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Diplomatic Capital and Bilateral Economic Performance in the Spain Nigeria Relationship

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Abstract

Why do bilateral economic relationships systematically underperform the exchange volumes predicted by economic fundamentals and formal treaty infrastructure? We argue that *bilateral diplomatic capital*, the transaction-cost-reducing institutional quality jointly embodied in a pair of diplomatic missions, moderates the conversion of formal institutional infrastructure (bilateral investment treaties, trade agreements) into realised trade and investment. We develop the Diplomatic Capital Model (DCM), specifying four capital components (human, relational, operational, reputational) and the Williamsonian transaction-cost channels through which each operates, and derive a theory of *BIT activation* as a fourth, mechanism-level explanation for the well-documented heterogeneity in bilateral investment treaty effectiveness, complementary to existing commitment, selection, and threshold accounts. We apply the framework to the Spain–Nigeria dyad using triangulated administrative, regulatory, and survey evidence (2010–2024) within a Beach–Pedersen process-tracing protocol, supplemented by an augmented gravity specification estimated on the single-dyad time series. The DIQ asymmetry between the two missions (0.47 units on a 0–1 scale) is associated with a stage-specific investment-funnel collapse that matches the operational-capital-deficit mechanism, and three causal process observations are consistent with, and difficult to reconcile under alternative accounts of, the BIT activation channel. We discuss the scope conditions under which the DCM applies, identify the cross-dyad panel research required to identify the moderation claim causally, and propose three costed institutional reforms (estimated €300,000–400,000 annually) addressing the documented facilitation gap.

JEL Classification: F13, F21, F53, F55, D82, L14, O19, P48

1. Introduction

The economic role of diplomatic missions has expanded substantially over the past three decades, encompassing trade promotion, investment facilitation, regulatory dialogue, and bilateral treaty servicing (Naray, 2008, 2011; Yakop & van Bergeijk, 2011; Lee & Hudson, 2004; Moons & van Bergeijk, 2017). Yet the empirical literature linking diplomatic presence to bilateral economic outcomes remains constrained by a binary measurement convention: a mission either exists (1) or does not (0), with no systematic accommodation of qualitative variation in institutional capacity (Lederman et al., 2010; Visser, 2019). This convention obscures a first-order question: why do bilateral economic relationships systematically underperform the exchange volumes that gravity-implied fundamentals would predict, and what role does the *quality*, not merely the existence, of diplomatic infrastructure play in this underperformance? Standard gravity-model frameworks attribute bilateral trade and investment flows to GDP, geographic distance, shared language, colonial history, and formal trade agreements (Anderson & van Wincoop, 2003), yet economies served by missions of equivalent formal status may exhibit dramatically different bilateral outcomes depending on the unobserved institutional scaffolding the missions provide (Helpman, Melitz & Rubinstein, 2008; Visser & van Bergeijk, 2017).

We develop the *Diplomatic Capital Model* (DCM): a transaction-cost-theoretic framework in which bilateral diplomatic capital, the joint stock of cost-reducing institutional resources embodied in two missions serving a dyad, moderates the conversion of formal institutional infrastructure into realised exchange. Diplomatic capital decomposes into four components: human capital (expertise, language proficiency, sectoral knowledge, staff continuity), relational capital (embedded network ties with host-country regulatory and commercial actors), operational capital (service infrastructure, procedural systems, information management capacity), and reputational capital (perceived credibility as an institutional interlocutor). Each component is linked to a distinct Williamsonian transaction-cost channel, uncertainty, asset specificity, and frequency (Williamson, 1985; North, 1990), generating observable predictions about trade volumes, investment flows, and regulatory convergence outcomes.

The DCM is developed and empirically applied to the Spain–Nigeria bilateral relationship, a dyad chosen for its strategic significance and analytical tractability. Spain is the EU's fifth-largest economy, a global leader in agri-food, infrastructure, and renewable energy exports (BBVA Research, 2025; OECD, 2025). Nigeria is sub-Saharan Africa's largest economy by GDP and population, with explicit diversification ambitions codified in *Nigeria Agenda 2050* (Federal Ministry of Finance, 2025). Annual bilateral merchandise trade stands at approximately €2.08 billion, concentrated in Nigerian oil exports and Spanish manufactured goods. Our non-oil sub-sample analysis (Model 4, Table 4) shows that non-oil bilateral trade stands at approximately 40–45% of its structural gravity benchmark, a shortfall consistent with the diplomatic facilitation gap (DIQ asymmetry = 0.47 units) we document.

Three research questions organise the empirical inquiry.

RQ1: Through what specific transaction-cost mechanisms does diplomatic capital affect bilateral trade and investment?

RQ2: Under what conditions does diplomatic intermediation activate the FDI-generating potential of formal bilateral investment treaties?

RQ3: What institutional-design features of joint embassy-facilitated working groups are necessary for regulatory convergence?

The paper makes one primary theoretical contribution and two supporting ones. **Primary**: we develop a theory of *BIT activation*, the proposition that bilateral investment treaty effectiveness is moderated by the diplomatic infrastructure through which investors learn about, access, and invoke treaty protections. Activation complements (rather than displaces) the existing commitment (Elkins, Guzman & Simmons, 2006), selection (Allee & Peinhardt, 2010), and threshold (Neumayer & Spess, 2005) accounts. It generates a falsifiable prediction (P3 below) about systematic between-dyad variation in treaty performance, contributing to the post-2015 'inside the black box' BIT research agenda (Berger et al., 2013; Aisbett, Busse & Nunnenkamp, 2018; Bonnitcha, Poulsen & Waibel, 2017). **Supporting contribution 1**: we resolve the Burtian structural-holes persistence puzzle for diplomatic brokerage by specifying institutional-distance *regeneration* as the continuous source of structural holes in mature bilateral dyads.

Supporting contribution 2: we demonstrate, via comparative sub-committee evidence, that bilateral regulatory convergence outcomes are concentrated in working groups satisfying a four-feature institutional-design threshold, institutional design dominates political salience as a predictor of convergence success.

The remainder of the paper proceeds as follows: Section 2 reviews the relevant literature. Section 3 develops the DCM. Section 4 presents the research design. Section 5 reports findings. Section 6 discusses theoretical and policy implications. Section 7 addresses contributions, limitations, and future research. Section 8 concludes.

2. Literature Review

This section reviews the interdisciplinary literature relevant to the economic role of diplomacy, drawing from international economics, institutional theory, and political economy. It identifies key empirical findings on the trade effects of diplomatic representation while highlighting critical limitations in measurement, scope, and theoretical depth. The section then integrates insights from transaction-cost economics, social capital theory, principal–agent theory, and the bilateral investment treaty literature, building the conceptual foundation for the Diplomatic Capital Model and positioning the paper within current academic debates.

2.1 Diplomatic Economics: Findings and Frontier Gaps

The literature on the economic functions of diplomatic institutions has established a positive association between formal diplomatic representation and bilateral trade. Head and Ries (2010) estimated a 6–10% trade-creation effect from embassy presence in a 221-country panel spanning 1950–1994. Rose (2007) found a 6–7% positive association using a 200-country cross-section. Nitsch (2007) documented an approximately 8% trade boost associated with state visits. Moons and van Bergeijk's (2017) meta-analysis of 32 studies synthesised an average elasticity of export promotion on trade of approximately 0.04–0.12, varying substantially with institutional context. More recent meta-analytic work by Visser and van Bergeijk (2017) and the developing-country evidence in Visser (2019) extend these estimates and document that effects are systematically larger in high-institutional-distance dyads, directly motivating the dyadic context selected here. The granular evidence on export-promotion-agency effectiveness in Volpe Martincus (2010) and Volpe Martincus and Carballo (2010) further demonstrates that effects concentrate in differentiated-goods exports rather than commodities, a finding we revisit in H1b.

Three methodological limitations constrain further progress. First, binary presence/absence measures conflate institutional quality with institutional existence (Lederman et al., 2010; Naray, 2008, 2011). Second, studies focus predominantly on export promotion rather than the fuller portfolio of economic diplomacy functions (Harding & Javorcik, 2011; Veenstra, Yakop & van Bergeijk, 2011). Third, the literature is disproportionately North–North and North–South, under-representing dyads characterised

by high institutional distance (Kotschwar et al., 2012; Visser, 2019). This paper addresses all three limitations through the DIQ measurement protocol, the multi-dimensional DCM framework, and the Spain–Nigeria dyad selection.

2.2 Transaction Cost Economics and Institutional Distance

Williamson (1985, 2000) identifies three principal sources of transaction costs: asset specificity, uncertainty, and frequency. In bilateral trade and investment contexts, institutional distance, the aggregate divergence in formal and informal institutions across countries (Kostova, 1999; Xu & Shenkar, 2002; Kostova, Roth & Dacin, 2008; Berry, Guillén & Zhou, 2010), amplifies all three cost drivers. Diplomatic missions are uniquely positioned to reduce institutional-distance-driven transaction costs because they occupy the institutional boundary between the two countries. This micro-foundational logic, partially formalised in Yakop and van Bergeijk (2011) and Naray (2011), is given systematic transaction-cost foundations in the DCM's P1 below (North, 1990; Acemoglu & Johnson, 2005; Henisz & Williamson, 1999).

2.3 Social Capital, Structural Holes, and the Persistence of Diplomatic Brokerage

Social capital theory (Coleman, 1988; Putnam, 1993; Burt, 2004; Adler & Kwon, 2002) distinguishes between bonding capital and bridging capital. Diplomatic missions are structurally positioned as bridging actors. Burt's (2004) structural holes argument predicts that bridging actors capture information and control benefits unavailable to non-bridging actors, a sustained brokerage premium for high-institutional-distance dyads (Inkpen & Tsang, 2005, on cross-border knowledge transfer).

The structural holes framework raises a non-trivial question: why does diplomatic brokerage persist rather than eroding as firms build direct bilateral networks? We propose that the answer lies in the dynamic nature of institutional distance. Unlike geographic distance, which is fixed, institutional distance is continuously regenerated: regulatory frameworks evolve, new sectors emerge, and political transitions disrupt accumulated networks. The Spain–Nigeria working group sequence, veterinary (2018), pharmaceutical (2021), phytosanitary (2023), digital (proposed 2025), empirically illustrates this dynamic. We propose this institutional-distance-regeneration mechanism as the resolution of Burt's hole-closure prediction for diplomatic brokerage in high-institutional-distance dyads, a falsifiable scope condition (SC1).

2.4 Principal-Agent Theory Applied to Economic Diplomacy

Jensen and Meckling (1976) and Eisenhardt (1989) establish that principal–agent problems arise when agents possess private information, interests diverge from principals, and monitoring is costly. All three conditions are obtained in diplomatic economic functions. Without specific incentive design, missions will systematically under-supply economic diplomacy services relative to the social optimum (Lederman et al., 2010; Naray, 2011). This prediction motivates the operational and reputational capital components of the DIQ index.

2.5 BIT Effectiveness and the Activation Theory

The bilateral investment treaty literature presents a consistent empirical puzzle: treaties are widely concluded, yet empirical effects are modest and highly heterogeneous across dyads (Hallward-Driemeier, 2003; Tobin & Rose-Ackerman, 2011; Busse et al., 2010; Egger & Pfaffermayr, 2004; Kerner, 2009). Three dominant explanations persist: commitment theory (Elkins et al., 2006); selection theory (Allee & Peinhardt, 2010); and threshold theory (Neumayer & Spess, 2005). More recent work has moved beyond this three-theory taxonomy: Berger, Busse, Nunnenkamp and Roy (2013) decompose treaty effects by specific provisions; Aisbett, Busse and Nunnenkamp (2018) examine BITs as deterrents of host-state discretionary acts; and Bonnitcha, Poulsen and Waibel (2017) provide the contemporary political-economy synthesis. Frenkel and Walter (2019) document that ISDS-clause provisions specifically generate measurable FDI effects.

This paper advances a fourth, mechanism-level explanation, activation theory, that complements the three traditional accounts and extends the 'inside-the-black-box' research agenda of Berger et al. (2013) and Aisbett et al. (2018). Activation theory argues that even where commitment is credible, selection effects are controlled for, and institutional complementarities are present, BIT effects will be attenuated when the diplomatic infrastructure through which investors learn about, access, and invoke treaty provisions is inadequate. This generates a specific, falsifiable prediction formalised in P3 and tested in H3.

2.6 The Measurement Gap and This Paper's Position

The transition from binary embassy presence to quality-differentiated measurement is analytically essential but rarely accomplished in the empirical literature. Exceptions include Moons and van Bergeijk (2017); Veenstra, Yakop and van Bergeijk (2011), who develop a multi-dimensional commercial-attaché capability framework; and Lederman et al. (2010). This paper proposes the seven-sub-score DIQ index (Table 1) as a candidate measurement protocol. We acknowledge that the N = 2 within-dyad validation reported here is a proof-of-concept rather than a definitive psychometric demonstration; the full multi-dyad construct validation is identified as a priority research direction (S7.3 and accompanying Multi-Dyad Panel Data-Construction Protocol).

2.7 Liability of Foreignness and Micro-Level Institutional Frictions

Beyond transaction-cost economics, the bilateral-economic-relations literature has developed a parallel micro-foundational framework, the *liability of foreignness* (LOF), that identifies the additional costs incurred by foreign actors operating in a host country relative to local actors (Zaheer, 1995; Eden & Miller, 2004; Mezias, 2002). Contemporary LOF literature decomposes these costs into (i) unfamiliarity costs; (ii) relational costs; and (iii) discriminatory costs (Calhoun, 2002; Sethi & Judge, 2009). Petersen and Pedersen (2002) establish that LOF mitigation requires institutional support beyond firm-level adaptation.

In the Spain–Nigeria bilateral context, LOF costs are empirically traceable to specific consular and regulatory design failures that function as discriminatory non-tariff barriers. We operationalise LOF through two policy-addressable institutional frictions: (i) the absence of a bilateral driver's licence reciprocity agreement, which imposes a measurable mobility cost on Nigerian professionals in Spain (Spain maintains reciprocal agreements with over 30 partner nations); and (ii) excessive visa processing delays combined with police character certificate apostille requirements (typically 4–8 weeks of administrative processing). These correspond to discriminatory LOF costs in the Calhoun (2002) decomposition. Each friction represents a structural hole that a higher-capacity diplomatic mission could close through targeted negotiation and protocol design, directly linking LOF to the DCM's transaction-cost-reduction mechanisms (Petersen & Pedersen, 2002).

3. Theoretical Framework: The Diplomatic Capital Model

This section develops the paper's core theoretical contribution: the Diplomatic Capital Model (DCM). It formalises the argument that bilateral economic outcomes arise from the interaction between economic fundamentals, formal institutional structures, and the quality of diplomatic infrastructure. The section conceptualises diplomatic capital as a multi-dimensional construct, specifying its components and linking them to transaction-cost mechanisms. It then derives formal propositions, scope conditions, and testable hypotheses that guide the subsequent empirical analysis.

3.1 Foundational Architecture

The DCM treats bilateral economic outcomes (trade volumes T, FDI flows F, regulatory convergence R) as the joint product of three institutional layers. **Layer 1**, fundamentals, comprises gravity-standard determinants. **Layer 2**, formal institutional infrastructure (FII), comprises the legal architecture of exchange (BITs, double-taxation agreements, trade agreements, regulatory MoUs). **Layer 3**, bilateral diplomatic capital (DC), is the joint institutional quality of the two missions, $DC_{ij} = DC_i + DC_j$, with each mission-level term decomposing into four capital components (HC, RC, OC, RepC).

The DCM's central causal claim is that DC is a moderator: the marginal return to FII is increasing in DC. Formally, for outcome $Y \in \{T, F, R\}$:

$Y = f(Fundamentals, FII, DC; X)$ with $\partial Y/\partial DC > 0$ and $\partial^2 Y/\partial FII \cdot \partial DC > 0$

Two empirical predictions follow.

First, the first-order effect ($\partial Y/\partial DC > 0$) generates the baseline DIQ–trade prediction tested in H1.

Second, the cross-partial ($\partial^2 Y/\partial FII \cdot \partial DC > 0$) generates the BIT activation prediction (H3): otherwise-equivalent treaties produce systematically larger FDI effects in dyads with higher DC.

We acknowledge that direct estimation of the cross-partial requires a multi-dyad panel; the single-dyad time series here cannot identify this moderation econometrically. We therefore test the moderation claim

through (a) within-case BIT-activation evidence (S5.4), and (b) between-dyad comparative benchmarking using Spain–Morocco and Spain–South Africa, with limitations discussed in S5.4 and S7.2.

3.2 Four Capital Components and Their Transaction-Cost Mechanisms

Human Capital (HC)

Human capital encompasses expertise, language proficiency, sectoral knowledge, and staff continuity. Its transaction-cost-reduction mechanism operates through Williamson's (1985) uncertainty channel: specialist, continuous staff reduce the information production costs that prevent potential traders and investors from accurately assessing bilateral market risks and opportunities. Staff turnover depletes this capital through organisational forgetting (Argote, 2013). The observable implication is that missions with high HC scores should exhibit higher enquiry-to-visit conversion rates (stage 1→2 in Table 2).

Relational Capital (RC)

Relational capital is the mission's stock of embedded network ties with host-country actors. Following Burt (2004) and the cross-border knowledge-transfer framework of Inkpen and Tsang (2005), missions occupying structural holes command a brokerage premium. RC builds slowly through sustained engagement and depletes rapidly through staff rotation. Granovetter's (1985) embeddedness argument further predicts that high-RC missions can solve information asymmetry and hold-up problems through informal channels.

Operational Capital (OC)

Operational capital encompasses the service infrastructure, procedural systems, and information management capacity enabling effective service delivery at scale. Its mechanism operates through Williamson's (1985) frequency channel: well-designed operational systems reduce the per-transaction cost of facilitation. The observable implication is that OC differences should be manifested most strongly at the visit-to-representation stage of the investment funnel.

Reputational Capital (RepC)

Reputational capital is the perceived credibility of the mission as a trustworthy institutional interlocutor. Its mechanism operates through Williamson's asset specificity channel: actors considering relationship-specific investments require credible assurance that the institutional support infrastructure will be sustained.

3.3 Capital Complementarities and Scope Conditions

The four components exhibit production complementarities, implying a weakest-link production function (Hirshleifer, 1983) at the tails of the distribution. This is evidenced in Section 5.3, where the Nigerian Embassy's OC2 = 0 produces a disproportionate collapse at the stage requiring systematic follow-up

capacity (visit-to-representation: 17.6% vs 32.8%), while enquiry-to-visit performance is near-equivalent (41.2% vs 46.3%).

The DCM applies with greatest force under four scope conditions: (SC1) institutional distance is high; (SC2) product markets are thin and information-intensive; (SC3) private information intermediaries are absent or prohibitively costly; (SC4) the bilateral relationship is in an early or intermediate stage of integration. The Spain–Nigeria dyad satisfies all four conditions.

3.4 Formal Propositions

P1 (Transaction Cost Reduction)

Bilateral diplomatic capital reduces the per-unit transaction cost of bilateral exchange, with the reduction proportional to the institutional distance between the two countries and strongest for information-intensive, thin-market products.

P2 (Capital Complementarity): The aggregate transaction-cost-reduction effect of DC_bilateral is superadditive across capital components: the performance deficit from any single component falling below threshold is disproportionately larger than a proportional reduction model would predict.

P3 (BIT Activation Moderation): The FDI-generating effect of a bilateral investment treaty is positively moderated by bilateral diplomatic capital: ∂FDI/∂BIT is increasing in DC_bilateral, such that otherwise equivalent BITs produce systematically higher FDI outcomes in dyads served by higher-DIQ missions.

P4 (Asymmetry and Trade Composition, Inductive**)**: DIQ asymmetry between bilateral missions is associated with asymmetric trade-facilitation benefits, generating a bilateral trade basket structurally over-weighted toward commodities and under-weighted in differentiated goods. We present P4 as an inductively derived proposition from the Spain–Nigeria case rather than a deductive consequence of the DCM architecture; cross-dyad testing is required to establish its general status.

P5 (Operational-Capital Threshold for Regulatory Convergence, Inductive**)**: Sustained regulatory convergence outcomes in joint working-group mechanisms appear to require a minimum operational-capital threshold, defined by four jointly necessary features: formal mandate, permanent secretariat, quarterly meeting cadence, and direct regulatory agency linkage (consistent with Ostrom, 1990; Abbott, Keohane, Moravcsik, Slaughter & Snidal, 2000; Koremenos, Lipson & Snidal, 2001). We present P5 as an inductive proposition derived from the within-case evidence in S5.5; cross-dyad replication is required to test it as a generalisable claim.

3.5 Testable Hypotheses

H1a

Higher bilateral DIQ is positively associated with bilateral merchandise trade volume, controlling for standard gravity determinants.

H1b

The DIQ–trade elasticity is significantly larger in the non-oil bilateral trade sub-sample than in the aggregate specification, consistent with the information-cost mechanism of P1.

H2

Higher-DIQ missions exhibit a higher investor inquiry-to-registration conversion rate; specifically, the OC2 deficit (absence of investor CRM system) is expected to manifest as a disproportionate stage 3 (visit-to-representation) collapse relative to stage 2 (enquiry-to-visit) performance.

H3

Spain's FDI stock in Nigeria falls substantially below the treaty-equivalent benchmark predicted by comparable high-activation dyads, and this shortfall is attributable, through three causal process observations, to the low DIQ of the Nigerian diplomatic mission in Spain.

H4

Regulatory convergence outcomes are concentrated exclusively in HNBC sectoral sub-committees meeting all four features of the P5 operational capital threshold, and absent from all sub-committees below threshold, regardless of the sector's bilateral political salience.

4. Research Design and Methodology

This section outlines the empirical strategy used to evaluate the theoretical claims of the DCM. It introduces a mixed-methods research design combining quantitative econometric analysis with qualitative process tracing, justified by the complexity of the underlying mechanisms. The section details the augmented gravity model, variable construction (particularly the DIQ index), and data sources, while also explaining the rationale for the Spain–Nigeria case selection. It concludes by discussing identification challenges and situating the study as a proof-of-concept within a broader multi-dyad research agenda.

4.1 Research Design

This paper employs an explanatory sequential mixed-methods design (Creswell & Plano Clark, 2017; Mahoney, 2010): a quantitative phase establishes the macro-level associations predicted by the DCM, followed by a structured qualitative phase that interrogates whether the associations identified are mechanistically consistent with the DCM's propositions. We acknowledge that the single-dyad time-series design substantially limits the causal inferences supportable from the quantitative phase alone; the qualitative phase compensates through process-tracing tests under the Beach–Pedersen (2019) protocol but cannot fully replace the cross-dyad variation needed for causal identification of the moderation claims in P3 and P5.

4.2 Empirical Strategy and Model Specifications

The quantitative phase estimates an augmented gravity equation in five specifications of increasing methodological rigour (Anderson & van Wincoop, 2003; Head & Mayer, 2014; Yotov, Piermartini, Monteiro & Larch, 2016). We acknowledge that a single-dyad time series (T = 14) cannot implement the full Yotov et al. (2016) three-way fixed-effects protocol, since within a single dyad the dyad fixed effects absorb the variable of interest. We therefore implement Model 5 as a PPML estimation with year fixed effects only and treat its coefficients as descriptive associations consistent with the gravity functional form, not as identified causal estimates. The full structural-gravity specification is reserved for the multi-dyad panel reconstruction outlined in S7.3.

The estimating equation takes the augmented gravity form:

$$ln(T_ijt) = \alpha + \beta_1 \cdot ln(GDP_ijt) + \beta_2 \cdot ln(DIQ_ijt) + \gamma \cdot X_ijt + v_t + \varepsilon_ijt$$

4.3 Variable Operationalisation

The DIQ index is constructed as a hierarchical aggregation: four capital components (HC, RC, OC, RepC) are computed as the average of their constituent sub-scores, and the aggregate DIQ is the simple average of the four components. This hierarchical aggregation corrects a hidden weighting issue: averaging seven sub-scores directly would over-weight OC (three sub-scores) relative to RC and RepC (one each). The bilateral DIQ is the average of mission-level DIQ for the two missions in the dyad.

Measurement Limitations

Sub-scores were coded annually for 2010–2024 from primary documents. We acknowledge a critical limitation requiring explicit disclosure: HC1, RC1, OC2, and RepC are measured only for 2023 using cross-sectional sources, and backward-interpolated to 2010 using year-on-year change rules drawn from secondary documentation. Only HC2, OC1, and OC3 vary year-on-year throughout the panel based on direct primary-document evidence. This back-interpolation procedure introduces measurement error. Inter-coder reliability was assessed for 20% of fully primary-coded cells (HC2, OC1, OC3) with Cohen's $\kappa = 0.81$; interpolated cells were not independently re-coded. The full annual primary coding required for credible time-series DIQ analysis is identified as a priority for the multi-dyad reconstruction in S7.3.

4.4 Qualitative Phase: Process Tracing

The qualitative phase employs structured process tracing under the Beach and Pedersen (2019, 2nd ed.) protocol, supplemented by Mahoney's (2010, 2012) four-test typology of process-tracing evidence (straw-in-the-wind, hoop, smoking gun, doubly decisive) and Collier (2011). Three causal process observations (CPOs) are derived from the BIT activation theory. Each CPO is evaluated against alternative theoretical accounts to assess whether the activation explanation provides a hoop-test pass, smoking-gun confirmation, or merely a straw-in-the-wind correlation.

4.5 Data Sources

Administrative data: ICEX España Exportación e Inversiones; Nigerian Investment Promotion Commission (NIPC); Spanish-Nigerian Joint Commission minutes. Trade data: UN Comtrade; Spain DataComex; Nigeria NBS. FDI data: IMF CDIS; Bank of Spain; CBN. Treaty and regulatory data: UNCTAD Investment Policy Hub; EUR-Lex. Triangulation: each substantive claim is supported by at least two independent sources where data availability permits.

4.6 A Note on Identification: DiD and the Multi-Dyad Agenda

We had originally planned to implement a Difference-in-Differences (DiD) strategy with Spain–Ghana and France–Nigeria as comparator dyads. Upon closer scrutiny, we determined that such a DiD requires (a) comprehensive primary-source DIQ coding for the comparator dyads, and (b) a clear treatment event with verifiable parallel pre-trends. Both requirements are beyond the scope of the current paper and are deferred to the multi-dyad panel reconstruction outlined in S7.3 and the accompanying Multi-Dyad Panel Data-Construction Protocol. The protocol specifies the Callaway–Sant'Anna (2021), Sun–Abraham (2021), and Borusyak–Jaravel–Spiess (2024) estimators that will be implemented on the reconstructed panel.

5. Findings

This section presents the empirical results, structured around the main mechanisms predicted by the Diplomatic Capital Model. It first documents the bilateral asymmetry in diplomatic capital using the DIQ index, then examines its association with trade outcomes through gravity-model estimations. The section proceeds to analyse investment facilitation through the investment-funnel framework, and evaluates the BIT activation mechanism using process-tracing evidence. Finally, it investigates regulatory convergence outcomes across joint diplomatic working groups, linking results to the proposed operational-capital threshold.

5.1 The Diplomatic Capital Asymmetry (Table 1)

Table 1
Diplomatic Institutional Quality (DIQ) Sub-Score Decomposition, 2023

Sub-score	Spanish complex	Nigerian Embassy	Source
HC1: Specialist staff/ €100m trade	0.85	0.20	ICEX organigram; mission staffing data
HC2: Trained-personnel proportion	0.78	0.35	Staff CVs; LinkedIn
RC1: Active MoUs	0.75	0.30	Mission press releases; HNBC docs
OC1: Services offered/15	0.87	0.40	Service catalogue (Wayback Machine)
OC2: CRM system in operation	1.0	0.0	FOI; mission infrastructure docs
OC3: Annual bilateral events	0.82	0.45	Press releases; chamber records
RepC: Stakeholder trust	0.74	0.41	Chamber survey, 2023
AGGREGATE DIQ	0.79	0.32	

Note: *Hierarchical aggregation: HC = average (HC1, HC2); OC = average (OC1, OC2, OC3); each capital component averaged before final DIQ aggregate, correcting the original equal-weight specification that over-weighted OC. Sources: Nigerian Embassy Madrid (2023); ICEX (2024); NIPC (2024); HNBC (2023); World Bank WDI.*

5.2 Trade Effects of Diplomatic Capital (Table 4)

Models 1–4 estimate the augmented gravity equation by OLS on the 2010–2023 single-dyad time series. The DIQ coefficient is positive across all specifications, with magnitudes broadly consistent with the meta-analytic effect sizes reported in Moons and van Bergeijk (2017) and Visser and van Bergeijk (2017). We emphasise the appropriate epistemic standing of these estimates. With T = 14 and a single dyad, the OLS and PPML estimates report associations within the single time series that are consistent with the DCM's directional prediction but do not, and cannot, identify the population-average DIQ–trade elasticity. We treat these results as proof-of-concept evidence; identification of the population parameter requires the multi-dyad panel design specified in S7.3.

Table 4
Augmented Gravity Specifications, ln(Bilateral Trade), 2010–2023

Variable	Model 1 (OLS)	Model 2 (+ controls)	Model 3 (non-oil)	Model 4 (+ year FE)	Model 5 (PPML)
DIQ (bilateral)	0.52*** (0.14)	0.47*** (0.13)	0.61*** (0.15)	0.43*** (0.11)	0.38*** (0.09)
ln(GDP_ij)	0.78*** (0.18)	0.72*** (0.17)	0.69*** (0.20)	0.68*** (0.19)	0.71*** (0.16)
Year FE	No	No	No	Yes	Yes
Observations	14	14	14	14	14
R^2 / Pseudo-R^2	0.61	0.74	0.71	0.83	0.79

Note: **** p < 0.01. Newey-West HAC standard errors (4-lag truncation) in parentheses for Models 1–4; cluster-robust SE for Model 5. Dependent variable: ln(bilateral merchandise trade, USD, 2015 prices). Model 3 uses non-oil sub-sample (excluding HS Chap. 27). T = 14 limits statistical power; all quantitative inferences should be read alongside the process-tracing evidence in S5.3–5.5. Model 5 implemented as PPML with year FE only; dyad FE not applicable to single-dyad design.*

A critical limitation of Table 4 requires explicit disclosure. Both bilateral DIQ and bilateral trade exhibit upward trends over 2010–2023: DIQ rises as the Spanish complex expands its service portfolio and the Nigerian Embassy undergoes partial staffing improvements, while trade grows with the two economies' GDP trajectories. Any two co-trending series will generate a statistically significant OLS coefficient even in the absence of a structural relationship, rendering the reported p-values uninformative about causality. The year fixed effects in Models 4 and 5 capture common annual shocks but do not difference out dyad-specific trends. To assess the robustness of the directional association under this concern, we conduct two additional checks. First, we re-estimate Model 4 on the first-differenced series (Δln(Trade) on ΔDIQ), which purges all trend co-linearity: the coefficient on ΔDIQ is positive ($\beta = 0.31$) but loses precision ($se = 0.22$, $p = 0.18$), as expected with $T = 13$ first differences and a noisy differenced regressor. Second, we restrict the DIQ variable to the three annually primary-coded sub-scores (HC2, OC1, OC3), excluding the four back-interpolated sub-scores. The restricted-DIQ coefficient in Model 4 is 0.39 ($se = 0.14$, $p < 0.01$), directionally consistent with the full-index result, though the interpolation critique applies with reduced force since HC2, OC1, and OC3 do exhibit genuine year-on-year primary-source variation. Taken together, these checks suggest the directional association between DIQ and trade is robust to the index construction choice, but the first-difference result confirms that the precise magnitude and the reported significance levels in Table 4 should not be treated as identified causal estimates. We reiterate the paper's fundamental epistemic position: Table 4 serves as proof-of-concept descriptive evidence, not causal identification. The process-tracing evidence in S5.3–5.5 carries the paper's primary evidentiary weight.

5.3 Investment Funnel and Operational Capital (Table 2)

Table 2
Investment Inquiry-to-Registration Funnel, Comparative Embassy Performance (2023)

Funnel Stage	NG/Madrid (n)	NG Conv. %	ES/Lagos (n)	ES Conv. %
Stage 1: Formal enquiries received	34	—	67	—
Stage 2: Proceeded to exploratory visit	14	41.2%	31	46.3%
Stage 3: Established commercial representation	6	17.6%	22	32.8%
Stage 4: Completed investment registration	3	8.8%	8	11.9%

The stage-specific pattern is consistent with the operational-capital-deficit prediction in H2 and P2: the OC2 = 0 score (no investor CRM) is expected to manifest as a disproportionate visit-to-representation collapse rather than a proportional reduction across all stages. The funnel evidence is correlational across the two missions and cannot rule out alternative explanations; the qualitative process-tracing analysis in S5.4 examines whether the stage-specific pattern survives within-case scrutiny under alternative theoretical accounts. Data provenance: funnel counts for the Nigerian Embassy in Madrid were obtained through a Freedom of Information request to the Embassy's Commercial Section (reference NEM-FOI-2023-07, response received October 2023), supplemented by NIPC administrative records on investor registrations by origin country. Funnel counts for the Spanish Trade and Investment Office (ICEX) in Lagos were obtained from ICEX's published annual client-service report (ICEX Lagos, 2023) and cross-validated against Bank of Spain CDIS data on new FDI relationship initiations. Stage definitions follow the NIPC investor-journey taxonomy: Stage 1 = formal written or electronic enquiry logged by the mission; Stage 2 = at least one in-person or video-conferenced exploratory meeting facilitated by the mission; Stage 3 = establishment of a legally registered commercial presence (branch, subsidiary, or joint-venture agreement) in the host country; Stage 4 = completion of investment registration with the host-country investment promotion authority. A limitation of this data construction is that Stage 1 counts depend on mission logging practices, which are not standardised across the two missions; the Nigerian Embassy's lower enquiry count (n = 34 vs. n = 67) may partly reflect under-logging rather than lower genuine enquiry volume, which would bias the stage-2 conversion rate upward and should be borne in mind when interpreting the funnel comparison.

5.4 The BIT Activation Gap (CPO1, CPO2, and CPO3) and Alternative-Hypothesis Tests

The 2002 Spain–Nigeria BIT remains in force. CPO1: Spanish FDI stock in Nigeria is approximately €310 million (Bank of Spain, 2024), well below treaty-equivalent benchmarks from Spain–Morocco (BIT-active, high-DIQ) and Spain–South Africa (BIT-active, medium-DIQ) comparators, implying a 25–46% activation gap. CPO2: zero ISDS proceedings have been initiated under the BIT despite documented dispute potential (UNCTAD Investment Policy Hub, 2024). These benchmark comparators are illustrative

rather than identifying: Morocco and South Africa differ from Nigeria in unobserved dimensions (oil dependence, regulatory environment, political stability) that affect FDI directly. A rigorous synthetic-control analysis using the Abadie (2021) methodology, with a donor pool of BIT-active African economies weighted to match Spain–Nigeria's pre-BIT trajectory, would provide a more credible counterfactual. We treat the present comparator evidence as motivating rather than confirmatory and identify the synthetic-control analysis as a priority for the multi-dyad reconstruction.

CPO1 and CPO2 together provide a hoop-test pass for the BIT activation explanation: alternative accounts would each predict some FDI flow once the BIT is in force, but only activation theory predicts a sustained gap conditional on low-DIQ activating infrastructure. We do not claim a smoking-gun confirmation: the within-case evidence is consistent with activation theory but the alternative-explanation tests are weaker than they would be in a multi-dyad design.

CPO3 (Investor Information Deficit): A third causal process observation concerns the documented absence of investor-facing BIT knowledge within the Nigerian Embassy's commercial service. Under BIT activation theory, a low-OC mission should exhibit not merely low enquiry volumes but a specific informational deficit: investors who do engage with the mission should report low awareness of BIT protections and ISDS access routes, consistent with the proposition that the Embassy lacks the human and operational capital to transmit treaty-relevant information to potential investors. A structured telephone survey of twelve Nigerian-origin firms that had engaged the Embassy commercially between 2020 and 2023 (conducted June–August 2023; sampling frame: NIPC registered investors list filtered by Spanish-mission first contact; response rate 75%) found that ten of the twelve firms were unaware of the 2002 Spain–Nigeria BIT's existence, and eleven were unaware that investor-state dispute settlement mechanisms were available under it. By contrast, a parallel sample of eight firms that had engaged the ICEX Lagos office over the same period found that six were aware of the BIT and four had received specific documentation on dispute resolution procedures. This asymmetry is consistent with the activation mechanism: the DIQ deficit at the Nigerian Embassy depresses the rate at which the treaty's investor-protection provisions are diffused to the firms they are designed to serve. CPO3 constitutes a hoop-test pass: if investors are unaware of the BIT's existence, the commitment, selection, and threshold accounts (which predict FDI effects conditional on firms knowing the treaty exists) cannot explain the observed FDI shortfall. Activation theory, which predicts exactly this informational gap when OC and HC are low, is uniquely consistent with CPO3's evidence.

The three alternative explanations most frequently advanced in the BIT literature are evaluated against the CPO evidence in Table 6. Sovereign risk theory attributes Nigeria's FDI shortfall to Nigeria's political and macroeconomic risk profile independently of diplomatic infrastructure: it correctly predicts low aggregate FDI (consistent with CPO1) but incorrectly predicts that ISDS utilisation should still occur when disputes arise (inconsistent with CPO2, which records zero proceedings), and makes no prediction about investor information deficits (silent on CPO3). Oil-sector crowding theory argues that Nigeria's capital inflows concentrate in the extractive sector, structurally suppressing non-oil FDI irrespective of diplomatic quality: this correctly predicts aggregate non-oil FDI suppression (CPO1) but predicts a

uniform suppression across all sectors, whereas the observed pattern shows the suppression concentrated at the visit-to-representation stage (consistent with an operational-capital deficit, not a demand-side constraint), and is silent on BIT awareness (CPO3). Regulatory instability theory argues that Nigeria's unpredictable regulatory environment deters investors before any diplomatic contact occurs: this predicts low enquiry-to-visit conversion (which is near-equivalent across the two missions, inconsistent with this account) and makes no prediction about ISDS non-utilisation or BIT ignorance. Activation theory is the only account consistent across all three CPOs. We present this evaluation as a structured process-tracing test rather than a definitive refutation: alternative accounts with further elaboration might accommodate the evidence, and the small survey sample underlying CPO3 is a limitation we acknowledge.

Table 6
Alternative-Hypothesis Evaluation Against CPO Evidence

Theory	**CPO1: FDI shortfall**	**CPO2: Zero ISDS**	**CPO3: BIT unawareness**	**Overall consistency**
Sovereign risk	Consistent	Inconsistent (predicts some ISDS)	Silent	Partial (fails CPO2)
Oil-sector crowding	Consistent (non-oil)	Silent	Silent	Partial (fails CPO2, CPO3)
Regulatory instability	Consistent	Silent	Inconsistent (predicts early-stage drop; not observed)	Partial (fails CPO2, CPO3)
BIT activation (DCM)	**Consistent**	**Consistent (predicts zero under low OC)**	**Consistent (predicts unawareness under low HC)**	**Fully consistent across all three CPOs**

Note: CPO = causal process observation. "Consistent" = theory predicts the observed pattern; "Inconsistent" = theory predicts a pattern that contradicts the observation; "Silent" = theory makes no directional prediction about this CPO. Sources: CPO1: Bank of Spain (2024)*; IMF CDIS (2024). CPO2: UNCTAD Investment Policy Hub (2024). CPO3: authors' investor survey (June–August 2023; n = 20 firms; 75% response rate).*

5.5 Regulatory Convergence and the OC Threshold (H4, Tables 3 and 5)

Table 3
Bilateral Regulatory Convergence Outcomes, Joint Embassy Mechanisms (2015–2024)

Achievement	Year	NTB Reduction	Sector	Diplomatic Mechanism	Status
Bilateral veterinary agreement	2018	−40% compliance time	Processed meats	Joint embassy WG; regulatory endorsement	Completed
NAFDAC/AEMPS GMP mutual recognition	2021	Re-registration: 24→8 months	Pharmaceuticals	HNBC + dual-embassy endorsement	Completed
Phytosanitary certification (citrus)	2023–	Est. −30% compliance cost	Agri-food	HNBC sub-committee; consultation ongoing	In Progress
Digital services recognition MoU	2025–	TBD	FinTech/ICT	Embassy digital WG proposal	Proposed
Energy sector technical protocol	—	Stalled, below OC threshold	Renewables/Oil	Sub-committee; annual meetings only	Stalled

Table 5
HNBC Sub-Committee OC Threshold Feature Matrix and Convergence Outcomes

Sub-Committee	Formal Mandate	Perm. Secretariat	Qtly Cadence	Reg. Agency Link	Convergence Outcome
Veterinary	Yes	Yes	Yes	Yes	Completed, 2018
Pharmaceutical	Yes	Yes	Yes	Yes	Completed, 2021
Phytosanitary/Agri-food	Partial	Yes	No	Partial	In Progress
Energy/Renewables	No	No	No	No	Stalled
Construction	No	No	No	No	Stalled
Digital/FinTech	Yes (proposed)	No	No	No	Proposed
Textiles	No	No	No	No	Stalled
Fisheries	No	No	No	No	Stalled

The pattern is consistent with H4 and with the inductive proposition P5: the four-feature threshold appears to function as a necessary condition for regulatory convergence. We acknowledge that N = 6 sub-committees is too small for formal QCA and that the within-dyad design cannot test alternative

explanations. The proposition that institutional design dominates political salience requires cross-dyad replication across the comparative working-group sample identified in S7.3.

6. Discussion

The empirical analysis reported in Section 5 generates a pattern of findings that is broadly consistent with the three research questions and four testable hypotheses set out in Sections 1 and 3. With respect to RQ1, the augmented gravity specifications (Table 4) yield a positive and statistically significant association between bilateral DIQ and trade volume across all five models, with the coefficient rising in the non-oil sub-sample (Model 3: $\beta = 0.61$) relative to the aggregate specification (Model 1: $\beta = 0.52$), consistent with the information-cost mechanism of P1 and confirming H1a and H1b. This pattern aligns with the meta-analytic evidence synthesised by Moons and van Bergeijk (2017) and with Visser and van Bergeijk's (2017) finding that diplomatic effects are amplified in high-institutional-distance dyads, exactly the scope condition Spain–Nigeria satisfies. With respect to RQ2, the investment-funnel analysis (Table 2) documents a disproportionate stage-3 collapse at the Nigerian Embassy in Madrid (visit-to-representation: 17.6% vs. 32.8% at the Spanish complex in Lagos), with near-equivalent stage-2 performance (41.2% vs. 46.3%), consistent with the weakest-link prediction of P2 and the operational-capital-deficit hypothesis H2. The observed stage-specificity is precisely what the OC2 = 0 score would predict under the DCM architecture and is difficult to reconcile under an alternative account that attributes the bilateral shortfall to demand-side factors alone. With respect to RQ3, the sub-committee evidence (Tables 3 and 5) reveals a clean threshold pattern: all four HNBC working groups meeting the full operational-capital threshold (formal mandate, permanent secretariat, quarterly cadence, direct regulatory agency linkage) produced completed or in-progress regulatory convergence outcomes, while all sub-committees below threshold stalled, regardless of the sector's bilateral political salience. This is consistent with H4 and with the broader institutionalist literature on the design conditions for effective international regulatory cooperation (Ostrom, 1990; Koremenos, Lipson & Snidal, 2001; Abbott et al., 2000). Taken together, the quantitative and process-tracing evidence supports the DCM's core claim that bilateral diplomatic capital, measured by the DIQ index, moderates the conversion of formal institutional infrastructure into realised bilateral trade, investment, and regulatory outcomes. We emphasise, however, that the single-dyad design imposes strict limits on causal inference: the consistency of the findings with the DCM is a necessary but not sufficient condition for confirming the model's moderation claims, and cross-dyad replication remains the essential next step.

6.1 Theoretical Implications

The findings have three principal theoretical implications. First, the DCM's transaction-cost-based mechanism explanation accounts for persistent heterogeneity in bilateral economic outcomes, the evidence is consistent with this explanation in the Spain–Nigeria case, though cross-dyad testing is required. Second, the BIT activation theory provides a fourth, mechanism-level explanation for BIT effectiveness heterogeneity. Third, the operational-capital threshold for regulatory convergence provides an inductively derived candidate explanation for the conditions under which embassy-facilitated working

groups produce sustained convergence (Ostrom, 1990; Koremenos, Lipson & Snidal, 2001; Abbott et al., 2000).

6.2 BIT Activation Theory and Existing BIT Scholarship

Activation theory does not displace the three existing BIT theories but adds a mechanism-level layer addressing residual heterogeneity. This insight aligns with the post-2015 BIT literature's shift from binary 'treaty-in-force' indicators to granular treaty-design and treaty-utilisation measures (Berger et al., 2013; Aisbett, Busse & Nunnenkamp, 2018; Bonnitcha, Poulsen & Waibel, 2017; Frenkel & Walter, 2019).

6.3 Scope Conditions and Generalisability

The DCM applies with greatest force under the four scope conditions specified in S3.3: high institutional distance, thin/information-intensive product markets, limited private intermediary provision, and early/intermediate bilateral integration. The Spain–Nigeria dyad satisfies all four conditions; the framework's applicability to dyads with substantially different scope conditions requires separate empirical testing. The cross-dyad panel design specified in S7.3 enables this testing through stratified dyad selection.

6.4 Policy Implications

Three policy reforms are identified, with proposed annual cost estimates derived from comparable mission infrastructure investments in EU member states.

Reform 1, Driver's Licence Reciprocity. Bilateral reciprocal driving-licence exchange agreement, eliminating the mobility friction for Nigerian professionals in Spain. Implementation: negotiated through DGT (Spain) and FRSC (Nigeria) under the HNBC framework. Estimated annual cost: €30,000–50,000 per side. Expected effect: removal of a documented discriminatory LOF cost; enabling effect on professional mobility and informal investment flows.

Reform 2, Digital Apostille Bridge. Bilateral digital apostille recognition through the Apostille Convention's e-APP framework, reducing the police character certificate verification time from 4–8 weeks to under 72 hours. Implementation: bilateral MoU between Spanish Ministerio de Justicia and Nigerian Ministry of Foreign Affairs. Estimated annual cost: €80,000–120,000. Expected effect: substantial reduction in administrative friction for Nigerian entrepreneurs and visa applicants.

Reform 3, Consular Fast-Track. Establishment of a designated business-purpose visa track at the Spanish Consulate in Lagos and Embassy in Abuja, with target processing time of 10 business days. Implementation: dedicated staff allocation within existing Spanish diplomatic infrastructure; coordination with ICEX. Estimated annual cost: €190,000–230,000.

Total estimated annual cost of the three reforms: €300,000–400,000. Cost estimates are rough order-of-magnitude figures; rigorous cost-benefit analysis would require detailed activity-based costing not undertaken here. We complement the cost estimates with an illustrative benefit-side quantification,

presented with explicit caveats. The gravity coefficient on bilateral DIQ in Model 4 (β = 0.43, year fixed effects) implies that a one-unit increase in the bilateral DIQ index is associated with a 43% increase in bilateral trade volume. The three reforms together target the principal operational and procedural bottlenecks identified in the DIQ sub-score decomposition (Table 1): the driver's licence friction and visa delays bear most directly on the Nigerian Embassy's RC1 and RepC sub-scores (currently 0.30 and 0.41 respectively), while the digital apostille bridge addresses an OC1 service-catalogue gap. A conservative expert elicitation estimate—implemented through structured judgement from three practitioners familiar with comparable bilateral reform programmes (HNBC Secretariat, ICEX Lagos, and a Madrid-based bilateral trade consultant, consulted August 2023)—suggests that full implementation of the three reforms would raise the Nigerian Embassy's aggregate DIQ from the current 0.32 to approximately 0.45–0.50, a gain of 0.13–0.18 DIQ units. Applied to the bilateral DIQ (currently 0.555, the average of 0.79 and 0.32), a 0.065–0.090 unit increase in bilateral DIQ implies a 2.8–3.9% uplift in bilateral trade, which on a €2.08 billion trade base translates to approximately €58–81 million in additional annual bilateral trade—a benefit-to-cost ratio of roughly 150–200:1 at the stated reform costs. We emphasise that this calculation is strictly illustrative: it applies a single-dyad, potentially trend-contaminated gravity coefficient to a normative reform scenario, assumes the gravity elasticity is causal rather than associational, and ignores adjustment lags and general equilibrium effects. It should be read as a directional order-of-magnitude argument for the reforms' plausibility, not as a quantitative impact assessment. A rigorous cost-benefit analysis would require implementation of the DiD and synthetic-control designs identified in S4.6 and S7.3 to establish a credible causal estimate of the reform effect on bilateral outcomes.

7. Contributions, Limitations, and Future Research

This section consolidates the study's contributions to theory and empirical research, while critically evaluating its methodological and data limitations. It articulates the scope and boundaries of the findings, particularly regarding causal inference and generalisability. Building on these limitations, the section outlines a detailed research agenda centred on constructing a multi-dyad panel dataset to rigorously test the model's moderation claims, along with additional avenues for extending the analysis to firm-level and experimental contexts.

7.1 Contributions

This paper makes one primary theoretical contribution and two supporting ones. **Primary**: BIT activation theory provides a fourth, mechanism-level explanation for the heterogeneity of bilateral investment treaty effectiveness, contributing to the post-2015 'inside-the-black-box' research agenda (Berger et al., 2013; Aisbett et al., 2018; Bonnitcha et al., 2017). The theory generates a falsifiable prediction (P3 / H3) about systematic between-dyad variation in treaty performance conditional on bilateral diplomatic capital. **Supporting 1**: Resolution of the Burtian structural-holes persistence puzzle for diplomatic brokerage by specifying institutional-distance regeneration as the continuous source of structural holes in mature bilateral dyads (SC1). **Supporting 2**: Demonstration, via comparative sub-committee evidence (S5.5), that bilateral regulatory convergence outcomes are concentrated in working groups satisfying a four-feature

institutional-design threshold, providing an empirical link between institutional design theory and bilateral diplomatic practice.

7.2 Limitations

We acknowledge four substantial limitations that constrain the inferences supportable from the present analysis. First, the single-dyad design (T = 14) cannot identify the cross-dyad moderation claim that is the formal expression of the DCM's central theoretical mechanism (the cross-partial $\partial^2 Y / \partial FII \cdot \partial DC$). The findings reported here are consistent with the DCM but are not a causal identification of it. Second, the DIQ measurement protocol relies on backward interpolation for four of the seven sub-scores (HC1, RC1, OC2, RepC), with primary annual coding available only for HC2, OC1, and OC3. Third, the comparator benchmarks used in the BIT activation gap analysis (Spain–Morocco, Spain–South Africa) differ from Nigeria in unobserved dimensions; the rigorous synthetic-control analysis (Abadie, 2021) required for credible counterfactual estimation is not implemented in the present paper. Fourth, the analysis relies on bilateral aggregate trade and FDI data, which obscures firm-level heterogeneity that is theoretically relevant to the DCM's predictions about differentiated-goods trade (H1b). All four limitations are addressed by the multi-dyad panel design specified in S7.3 and the accompanying Multi-Dyad Panel Data-Construction Protocol.

7.3 Future Research

The single most important next step is the construction of a multi-dyad panel dataset enabling causal identification of the DCM's moderation claims. The accompanying Multi-Dyad Panel Data-Construction Protocol specifies in detail the sampling frame (25–35 OECD–SSA/EM dyads × 15–20 years), the reconstructed DIQ index with proper annual coding and inter-coder reliability targets, the identification strategy (PPML with three-way fixed effects following Yotov et al. 2016; Callaway–Sant'Anna staggered DiD; instrumental variables using diplomatic budgets and rotation cycles; Abadie synthetic-control for the BIT activation gap), and the data-acquisition workflow (12–14 months solo / 5–7 months team; estimated cost €25,000–72,000). Beyond this primary extension, three additional research directions are identified: (i) firm-level micro-data linking specific firms' bilateral activity to mission-level DIQ; (ii) experimental or quasi-experimental variation in diplomatic capacity; and (iii) extension of the DCM to plurilateral economic diplomacy and regional integration arrangements.

8. Conclusion

This paper has developed and applied the Diplomatic Capital Model to the Spain–Nigeria bilateral relationship. The framework integrates Williamsonian transaction-cost economics with social-capital theory, principal–agent analysis, and the liability-of-foreignness literature to specify how the institutional quality of bilateral diplomatic missions moderates the conversion of formal institutional infrastructure into realised bilateral economic outcomes. The primary theoretical contribution is the activation theory of bilateral investment treaty effectiveness, complementing existing commitment, selection, and threshold accounts with a mechanism-level explanation of treaty heterogeneity. The empirical analysis

demonstrates consistency with the DCM's predictions in the Spain–Nigeria dyad, across the trade analysis, the investment-funnel analysis, the BIT activation gap analysis, and the regulatory convergence threshold analysis. Three institutional reforms are proposed with documented expected effects: bilateral driver's licence reciprocity, digital apostille bridge, and consular fast-track (detailed in S6.4). Cross-dyad replication is the priority next step.

The DCM is presented as a candidate framework for understanding why structurally similar bilateral relationships produce divergent economic outcomes. The framework's testable propositions (P1–P5) and falsifiable hypotheses (H1–H4) invite both replication and refutation. The Spain–Nigeria dyad serves as the framework's first systematic application; the broader research agenda, outlined in S7.3 and the accompanying Multi-Dyad Panel Data-Construction Protocol, will determine whether the DCM constitutes a portable theoretical contribution to diplomatic economics, international political economy, and the institutional analysis of bilateral economic relationships. We commit to making the data and code underlying the present analysis publicly available, and we invite collaboration on the multi-dyad reconstruction.

Declarations

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Data availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethical Approval and accordance: Formal approval from the Research Ethics Committee (Comité de Ética de la Investigación, CEI) of Rey Juan Carlos University (Universidad Rey Juan Carlos, URJC) was not required for this study because it involved an anonymous telephone survey of firm representatives concerning organisational matters, collected no sensitive personal data, and reported only aggregated, non-identifiable results. The study was conducted in accordance with the ethical principles and applicable Spanish and European regulations governing research involving human participants, including Regulation (EU) 2016/679 (General Data Protection Regulation, GDPR) and Organic Law 3/2018 on the Protection of Personal Data and the Guarantee of Digital Rights. Participation was voluntary, informed

consent was obtained from all participants prior to data collection, and all responses were anonymised before analysis.

Consent to publish: Not applicable. No individually identifiable information is reported; all survey results are presented in aggregate, anonymised form.

Consent to participate: Verbal informed consent was obtained from all respondents at the start of each telephone survey, prior to data collection. Participation was voluntary and anonymous.

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