# The Impact of Telecommunication Regulatory Policy on Mobile Retail Price in Sub-Saharan African Countries

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Mobile number portability and termination rates

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# Switching Costs in the Mobile Telecommunication Industry

- Switching costs and mobile termination rates (MTRs).
- Introduction of mobile number portability.
- MTRs are wholesale charges among operators
- Each network is a de-facto monopoly and they are a source of collusion
- Glide path in MTRs

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Switching Costs and Waterbed effect

# Large Body of Theoretical Literature but Few Emperical

The paper is based on two strands of literature

- switching costs: Klemperer (1987), Beggs and Klemperer (1992), Chen and Rosenthal (1996), Grzybowski (2005), Park (2011) and Cho (2013) estimate the impact of MNP on price
- Waterbed effects: Genakos and Valletti (2011, 2015), Dewenter and Haucap (2005), Cerelli et. al., (2012)

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## Lack of Policy Assessment for Developing Countries

- We add to this literarue by assessing the effect of these policies (MNP and MTRs) on prices and competition in low income countries.
- scarcity of data.

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Mobile Number Portability and MTRs

## Mobile Number Portability and MTRs in Africa

- MNP in Africa Vs Europe
- Regulation of MTRs to avoid welfare distortion in the structure of price
- Mobile operators taking regulators to court

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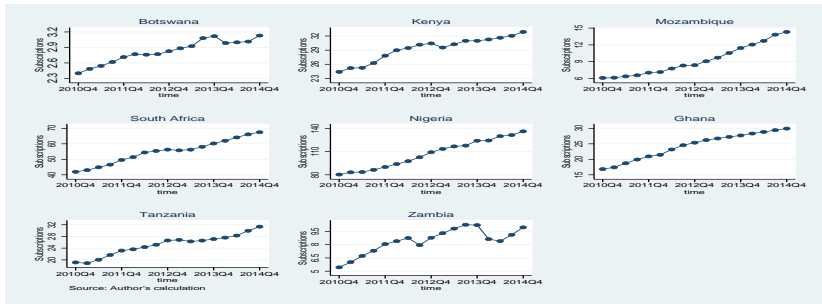
Data Construction and statistics

## Data construction

- Quarterly time series data 2010Q4 to 2014Q4
- Data constructed by aggregation of price and subscription infromation for SSA countries
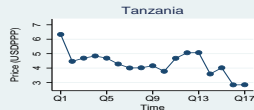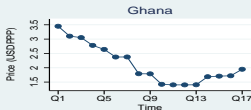- Pricing data comes from RIA and subscriptions data from World Communication Information Services (WCIS)

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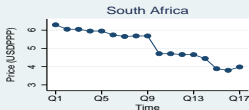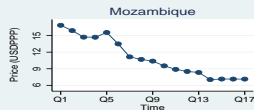Literature Review
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## Simple Statistics

### Table: Simple Statistics

| Variable | N | Mean | Std.Dev. |
|---|---|---|---|
| Price | 136 | 5.272 | 3.224 |
| rates | 136 | 0.099 | 0.040 |
| Subscr('000000) | 136 | 34.300 | 34.300 |
| GDP('000) | 136 | 5.800 | 4.778 |
| $1/N$ | 136 | 0.254 | 0.068 |
| Fixed | 136 | 2.451 | 3.346 |
| Price*MNP | 136 | 1.541 | |
| time | 136 | 9 | 4.917 |

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# Pre-paid Mobile Subscriptions for Selected African Countries



Source: Author's calculation

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# Mobile Prices for Selected Countries, 2010:Q4-2014:Q4
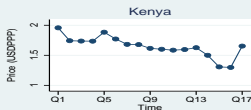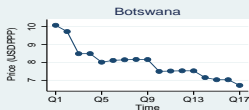
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Model implementation and identification strategies

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## Demand and Supply Estimation

Mobile operators are faced with the following inverse demand function:

$$p_{ts} = f\left(\sum_{i=1}^{N} q_{its}, X_{ts}, \epsilon_{ts}\right), \tag{1}$$

$$Q_{ts} = \exp(-(\alpha_0 + \alpha_1 R_{ts})p_{ts} + X_{ts}\beta + \epsilon_{ts}), \tag{2}$$

$$p_{ts}(.) = \frac{1}{N_{ts}} \frac{\lambda_{ts}}{(\alpha_0 + \alpha_1 R_{ts})} + MC_{ts}(.)\gamma + \omega_{ts}. \tag{3}$$

$$\eta_{ts} = \frac{\partial Q_{ts}}{\partial p_{ts}} \frac{p_{ts}}{Q_{ts}} = -(\alpha_0 + \alpha_1 R_{ts})p_{ts}. \tag{4}$$

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## Identification Strategies

Prices and MMP are endogenous

Instrumental variable techniques used

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Supply Side Results

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Supply Side Results

## MNP Insignificant but MTRs positive

| VARIABLES | Price |
|-----------|-------|
| $1/N$ | 24.397*** |
| | (4.221) |
| $MNP/N$ | -0.962 |
| | (2.076) |
| Rates | 10.677** |
| | (5.371) |
| Time | -0.155*** |
| | (0.038) |
| Constant | -0.532 |
| | (1.299) |
| Observations | 136 |
| R- square | 0.45 |

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## MNP and MNP interacted with price insignificant

| VARIABLES | 1 | 2 |
|---|---|---|
| Price | -0.056*** | -0.052*** |
| | (0.007) | (0.006) |
| Price*MNP | 0.024 | -0.006 |
| | (0.015) | (0.035) |
| MNP | 0.070 | 0.087 |
| | (0.052) | (0.088) |
| Constant | 0.632 | 11.870*** |
| | (0.723) | (1.900) |
| Observations | 136 | 136 |
| R-square | 0.83 | 0.87 |

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No waterbed effect in SSA, MNP policy not effective

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## Conclusion

- Mobile termination rates (MTR) have a statistically significant positive impact on mobile retail prices
- Our results oppose the hypothesis that MNP reduces prices and firms' markups.
- Both on the demand and supply side we find that MNP is insignificant.