Does Digital Infrastructure Deepen Regional Integration?
Evidence from Cross-Border Instant-Payment Flows in Central Africa

Abstract

Africa's regional integration agenda depends not only on reducing trade barriers but also on building infrastructure through which economic value can move efficiently across borders. The underlying interoperable transactions are instant payments, so the network represents not only cross-border connectivity but also the capacity to transfer value with near-immediate transactional availability across participating payment ecosystems. Yet while trade costs, transport corridors and regional value chains are central to the literature, considerably less empirical evidence examines how interoperable digital payment infrastructure changes the structure of regional connectivity. This paper addresses that gap using the Central African Economic and Monetary Community (CEMAC) as an empirical setting.

The study constructs a novel origin–destination dataset from GIMACPAY administrative payment matrices covering 2021–2025. It combines longitudinal and network-based measures of scale, cross-border intensity, average transaction value, bilateral corridor growth, concentration, diversification, directional asymmetry, country centrality and network density. A constant five-country specification tests robustness to changes in network coverage. A separate 2023 external-validation exercise matches available bilateral payment corridors with merchandise-export relationships.

The results indicate rapid expansion and a marked structural broadening of regional payment connectivity. Cross-border transaction counts grew at approximately **34.4% annually**, compared with about **22.8% for total transaction activity**. More importantly, transaction-based corridor concentration fell sharply: the Herfindahl–Hirschman Index declined from **0.719 in 2021 to 0.292 in 2025**, while secondary corridors and country nodes gained importance. However, value concentration and directional asymmetry remained substantial, showing that broader connectivity does not imply balanced integration. External validation further identifies a significant positive association between payment transaction frequency and bilateral merchandise exports in the available 2023 matched sample (Pearson **r = 0.679, p = 0.022**), although the small cross-section precludes causal interpretation.

The paper contributes new administrative evidence, a network-based measurement approach to regional payment integration, and an evidence-informed federated architecture for AfCFTA payment connectivity. The proposed architecture connects a **national or regional payment system** to a continental interoperability and settlement layer, rather than imposing a mandatory national–regional–continental hierarchy. The findings suggest that payment interoperability is best understood as an enabling layer of regional economic connectivity whose effectiveness depends on breadth, affordability, governance, safeguards and trust.

Keywords: regional integration; digital infrastructure; cross-border payments; payment interoperability; CEMAC; AfCFTA; network analysis; digital public infrastructure.

JEL Classification: F15; F36; G21; O33; O55.