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Salle 217 RO, 26 avenue Léon Blum 63000 Clermont-Ferrand

## Submarine cables deployment, digital vulnerabilities and the digital divide in Sub-Saharan Africa

### SUMMARY:

While the massive laying of fiber optic submarine cables (SMCs) over the subcontinent in the last decades raised the prospects for the digital economy's expansion in sub-Saharan Africa (SSA), this deployment may have made the telecommunication sector subject to new vulnerabilities. On the one hand, SMCs are vital nodes of the telecommunication network, and their recent laying in SSA, though having boosted the digital economy, has also increased the sub-continent vulnerability to SMC outages. On the other hand, the laying of SMCs has widened the spatial digital divide within the subcontinent

and within countries: between coastal or urban populations close to SMC landing stations and key other backbone infrastructures, and isolated inland or rural populations with low infrastructure coverage and more exposed to telecommunication network failures. This paper studies the impact of SMC deployment on the SSA's digital divide, and highlights the importance of aforementioned digital vulnerabilities: the country's exposure to SMC outages and digital isolation. Diff-in-Diff estimations of the impact of different waves of SMC arrival on internet penetration rates are conducted, and stress a 1%-significant four percentage-point increase in Internet penetration rates following the laying of these cables. However, the panel data analysis points that digital vulnerabilities related to SMC deployment negatively affect Internet and mobile penetration rates, ICT investments, and positively affect prepaid mobile cellular tariffs and the wireline network instability.

### KEYWORDS:

ICT, submarine cables, infrastructures, telecommunications, Sub-Saharan Africa

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