WHAT DAMAGE HAS TITLE II WROUGHT?
FCC reclassified Internet service as “telecom” service subject to Title II in Feb. 2015
  - Claimed necessary to ban paid priority arrangements pursuant to “just and reasonable” standard

Exposed ISPs to new risks
  - Lays groundwork but then forbears from unbundling
  - Lays groundwork but then preempts states from assessing telecom-based fees on ISPs unless/until FCC does so
To model impact of Title II on ISP capex, must discount these observed effects by *likelihood* that FCC will continue to forbear from unbundling provisions

Several factors to consider

- No principled approach by FCC; instead appears to track “popular” opinion
- FCC included an unbundling provision in IP Transition order
- Canadian telecom regulator just reversed course, appropriated FTTP investment by extending unbundling mandate

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Methodology</th>
<th>Lower Bound %</th>
<th>Upper Bound %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singer (2015)</td>
<td>USA</td>
<td>DID</td>
<td>5.5</td>
<td>38.7</td>
</tr>
<tr>
<td>Hassett &amp; Shapiro (2014)</td>
<td>USA</td>
<td>Regression</td>
<td>17.8</td>
<td>31.7</td>
</tr>
<tr>
<td>Wallsten &amp; Hausladen (2009)</td>
<td>European Union</td>
<td>Regression</td>
<td>8.2</td>
<td>16.4</td>
</tr>
</tbody>
</table>

Note: W&H find that for every unbundled line per capita in a country, the number of fiber connections per capita declines by 0.041. Percent change based on simulation of move from 5% to 10/20% share of unbundled lines.
2015 WILL LIKELY MARK THE FIRST DECLINE NOT INDUCED BY A DEMAND SHORTFALL/SHOCK ($ MILLION)

<table>
<thead>
<tr>
<th>ISP</th>
<th>First Half 2014</th>
<th>First Half 2015</th>
<th>Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>11,649</td>
<td>8,328</td>
<td>-3,321</td>
<td>-29%</td>
</tr>
<tr>
<td>Verizon</td>
<td>8,494</td>
<td>8,153</td>
<td>-341</td>
<td>-4%</td>
</tr>
<tr>
<td>Comcast</td>
<td>3,246</td>
<td>3,697</td>
<td>451</td>
<td>14%</td>
</tr>
<tr>
<td>Time Warner Cable</td>
<td>2,074</td>
<td>2,397</td>
<td>323</td>
<td>16%</td>
</tr>
<tr>
<td>Century Link</td>
<td>1,385</td>
<td>1,267</td>
<td>-118</td>
<td>-9%</td>
</tr>
<tr>
<td>Charter</td>
<td>1,109</td>
<td>783</td>
<td>-326</td>
<td>-29%</td>
</tr>
<tr>
<td>Cablevision</td>
<td>425</td>
<td>381</td>
<td>-44</td>
<td>-10%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>28,382</strong></td>
<td><strong>25,006</strong></td>
<td><strong>-3,376</strong></td>
<td><strong>-12%</strong></td>
</tr>
</tbody>
</table>

Note: Excludes ISPs with < $100M in capex in 2014
ONLY TWO CAPEX DECLINES IN THE HISTORY OF BROADBAND ($ BILLION)

Bursting of dot.com bubble, long-haul fiber glut

Source: USTelecom (1996-present) and Yankee Group (1996-2010).
WHAT EXPLAINS THE TWO OUTLIERS?

- Comcast and TWC are only cable ops with > 10M bbd subs (Charter has 5.2M)
- Comcast and TWC both cite increases in customer premises equipment among primary drivers of capex increase
- Holman Jenkins (WSJ Sept. 1, 2015): Title II could have disparate impact on cable, telecom
  - “The cable guys resisted Obama regulation because that’s what cable guys do, but they can be expected to make their peace with a Netflix-FCC agenda that reinforces their incumbency. Meanwhile, in a year or two, expect to notice that the broadband speed increases aren’t coming quite as reliably as they once did.”
  - Cable accounted for 60% of broadband subs, 86% of the net broadband additions in Q1-15
Revenue declines
- Capital intensity declined as well, GDP increased

Cord cutting (Laperruque)
- Shift out demand for Internet

VZ & T “finished upgrades” (Kushnick, Shapiro)
- Investment is never finished in dynamic industry

Trend replace capex/hardware with opex/software (Bubley)
- Can’t explain a $3 billion savings

Tinkering with capex for political leverage (Frieden)
- If true, why start a war?
WHAT TO MAKE OF DUELING STATEMENTS BY CORPORATE EXECUTIVES?

- AT&T
  - CFO: “Once again, the network guys have done a great job in getting the Project VIP initiatives completed. And when they are done…the additional spend isn’t necessary, because the project has been concluded not for lack of anything, but for success.”
  - CEO: “The exact comment I made was we’re going to put a pause on our new broadband deployment plans until we see how these rules came out. We have seen how the rules came out. As we read those rules, we do believe they’re subject to modification by the courts and remand by the courts to the FCC.”

- Charter
  - CFO: Decline in capex “was driven by the completion of All-Digital during the fourth quarter of last year.”
COST-BENEFIT CALCULUS

- **Cost side of the ledger**
  - X% of $3.3 Billion capex decline at the “core”

- **Benefit side of the ledger**
  - FCC’s estimated $100 Million incremental investment at the “edge”
    - No cost-benefit analysis in OIO itself
    - Compare with DOL’s rigorous econometric modeling of claimed benefits of Fiduciary Rule

- **Dismissed less-restrictive alternative of case-by-case (CBC) as “too cumbersome”**
  - But CBC was somehow fine for interconnection, general conduct, adjudicating discrimination complaints in traditional video, May 2014 NPRM
RESOLVING THE NET NEUTRALITY DEBATE

CBC, presumption in favor (Cellco, 2014 NPRM)

CBC, presumption against (2010 OIO)

Blanket ban (2015 OIO)

Core investment

Edge investment

Degree of intervention