Overview

• Terms of Reference
• Interpretation of TOR
• Economic of Competition policy
• Role of MTR
• Effect of Competition on Tax Revenue
• Effect of competition on Profits
• Effect of competition on Macroeconomy
• Effect of competition on Safaricom Stock
• Proposed Retail price floor
Objectives of the Study

- Evaluate the impacts of competition in the mobile voice telephony market on exchequer revenues and recommend appropriate fiscal remedies to address volatility in tax revenues;
- Evaluate the impact of competition in the mobile voice market on profitability and financial performance of the sector;
- Evaluate the effects of competition for telecommunications services on Government Macro Economic agenda such as investments, employment creation, inflation, business process outsourcing, access and affordability of telecommunication service;
- Using accurate data and plausible modeling approach, isolate the effects of the ongoing competition in the mobile voice market on the performance of Safaricom Stock in the Nairobi Stock exchange and any threats to the stability of the stock market; and
- Based on sound micro economic judgment and best practices from progressive telecommunications jurisdictions, evaluate the economic soundness of introducing retail price floor for mobile voice services pegged at 50% above the prevailing wholesale prices.
Interpretation of TORs

- **Objective 1**
  - Effect of competition on exchequer revenue
  - Effect of competition on tax instability
- **Objective 2**
  - Effect of competition on profitability
- **Objective 3**
  - Effect of Competition on Macroeconomy
    - \( AD = C + I + G + (X-M) \)
- **Objective 4**
  - Competition effect on Safaricom stock price
  - Effect of Safaricom on NSE
- **Objective 5**
  - Economics of price floor
Economics of Competition

- Policy goal
  - Promote and protection effective competition to enhance Welfare of Kenya
    - Economic Efficiency
      - highest output at lowest price
- Firm Problem
  - Max profit
- Competitive market
  - Assumption
    - Firm as price takes
    - No information asymmetry
  - Innovation
  - Reduction of production cost
Role of MTR

- Comparative analysis
- Role MTR
  - Firm problem
    - Limit access
- Solution
  - Regulate access price
  - Internalize positive externalities
- Analogous problem
  - Mandatory vaccination
  - Creation of easement to public facilities
Competition effect on Tax Revenue

• Issue
  ▫ Competition on Tax Revenue

• Methodology
  ▫ Trend Analysis
    • HHI v Total Tax revenue
    • HHI v forms of taxes Revenue

• Findings
  • HHI ↓ v Total Tax revenue ↑
  • HHI ↓ v forms of taxes Revenue

• Interpretation
  ▫ Competition enhances consumption and thus consumption taxes
Competition effect on tax Revenue

Annual tax revenue from mobile operators, 2006/7 to 2011/12

- Corporate
- Withholding
- PAYE
- VAT
- Airtime
- HHI

KES millions

Ksh. Millions
Competition Effect on Tax Revenue instability

- **Issue:**
  - effect on tax instability

- **Methodology**
  - $\ln(\sigma_t) = \alpha_0 + \alpha_i \ln(x_{it}) + \beta_i \ln(z_{it}) + \varepsilon_t$

- **Findings**
  - Lag tax instability has an impact
  - Airtime increases instability
  - VAT reduces instability
  - GDP increase instability
  - HHI has no impact

- **Interpretation**
  - Competition promote efficiency

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax inst(-1)</td>
<td>0.56</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>(14.29)</td>
<td>(14.12)</td>
</tr>
<tr>
<td>Income</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.37)</td>
</tr>
<tr>
<td>Excise</td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>(10.93)</td>
<td>(10.77)</td>
</tr>
<tr>
<td>VAT</td>
<td>-0.29</td>
<td>-0.29</td>
</tr>
<tr>
<td></td>
<td>(-3.65)</td>
<td>(-1.25)</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.21</td>
<td>-0.21</td>
</tr>
<tr>
<td></td>
<td>(-1.25)</td>
<td>(-1.25)</td>
</tr>
<tr>
<td>GDP</td>
<td>7.57</td>
<td>7.62</td>
</tr>
<tr>
<td></td>
<td>(7.57)</td>
<td>(7.62)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.11</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>(16.18)</td>
<td>(5.81)</td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>F-stat</td>
<td>155.98</td>
<td>130.57</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
</tbody>
</table>
Competition effect on Profitability

• Issue:
  ▫ Competition effect on Profits

• Methodology
  ▫ Granger causality test
    • Revenue(profit proxy) was regressed on past values of itself and HHI
    • Used monthly data-Jan. 2009-June 2012

• Findings
  ▫ Coefficient on first lag of HHI significant (t=2.59)

• Interpretation
  ▫ Competition is useful for predicting profitability

<table>
<thead>
<tr>
<th>Variable</th>
<th>coefficient</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit Lag 1</td>
<td>-0.3045</td>
<td>-1.82</td>
</tr>
<tr>
<td>Profit Lag 2</td>
<td>-0.4303</td>
<td>-2.76</td>
</tr>
<tr>
<td>HHI Lag 1</td>
<td>1.80e^10</td>
<td>-2.57</td>
</tr>
<tr>
<td>HHI Lag 2</td>
<td>-1.69e^8</td>
<td>-0.02</td>
</tr>
<tr>
<td>HHI Lag 3</td>
<td>-8.75e^9</td>
<td>-1.29</td>
</tr>
<tr>
<td>HHI Lag 4</td>
<td>1.06e^10</td>
<td>1.73</td>
</tr>
<tr>
<td>HHI LAG 5</td>
<td>3.56e^9</td>
<td>0.53</td>
</tr>
</tbody>
</table>

F-statistic(7,28)  
Prob>F  
3.25 (0.0119)
Effect on Macroeconomy

• Issue:
  ▫ Effect on Employment

• Methodology
  ▫ Trend analysis of direct, indirect and HHI

• Findings
  ▫ Total employment increased with competition

• Interpretation
  ▫ In competitive environment the firm faces elastic demand thus to increase revenue firm must reduce variable cost
Effect of Macroeconomy

• Issue:
  ▫ Effect on Investment
• Methodology
  ▫ Trend analysis
• Findings
  Investment has been increasing steadily over the years however in 2010, there was a slow down in investment in due to heavy investment in prior years; (upgrading & undersea cables), this picked up in 2010 & is expected to increase as MNOs continue upgrading network to cater to increased traffic
• Interpretation
  ▫ Outcome is consistent with economic theory
Effect on Macroeconomy

- Issue
  - Competition on Inflation

- Methodology
  \[ \pi_t = \lambda_1 \pi_{t-1} + \lambda_2 \pi_t + \lambda_3 D + \varepsilon_t \]

- Findings
  - Past inflation has impact on inflation
  - HHI & Airtime has no impact

- Interpretation
  - Airtime contributes to 3% of CPI

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag CPI</td>
<td>-0.2221</td>
<td>-0.319</td>
</tr>
<tr>
<td></td>
<td>(-1.548)</td>
<td>(-2.093)</td>
</tr>
<tr>
<td>Lag 4 CPI</td>
<td>0.675</td>
<td>0.605</td>
</tr>
<tr>
<td></td>
<td>(4.320)</td>
<td>(3.826)</td>
</tr>
<tr>
<td>Lag 12 CPI</td>
<td>0.484</td>
<td>0.459</td>
</tr>
<tr>
<td></td>
<td>(3.226)</td>
<td>(2.712)</td>
</tr>
<tr>
<td>HHI</td>
<td>-0.029</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.230)</td>
<td></td>
</tr>
<tr>
<td>Airtime CPI</td>
<td>0.024</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.937)</td>
<td></td>
</tr>
<tr>
<td>Airtime/HHI</td>
<td></td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.540)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.003</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(-0.374)</td>
<td>(0.187)</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.764</td>
<td>0.725</td>
</tr>
<tr>
<td>F-state (p value)</td>
<td>6.463 (0.001)</td>
<td>6.405 (0.001)</td>
</tr>
</tbody>
</table>
Effect on Macroeconomy

- **Issue:**
  - Competition Effect on BPO

- **Methodology**
  - Trend analysis
  - Government policy
    - Vision 2030,
    - Interconnectivity networks

- **Findings**
  - Licensed BPO ↑
  - Impact (ICT) ↑

- **Interpretation**
  - Potential outsourcing by the providers

Number of Licensed BPOS

ICT service exports (BoP, current US$)
Effect on Macroeconomy

- **Issue:**
  - Effect on Accessibility
- **Methodology**
  - Trend analysis of BTS
  - Product differentiation
- **Interpretation**
  - Distribution of BTS mirrors our population distribution
  - Development corridors along the railway, high productive land
Effect on Macroeconomy

- Issue
  - Effect on Affordability
- Methodology
  - Trend analysis on prices
- Findings
  - Inverse relationship between HHI and average tariffs
- Interpretation
  - The finding is consistent with economic theory

![Average Tariffs](chart.png)

- To another mobile network
- To a fixed network
- HHI
- Tariff (Kshs per minute)
Effect on Macroeconomy

Product Differentiation
- Short messaging service (SMS)
- Telephone Directory
- Data/internet (98.9% of total internet subscription)
- Mobile tunes/music
- Mobile money (transactions of up to USD 14 million daily)
  - Facilitate trade
  - Pay utility bills & school fees
  - Bank transactions
  - Top-up airtime
  - Charity

<table>
<thead>
<tr>
<th>MNO</th>
<th>Airtime sharing</th>
<th>Airtime credit</th>
<th>Mobile money</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safaricom</td>
<td>✓ sambaza</td>
<td>✓ Okoa Jahazi</td>
<td>✓ MPESA</td>
</tr>
<tr>
<td>Airtel</td>
<td>✓ Me2U</td>
<td>✓ Kopa credo advance</td>
<td>✓ Airtel money</td>
</tr>
<tr>
<td>Essay (yu)</td>
<td>✓ Share airtime</td>
<td>✓ yuCredo</td>
<td>✓ Yu cash</td>
</tr>
<tr>
<td>Telkom Orange</td>
<td>✓ Credit transfer</td>
<td>pewa</td>
<td>✓Orange cash</td>
</tr>
</tbody>
</table>
Competition effect on Safaricom Stock

- **Issue**
  - Effect of competition on Safaricom Stock

- **Methodology**
  - Regress Safaricom stock on lagged values, past share volumes, competition effect

- **Findings**
  - Competition had no effect

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price (-1)</td>
<td>0.580</td>
<td>0.583</td>
</tr>
<tr>
<td></td>
<td>(4.695)</td>
<td>(4.701)</td>
</tr>
<tr>
<td>Price (-2)</td>
<td>0.411</td>
<td>0.409</td>
</tr>
<tr>
<td></td>
<td>(3.353)</td>
<td>(3.326)</td>
</tr>
<tr>
<td>Competition dummy</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(0.096)</td>
</tr>
<tr>
<td>NASI</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.117)</td>
</tr>
<tr>
<td>Structural dummy</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>(3.062)</td>
<td>(2.950)</td>
</tr>
<tr>
<td>Shares volume</td>
<td>0.003</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(6.369)</td>
<td>(6.354)</td>
</tr>
<tr>
<td>Shares vol (lag 3)</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(-2.393)</td>
<td>(-2.396)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.013</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(-1.261)</td>
<td>(-1.232)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.994</td>
<td>0.994</td>
</tr>
<tr>
<td>F-stat (p value)</td>
<td>16239.80</td>
<td>14869.50</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>
Impact of Competition Safaricom NSE Share

- **Issue:**
  - Impact on the stability of NSE
- **Methodology**
  - Regress NASI on lag, safaricom capitalization, competition proxy
- **Findings**
  - Safaricom stock had no impact on stability of NSE
  - Competition proxy had no impact
- **Interpretation**

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Deviation Capitalization /NASA (-1)</td>
<td>0.003 (1.034)</td>
<td>0.087 (0.216)</td>
</tr>
<tr>
<td>Safaricom Capitalization</td>
<td>0.000 (0.340)</td>
<td>0.012 (0.508)</td>
</tr>
<tr>
<td>Competition Proxy</td>
<td>0.000 (0.178)</td>
<td>-0.008 (-0.544)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.003 (1.034)</td>
<td>0.087 (0.216)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.999</td>
<td>0.999</td>
</tr>
<tr>
<td>F-statistic (p-value)</td>
<td>125856.00 (0.000)</td>
<td>178909.60 (0.000)</td>
</tr>
</tbody>
</table>
Proposed Retail Price Floor

- **Issue:**
  - Evaluation of proposed introduction of price floor
- **Methodology**
  - Economic Analysis of Price floor
- **Interpretation**
  - DWL : Social loss
  - Consumer loss : Equity ?
  - Producer surplus may used for rent seeking &
- **Solution**
  - Set price floor
Conclusion

- Trend analysis reveal a positive relationship between total tax revenue and competition
- **Based on regression analysis competition had no impact on tax revenue instability**
- **Based on causality test, competition was a good predictor of voice market profitability**
- Trend analysis implies positive relationship between total employment and competition proxy
- Trend analysis implies positive relationship between competition and investment with some qualification
Conclusion

- **Competition and Airtime tariff had no impact on the inflation**
- Trend analysis implies the direct relationship between affordability and competition
- The distribution of BTS suggest easy accessibility because it mirrors population distribution
- Regression analysis shows that competition had no impact of prices of safaricom stock
- Safaricom Stock and competition had no impact on the stability of NSE
- Price floor would be inefficient because it would create social cost