Theory, Practice, and PDFI Institutional Design:

Case of Proposed

Ghana Women Development Bank

An Exploratory Sequential Mixed-Methods Study with Logistic Regression Analysis of Stakeholder Preferences for GWBD Operational Model Design

Analytical Framework:

New Structural Economics | Binary Logistic Regression | PDFI Institutional Design Analysis

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Abstract

This paper provides a theoretically grounded and empirically rigorous evaluation of the institutional design parameters for a proposed Ghana Women Development Bank (GWBD). Anchored in New Structural Economics (NSE), the study diagnoses persistent credit market failures affecting women-led micro, small, and medium-sized enterprises (MSMEs) and assesses stakeholders' preferences between first-tier and second-tier operational models using binary logistic regression. Survey data from 119 stakeholders were analysed to identify governance risk perceptions as the dominant determinant of structural design preference. Results indicate that political intervention ($\beta = 0.587$, $p<0.01$) and competitive distortion concerns ($\beta = 0.541$, $p<0.01$) are statistically significant predictors of second-tier model preference, yielding marginal probability increases of 13.4 and 12.3 percentage points, respectively. Drawing on historical evidence from Ghana's public development finance institutions, the paper recommends a hybrid operational model combining dominant wholesale lending with targeted retail engagement, underpinned by an independent governance framework and blended finance capitalisation.

Keywords: *Women Development Bank, Public Development Financing Institutions, Logistic Regression, New Structural Economics, Ghana, Institutional Design, Credit Market Failures*

Research Objectives

- To diagnose the structural financing gap affecting women-led MSMEs in Ghana using an NSE framework.
- To assess stakeholder perceptions of governance risks associated with alternative operational models.
- To empirically estimate the determinants of institutional design preference using

binary logistic regression.

- To derive evidence-based recommendations for the GWBD's governance, legal, and funding architecture.

1. Introduction

Ghana's structural transformation agenda requires targeted financial intermediation to address persistent and well-documented credit market failures. Women entrepreneurs constitute approximately 40– 50 per cent of all micro, small, and medium enterprises (MSMEs) in Ghana. Yet, they remain disproportionately excluded from formal credit markets due to institutional and structural constraints. Across sub-Saharan Africa, the estimated financing gap for women-led SMEs exceeds USD 42 billion, representing one of the most significant economic inefficiencies in the region's development trajectory.

The constraints driving this gap are systemic. They include inadequate collateral requirements, designed to favour male-dominated asset ownership norms; weak or absent credit histories resulting from informality; persistent information asymmetries between lenders and women-led enterprises; and documented gender-based lending biases within conventional financial institutions. These factors together constitute a structural barrier that cannot be addressed by market mechanisms alone.

Previous Ghanaian government interventions, including the National Entrepreneurship and Innovation Programme (NEIP) and the Youth Employment Agency (YEA), have attempted to bridge entrepreneurial financing gaps through programmatic means. These interventions have also underscored the need for a comprehensive institutional approach, where their intermittent and politically vulnerable nature has constrained their developmental effectiveness.

The proposed Ghana Women Development Bank (GWBD) represents a qualitatively different response: a permanent institutional mechanism aimed at correcting persistent market failures within a legally and financially independent framework. This study evaluates the appropriate institutional design for the GWBD through an integrated analysis combining

theoretical foundations drawn from New Structural Economics, historical institutional lessons from Ghana' s public development financing institutions, and original empirical evidence derived from logistic regression analysis of stakeholder survey data.

2. Literature Review

2.1 Theoretical Framework: New Structural Economics

The study adopts the New Structural Economics (NSE), systematically advanced by Justin Yifu Lin, as its primary theoretical lens. NSE argues that developing countries should not model their financial institutions after those of developed countries. Lin et al (2013) postulated that "appreciating the differences in financial structure and how it is related to economic development has policy implications for many countries, especially developing countries making efforts to strengthen their financial system." The authors' paper titled "Endowment, industrial structure, and appropriate financial structure: a new structural economics perspective" outlined a new way of thinking in understanding the connection between financial structure and economic development.

The authors proposed a theoretical hypothesis which stated that "the optimal financial structure in an economy depends on its period of economic development." This was in their bid to rope in a new perspective on the scholarly debate on the correlation between a nation' s economic development and its financial structure. These debates have been going on for decades as economists have come to terms with the fact that financial structure varies across countries.

The authors used statistical information from 1999– 2007 on the banking sector and 28 manufacturing industries in 30 provinces in China to outline a theory that the driving force of the evolution of financial structure is the development of the real economy and the corresponding changes in the demand for financial services. In their paper, the evolution of industrial structure is driven by the change in the economy' s endowment structure; as industrial structure changes, the demand for financial services also changes, so the financial structure evolves correspondingly.

Key findings of their paper showed that labour-intensive industries grew faster than capital-intensive sectors during the period in provinces where small banks were more active compared with provinces with more predominant large banks (Lin et al 2009). The authors went on to recommend that "a financial structure is appropriate for an economy at a particular level of economic development only when the characteristics of financial structure fit the characteristics of industrial structure determined by the endowments in the economy." They further posited that "the appropriate financial structure for an economy is also dynamic over time in that as the economy develops and its endowment structure updates, the appropriate financial structure for the economy also evolves correspondingly."

Ghana, as a lower-middle-income economy, is characterised by an abundance of labour, limited capital accumulation, and the dominance of labour-intensive sectors. Women entrepreneurs are concentrated precisely in these sectors: agribusiness, services, and light manufacturing, which correspond to Ghana's comparative advantage under NSE theory. This convergence provides the theoretical justification for targeted institutional intervention to correct market failures in these specific segments.

Ghana Women Development Bank should look at an institutional design that is appropriate to Ghana's economy at its lower middle income status and fits the characteristics of the industrial structure determined by the endowments in the economy.

2.2 Historical Lessons from Ghana's Public Development Finance Institutions

Ghana's experience with public development finance institutions (PDFIs) provides a rich empirical foundation for institutional design decisions. Established cases include the National Investment Bank (NIB) and the Agricultural Development Bank (ADB), both of which served as primary vehicles for directed development credit.

These institutions were systematically undermined by four recurring issues: (i) political interference in credit allocation decisions, compromising credit risk discipline; (ii) governance weaknesses that facilitated patronage rather than developmental lending; (iii) mandate drift toward universal banking operations, erasing developmental focus; and (iv) structurally unsustainable funding models that eroded institutional resilience over time.

The more recently established Development Bank Ghana (DBG) represents a partial institutional evolution, adopting a second-tier wholesale lending model specifically to mitigate political capture risk. While DBG' s governance structure demonstrates improvements over predecessor institutions, persistent structural challenges remain: high intermediation spreads that compress the effective subsidy to final borrowers, limited outreach to the highest-risk underserved segments, and weak feedback mechanisms from final beneficiaries to institutional management.

These historical trajectories delineate the structural trade-off at the heart of GWBD institutional design: first-tier models offer superior outreach and responsiveness but carry elevated governance risks, while second-tier models provide greater political insulation but risk insufficient penetration of underserved market segments.

3. Materials and Methods

3.1 Research Design

The inductive nature of the research necessitated the adoption of an exploratory-sequential mixed-methods research approach.

An exploratory sequential mixed method is a design in which the researcher initially explores with qualitative data and analysis, then uses the findings in a second quantitative phase.

Under this design, the researcher would first collect focus group data, analyse the results, develop two hypotheses based on the results, and then use logistic regression to test the hypotheses. In effect, the researcher employs a three-phase procedure with the first phase as exploratory, the second as hypothesis development, and the third as testing the hypotheses to inform policy recommendations.

This triangulated approach enables both the statistical estimation of determinants driving design preferences and the contextual interpretation of institutional dynamics that statistical models cannot fully capture.

Primary data collection was conducted through structured questionnaires administered to 119 stakeholders spanning five institutional categories: SME operators and women entrepreneurs, commercial financial institutions, regulatory authorities, government ministries and agencies, and bilateral and multilateral development partners. This breadth of representation ensures that the dataset captures heterogeneous perspectives across the development finance ecosystem.

3.2 Econometric Model Specification

A binary logistic regression model was specified to estimate the determinants of stakeholder preference between the first-tier and second-tier operational models. The logistic specification is appropriate given the binary categorical nature of the dependent variable and its robustness to non-normality in the predictor distributions.

$$\text{logit}[P(Y=1)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \Sigma \beta_k \text{Control}_k + \varepsilon$$

Equation 1: Binary Logistic Regression Specification

Where the dependent variable Y takes the value 1 when a respondent expresses a preference for the second-tier wholesale lending model, and 0 for the first-tier retail lending model. The three primary independent variables are operationalised as follows:

- X_1 (Political Interference): Respondent's perceived likelihood of direct political interference in GWDB credit allocation decisions
- X_2 (Political Intervention): Perceived risk of broader political intervention in GWDB operational and strategic decisions
- X_3 (Unfair Competition): Perceived risk of GWDB operations distorting private financial sector competition

Control variables include institutional type, professional experience, and industry classification of the respondent. All primary variables are measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater perceived governance risk.

3.3 Descriptive Statistics

Table 1 presents the descriptive statistics for the primary analytical variables. The elevated mean scores across the three governance risk perception variables, ranging from 3.622 to 3.880 on the five-point scale, indicate that a substantial majority of stakeholders perceive governance-related risks as a significant concern in the context of GWDB institutional design.

Table 1: Descriptive Statistics — Primary Analytical Variables

Variable	N	Mean	Std. Dev.	Min	Max
Political Interference (X_1)	117	3.880	1.197	1	5
Political Intervention (X_2)	119	3.664	1.209	1	5
Unfair Competition (X_3)	119	3.622	1.228	1	5
Second-Tier Preference (Y)	119	0.647	0.480	0	1
Institutional Type (Control)	118	2.314	0.891	1	4
Professional Experience (Control)	116	3.121	1.043	1	5

Source: Author' s survey data (2024). N = 119 stakeholders across five institutional categories.

The near-symmetry between mean scores for Political Intervention (X_2, mean = 3.664) and Unfair Competition (X_3, mean = 3.622), relative to the slightly higher score for Political Interference (X_1, mean = 3.880), suggests that while all three governance dimensions are salient, concerns about direct interference may be marginally more prominent than concerns about competitive distortion. The standard deviations (range: 1.197– 1.228) indicate moderate inter-respondent variation, confirming that these are contested rather than universally held perceptions.

4. Data Analysis and Interpretation

4.1 Logistic Regression Results

Table 2 presents the full results of the binary logistic regression model. The model demonstrates statistically acceptable fit, with a McFadden Pseudo-R^2 of 0.187 and a Nagelkerke R^2 of 0.261, indicating that the model explains approximately 19– 26 per cent of the variance in institutional design preference. The Hosmer-Lemeshow goodness-of-fit test yields a non-significant chi-square statistic ($\chi^2 = 6.82$, df = 8, p = 0.556), confirming adequate model calibration.

Table 2: Binary Logistic Regression Results — Determinants of GWDB Operational Model Preference

Variable	Coefficient (β)	Std. Error	z-Statistic	p-Value	Odds Ratio (95% CI)
Political Interference (X_1)	0.312	0.241	1.367	0.171	0.895 – 2.091
Political Intervention (X_2) **	0.587	0.213	2.756	0.006	1.241 – 3.428
Unfair Competition (X_3) **	0.541	0.198	2.732	0.006	1.184 – 3.102
Institutional Type (Control)	− 0.214	0.176	− 1.216	0.224	0.621 – 1.198
Professional Experience (Control)	0.183	0.147	1.245	0.213	0.891 – 1.671
Constant (β_0) **	− 1.842	0.614	− 3.000	0.003	—

*** p<0.01. Source: Author's analysis. Listwise N = 113. Model chi-square = 27.41 (df = 5, p<0.001).*

Model fit: Log-Likelihood = − 58.34; Pseudo-R^2 (McFadden) = 0.187; Nagelkerke R^2 = 0.261; Hosmer-Lemeshow χ^2 = 6.82 (df=8, p = 0.556). Dependent variable: Y = 1 (Second-Tier Preference), Y = 0 (First-Tier Preference).

4.2 Marginal Effects Analysis

To facilitate policy-relevant interpretation, Table 3 presents average marginal effects (AMEs), which quantify the change in the predicted probability of second-tier model preference associated with a one-unit increase in each predictor, evaluated at the sample means of all other variables.

Table 3: Average Marginal Effects — GWDB Operational Model Preference

Variable	Marginal Effect (dy/dx)	Std. Error	p-Value	Inference
Political Interference (X_1)	0.071	0.055	0.171	Not Significant
Political Intervention (X_2) **	0.134	0.048	0.006	Significant (p<0.01)
Unfair Competition (X_3) **	0.123	0.045	0.006	Significant (p<0.01)

*Source: Author's analysis. Marginal effects evaluated at sample means. **p<0.01.*

4.3 Interpretation of Findings

Political Intervention (X_2) — Primary Driver

Political intervention is the strongest and most statistically significant predictor of second-tier model preference (β = 0.587, OR = 1.799, p = 0.006). The average marginal effect of 0.134 indicates that a one-unit increase in perceived political intervention risk raises the predicted probability of second-tier preference by 13.4 percentage points. This finding is theoretically consistent with the institutional issues documented in Ghana's PDFI history, and empirically confirms that governance risk mitigation is the dominant rationale behind stakeholder preference for wholesale lending structures.

Unfair Competition (X_3) — Secondary Driver

Concerns about competitive distortion constitute the second significant determinant of second-tier preference (β = 0.541, OR = 1.718, p = 0.006). An average marginal effect of 0.123 indicates that a one-unit increase in perceived competitive distortion risk raises second-tier preference probability by 12.3 percentage points. This finding reflects awareness within the

stakeholder community, particularly among commercial financial institutions, that a first-tier GWDB could crowd out private sector engagement rather than catalyse complementary lending.

Political Interference (X_1) — Non-Significant

Political interference per se does not reach conventional statistical significance thresholds ($\beta = 0.312, p = 0.171$). This distinction between interference and intervention is substantively meaningful. It suggests that stakeholders do not exclusively fear direct political credit allocation interference, which may be guarded against through internal risk controls, but express broader concern about structural vulnerability to political management and strategic direction. This nuanced finding has important implications for governance structure design.

Key Empirical Findings Summary

- Political Intervention (X_2) is the primary driver: $\beta = 0.587$ ($p < 0.01$), marginal effect = +13.4 percentage points
- Unfair Competition (X_3) is the secondary driver: $\beta = 0.541$ ($p < 0.01$), marginal effect = +12.3 percentage points
- Political Interference (X_1) is not statistically significant: $\beta = 0.312$ ($p = 0.171$)
- Model fit is adequate: McFadden $R^2 = 0.187$, Nagelkerke $R^2 = 0.261$, H-L $p = 0.556$
- Neither pure first-tier nor pure second-tier architecture is empirically optimal.

5. Conclusions

This study provides convergent evidence, theoretical, historical, and empirical, for the institutional design of the Ghana Women Development Bank.

From a theoretical perspective, New Structural Economics clearly justifies a specialised development financing institution for women entrepreneurs, given the structural nature of credit market failures in Ghana’ s factor endowment context. The GWBD addresses market failures that cannot be resolved through conventional financial sector development alone.

From a historical perspective, Ghana’ s PDFI experience demonstrates that pure first-tier models are structurally vulnerable to political interference, mandate drift, and governance deterioration. The DBG’ s wholesale model represents a partial governance solution, but its limited outreach to underserved segments illustrates the insufficiency of an exclusively second-tier approach.

Empirically, the logistic regression analysis confirms that governance risk perceptions, specifically concerns about political intervention and competitive distortion, are statistically significant and substantively meaningful determinants of stakeholder preference for second-tier operations. Political interference, per se, while directionally consistent, does not constitute a significant predictor, suggesting that broader institutional vulnerability is a more salient concern than isolated interference events.

The combined weight of evidence points clearly toward a hybrid institutional model as the most context-appropriate design solution for the GWBD. This conclusion is not a compromise between competing preferences but an empirically grounded design prescription: wholesale operations should dominate to mitigate governance risk, while targeted first-tier windows address the outreach gaps that pure wholesale models systematically leave unserved.

6. Recommendations

6.1 Institutional Design: Hybrid Operational Model

A hybrid model emerges as the most appropriate design for Ghana’ s context. Such a model would combine predominantly second-tier wholesale lending with strategic first-tier direct engagement and dedicated technical assistance programming. The second-tier component would leverage existing banking infrastructure, maintain competitive dynamics, and reduce political interference risks. Participating financial institutions would be selected through competitive processes with clear performance criteria, offering wholesale lines of credit with maximum spread caps to control end-user costs.

The first-tier component would be narrowly focused on specific gaps: pilot programs for innovative business models not yet understood by commercial banks, direct financing for proven larger enterprises seeking expansion beyond commercial bank comfort zones, and geographic areas lacking adequate participating financial institution presence. Critically, this first-tier component must include strict safeguards: absolutely no deposit-taking to prevent mission drift toward universal banking, minimal physical infrastructure, and regular review of the first-tier portfolio to identify graduation opportunities to second-tier delivery.

The technical assistance component addresses the reality that finance alone proves insufficient. Business development services, financial literacy training, mentorship programs, and market linkage facilitation should be delivered through partnerships with specialized organizations rather than entirely in-house. This approach leverages existing expertise while maintaining cost efficiency.

6.2 Governance Structure

The governance framework must be designed to insulate the GWDB from both direct political interference and broader structural political vulnerability, the two dimensions identified as primary and secondary drivers of institutional design preference in the empirical analysis. Specific design parameters include: a board with an independent majority appointed through transparent competitive processes; CEO recruitment based on merit through an open competitive process; dual performance metrics requiring both financial sustainability benchmarks and development impact indicators; and dedicated audit, risk, and remuneration committees reporting independently to the board.

6.3 Legal Framework

The GWDB should be operationalised under the Development Finance Institutions Act, 2020, with supplementary provisions in the enabling legislation explicitly prohibiting political direction of credit allocation, mandating board approval for all strategic operational decisions, and requiring public reporting on development impact alongside financial performance.

6.4 Funding Structure and Capitalisation

The GWDB' s initial capitalisation should leverage a blended finance structure comprising government equity injection as anchor capital, concessional loans from bilateral and multilateral development partners, long-term bond issuance to institutional investors, and blended finance mechanisms that attract commercial co-investors through risk-sharing instruments. Government ownership should be structured to progressively reduce toward minority shareholding within a 10-year horizon, contingent on financial sustainability performance thresholds, to strengthen institutional independence over time.

6.5 Monitoring, Evaluation, and Accountability

A rigorous monitoring and evaluation framework should employ a balanced scorecard approach, with metrics spanning financial sustainability (capital adequacy, non-performing loan ratios, return on equity), development impact (number and profile of women borrowers reached, employment created, enterprise revenue growth), and governance quality (board independence scores, audit finding resolution rates). Independent impact assessments should be commissioned biennially and published publicly to maintain accountability to stakeholders and development partners.