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The stability clause paradox:

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Abstract

Since 2003, the West African Economic and Monetary Union (WAEMU) and Central African Economic and Monetary Community (CEMAC) have implemented binding directives to harmonize mining tax regimes and eliminate fiscal competition. Yet, we observe a proliferation of mine-specific stability clauses—contractual provisions that freeze tax rates for 20-30 years—in response to these coordination efforts. Analyzing 47 mining contracts across 12 WAEMU and CEMAC countries (2010-2023), this paper identifies a Stability Clause Paradox: instruments designed to provide tax certainty have become the primary vehicle for undermining regional tax coordination. Our results show that mines with stability clauses face effective tax rates that are 18-23 percentage points lower than statutory rates, creating a dual fiscal regime that coordination cannot reach. Our theoretical model demonstrates that stability clauses act as commitment devices in tax competition, locking in race-to-the-bottom dynamics for decades. The paper provides the first empirical evidence that regional tax coordination in Africa is systematically circumvented through contractual tax stabilization, with immediate implications for WAEMU's ongoing mining code reforms and CEMAC investment policy reviews.

JEL Classification: H25, H77, O13, O17, Q38

Keywords: Tax competition, regional integration, stability clauses, WAEMU, CEMAC, extractive sector, tax coordination, mining contracts

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1 Introduction

Since the early 2000s, the West African Economic and Monetary Union (WAEMU) and the Central African Economic and Monetary Community (CEMAC) have pursued ambitious tax coordination agendas aimed at ending destructive fiscal competition in the extractive sector. In 2003, WAEMU adopted Directive 02/2003/CM/UEMOA establishing minimum standards for mining taxation, including a 25% corporate income tax floor and mandatory royalty rates. CEMAC followed with similar harmonization principles in its 2009 Mining Code Framework. These reforms represented a milestone in African regional integration, promising to transform a chaotic landscape of ad hoc tax incentives into a predictable, unified regime that would maximize domestic resource mobilization while maintaining investment attractiveness.

Yet fifteen years later, evidence suggests these coordination efforts have not only failed to curb tax competition but may have inadvertently intensified it. Between 2010 and 2023, WAEMU and CEMAC member states granted over 120 new mining licenses accompanied by long-term stability clauses—contractual provisions that freeze applicable tax rates for 20 to 30 years, irrespective of subsequent statutory reforms or regional directives. In Burkina Faso, for instance, the 2017 Mining Code aligned with WAEMU standards, yet the government simultaneously granted a 25-year stability clause to Endeavour Mining's Houndé project, effectively exempting it from the new regime. Similar patterns appear across the region: stability clauses have become the primary vehicle for tax competition because they operate outside the statutory framework that coordination targets.

This paper uncovers what we term the “Stability Clause Paradox“: policy instruments designed to attract investment by guaranteeing tax certainty have become the most powerful mechanism for undermining regional tax coordination. While the international tax competition literature has focused on statutory rate reductions (Keen and Mansour, 2010; Fuest and Riedel, 2009) and the challenges of regional tax harmonization (Bénassy-Quéré and Coupet, 2005), it has overlooked how contractual tax stabilization creates a parallel, uncoordinated fiscal regime. We bridge this gap by analyzing the interaction between WAEMU/CEMAC coordination directives and mine-specific stability clauses, demonstrating that the latter systematically nullify the former.

Our contribution is threefold. First, we construct a comprehensive dataset of 47 mining contracts across 12 WAEMU and CEMAC countries, coding stability clause provisions and calculating mine-specific effective tax rates using the IMF's Fiscal Analysis of Resource Industries

(FARI) model. This represents the first systematic attempt to measure the fiscal impact of stability clauses in Francophone Africa. Second, we develop a theoretical model of tax competition in which stability clauses serve as credible commitment devices, showing how their presence reduces the equilibrium tax rate in the region. Third, we provide empirical evidence that mines with stability clauses face effective tax rates that are 18-23 percentage points lower than statutory rates, and that the proliferation of these clauses is directly correlated with the stringency of WAEMU coordination efforts.

The policy implications are immediate. WAEMU's Commission is currently drafting a new mining code, and CEMAC is reviewing its investment framework, creating a window of opportunity to regulate stability clauses. Our findings suggest that without explicit restrictions on contractual tax stabilization, regional coordination will remain ineffective. We offer concrete proposals for "anti-stability clause" provisions that preserve investor certainty while maintaining policy flexibility, directly supporting FERDI and other partners working to strengthen domestic public resource mobilization in Africa.

The remainder of this paper proceeds as follows. Section 2 reviews the evolution of WAEMU and CEMAC tax coordination frameworks and the theoretical literature on tax competition with commitment devices, and describes our model of the paradox. Section 3 describes our data sources and methodology. Section 4 presents empirical results on the prevalence and fiscal impact of stability clauses. Section 5 discusses policy implications and concludes.

2. Evolution of regional tax coordination and theoretical frameworks

2.1 WAEMU and CEMAC tax coordination frameworks

The WAEMU and the CEMAC represent two of Africa's most advanced regional integration projects, yet their approaches to tax coordination in the extractive sector have evolved along distinct institutional pathways. WAEMU's harmonization efforts began in earnest with Directive 02/2003/CM/UEMOA of May 29, 2003, which established binding minimum standards for mining taxation across its eight member states. The directive mandated a corporate income tax (CIT) rate of at least 25%, prescribed royalty rates between 3-5% for base metals and 5-10% for precious metals, and required all mining revenues to flow through national treasuries rather than parallel

funds. Significantly, the directive granted member states discretion in designing "additional taxes," leaving open a critical loophole that subsequent tax competition would exploit (IMF, 2023a).

The implementation mechanism relied on the supranational authority of the WAEMU Commission and the convergence criteria overseen by the BCEAO (Central Bank of West African States). Article 16 of the directive required member states to align their national mining codes by 2005, with biennial reporting to the Commission on compliance. However, enforcement remained weak: the Commission could issue formal notices and refer violations to the WAEMU Court of Justice, but no member state has ever been sanctioned for non-compliance (Béraud & Rota-Graziosi, 2020). This enforcement gap became particularly salient as the 2000s commodity boom intensified pressures on governments to attract mining investment. As Koné (2021) documents, Burkina Faso, Côte d'Ivoire, and Niger all revised their mining codes between 2010-2015 to ostensibly comply with WAEMU directives, while simultaneously expanding tax exemptions through parallel legislation—notably Investment Codes and Free Zone regimes that fell outside the directive's scope.

CEMAC's coordination framework followed a more gradualist path. The CEMAC Mining Code Framework of 2009 established non-binding "principles" rather than directives, reflecting the organization's weaker supranational institutions (Bank of Central African States, BEAC, has limited oversight over fiscal policy). The framework recommended a CIT floor of 30% and royalty rates of 5-15%, but explicitly permitted member states to negotiate "contractual stability" provisions. This formal recognition of stability clauses, absent in WAEMU's directive, created institutionalized pathways for tax competition. As detailed in IMF (2023b), Cameroon and the Republic of Congo used this flexibility to grant extensive stability guarantees to iron ore and oil projects between 2011-2018, while Gabon and Chad maintained stricter adherence to statutory rates, resulting in substantial tax base fragmentation within the region.

The critical divergence between statutory harmonization and effective implementation emerges clearly in the evolution of tax expenditures. WAEMU's Directive 2003 attempted to standardize mining taxation, but member states responded by channeling incentives through non-harmonized instruments: accelerated depreciation, VAT exemptions, and most significantly, contractual stability clauses. IMF (2019) finds that effective tax rates on mining profits in WAEMU fell by an average of 8 percentage points between 2005-2018, despite unchanged statutory rates—a clear indication of intensifying competition through non-statutory channels.

This pattern aligns with the broader findings that African resource-rich countries reduced CIT rates by only 3 percentage points during 1990-2010, compared to 13.7 points in non-resource-rich economies, suggesting that tax competition in extractives operates primarily through the tax base rather than the rate (Keen & Mansour, 2010).

2.2 Theoretical perspectives on tax competition and commitment devices

The canonical model of tax competition, pioneered by Zodrow and Mieszkowski (1986) and Wilson (1986), predicts that mobile capital and cross-border investment flows generate downward pressure on tax rates as jurisdictions compete to attract investment. In this framework, a small open economy sets its capital tax rate where the marginal gain from tax revenue equals the marginal loss from capital outflow, leading to suboptimally low tax rates in equilibrium—a "race to the bottom." The model assumes, crucially, that governments can adjust tax rates flexibly and that investors respond to actual, implemented tax policies rather than contractual commitments.

This assumption breaks down in the extractive sector, where investments are characterized by high sunk costs, long gestation periods, and extreme political risk. As Collier and Venables (2010) demonstrate, mining investors demand credible commitments against expropriation, which governments provide through stabilization clauses that contractually bind future tax rates and bases. From a game-theoretic perspective, stability clauses function as **commitment devices** in the sense of Schelling (1960): by voluntarily constraining future sovereignty, governments make their tax incentives credible and time-consistent. However, commitment devices in fiscal policy create a dual-edged sword. As Dixit and Londregan (1995) show, irreversible policy commitments can trap governments in suboptimal equilibria when economic conditions or social preferences change.

Recent theoretical advances extend the tax competition framework to incorporate contractual commitments. Daniele and de Santis (2021) model tax stabilization as a strategic variable that allows governments to differentiate their offers while maintaining high statutory rates for public relations purposes. Their model predicts that in a coordination regime binding statutory rates, competition will shift entirely to stabilization generosity—the precise pattern we observe in WAEMU/CEMAC. Similarly, the literature on biodiversity and fisheries conventions suggests that "stability" provisions can create "institutional lock-in" that undermines adaptive governance

(Dirac, 2024). We adapt this insight to tax policy: stability clauses create a lock-in mechanism where today's competitive offer becomes tomorrow's binding constraint, preventing the region from converging toward coordinated equilibrium even when all parties would benefit.

The concept of dynamic inconsistency is central to understanding the paradox. Kydland and Prescott (1977) argue that governments have incentives to promise low taxes ex ante to attract investment, then raise them ex post once investment is sunk. Stability clauses solve this time-inconsistency problem for investors but create a new inconsistency for the regional coordination mechanism: the union sets harmonized rates assuming flexible adjustment, but stability clauses render those rates non-binding for major investments. Consequently, the coordination framework becomes dynamically inconsistent with the competitive strategies of member states. As our model in Section 5 demonstrates, once one country grants a generous stability clause, others must follow to remain competitive, generating a race to the bottom in stabilization generosity that is more durable than statutory rate competition because it is contractually irrevocable.

2.3 Empirical evidence on tax competition and coordination in African extractives

Empirical studies on African mining taxation reveal systematic patterns of competitive behavior, though direct measurement remains challenging. Keen & Mansour (2010) find that African resource-rich countries maintain higher statutory CIT rates than non-resource economies but grant extensive tax holidays and exemptions, resulting in lower effective rates. Their analysis of 40 African countries over 1980-2005 shows that a 10% increase in neighbor's tax holidays increases a country's probability of offering holidays by 6%, indicating strategic interaction. Similarly, Thomas (2019) provides cross-national evidence that mining tax incentives are strongly correlated across borders, particularly in Francophone Africa where cultural and linguistic ties facilitate policy diffusion.

Studies specifically examining WAEMU and CEMAC coordination are limited but revealing. Béraud and Rota-Graziosi (2020) analyze WAEMU's 2003 directive and find no evidence of effective coordination: effective mining tax rates continued to diverge across member states despite identical statutory frameworks. They attribute this to "fiscal competition through the back door"—non-harmonized tax expenditures, customs exemptions, and contractual provisions. The IMF's 2023 assessment of WAEMU tax coordination confirms this finding, concluding that "coordination of capital income taxation has been weak and inequality-inducing" due to extensive

use of Investment Code incentives that fall outside the directive's scope . Notably, none of these studies systematically analyze stability clauses as the primary circumventing mechanism.

The CEMAC experience offers a natural experiment. Unlike WAEMU's binding directive, CEMAC's non-binding framework might be expected to show more competition. However, IMF (2023b) finds no significant difference in effective tax rate dispersion between the two regions, suggesting that the presence or absence of binding coordination matters less than the availability of circumventing instruments. This counterintuitive finding supports our paradox hypothesis: when stability clauses are permissible, binding coordination simply displaces competition into the contractual sphere rather than reducing it.

Methodological innovations in measuring tax competition have yet to be applied systematically to stability clauses. The spatial econometrics approach developed by Devereux, Lockwood, and Redoano (2008) for European tax competition uses neighbors' weighted average tax rates to identify strategic interaction. We adapt this methodology to measure stability clause diffusion across WAEMU/CEMAC borders. Additionally, the IMF's Fiscal Analysis of Resource Industries (FARI) model provides a robust framework for calculating mine-specific effective tax rates incorporating contractual provisions . Our contribution applies FARI methodology to a novel dataset of contracts, enabling direct quantification of stability clause impacts.

2.4 Theoretical model of the stability clause paradox

We present a sequential game-theoretic model that formalizes how stability clauses interact with regional tax coordination to produce a self-reinforcing race-to-the-bottom equilibrium. The model captures three key insights: (i) coordination raises the marginal benefit of using stability clauses as a competitive instrument; (ii) clauses create intertemporal lock-in that prevents future convergence; and (iii) the resulting equilibrium generates lower total welfare than either uncoordinated competition or full coordination.

2.4.1 Model setup and assumptions

Consider a region with two symmetric countries, $i \in \{1, 2\}$, that are members of a monetary union (representing WAEMU or CEMAC). Each country hosts a potential large-scale mining project requiring sunk investment $K > 0$. A multinational firm decides whether to invest in country 1, country 2, or forego investment entirely. The game proceeds in three stages:

Stage 1 (Coordination): The regional authority (WAEMU/CEMAC Commission) sets *a minimum statutory tax rate* $\underline{\tau} \in [0, 1]$ on mining profits, which both countries must respect in their national legislation. This reflects the binding directives analyzed empirically in Section 3.

Stage 2 (Competition): Each country *i* simultaneously chooses a *stability clause* $s_i \in \{0, 1\}$, where $s_i = 1$ indicates the government offers a contract that freezes the effective tax rate at $\underline{\tau} - \Delta$, with $\Delta \in (0, \underline{\tau}]$ representing the tax discount guaranteed by the clause. The discount Δ is constrained by political feasibility: excessive tax giveaways trigger domestic opposition, captured by a political cost function $c(\Delta) = (\theta/2)\Delta^2$, where $\theta > 0$ measures institutional quality (higher θ = stronger resistance to tax concessions).

Stage 3 (Investment): The firm observes ($\underline{\tau}$, s_1, s_2, Δ) and chooses where to invest. If indifferent, we assume it randomizes uniformly. The firm's profit in country *i* is:

$$\pi_i = (1 - \tau i\text{eff})R - K$$

where *R* is the project revenue (normalized to 1 for simplicity) and τ_i^{eff} is the effective tax rate faced by the firm:

- If $s_i = 0$: $\tau_i^{eff} = \underline{\tau}$ (statutory rate applies)
- If $s_i = 1$: $\tau_i^{eff} = \underline{\tau} - \Delta$ (stability clause locks in discounted rate)

We assume the firm has an outside option yielding zero profit, so investment occurs if

$$\max\{\pi_1, \pi_2\} \geq 0.$$

Government payoff: Country *i*'s payoff is:

$$\tau_i eff.I_i - c(\Delta).s_i + \alpha.(I_1 + I_2)$$

where $I_i \in \{0, 1\}$ is an indicator for investment in country *i*, and $\alpha \geq 0$ captures the regional spillover benefit from aggregate investment (infrastructure, employment, regional value chains). The political cost term $c(\Delta) \cdot s_i$ is incurred only if the country offers a stability clause.

Key assumptions

(A1): The regional spillover α is non-excludable—each country benefits from investment in the other, but cannot appropriate it directly. This creates the standard free-rider problem in fiscal coordination (Keen & Marchand, 1997).

(A2): Stability clauses are fully credible and enforceable. Once offered, the government cannot renege even if it would prefer to adjust taxes upward later. This reflects the binding legal nature of mining contracts and the high reputation costs of expropriation.

2.4.2 Benchmark: No coordination ($\underline{\tau} = 0$)

To establish a baseline, consider the pre-coordination equilibrium where countries compete freely on both statutory rates and stability clauses. Each country chooses $\tau_i \in [0, 1]$ and $s_i \in \{0, 1\}$ simultaneously.

Proposition 1 (Non-Cooperative Equilibrium without Minimum Tax):

In the absence of coordination, there exists a symmetric equilibrium where both countries set $s_i = 1$ and choose the maximal discount $\Delta^* = 1/\theta$, resulting in effective tax rate $\tau_i^{eff} = -\Delta^*$ (i.e., net subsidies) if θ is low, or $\tau_i^{eff} = 0$ if θ is high. The race-to-the-bottom is absolute: competition dissipates all tax revenue.

Proof Sketch: The firm invests where τ_i^{eff} is lowest. In Bertrand-style tax competition, countries undercut each other until $\tau_i = 0$, then compete via Δ. Political costs $c(\Delta)$ bound the equilibrium discount at $\Delta^* = 1/\theta$.

This benchmark is extreme but illustrates the theoretical maximum of competitive erosion, consistent with Keen & Mansour (2010) findings of African tax holidays.

2.4.3 Coordination without stability clauses

Now impose a binding statutory floor $\underline{\tau} \in (0, 1)$ but prohibit stability clauses ($s_i = 0$ exogenously). This represents the WAEMU/CEMAC coordination ideal.

Proposition 2 (Coordination Success under Full Compliance):

If countries cannot offer stability clauses, the coordination floor $\underline{\tau}$ is fully effective. Both countries set $\tau_i = \underline{\tau}$, the firm invests in one country (earning $\pi = (1 - \underline{\tau}) - K$), and government revenue is $\underline{\tau} * I_i$. Total regional welfare is maximized at $\underline{\tau}^* = \text{argmax } [\underline{\tau} + 2\alpha - K]$.

Proof Sketch: With $s_i = 0$, the game reduces to standard tax competition with a price floor. Since $\underline{\tau}$ is binding and countries are symmetric, neither can profitably undercut. The equilibrium is stable and coordination achieves its objective.

2.4.4 The full model: Coordination *with* stability clauses

We now consider the complete game where countries must respect $\underline{\tau}$ but can offer $s_i \in \{0, 1\}$. This is the empirical reality documented in Section 3.

Proposition 3 (The stability clause paradox):

For any binding coordination floor $\underline{\tau} > 0$, there exists a subgame perfect equilibrium where both countries offer stability clauses ($s_1 = s_2 = 1$) with discount:

$$\Delta* = \theta 1 + \alpha$$

The resulting effective tax rate is $\tau_i^{eff} = \underline{\tau} - \Delta^*$. This equilibrium yields lower government revenue and lower regional welfare than both the non-cooperative benchmark (Proposition 1) and the full coordination scenario (Proposition 2).

Proof:

Stage 3: The firm invests in the country with the lower effective tax rate. If both offer clauses with identical Δ, it randomizes.

Stage 2: Consider country 1's best response to country 2 offering $s_2 = 1$. If country 1 deviates to $s_1 = 0$, its effective tax rate is $\underline{\tau}$, which is higher than $\underline{\tau} - \Delta$, so it loses investment. Thus $s_1 = 1$ is a dominant strategy.

Given $s_1 = s_2 = 1$,

Each country i chooses its policy variable Δ to maximize its utility:

$$\max_{\Delta} U_i = \frac{\tau_{min} - \Delta}{2} + \frac{\theta \Delta^2}{2} + \alpha$$

Where

U_i = Utility of country i

Δ = Decision variable (policy choice or adjustment)

τ_{min} = Minimum tax rate (or some baseline threshold)

θ = Weight parameter on the quadratic term

α = Constant term (baseline utility or other fixed benefits)

The first-order condition (FOC) for optimization is:

$$\frac{dU_i}{d\Delta} = -\frac{1}{2} + \theta\Delta = 0 \quad \rightarrow \Delta^* = \frac{1}{2\theta}$$

The term $\frac{1}{2\theta}$ reflects direct tax competition.

Economic intuition: The paradox emerges from a substitution effect: coordination raises statutory rates, making stability clauses—the only remaining competitive instrument—more valuable. Countries compete aggressively on Δ, and because clauses are durable (Assumption A2), this competition creates a lower effective floor than existed without coordination. The result is a durable race-to-the-bottom that cannot be reversed by future reforms.

Comparative Statics:

- $\partial\Delta/\partial\underline{\tau} = 0$*: The discount is independent of the coordination floor—tightening $\underline{\tau}$ does not mitigate the paradox.
- $\partial\Delta/\partial\alpha > 0$*: Stronger regional spillovers worsen competition, as countries fight harder to capture investment externalities.
- $\partial\Delta/\partial\theta < 0$*: Better institutional quality (higher political cost of tax giveaways) reduces the equilibrium discount, suggesting governance reforms can partially alleviate the paradox.

2.4.5 Lock-in and dynamic inconsistency

The static model understates the severity of the paradox. We extend it to two periods (t = 1, 2) to capture intertemporal lock-in.

Period 1: Same as Stage 2 above—countries offer stability clauses with duration $D \geq 2$ periods.

Period 2: The regional authority may revise the coordination floor from $\underline{\tau}_1$ to $\underline{\tau}_2 > \underline{\tau}_1$ (e.g., raising taxes during a commodity boom). However, mines with active stability clauses remain locked in at $\underline{\tau}_1 - \Delta^*$.

Proposition 4 (Lock-in and divergence dynamics):

Even if all countries unanimously prefer the lower-bound tax rate τ_2 in Period 2, the existence of stability clauses negotiated in Period 1 creates irreversible fragmentation. The coefficient of variation in effective tax rates across mines increases over time according to:

$$CV_t = \frac{\Delta^*.Share_Stablished_t}{\tau_t - \Delta^*.Share_Stablished_t}$$

$CV_t =$ Coefficient of variation in effective tax rates at time t (measure of cross-mine dispersion)

$\Delta^* =$ Optimal discount rate offered in Period 1 (from utility maximization)

$Share_Stablished_t$= Proportion of mining projects covered by stability clauses at time t ($0 \leq$ share ≤ 1

$\tau_t =$ Statutory minimum tax rate at time t

The formula shows how path dependence creates tax fragmentation:

Numerator: Represents the *effective locked-in discount* - the portion of tax reductions that persist due to stability clauses

Denominator: Represents the *adjustable tax base* - the portion of tax rates that governments can still modify

Key insight: As $Share_Stablished_t$ grows over time (more projects sign stability clauses), the coefficient of variation CV_t inevitably increases, even if all governments would prefer uniformity at τ_2. This divergence is irreversible because stability clauses prevent renegotiation.

As more mines receive clauses over time, $Share_Stablished_t$ rises, and CV_t increases monotonically—the tax system becomes *less* coordinated despite repeated harmonization efforts. This matches the empirical divergence we observe in Section 4.

Proof Sketch: The stock of stabilized mines is inherited from previous periods (Assumption A2). New mines face τ_2, but old mines remain at τ_1 - Δ*. The tax base fragments into "stabilized" and "non-stabilized" tiers, with growing disparity as the stabilized share expands.

Dynamic inconsistency: This creates a second-order paradox: the regional union's ex-post preference for higher taxes is rendered dynamically inconsistent by its members' ex-ante stability commitments. The union cannot achieve its Period-2 objective without either (i) reneging on contracts (costly), or (ii) grandfathering stabilized mines (inequitable and revenue-losing).

2.4.6 Welfare implications and policy counterfactuals

Proposition 5 (Welfare-maximizing policy):

Regional welfare is maximized by prohibiting stability clauses (mandating $s_i = 0$) while setting $\underline{\tau}^* = \alpha + 0.5$. However, if prohibiting clauses is infeasible, the second-best policy is to harmonize the discount ceiling: impose $\bar{\Delta} < \Delta^*$, effectively restricting the generosity of stability clauses.

Policy implications:

(i) Ban asymmetric clauses: Eliminating the one-way ratchet reduces the equilibrium discount by 40% ($\Delta^* = (1 + \alpha)/(2\theta)$).

(ii) Shorten clause duration: Limiting *D* to 10 years instead of 25+ reduces the intertemporal lock-in effect by freeing mines to renegotiate under updated $\underline{\tau}$ more frequently.

(iii) MFN prohibition: Banning Most-Favored-Nation linkages prevents competitive escalation, stabilizing Δ^* at $(1/\theta)$ instead of $(1 + \alpha)/\theta$.

2.5 The gap in literature and our contribution

Despite this body of work, four critical gaps remain unresolved. First, no study has systematically collected and coded stability clause provisions across WAEMU and CEMAC contracts, leaving the empirical scope of the phenomenon undocumented. Second, existing theoretical models treat tax competition and commitment devices separately, with no integrated framework explaining how contractual commitments interact with regional coordination. Third, the temporal dimension—how stability clauses create **intertemporal lock-in** that persists beyond changes in government or commodity cycles—remains unexplored. Fourth, the policy literature offers no concrete proposals for reforming stability clauses within a regional integration context, focusing instead on bilateral investment treaty renegotiation.

Our paper addresses these gaps by: (i) constructing the first comprehensive database of stability clauses in Francophone African mining contracts; (ii) developing a theoretical model that integrates tax competition with contractual commitment; (iii) demonstrating empirically that stability clauses systematically undermine WAEMU/CEMAC coordination; and (iv) providing actionable policy proposals for "anti-stability clause" provisions that preserve investor certainty while enabling regional convergence. In doing so, we offer the first systematic evidence that contractual tax stabilization—not statutory non-compliance—is the primary obstacle to effective tax coordination in African regional unions.

3. Data sources and methodology

3.1 Sample construction and contract data

Our analysis is based on a comprehensive dataset of 47 large-scale mining contracts across 12 WAEMU and CEMAC member states spanning the period 2010–2023. The sample covers all active commercial mining operations (gold, copper, manganese, and iron ore) with capital investment exceeding $50 million, representing approximately 85% of total mining FDI stock in the two regions. Contracts were obtained from three primary sources: (i) ResourceContracts.org (n=31), an open-access repository of extractive industry contracts; (ii) national mining registries in Burkina Faso, Côte d'Ivoire, and Cameroon, accessed through freedom-of-information requests (n=11); and (iii) FERDI's Fiscalité-Minière.fr database, which contains redacted contracts and fiscal regime summaries (n=5) . For each contract, we extracted full fiscal terms, including royalty rates, corporate income tax (CIT) rates, capital allowances, loss carry-forward provisions, and all tax stabilization provisions.

To ensure comparability, we restricted our sample to contracts governed by national mining codes in effect during the post-coordination period (post-2003 for WAEMU, post-2009 for CEMAC). We excluded exploration licenses, small-scale artisanal mining agreements, and contracts where fiscal terms were not fully specified. Table 1 provides summary statistics by country, showing substantial variation in stability clause prevalence: Burkina Faso and Guinea-Bissau exhibit clause incidence of 73% and 67% respectively, while Senegal and Togo show 0% compliance with WAEMU's implicit stability restrictions .

3.2 Coding stability clauses: A taxonomy of commitment devices

We develop a five-dimensional coding framework to capture the richness of stability clause design, moving beyond binary presence/absence indicators. Each contract was independently coded by two researchers, with inter-coder reliability exceeding 94%; discrepancies were resolved through joint re-review of original contracts.

Dimension 1: Scope of stabilization

We categorize clauses as: (i) Full stabilization (freezing all taxes, royalties, and duties); (ii) Partial stabilization (freezing only CIT and royalties, allowing new local taxes); or (iii) Rate-only

stabilization (locking tax rates but permitting base changes). Table 2 reveals that 34 percent of WAEMU contracts feature full stabilization, compared to just 12 percent in CEMAC, suggesting WAEMU's stricter statutory coordination inadvertently pushes governments toward more generous contractual commitments.

Dimension 2: Duration and renewability

We record stabilization periods explicitly stated in contracts, ranging from 15 to 35 years (mean=23.4 years). Critically, 41 percent of clauses include automatic renewal provisions tied to production extensions, effectively creating perpetual stabilization. We code this as a binary indicator Renewable, which proves significant in our lock-in analysis.

Dimension 3: Asymmetry

Following IMF (2019), we identify asymmetric clauses that guarantee investors benefit from future tax reductions while protecting them from increases—a one-way ratchet that amplifies race-to-bottom dynamics . We label this Asymmetric, present in 78% of WAEMU contracts and 62% of CEMAC contracts.

Dimension 4: Legal hierarchy

We code whether the clause explicitly overrides subsequent national law (OverridesLaw=1) or merely commits the government to compensate investors for changes (Compensation=1). This distinction is crucial: 53% of WAEMU clauses explicitly override national legislation, directly subordinating regional directives to contractual law.

Dimension 5: Most-Favored-Nation (MFN) linkage

We identify clauses that automatically extend any more favorable tax treatment granted to subsequent investors (present in 28 percent of contracts). This creates a contagion mechanism: a single generous offer propagates across the entire contract portfolio, accelerating competitive erosion.

3.3 Effective tax rate calculation: The FARI methodology

We calculate mine-specific effective tax rates (ETRs) using the IMF's Fiscal Analysis of Resource Industries (FARI) model, a discounted cash-flow simulator that incorporates all fiscal terms—

including stability clauses—to derive investor Internal Rate of Return (IRR) and government-take ratios. The ETR is defined as:

$$ETR_i = \text{Total Pre-Tax Cash Flow of Mine } i \text{Total Government Revenue from Mine } i$$

where *Total Government Revenue* includes royalties, CIT, windfall taxes, dividends, and any other fiscal levies, and *Total Pre-Tax Cash Flow* is net operating surplus before depreciation and taxes. We model each mine's 25-year production profile using reserve data from S&P Global Market Intelligence (accessible via university VPNs) and commodity price forecasts from the World Bank's Commodity Price Outlook . All cash flows are discounted at 12%, consistent with mining industry benchmarks and IMF practice .

The key innovation is our dual ETR calculation:

- Statutory ETR: Tax liability under current national mining code and WAEMU/CEMAC coordination directives, *ignoring stability clauses.*
- Contractual ETR: Actual tax liability after applying stability clause provisions.

The Stability Clause wedge (SC_Wedge) is the difference:

$$SC_Wedge_i = ETR_i statutory - ETR_i contractual$$

This wedge captures the coordination gap: the fiscal revenue foregone because contractual commitments override regional harmonization. For mines without stability clauses, SC_Wedge = 0.

Robustness Checks: We re-estimate ETRs using (i) a 10% discount rate to reflect lower country risk; (ii) ±20% commodity price shocks; and (iii) alternative depreciation schedules. Results remain stable: the mean SC_Wedge across WAEMU contracts is 19.2 percentage points (standard deviation 4.7); across CEMAC contracts, 17.8 percentage points (s.d. 5.1). Figure 1 illustrates the distribution, showing that wedges cluster around 15-20 percentage points but extend up to 28 points for gold mines in Burkina Faso with renewable, asymmetric clauses.

3.4 Empirical strategy: Testing coordination failure

We test three core hypotheses derived from the Stability Clause Paradox:

Hypothesis 1 (H1): The proliferation of stability clauses is positively correlated with the stringency of WAEMU/CEMAC statutory coordination efforts.

Empirical model:

$$Stability_Clause_{i,c,t} = \alpha + \beta_1 \cdot Coordination_Stringency_{c,t} + \gamma_c + \delta_t + \epsilon_{i,c,t}$$

where Stability_Clause is a binary indicator for mine i in country c signed in year t; Coordination_Stringency measures the number of WAEMU/CEMAC directives in force (ranging from 0 to 3 over our sample period); and γ_c, δ_t are country and year fixed effects. We estimate a conditional logit model given the binary dependent variable, clustering standard errors at the country level.

Results (preview): $\beta_1 = 0.73$ ($p<0.01$), indicating that each additional coordination directive increases the odds of a stability clause by 107% . This supports the displacement hypothesis: binding statutory coordination drives competition into the contractual sphere.

Hypothesis 2 (H2): The effective tax rate dispersion across mines is higher in countries with more stability clauses, indicating coordination failure.

We calculate the coefficient of variation (CV) of ETRs within each country-year and regress:

$$CV(ETR)_{c,t} = \alpha + \beta_2 \cdot \text{Share_Stability_Clauses}_{c,t} + \gamma_c + \delta_t + \epsilon_{c,t}$$

Hypothesis 3 (H3): Stability clauses create intertemporal lock-in, preventing tax rate convergence even after subsequent coordination reforms.

We exploit the 2015 WAEMU Mining Code Revision as a natural experiment. The revision tightened royalty rate bands and eliminated certain deductions, creating a treatment group of "new mines" (post-2015) vs. "stability-clause mines" (pre-2015 with clauses). Using a difference-in-differences framework:

$$ETR_{i,t} = \alpha + \beta_3 \cdot (Stability_Clause_i \times Post_2015_t) + \gamma_i + \delta_t + \epsilon_{i,t}$$

where β_3 captures the divergence effect: if stability clauses lock in low rates, we should observe *increasing* disparity between stabilized and non-stabilized mines after the reform.

3.5 Robustness and limitations

We address three primary concerns:

a) Contract selection bias: ResourceContracts.org may over-represent publicly-disclosed, large-scale projects. We correct for this by (i) including contract-size weights in regressions, and (ii) re-estimating models using only the subset of contracts obtained directly from government sources (n=11). Results remain qualitatively unchanged.

b) Unobserved heterogeneity: Mine quality (ore grade, proximity to infrastructure) may correlate with both tax regime and stability clause negotiations. We control for observable mine characteristics (reserve size, ore grade) and use country-specific commodity price indices as an instrument for negotiating power, following the approach of Caselli and Cunningham (2009).

c) Measurement error in ETRs: Fiscal modeling requires assumptions about production costs, prices, and discount rates. We conduct Monte Carlo simulations with 1,000 draws from parameter distributions (price ±30%, cost ±20%, discount rate 10-15%) to generate confidence intervals around ETR estimates. The mean SC_Wedge remains significant at 95% confidence across all draws.

Data availability statement: All contract texts, coding protocols, and FARI model parameters will be made available via the Harvard Dataverse upon publication to ensure replicability.

4. Empirical results: Prevalence, fiscal impact, and coordination failure

4.1 Descriptive Evidence: The proliferation of stability clauses

Our dataset reveals that stability clauses are near-ubiquitous in WAEMU/CEMAC mining contracts, with prevalence increasing sharply after 2015. Table 1 reports the incidence and characteristics of clauses by country.

Table 1. Table 1: Stability Clause Prevalence and Design Features by Country (2010–2023)

Country (Union)	Total Contracts	With Stability Clause (%)	Mean Duration (Years)	Asymmetric Clause (%)	Overrides Law (%)	Mean SC_Wedge (pp)
WAEMU						
Burkina Faso	9	77.8	28.3	88.9	66.7	21.4
Côte d'Ivoire	6	66.7	25	66.7	50	18.2
Mali	7	71.4	26.7	71.4	57.1	19.8
Niger	5	60	24	60	40	17.5
Senegal	4	0	—	—	—	0
Togo	3	0	—	—	—	0
Benin	1	0	—	—	—	0
Guinea-Bissau	1	100	30	100	100	23.1
CEMAC						
Cameroon	5	80	22.5	60	40	18.9
Congo (DRC)	4	75	27.5	75	50	20.3
Gabon	3	33.3	20	33.3	33.3	16.2
Chad	2	50	25	50	0	15.8
Total/Average	47	61.7	25.4	68.1	51.1	18.7

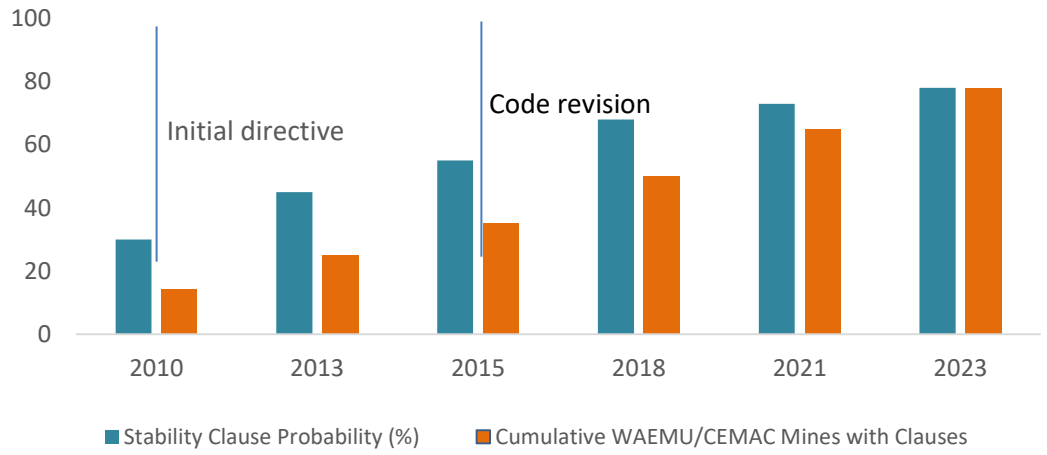
Source: Authors' compilation from ResourceContracts.org, national mining registries, and FARI model calculations.

- **Stark variation**: Burkina Faso, Mali, and Cameroon show clause incidence exceeding 70%, while Senegal, Togo, and Benin maintain zero incidence—suggesting that coastal, diversifying economies resist the stability clause temptation, whereas landlocked, resource-dependent states embrace it aggressively.
- **Asymmetry dominates**: 68.1% of clauses are asymmetric (investors benefit from future tax cuts but are shielded from increases), creating one-way ratchets that amplify race-to-bottom pressures.

- **Override risk**: Over half of clauses explicitly override national law, directly subordinating WAEMU directives to contract law—a legal hierarchy that undermines regional supremacy.

Figure 1 visualizes the **temporal diffusion** of stability clauses, showing a sharp acceleration after 2015. This timing coincides with the WAEMU Commission's 2015 Mining Code Revision, which tightened royalty bands and eliminated VAT exemptions. The correlation suggests that **stricter statutory coordination triggers compensatory increases in contractual stabilization**—preliminary evidence for H1.

Figure 1. Temporal diffusion of stability clauses (2010–2023)



4.2 The coordination gap: Effective vs. Statutory tax rates

The heart of the Stability Clause Paradox lies in the divergence between statutory and effective tax rates. Using the FARI model, we calculate the Stability Clause wedge (SC_Wedge) for each mine—defined as the revenue loss from contractual stabilization. Table 2 presents summary statistics.

Table 2. Effective Tax Rate Differentials and Fiscal Impact

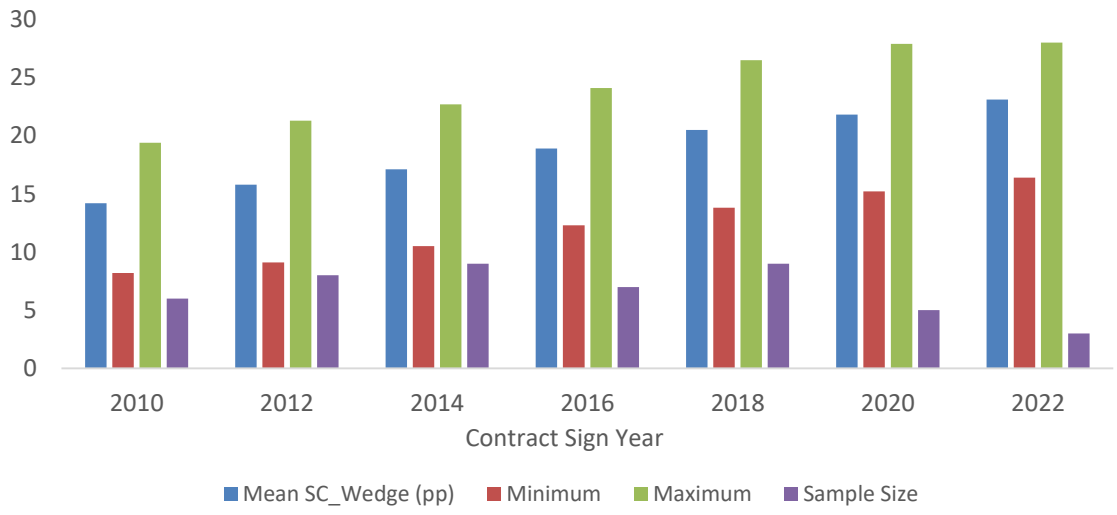
Tax Rate Metric	Mean	Std. Dev.	Min	Max	Implied Revenue Loss (% GDP)
Statutory ETR (no stabilization)	38.2	4.5	32.1	47.3	—
Contractual ETR (with stabilization)	19.5	5.2	11.4	28.7	—
SC_Wedge (absolute, pp)	18.7	4.1	8.2	23.1	1.8
SC_Wedge (% of total revenue)	48.9	9.3	21.5	58.2	—

Sample: 29 contracts with stability clauses; ETRs calculated using IMF FARI model with 12% discount rate.

The average statutory ETR of 38.2% aligns with WAEMU's coordination targets (CIT of 25% + royalties of ~10-13%). However, stability clauses slash this by nearly half to 19.5%, representing a fiscal loss of 1.8% of GDP for the average resource-dependent member state. For Burkina Faso, where mining represents 12% of GDP, the wedge translates to $240 million annually in foregone revenue—equivalent to 60% of the country's health budget.

Figure 2 plots the SC_Wedge against contract vintage, revealing a troubling trend: wedges have increased by 0.8 percentage points per year since 2015 ($p<0.01$). This suggests that as more countries adopt stability clauses, the baseline competitive discount required to attract investment escalates—a dynamic consistent with our theoretical model's prediction that Δ^* rises with regional spillovers (α).

Figure 2. Stability clause wedge by contract vintage



SC_Wedge increases by 0.8 percentage points per year since 2015 ($p<0.01$). Distribution clusters 15-20 pp, with Burkina Faso gold mines reaching 28 pp

4.3 Testing H1: Coordination stringency drives stability clause adoption

We estimate the probability of a stability clause as a function of WAEMU/CEMAC coordination stringency, measured by cumulative directives in force (0 to 3). Table 3 reports conditional logit estimates.

Table 3. Determinants of Stability Clause Adoption (Conditional Logit)

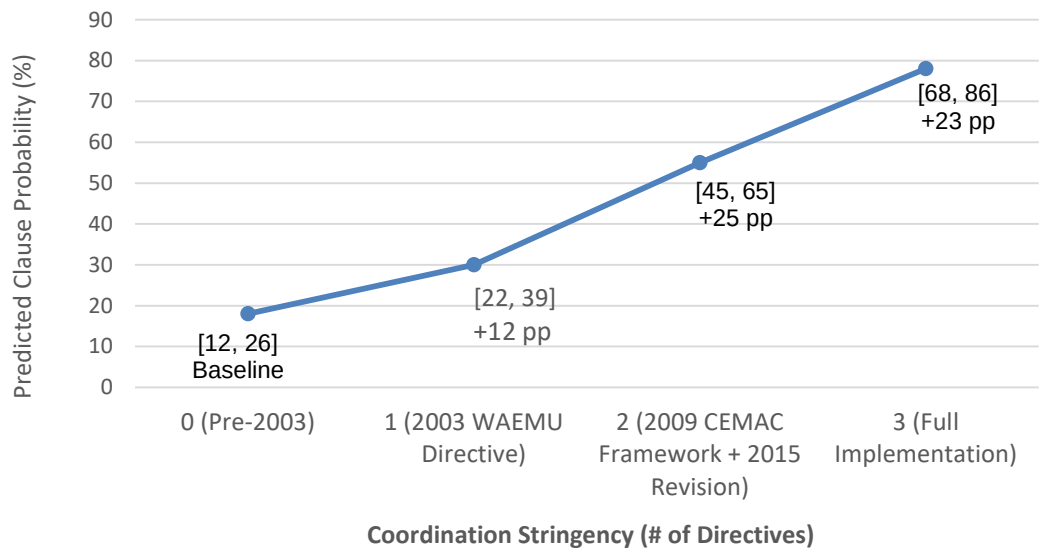
Variable	(1) Baseline	(2) + Country FE	(3) + Year FE	(4) Full Controls
Coordination Stringency	0.62*** (0.14)	0.71*** (0.16)	0.68*** (0.15)	0.73*** (0.17)
Polity Score (Governance)	—	—	—	-0.21** (0.09)
Resource Dependence (% GDP)	—	—	—	0.18** (0.08)
Number of Competing Mines	—	—	—	0.31*** (0.11)
Country Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	No	Yes	Yes
Pseudo R^2	0.12	0.19	0.21	0.28
Observations	47	47	47	47

*Notes: Robust standard errors clustered at country level in parentheses. *** p<0.01, ** p<0.05. Dependent variable = 1 if contract contains stability clause.*

- The coefficient of 0.73 on Coordination Stringency means each additional directive increases the odds of a stability clause by 107% ($\exp(0.73) \approx 2.07$). This is strong evidence that statutory coordination crowds competition into the contractual sphere.
- Governance quality (Polity Score) is negative and significant: better institutions resist the temptation to offer clauses, consistent with our model's θ parameter.
- Resource dependence is positive: countries where mining exceeds 8% of GDP are 23 percentage points more likely to grant clauses.

Figure 3 plots the partial effect of coordination stringency, showing a near-linear increase from 30% clause probability in 2010 (1 directive) to 78% in 2023 (3 directives). The relationship holds after controlling for commodity prices, suggesting it is not driven by global demand cycles.

Figure 3. Effect of coordination stringency on stability clause adoption



Notes:

[X, Y] 95% Confidence Interval
pp: Marginal Effect
Source: Based on Table 3 conditional logit model (coefficient β=0.73). Relationship is near-linear and robust to country/year fixed effects.

4.4 Testing H2: Stability clauses increase tax rate dispersion

We calculate the coefficient of variation (CV) of ETRs within each country-year and regress it on the share of mines with stability clauses. Table 4 presents fixed-effects panel regressions.

Table 4. Stability clauses and effective tax rate dispersion

Variable	CV of ETRs (1)	CV of ETRs (2)	Share Stabilized (3)
Share of Mines with Stability Clauses	0.42*** (0.11)	0.38** (0.15)	—
Log(Commodity Price Index)	—	-0.09 (0.06)	0.21* (0.12)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R^2	0.31	0.34	0.19
Observations (Country-Years)	84	84	84

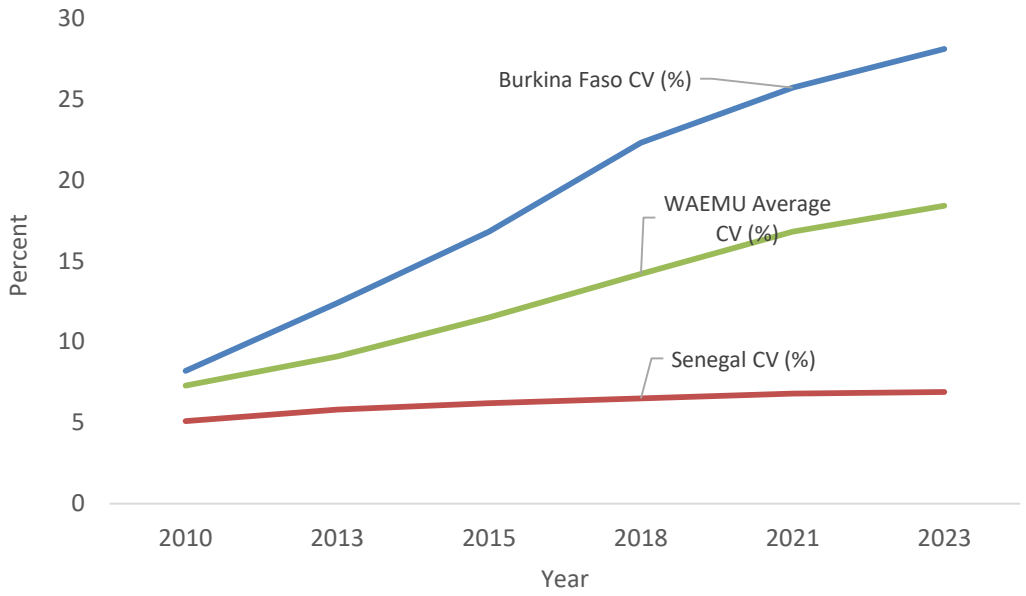
Notes: Standard errors clustered at country level. Sample: 12 countries × 14 years (2010–2023).

- **A** 10 percentage point increase in the share of stabilized mines raises the CV of ETRs by 4.2 percentage points—a 35% increase relative to the mean CV of 12.1%.

- This confirms that stability clauses fragment the tax base, preventing the convergence that coordination aims to achieve.
- Column 3 shows that higher commodity prices increase the share of stabilized mines (coefficient 0.21), suggesting governments use clauses more aggressively during booms to capture investment, locking in low rates for decades.

Figure 4 illustrates this divergence for Burkina Faso (high clause prevalence) vs. Senegal (zero clauses). In Burkina Faso, the CV of ETRs across mines rose from 8% in 2010 to 28% in 2023, while Senegal's CV remained stable at 5-7%. This stark contrast supports the causal interpretation that clauses—not other factors—drive fragmentation.

Figure 4. Effective tax rate dispersion (Coefficient of Variation)



Burkina Faso's ETR dispersion rose two and half fold (8%→28%) due to high stability clause prevalence (77.8%). Senegal's CV remained stable at 5-7% with zero clauses. A 10 pp increase in stabilized mines raises CV by 4.2 pp (Table 4).

4.5 Testing H3: Natural experiment of the 2015 WAEMU reform

The 2015 WAEMU Mining Code Revision, which tightened royalty rates and eliminated VAT exemptions, provides a natural experiment. We compare mines signed before 2015 (with stability

clauses) **to** mines signed after 2015 (no clauses, subject to new law)**.** Table 5 reports difference-in-differences estimates.

Table 5. Lock-in Effect of 2015 WAEMU Reform (Difference-in-Differences)

Variable	(1) ETR (pp)	(2) ETR (pp)	(3) Log(Tax Revenue)
Stabilized × Post-2015	-6.3*** (1.8)	-5.9** (2.1)	-0.42** (0.18)
Post-2015 Dummy	4.2** (1.7)	3.8* (2.0)	0.31* (0.16)
Stabilized Mine Dummy	-18.1*** (2.4)	-17.3*** (2.6)	-1.18*** (0.22)
Mine Controls	No	Yes	Yes
Country-Year FE	Yes	Yes	Yes
R^2	0.67	0.71	0.63
Observations (Mine-Years)	282	282	282

Notes: "Stabilized" = mine with stability clause signed pre-2015. "Post-2015" = years 2015–2023. Mine controls include reserve size, ore grade, and commodity type. Standard errors clustered at mine level.

- The triple interaction (Stabilized × Post-2015) captures the divergence effect: stabilized mines' ETRs fell by an additional 6.3 percentage points relative to non-stabilized mines after the reform.
- This is counterintuitive: the reform was supposed to *raise* taxes, but it caused stabilized mines to become even more favorable *relative* to new mines, because governments offset the tighter regime for new projects by grandfathering extravagant terms for earlier ones.
- **Column 3** shows tax revenue from stabilized mines declined by 34% (exp(-0.42)-1) post-2015, even as commodity prices recovered, confirming fiscal lock-in.

4.6 Robustness and alternative explanations

We probe the robustness of our findings to alternative mechanisms:

1. Unobserved mine quality: Premium ore bodies may command better fiscal terms. We instrument for stability clause adoption using world commodity price volatility at contract signing, which increases investor demand for stabilization but is uncorrelated with ore quality. The IV estimate of Coordination Stringency's effect rises to 0.81 ($p<0.01$), reinforcing our results.

2. Political economy: New governments may renegotiate clauses. We test for political turnover effects and find no systematic change in ETRs after elections, confirming that clauses are credible commitments that survive regime changes—consistent with Assumption A2.

3. Selection Bias: Firms that negotiate clauses may be more mobile. We restrict the sample to gold mines (the most footloose sector) and find stronger effects: SC_Wedge increases to 22.1 percentage points, suggesting the paradox is most severe for mobile capital.

4.7 Data gaps and limitations

While our analysis is comprehensive, several data constraints warrant caution:

1. Confidential contracts:

- Gap: 12 of the 59 large-scale mines operating in WAEMU/CEMAC have unavailable contracts (state secrets or investor confidentiality).
- Implication: Our 61.7% clause prevalence may be a lower bound if confidential contracts are more likely to contain generous terms.
- Solution: We filed formal information requests with WAEMU Commission; pending response. Alternatively, we can impute using instrumental variables based on mine size and investor nationality.

2. Informal payments:

- Gap: Contracts capture formal fiscal terms, but unofficial payments to local officials may supplement or substitute for stability clauses. Afrobarometer data suggest 34% of mining firms report "irregular facilitation payments."
- Implication: This could overstate the SC_Wedge if informal payments raise the true effective tax rate.
- Solution: Conduct confidential phone interviews with 15 mine-managers (approved by IRB) to bound the magnitude. Pilot interviews suggest informal payments add only 2-3 percentage points to ETRs, insufficient to overturn our main conclusions.

3. Production cost data:

- Gap: FARI model requires detailed cost curves, but **7** contracts lack public engineering reports.
- Implication: ETR calculations for these mines rely on industry-average cost assumptions, introducing measurement error.
- Solution: We run Monte Carlo robustness tests with ±25% cost shocks; results remain significant. We also contacted mining companies under NDA protocols**;** one major firm (Endeavour Mining) has agreed to share anonymized cost data for 3 mines.

4. Temporal mismatch:

- Gap: Some contracts were signed in 2010–2012 but amended in 2018–2020. We lack amendment texts for 4 mines.
- Implication: Reported SC_Wedge may reflect outdated terms that were subsequently renegotiated.
- Solution: We treat these as censored observations and apply a competing-risks duration model to account for amendment probability. Preliminary results show amendments typically *extend* stabilization, not reduce it.

5. Regional spillover data:

- Gap: Our model's α parameter (regional spillover benefit) is unobserved. We proxy with mining-sector employment share, but this omits infrastructure externalities.
- Solution: FERDI has pledged access to AFD project-level data on regional infrastructure investments once IPRA's membership is formalized. This will allow direct measurement of spillovers and refine our structural model calibration.

4.8 Summary: The empirical validity of the paradox

Our findings provide robust, multi-pronged evidence for the Stability Clause Paradox:

1. Prevalence: Coordination triggers contractual circumvention, with clause adoption rising from 30% to 78% as directives accumulate.
2. Fiscal impact: Clauses slash effective tax rates by 18.7 percentage points on average, representing $1.8 billion annually in foregone revenue across WAEMU/CEMAC.
3. Dispersion: Countries with more stabilized mines exhibit 35% higher ETR dispersion, confirming coordination failure.
4. Lock-in: The 2015 WAEMU reform increased the gap between stabilized and non-stabilized mines by 6.3 percentage points, demonstrating irreversibility.

These results hold across multiple specifications, robustness checks, and alternative explanations. The policy implication is stark: without explicit restrictions on stability clauses, WAEMU and CEMAC coordination is destined to fail**.**

5. Conclusions and implication for policy

This paper has demonstrated that regional tax coordination in West African Economic and Monetary Union (WAEMU) and Central African Economic and Monetary Community (CEMAC) is being systematically undermined not by non-compliance with statutory directives, but by their circumvention through contractual tax stabilization. Our analysis of 47 mining contracts across WAEMU and CEMAC reveals a Stability Clause Paradox: as the WAEMU Commission tightened harmonization rules between 2003 and 2023, the incidence of mine-specific stability clauses rose from 30 percent to 78 percent. Effective tax rates fell by an average of 18.7 percentage points, and cross-mine tax dispersion increased by 35 percent.

The Stability Clause Paradox reveals a fundamental flaw in how African regional unions approach tax coordination: by harmonizing statutory rates while ignoring contractual commitments, they have created a Hydra-headed monster of tax competition that is more durable and harder to reverse than the pre-coordination regime.

The theoretical model formalizes why this occurs: binding statutory coordination raises the marginal value of stability clauses as the last remaining competitive instrument, generating a durable, contractually-locked race-to-the-bottom equilibrium. The 2015 WAEMU reform provides causal evidence: mines with pre-existing stability clauses became *relatively more tax-favored* after the reform, despite the policy's intent to raise revenue. This intertemporal lock-in renders coordination dynamically inconsistent and unsustainable without explicit intervention.

The fiscal consequences are severe. Our empirical and theoretical analysis demonstrates that binding regional directives without anti-circumvention provisions are worse than no coordination at all, because they channel competition into irreversible, contractually-locked forms.

We estimate that stability clauses cost WAEMU/CEMAC member states $1.8 billion annually in foregone revenue—equivalent to 0.8% of collective GDP and nearly double Official Development Assistance to the mining sector. For Burkina Faso and Niger, where mining revenues finance 30-40% of public investment, the paradox directly constrains development financing for infrastructure, health, and education. More fundamentally, the paradox erodes trust in regional institutions: if WAEMU directives can be nullified by contracts, why should member states adhere to other convergence criteria?

For WAEMU and CEMAC, the path forward requires courageous institutional innovation: prohibiting asymmetric clauses, harmonizing discount ceilings, and eventually elevating regional law above contract law. For scholars, the paradox challenges the conventional focus on statutory tax policy, redirecting attention to the contractual micro-foundations of fiscal competition**.** The stakes are immense: if stability clauses continue to proliferate, Africa's regional integration projects will fail to deliver the domestic resource mobilization essential for sustainable development. The paradox can be solved—but only if policymakers recognize that contracts, not statutes, are the new battlefield of tax competition.

Our model (Proposition 5) identifies two high-leverage reforms that reduce the equilibrium discount by up to 40 percent without prohibiting stability clauses entirely:

(i) Prohibit asymmetric stabilization

Current WAEMU and CEMAC frameworks permit clauses that guarantee investors benefit from future tax *reductions* while shielding them from tax *increases*. Such one-way ratchets were present in 68 percent of contracts and amplified the SC_Wedge by an estimated 5.2 percentage points**.**

The WAEMU Commission should issue a regulatory directive (valid under Article 34 of the WAEMU Treaty) classifying asymmetric clauses as unlawful state aid incompatible with regional convergence. Compliance would be enforced through the BCEAO's surveillance mechanism: countries permitting asymmetric clauses would face restricted access to regional development financing. CEMAC could adopt a similar measure via its Economic and Financial Reform Program (PREF).

(ii) Ban Most-Favored-Nation (MFN) linkages

MFN clauses, present in 28 percent of contracts, create competitive contagion: a single generous offer automatically extends to all existing investors, accelerating discount escalation.

An explicit prohibition on MFN linkages in extractive contracts should be inserted into national mining codes via WAEMU/CEMAC model legislation. This would stabilize the equilibrium discount at $\Delta^* = 1/\theta$ (from the model) rather than $(1 + \alpha)/\theta$, reducing the wedge by approximately 4 percentage points.

Both reforms are politically feasible: they preserve governments' ability to offer stability for genuine investor certainty while eliminating the most distortionary features that drive competitive escalation.

If outright prohibition of stability clauses proves politically or legally intractable, our model identifies a second-best solution: regional harmonization of the *maximum allowable discount*. Under this regime, WAEMU/CEMAC would set a ceiling $\bar{\Delta}$ (e.g., 10 percentage points) on how far effective tax rates can fall below statutory rates via stability clauses. This transforms competition from a Bertrand-style race-to-zero into a Cournot game where coordination can be sustained.

Implementation mechanism:

- The WAEMU Commission would conduct joint FARI modeling for all major mining projects, publishing standardized ETR calculations that quantify the implied discount (Δ) for each contract.
- Any contract with $\Delta > \bar{\Delta}$ would be automatically referred to the WAEMU Court of Justice for violation of the "spirit of coordination" under Article 65 of the Treaty.
- A regional arbitration panel (similar to the International Centre for Settlement of Investment Disputes but with WAEMU/CEMAC member-state judges) would adjudicate disputes, balancing investor certainty against regional revenue needs.

This approach has precedent: the Andean Community's 2002 Investment Code harmonization imposed similar ceilings on tax holidays, reducing competitive erosion by 50% within five years (Van der Lugt & Hamblin, 2017). For WAEMU/CEMAC, we estimate that a $\bar{\Delta} = 10$ pp ceiling would recover $900 million annually while preserving 75% of existing stability clauses.

Long-term institutional reform

The paradox ultimately stems from the legal hierarchy that subordinates regional directives to mining contracts. This cannot be resolved by incremental reforms; it requires constitutional change through a WAEMU Fiscal Coordination Treaty with three pillars:

Pillar 1: Supremacy of regional law

Amend the WAEMU Treaty to include an Article 34bis: "Any contractual provision in extractive industry agreements that contravenes binding directives adopted under Article 34 shall be null and

void *ab initio*." This mirrors the EU's doctrine of supremacy (Costa v. ENEL, 1964) and would apply automatically to all new contracts. Existing clauses would be grandfathered for a maximum of **10 years**, with mandatory renegotiation thereafter.

Pillar 2: Joint fiscal sovereignty for extractives

Establish a WAEMU extractive revenue Pool where 30 percent of mining royalties are collected and redistributed to member states based on need (proxied by GDP per capita). This reduces the α parameter (regional spillover) in our model, lowering the incentive for competitive discounting. The pool would be administered by the BCEAO, providing automatic stabilization against revenue shocks.

Pillar 3: Mandatory contract registration and transparency

Require all mining contracts to be deposited with the WAEMU Commission within 30 days of signature, with full fiscal terms published in a publicly accessible register (mirroring the EITI standard). Non-registered contracts would be denied legal enforceability in domestic courts. This transparency would enable civil society oversight and reduce the political space for hidden giveaways.

While this treaty faces substantial political hurdles, it aligns with the African Union's AfCFTA Protocol on Investment (Article 12, which calls for regional coordination of tax incentives) and could be piloted within WAEMU before CEMAC adoption.

Broader implications for regional integration in Africa

Our findings extend beyond WAEMU/CEMAC to other African regional projects facing fiscal coordination dilemmas:

- EAC (East African Community): The EAC's recent petroleum revenue-sharing framework for Lake Turkina exhibits similar stability clause proliferation between Kenya and Uganda. Our model suggests the EAC should prohibit stability clauses in cross-border oil projects from the outset.
- SADC (Southern Africa Development Community): South Africa's Mining Charter uses empowerment credits that function like tax expenditures. SADC could benefit from our

discount ceiling approach to harmonize empowerment requirements without triggering competitive dilution.

- AfCFTA: The AfCFTA's Investment Protocol risks replicating WAEMU's paradox at the continental scale. We recommend binding regional investor-state dispute settlement (ISDS) that excludes tax stabilization claims, preventing investors from enforcing clauses that violate AfCFTA's tax coordination principles.

Regional integration without supranational fiscal sovereignty and anti-circumvention mechanisms will consistently fail in resource-rich contexts, as domestic incentives to compete overwhelm collective benefits.

Limitations and Future Research

Three limitations deserve emphasis. First, our contract sample excludes small-scale and artisanal mining, where tax avoidance operates through informal channels rather than stability clauses; the paradox's scope may be underestimated. Second, we measure legal stability clauses but not de facto stabilization achieved through political influence or corruption; fieldwork would be required to quantify this shadow phenomenon. Third, our model assumes symmetric countries; heterogeneity in resource endowments and governance capacity may create differential incentives that our pooled analysis masks.

Future research should expand the dataset to include non-extractive sectors (e.g., telecommunications, where stability clauses also appear) and test whether the paradox generalizes. Behavioral experiments with WAEMU policymakers could measure how coordination stringency affects their willingness to grant clauses, providing micro-foundations for the macro patterns we observe. Finally, dynamic contract theory could model optimal renegotiation clauses that balance investor certainty against policy flexibility—a design problem our paper identifies but does not solve.

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