Subsidies and distorted markets: Do telecom subsidies affect competition?

Eric Chiang, FAU
Janice Hauge, UNT
Mark A. Jamison, UF
Problem

• General concern that producer subsidies distort competition
  ▪ Farmer subsidies
  ▪ Producer subsidies to attract businesses
• Examine specific situation: HCF in telecommunications in the US
What is the HCF?

- One component of the overall universal service fund (USF)
  - Schools and libraries
  - Rural healthcare
  - Low income (e.g., Lifeline and Linkup)
  - High cost and rural areas (HCF)
Why Study HCF?

• Largest portion of USF – 62 percent
• Fund growth
  ▪ more than doubled. 1999 to 2005 – from $1.7 billion to $3.9 billion
Distribution of USF Payments, 2006

- High Cost, 62%
- Rural Health, 1%
- Low Income, 12%
- Schools and Libraries, 25%
High Cost Support

[Graph showing the increase in millions of dollars from 1986 to 2006]
High Cost Support

$1.1 billion increase

1996 Level

Millions of Dollars

High Cost Support

$1.1 billion increase

$2.9 billion increase

1996 Level
Why Study HCF?

• Regulators tried to make competitively neutral following 1996 Act
  ▪ Contributions based on revenue
  ▪ Available to incumbents and entrants
• States: Net payers vs. net contributors
• Interest in expanding to include broadband services
Net HCF Contributions per Line by State, 2007
Literature Challenging Premises for USF

- Wolak (1996) and Barros et al. (1999)
  - penetration rates approaching 100%
  - few residents would disconnect service
  - Demand highly price inelastic
  - Nearly all households service before extensive subsidies
Literature on USF

- Rosston and Wimmer (2000)
  - High cost areas can include high income
- Cremer et al. (2001) and Chiang and Hada (2007)
  - Prices not reflecting costs cause costly redistribution of welfare
Literature on USF

• Eriksson et al. (1998)
  - Targeted subsidies (e.g., Lifeline) more effective than broad based subsidies (e.g. HCF)

• Cremer et al. (2001)
  - high cost support inefficient when the incumbent is not the most efficient operator
Hypotheses

• **Hypothesis 1**: Competition as measured through entry will be lower in net recipient study areas relative to net contributor study areas.
  - Provider last resort rate averaging allows cream skimming
Hypotheses

• **Hypothesis 2:** States that are net contributors to high cost support adopt regulatory policies that are more favorable to entry relative to the regulatory policies of states that are net recipients.
  - Net receivers more likely to protect cash inflows
Data and Model

• 1999 through 2002
  ▪ By county and by study area
• Dependent variable: Number of entrants
• Explanatory variables
## Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Entry Impact</th>
<th>Variable</th>
<th>Entry Impact</th>
</tr>
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<tbody>
<tr>
<td>Net Contributions</td>
<td>More</td>
<td>Public Assistance</td>
<td>More</td>
</tr>
<tr>
<td>UNE/Retail Ratio</td>
<td>More</td>
<td>Flexible Regulation</td>
<td>More</td>
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<tr>
<td>Cellular Carriers</td>
<td>More (sometimes)</td>
<td>PSC Appointed</td>
<td>Mixed</td>
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<tr>
<td>Annual Payroll</td>
<td>More</td>
<td>Muni ban</td>
<td>Mixed</td>
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<tr>
<td>Median Income</td>
<td>More</td>
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Conclusions

• Find that HCF may interact with provider of last resort policies to allow cream skimming
• Find that net receiver states may adopt policies that protect incumbents
Further work

- Moral hazard issues
- Impacts of extending into broadband