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Competition, Taxes, Subsidies and Social Welfare Functions: A Case Study of Cocoa (*Theobroma Cacao*) in Nigeria

¹ Idisi PO, ² Adeagbo BA, ³ Ogwu IJ, ⁴ Fabiyi IO, ⁵ Awatt NK
^{1, 2, 3, 4, 5} Department of Agricultural Economics, University of Abuja, Nigeria

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Corresponding Author: **Idisi PO**

Abstract

Cocoa (*Theobroma cacao*) remains a vital export crop, an important source of rural income and foreign exchange, predominantly among ageing smallholder farmers in southern Nigeria, and it continues to underperform compared to global competitors. Therefore, this paper examines the nexus among market structure, taxation, subsidies, and social welfare within Nigeria's cocoa sector. Drawing on empirical studies and policy evidence, this review highlights how competition, fiscal policies, and welfare considerations shape farmers' livelihoods and the overall performance of the cocoa value chain. Cocoa farmers face structural challenges, including weak market linkages, limited access to finance and modern inputs, and

policy volatility, which ultimately undermine productivity and farmers' welfare. Government interventions through input and seedling subsidies have had limited success due to implementation inefficiencies, while taxation and regulatory frameworks influence incentives for production and value addition. Furthermore, fragmented market governance allows intermediaries to capture rent, thereby reducing the share of benefits accruing to farmers. This study recommends more effectively targeted subsidies, simplified and transparent tax regimes for smallholders, improved market governance, and the integration of welfare indicators into cocoa policy design.

Keywords: Cocoa, Market Structure, Taxation, Subsidy, Welfare Indicator

1. Introduction

Over the years, cocoa has been a key source of export earnings, alongside crude oil, and plays a significant role in Nigeria's drive for diversification (ICCO, 2023) ^[20]. In addition to its relevance to export trade, cocoa can provide livelihoods to thousands of smallholder farmers in parts of Ondo, Osun, Ekiti, Oyo, and Cross River States in the South-West and South-South geopolitical zones of Nigeria (CRIN, 2023) ^[10].

Despite its economic potential, Nigeria's cocoa industry underperforms compared to competitors (Kehinde, 2022; Frontiers in Sustainable Food Systems, 2025) ^[18, 16].

Regrettably, the Food and Agriculture Organisation and the European Union considered Côte d'Ivoire, Ghana and Cameroon on long-term economic, social & environmental sustainability of cocoa value chains, while Nigeria is being left out owing to its relatively lower performance (European Commission, 2021; Food and Agriculture Organisation, 2025) ^[12, 17].

Structural problems related to old trees, pest and disease attacks, price fluctuations, poor organisation among farmers, and limited access to credit restrict productivity (Wessel *et al.*, 2015; Adesanya *et al.*, 2021 ^[3]). Government interventions aimed at improving output, including subsidies, tax policy, and market reforms, have had varying impacts on farmer welfare.

Therefore, this review seeks to summarise the literature, providing contrasting views on market competition, taxation, and subsidies, as well as on social welfare functions for the cocoa-growing industries. Unlike previous studies, which focus on one specific policy dimension, this paper provides a holistic framework for analysing the impact of fiscal and institutional changes on rural livelihoods and sectoral growth.

Hence, this paper used a systematic narrative review approach to draw on literature from academic journals, institutional reports (ICCO, CRIN), and government policy documents. This paper selected sources based on relevance to Nigerian cocoa, and themes were synthesised around issues of competition, subsidies, taxes, and welfare. The Structure Conduct Performance (SCP) paradigm from industrial organisation was used to examine how Nigeria's cocoa market dynamics influence farmers' welfare. The SCP model provides a structured framework for understanding how market structure determines conduct, how

conduct shapes performance, and how performance ultimately affects welfare.

2. Background to the Study

Despite several interventions to revive the cocoa industry, Nigeria still lags behind regional leaders such as Côte d'Ivoire and Ghana in both production capacity and value addition (Frontiers in Agronomy, 2022; ICCO, 2023; Kongor *et al.*, 2024) [15, 20, 19]. Government efforts to revive the sector have focused on subsidies, particularly seedling distribution and input support. However, these initiatives face persistent problems of poor targeting, inadequate monitoring, and weak institutional coordination (CRIN, 2024; Kongor *et al.*, 2024) [11, 19]. Consequently, the Nigerian cocoa sector is underperforming. The cocoa production sector in Nigeria is dominated by smallholder farmers, characterised by fragmented plots, ageing farmers, low-input practices, limited access to extension services and finance, and an insufficient supply of improved seedlings. (Frontiers in Sustainable Food Systems, 2025; CRIN, 2024; Kongor *et al.*, 2024; Adesanya *et al.*, 2021; Aikpokpodion, *et al.*, 2019) [16, 11, 19, 3, 5].

Recent evidence shows that while rising global cocoa prices have attracted younger farmers into the sector, structural weaknesses in input distribution, extension delivery, and farm rehabilitation programs continue to limit productivity and welfare outcomes (Ezeamalu, 2025; CRIN, 2024) [13, 11]. Sadly, market linkages remain fragmented, with most farmers relying on intermediaries that capture a significant share of value, thereby reducing farm-gate prices and farm-gate incentives (ICCO, 2023) [20]. On the processing side, domestic value addition is constrained by multiple taxation, regulatory overlap, and infrastructure deficits; while issues of deforestation and illegal cocoa farming raise sustainability and traceability concerns in global markets (Associated Press, 2023; Okojie, 2024) [7, 23].

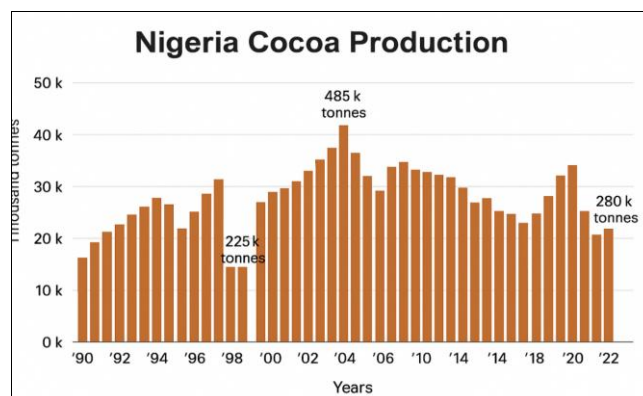
Although there is renewed government policy interest and private-sector investment in upgrading the cocoa value chain. (ICCO, 2023; Reuters, 2025) [20, 26]. Systematic analysis of how market competition, fiscal instruments (taxation and subsidies), and welfare outcomes interact remains limited. This study, therefore, reviews recent empirical and policy evidence to show how these factors jointly shape the livelihoods of cocoa farmers and the broader performance of the sector in Nigeria.

- How do market structure and competition affect efficiency and producer outcomes in Nigeria's cocoa sector?
- In what ways have subsidies such as seedlings, inputs, and extension services influenced cocoa productivity and farmer welfare?
- What impacts do taxation regimes and fiscal policies have on cocoa producers and value addition along the supply chain?

3. Trend of cocoa production in Nigeria

Cocoa production in the 1950s and 1960s was considered the "golden age" of cocoa production and the leading foreign-exchange earner (Oladokun, 2024) [24]. Nigeria was the world's second-largest cocoa producer after Ghana. However, in the late 1960s, a significant decline began that continued through the 1970s and 1980s, primarily due to a shift in focus and investment away from the oil industry following the discovery of crude oil (Walker, 2000) [28].

During the 1980s, the economic downturns and further neglect of the agricultural sector reduced production from about 317,000 tonnes in the 1970-1971 to 150,000 tonnes by 1986. The dissolution of the government marketing board in 1986 led to a decrease in the use of agricultural inputs, and quality control further plunged cocoa production and exchange earnings to much lower levels over the decades.



Source: Food and Agriculture Organization of the United Nations

Fig 1: Nigeria cocoa production trend from 1990- 2022

Based on the FAO data, the histogram shows clear fluctuations in cocoa production over time in Nigeria. Output rose steadily from about 230,000 tonnes in 1990s, peaking at 485,000 tonnes in 2006, reflecting favourable export prices and government support during that period. However, output declined sharply afterwards in 2006, falling below 250,000 tonnes by 2015, mainly due to low investment, poor farm management, ageing trees, and climate-related challenges. Although production partially recovered to about 280,000 tonnes in 2022, it remains below its historical peak. The overall trend highlights the need for policy interventions.

3.1 Cocoa market structure and trade in Nigeria

The cocoa industry in Nigeria operates under a dual market structure that disadvantages smallholder farmers (Olutumise *et al.*, 2020; Idowu *et al.*, 2020; Ajetomobi *et al.*, 2014) [25, 14, 6]. In terms of production, cocoa cultivation in Nigeria is dominated by smallholder farmers managing plots typically under five hectares. This fragmented supply base reflects the features of a perfectly competitive system, in which numerous farmers act as price takers (ICCO, 2023) [20].

In contrast, the marketing and export segments are far more concentrated, producing outcomes closer to oligopsony, where relatively few buyers exercise disproportionate power over many producers.

The historical shift from state-controlled marketing boards to liberalised private markets in the 1980s altered the balance of power (Adebayo *et al.*, 2024) [1]. While reforms enabled farmers to link more directly to global prices, they also entrenched the dominance of intermediaries and exporters (Ajetomobi *et al.*, 2014) [6]. Studies show that licensed buying agents and other intermediaries purchase up to 90 per cent of cocoa directly from farmers, whereas farmers' cooperatives and associations are stronger in Ghana and Côte d'Ivoire (Adesiyun, 2023; UNCTAD, 2015) [4, 27]. This imbalance reduces farmers' bargaining power and allows intermediaries to capture margins that should accrue to producers.

At the export level, concentration is even stronger: a handful of firms control most international sales, creating a bottleneck between global demand and dispersed domestic supply (ICCO, 2023) ^[20]. Cocoa world price gains rarely fully translate into farm-gate incomes. Consequently, cocoa price transmission remains imperfect. Evidence shows that information asymmetries, limited access to credit, and inadequate storage infrastructure compel farmers to sell quickly after harvest, often at discounted prices, thereby reinforcing buyer dominance (Adesiyan *et al.*, 2022). Emerging investments in domestic processing and ongoing debates about re-establishing a national cocoa management board signal potential shifts in market governance (Reuters, 2025 ^[26]; Ayanwale *et al.*, 2020). However, unless Nigeria strengthens farmer cooperatives, introduces transparent pricing mechanisms, and improves rural infrastructure, the cocoa sector will likely remain oligopsonistic, with farmers capturing only a limited share of value within the global chain.

3.2 Effects of subsidies in the Nigerian cocoa sector

Government subsidies have long been central to Nigeria's cocoa policy, primarily through seedling distribution, fertiliser support, and extension services. Subsidies were reintroduced in the 2000s as part of broader agricultural transformation agendas aimed at boosting production after decades of decline (Adepoju *et al.*, 2019) ^[2]. More recently, input subsidy programs have targeted the replacement of ageing cocoa trees with high-yield varieties, supported by the Cocoa Research Institute of Nigeria (CRIN, 2024) ^[11].

However, the effectiveness of subsidies has been mixed. Studies highlight problems of elite capture, delayed delivery of seedlings, and poor monitoring, which limit benefits for ordinary farmers (Bamire *et al.*, 2015; CRIN, 2024) ^[9, 11]. Many smallholders still struggle to access subsidised inputs due to bureaucratic bottlenecks or corruption in distribution channels. These challenges reduce the overall impact of subsidies on productivity and welfare.

Nevertheless, when well implemented, subsidies have been shown to improve yields and farmer incomes significantly. For instance, targeted input support combined with extension training has enhanced farm productivity and increased resilience against pests and diseases (Bamire *et al.*, 2015 ^[9]; Kolawole *et al.*, 2022). Moreover, subsidies for tree rehabilitation are increasingly important given the ageing nature of Nigeria's cocoa farms. Consequently, subsidies can play a stronger role in improving both productivity and welfare outcomes in Nigeria's cocoa sector.

3.3 Impact of taxation regime in Nigeria's cocoa sector

Historically, export taxes and levies provided government revenue but also depressed farm-gate prices, discouraging production (Ajetomobi *et al.*, 2014) ^[6]. Although liberalisation reduced direct export taxes, smallholder farmers and processors continue to face multiple layers of levies from state and local governments, as well as unofficial charges that increase marketing costs (Okojie, 2024) ^[23]. These fragmented tax regimes reduce competitiveness and disincentivise investment in domestic processing.

Empirical studies show that inefficient taxation leads to "double taxation" effects, where both producers and processors bear overlapping burdens, eroding margins across the chain (Ojo *et al.*, 2021). Cocoa processors have

reported multiple taxation as a significant barrier to scaling, with many firms underperforming despite rising global demand for semi-processed cocoa products (BusinessDay, 2024). Moreover, the absence of a harmonised national taxation framework creates uncertainty for investors. It undermines Nigeria's ability to compete with Ghana and Côte d'Ivoire, where export levies are more centralised and predictable (UNCTAD, 2015) ^[27].

3.4 Social welfare functions in cocoa farming households

Social welfare functions in this context refer to the distribution of income, resources, and well-being across households, often linking production outcomes to broader measures of equity and poverty reduction (Varian, 2010). To capture a broader measure of household living standards, social welfare in the cocoa sector should be assessed beyond farm income alone. Hence, measuring welfare requires using both monetary and non-monetary indicators. It encompasses food security and household consumption, multi-dimensional measure of poverty status, gender equity, resilience to shocks, and environmental sustainability.

Studies show that many cocoa households remain vulnerable on multiple welfare dimensions such as financial risks, limited access to cash, and irregular input delivery, reducing household welfare and increasing the likelihood of distress sales and food insecurity, shortfalls in services like potable water, health care, and electricity (Yusuf *et al.*, 2024; Ogini *et al.*, 2023; Oguntade *et al.*, 2013) ^[30, 21, 22]. Targeted programs and certification can raise incomes and resilience, but the majority of farmers still fall below living-income thresholds (Ajebe, 2024; World Cocoa Foundation/Wageningen, 2024 ^[29]). It implies that earnings by themselves do not guarantee welfare improvements.

Finally, gender is central to welfare outcomes. Women perform key roles across the cocoa value chain but often have less access to land, credit, inputs, and extension services; this reduces household welfare and widens intra-household inequities (Auwah-Frimpong *et al.*, 2024) ^[8]. This gender gap reduces productivity and constrains female farmers' ability to capture welfare benefits from market improvements. Policies that ignore gendered constraints risk leaving significant welfare gains unrealised.

4. Policy implications and recommendations

Based on the findings of this review, several policy recommendations emerged for strengthening Nigeria's cocoa sector.

4.1 Cocoa market competition

Cocoa market competition can be strengthened by encouraging the formation of farmer cooperatives and producer associations, thereby improving bargaining power and reducing exploitation by intermediaries. Price discovery through digital platforms can increase transparency by giving farmers real-time access to prevailing market prices. Harmonising these measures can enhance market efficiency and ensure that farmers receive a fairer share of export revenues.

4.2 Reform subsidies

Subsidy programs should be reformed and monitored to ensure the timely and transparent delivery of inputs such as improved seedlings, fertilisers, and pesticides. Linking subsidies to cooperative membership and digital registration

could reduce elite capture and leakages that often divert benefits away from smallholder farmers. A more accountable subsidy regime would improve productivity, equity, and trust in government interventions.

4.3 Simplify taxation

Tax regimes for smallholder cocoa producers and processors are often complex and burdensome, hindering compliance and discouraging formalisation. Simplifying taxation through transparent and efficient procedures can reduce transaction costs and encourage better participation in formal markets. Moreover, targeted fiscal incentives for value addition can stimulate local processing, increase export revenues, and create rural employment opportunities.

4.4 Welfare metrics integration

Evaluating cocoa policies solely on output or export earnings overlooks their broader social implications. The government should systematically incorporate welfare metrics such as poverty reduction, food security, gender equity, and environmental sustainability into policy assessments. multidimensional approach ensures that interventions not only raise income but also improve overall living standards and resilience among farming households.

4.5 Regional Coordination

Nigeria can strengthen its global bargaining power by learning from the coordinated strategies of Ghana and Côte d'Ivoire, particularly their joint efforts to stabilise and set minimum export prices. Such regional coordination reduces vulnerability to volatile international markets and enhances producer countries' influence in global cocoa value chains. By aligning with neighbours, Nigeria can improve cocoa farmer incomes and social welfare.

5. Conclusion

Nigeria's cocoa industry remains critical for diversifying the economy beyond oil and for supporting rural livelihoods. Nonetheless, challenges such as inefficiencies in competition, poorly managed subsidies, and burdensome taxes continue to limit its growth. Aligning fiscal policies with welfare-focused planning can boost productivity and deliver inclusive benefits for cocoa-farming households.

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