore Schultz and Gary Becker reflect this particularly (4).

*Schultz argues that investments in human capital—spending on education, health care, and professional training—all reduce labor nonproductivity as well as promote national economic development . In his opinion, the betterment of human resources is a primary source for increasing long-term growth. So by improving the efficiency of labor and strengthening innovation capacity while adapting to structural changes in the economy, human capital accumulation increases economic productivity.

Likewise, Becker considers education and healthcare services as a form of strategic investment rather than simple consumption expenditure. Investment in human capital is long-term spending and yields returns such as higher income, improved productivity, and increased sustainable economic output.

From this viewpoint, social services serve not only as instruments of social support but also as mechanisms for enhancing economic competitiveness and macroeconomic stability.

Therefore, the expansion and qualitative improvement of social services can be interpreted as investments in human capital, which play a decisive role in supporting sustainable economic development and strengthening the overall productive capacity of the economy.

In accordance with the above-mentioned theoretical perspectives, expenditures on education and healthcare can be reasonably considered strategic drivers of economic growth. This provides a basis for testing the scientific hypothesis that increasing public spending on social services contributes to human capital development, which in turn exerts a positive influence on economic growth.

Accordingly, the present study focuses on examining the economic interrelationship between social services and key macroeconomic variables. Particular attention is given to analyzing how the expansion of social service output influences GDP, population dynamics, inflation, and unemployment, as well as how it contributes to stimulating economic growth. In this research, the volume of social services encompasses education services, healthcare services, and social protection activities. Based on the methodological framework adopted in the study, Table 1 was constructed to illustrate the main macroeconomic indicators over the observed period.

Table 1 presents the dynamics of key macroeconomic indicators of the Republic of Uzbekistan over a long-term period. On the basis of these data, the growth trajectory of social service output and its relationship with major macroeconomic factors were

analyzed. The statistical evidence demonstrates a substantial and consistent increase in the volume of social services. Over the analyzed period, social service output expanded dramatically, indicating a strong upward development trend within the sector.

At the same time, a clear positive relationship between GDP growth and the expansion of social services can be observed. The increase in GDP was accompanied by a parallel rise in social service expenditures and output. This pattern suggests that economic growth creates the necessary fiscal capacity for expanding social services. In other words, the development of the social services sector is closely linked to the broader macroeconomic environment, where GDP growth serves as a primary financial foundation for increasing public investment in social infrastructure.

Overall, the empirical findings support the assumption that social service development and economic growth are mutually reinforcing processes. Economic expansion enables greater public investment in social services, while improved social services enhance human capital formation and contribute to long-term sustainable growth.

Table 1. Dynamics of Social Service Output and Key Macroeconomic Indicators

Year	Social Service Output (billion UZS)	GDP (billion UZS)	Population (million)	Inflation (%)	Unemployment (%)
2010	1021,1	60 876 691 748,35	28385506,0	48,5	5,36
2011	1381,8	65 457 747 965,39	28 823 196,0	21,6	4,96
2012	1884,1	70 106 848 438,95	29 261 903,0	15,3	4,87
2013	2464,9	75 222 229 947,90	29 724 065,0	11,1	4,86
2014	3024,3	80 392 884 506,10	30 222 994,0	14,0	5,09
2015	3781,8	86 196 264 755,31	30 749 346,0	10,5	5,15
2016	4679,3	91 309 557 164,51	31 284 568,0	8,9	5,16
2017	8681,2	95 322 862 968,51	31 819 178,0	33,6	5,83
2018	10791,3	100 622 047 495,60	32 373 490,0	25,8	5,38
2019	14423,7	107 444 145 839,58	32 964 701,0	17,5	4,93
2020	16492	109 123 866 128,15	33 586 372,0	10,6	5,29
2021	23 656,3	117891622 986,82	34 243 696,0	13,6	5,36
2022	30 765,3	124 966 702 851,26	34 938 955,0	14,4	4,49
2023	38 823,6	132 828 878 427,53	35 652 307,0	13,8	4,46
2024	48 072,3	141 462 755 525,29	36 361 859,0	13,3	4,48

Source: Compiled by the author based on data from the State Committee of the Republic of Uzbekistan on Statistics (relevant years).

The demographic trends of Uzbekistan show continuous growth in population during the analyzed time frame. It was a steadily growing population — up from 28.3 million in 2010 to 36.3 million in 2024. "Population growth in itself leads to increasing demand for education, healthcare and social protection services. As a result, the growth of social service output can be viewed in part as a response to demographic pressure that raises demand for schools and medical institutions, along with programs of social assistance (Table 1).

This macroeconomic stability also helped further shape the paths of social service development. [Inflation in the last ten years, which from 48.6% in 2010 dropped to 10.5% down to 2015 and then stabilized at 13.4% for 2024, made the fiscal mirrors more predictable]. The stabilization of inflation strengthened the real purchasing power on public expenditures and enabled social spending to generate real sectoral growth. This means that macroeconomic stabilization policies indirectly contributed to the extension of social services.

Okun's Law states that unemployment and GDP growth are inversely related. The ratio of the share of unemployment in Uzbekistan appeared to be relatively small and stable, ranging between 4.4–5.8% during the analyzed period. The lack of abrupt jumps in unemployed populations protected household income levels and kept demand for social services steady. So, labour market stability was a complementary element promoting sectoral growth.

After 2020, however, we saw a particularly large structural shift. Social service output (gross value added in the social sphere) — 16492 billion UZS in 2020, 23656 billion UZS in 2021, 30765 billion UZS in 2022, 38823 billion UZS in 2023 and finally increased to148072 billion USZ. This rapid growth period has also been seen as a sign of increased state involvement in social policy and placement on the government agenda [11].

The long-term dynamics also show a close parallelism between GDP growth and social service expansion. In 2010, the GDP was recorded at 60,876.7 billion UZS, while in 2024 it reached 141,462.8 billion UZS. In the same time frame, social service output increased close to 47 times. We can interpret this chain mechanism as:

GDP growth → increased budget revenues → higher public allocations to education and healthcare → more extensive social services → human capital accumulation → robust long-term economic growth

Hence empirical evidence proves that macroeconomic growth activates the development of social service as well as the reverse, that is, the latter also invigorates new approaches to frame and leverage an economy. Economic growth assures fiscal space for social investment, which in turn augments human capital and fosters sustainable inclusive economic development.

In general, the analysis allows us to conclude that the development of social services in Uzbekistan is characterized by structural dependence on GDP growth, demographic dynamics, stabilization of inflation processes, strengthening labor markets, as well as significant strengthening of public finance. This interdependence emphasizes the need for large-scale organizational and economic mechanisms to increase the efficiency of social services sector and their macroeconomic effects over the long run. The analysis of the transfers highlights a significant rise in public spending on social services in recent years. Thus according to the data shown in Table-2 for 2020-2024 government spending on education surged by 57.9% while it increased by 72.4% on health care (9).

This increasing trend is a reflection of strategic reorientation in fiscal policy towards the strengthening of human capital formation and improving quality and availability of social services [12]. Investment in public spending on education leads to better skill formation that raises productivity and longer-term competitiveness. Likewise, spending

more on healthcare improves population health and life expectancy and decreases productivity lost from illness.

Macro-economically, expanded social expenditures could be viewed as an investment-led process. It goes like this, the chain effect:

Public revenues increased> Aggregate allocation to education/health Increased → service coverage and quality improved → human capital strengthened → economic productivity and growth enhanced [13].

Thus, the increase of social sector expenditure is not just about an expanded fiscal space or battle for a larger share of the pie (the proverbial fight between guns and butter); it can also be understood as a political choice for sustainable and inclusive development. These literature provides evidence that the growth in public expenditure in education and health are an important transmission channel through which a macroeconomic expansion translates into improved long-term socioeconomic outcomes.

Table 2. Government Expenditures on the Social Sector in Uzbekistan (2020–2024)

Indicators	2020	2021	2022	2023	2024	Growth in 2024 Compared to 2020 (%)
Government Expenditures on Education (billion UZS)	29961,1	39640,8	50271,3	61220,3	71240,5	57,9
Government Expenditures on Healthcare (billion UZS)	19397,2	23316,8	27288,3	31066,6	33439	72,4

Source: Author's calculations based on official statistical data from the Statistics Agency under the President of the Republic of Uzbekistan (various years).

The increase in public expenditures has been accompanied by measurable improvements in human resource capacity within the social sector. As shown in Table 3, growth in education spending resulted in an 11.5% increase in the number of teachers, while healthcare expenditures contributed to a 15.2% rise in the number of physicians.

These outcomes highlight that the expansion of public spending was not merely nominal but translated into tangible improvements in service capacity. From an efficiency perspective, this reflects the relationship between financial inputs (public expenditures) and institutional outputs (human resource expansion). The observed growth in professional staff indicates strengthening service delivery capacity and expanding coverage of social services.

Such developments are particularly important in evaluating the economic effectiveness of social services [14]. Rather than assessing efficiency solely through expenditure volumes, it is essential to examine achieved outcomes, including improvements in human capital indicators and service accessibility. The increase in qualified personnel in education and healthcare demonstrates that public investments in the social sector contribute directly to enhancing human capital formation.

Therefore, the empirical evidence suggests that increased social spending generates measurable structural improvements in workforce capacity, thereby reinforcing the long-term economic benefits of investment in human capital.

Table 3. Dynamics of Social Sector Personnel and Social Service Coverage in Uzbekistan (2000–2024)

Indicators	2020	2021	2022	2023	2024	Growth in 2024 Compared to 2020 (%).
Total Number of Teachers (thousand persons)	523312	529116	541473	548546	583559	11,5%
Total Number of Physicians (thousand persons)	93337	95587	100524	105723	107497	15,2%

Source: Author's calculations based on official statistical data from the Statistics Agency under the President of the Republic of Uzbekistan (various years).

The level of social expenses may also be relatively analyzed according to the international practice in accordance with the above-mentioned criteria. OECD data shows that in 2024, member nations spent a mean of 9.3% of GDP on healthcare. While such figure is less than half the max seen during COVID-19 crisis, it is much above pre-COVID levels. Moreover, the OECD's 2025 analytical report also suggests that in high-income economies the share of public resources for financing healthcare is about 70–75% out of total spending.

A large share of public expenditure highlights the importance that health and education spending make up for important components of human capital development. From the standpoint of macro-economic impact, continuous public investment in these sectors raises productivity, fortifies workforce resilience, and sustains long-term economic competitiveness [15].

The Human Capital Project by the World Bank is a global initiative to accelerate investment in people as the key to individual success and economic growth. In this paradigm, human capital includes educational attainment, skills, health status and resilience — attributes that directly impact a person's productive ability. These attributes have intrinsic value and are crucial for individuals to learn, work, adapt, and be of use [16].

The World Bank's Human Capital indicators, specifically the Harmonized Test Scores index of 2025, shows Uzbekistan a score of 391.566 and ranked 95 out of 229 countries. Compared to the global median of 406.291. Although this reflects better performance in education, it also emphasizes the necessity of enhancing quality and other elements toward international average levels across system dimensions such as instruction, teacher professionalism [], and school infrastructure [,].

Indicator: Harmonized Test Scores — an internationally comparable measure of education quality based on results from standardized testing. This research is a crucial instrument for assessing the educational part of human capital, illustrating the need to strengthen result-oriented policies in this sector in order to improve trend on adequate quality of human capital integer in Uzbekistan.

This analysis of international benchmarks and macroeconomic dynamics indicates that face a positive interrelationship between social services output, GDP growth, population growth and the redistribution of public social expenditures. Similarly, the development of social service system is greatly subjected to macroeconomic environment in such aspects as economic growth rate, fiscal capacity, inflation stability, and labor market condition. These findings illustrate that the social services sector functions within

a complex macroeconomic environment in which sustainable development will necessitate synergy between fiscal, institutional and structural reforms.

4. Conclusion

Given the analysis formed, several key conclusions can be drawn:

Die Erkenntnisse belegen erstens, dass der Ausbau des sozialen Dienstes eng mit dem Wachstum von BIP, fiskalischer Kapazität sowie Inflation und arbeitsmarktspezifischen Indikatoren — insbesondere mit dem Maß an beschäftigtund Arbeitslosigkeit und den reellen Einkommensniveaus — verzahnt ist. Stability of budget revenues and inflation rates defines the real value and continuity of financing social services. Thus, macroeconomic stability is the first prerequisite of sustainable social sector development.

Second, social services—including education, healthcare, and social protection—are affected by macroeconomic conditions, but at the same time, contribute to economic growth through human capital formation link and better labor productivity. Well-functioning social provision has positive feedback effects on economic performance in the medium and long run through improving skills, health outcomes, and labour market participation.

A third key concern is the sustainability of social services 24 which requires fiscal discipline, efficient- and targeted resource allocation, as well as an assessment of risks stemming from external shocks and inflation. These results offer a methodological basis for econometric relationships between social service indicators and major macroeconomic factors.

Based on these findings, this study constructs the social services sector as a key pillar of national economy that underpins human capital accumulation. Based on the above considerations, the research derives a hypothesis that the development of social services is structurally connected with economic stability, population welfare and priorities in state social policy.

Based on this assumption, a correlation and regression analyses study was suggested to illustrate the relationship among social service output(Y) against four macroeconomic variables: Gross domestic product (GDP)-X_1, Population size-X_2, Inflation-X_3 and Unemployment-X_4. To do this, it is necessary to see how the development of social services in Uzbekistan correlates with economic growth and demographic dynamics, as well as labor market conditions.

Methodologically, this framework is underpinned by time series analysis and econometric estimation to quantitatively measure these relationships.

Indeed, the overall finding of this study is that social services development should not be seen in isolation but rather as part of a broader macroeconomic picture where all components of fiscal, institutional and structural policies need to work together to support sustainable and inclusive economic growth.

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