Australia's National Broadband Network: Disruptor And Disrupted

July 24, 2018
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Key Takeaways

- We believe NBN Co.’s forecast take-up rate will be hard to achieve without a step-change to its wholesale pricing model. This raises the prospect of a writedown and additional government funding, potentially in the form of debt relief or direct subsidies.

- It is uncertain whether retail service providers will realize an enduring benefit if NBN Co. were to recalibrate its wholesale pricing model.

- We believe that prevailing incentive structures will continue to push mobile network operators to invest heavily in their own infrastructure.

- A prolonged infrastructure arms race threatens to stretch balance sheets and ultimately force industry consolidation.

- Intransigence over the future regulatory environment and NBN Co.’s role within it risks an industrywide misallocation of capital.

The Australian government established the National Broadband Network (NBN) with two key policy objectives: to “bridge the digital divide” between metropolitan and regional areas and industry reform via the structural separation of Telstra Corp. Ltd., the former government-owned fixed-line monopoly. It is likely that the government will substantially achieve these policy objectives, albeit at an enormous cost to taxpayers, subscribers, and incumbent telecommunications providers.

S&P Global Ratings believes the disruptive forces unleashed by Australia’s NBN have weakened the industry’s credit quality. Moreover, they are reshaping the competitive landscape in a way that can no longer be confined to the fixed broadband market. That said, we believe there could be a silver lining for mobile network operators (MNOs)—NBN Co.’s high access charges, opaque service offerings, and inferior technology mix provide key ingredients for mobile substitution. This is in addition to rapid advancements in wireless technologies that are narrowing the cost advantage of fixed networks.

The full impact of the NBN is yet to unfold. The rollout that began in 2011 has only recently passed its half-way point, but is accelerating fast. The market upheaval over the past few years is set to continue as the rollout nears completion.
In our view, NBN Co.'s forecast take-up will be hard to achieve without a step-change to its wholesale pricing model. The company forecasts overall market take-up of between 73% and 75%. Any shortfall in NBN Co.'s revenue target raises the prospect of a writedown and additional government funding to support the company, potentially in the form of debt relief or direct subsidies.

Even if a recalibration of NBN Co.'s wholesale pricing model were to occur, it's uncertain whether retail service providers (RSPs) will realize an enduring benefit. Prevailing incentive structures are likely to continue to push MNOs to invest heavily in their own mobile network infrastructure. A prolonged arms race in building telecommunications infrastructure threatens to stretch MNOs' balance sheets and ultimately force industry consolidation. We expect MNOs' credit quality to remain pressured as a result (Telstra, A-/Stable/A-2; Singtel Optus Pty Ltd., A/Stable/A-1). Intransigence over the future regulatory environment and NBN Co.'s role within it risk an industrywide misallocation of capital.

The Ingredients For Mobile Substitution

NBN Co. has to contend with the global phenomenon of rapidly advancing mobile technologies. However, many of its problems are uniquely Australian: a retrograde technology mix, political involvement, rollout miscalculations, cross-subsidization of unprofitable regions, as well as a convoluted pricing structure that puts the onus on RSPs to adequately provision bandwidth. It is a contrived market shaped by heavy government intervention. And it is consumers who are expected to underwrite NBN Co.'s profitability via its favorable regulatory arrangements.

The economics of reselling NBN broadband services are extremely challenging. NBN Co.'s "last mile" fixed(1) network provides wholesale broadband to RSPs on a nondiscriminatory basis. This lowers the barriers to entry and somewhat levels the playing field between established telcos and a proliferation of new market entrants--currently comprising over 45 RSPs throughout Australia.

These conditions have fomented intense competition, leading to what NBN Co. describes as a "land grab" mentality among RSPs. The forced migration to NBN is a once-in-a-generation churn
event. Incumbent telcos have been pragmatic in their response, sacrificing margins for market share. We estimate that reseller margins are close to zero.

The rollout of the NBN is particularly damaging for Telstra, which is incrementally transferring its fixed-line monopoly to NBN Co. That said, Telstra is receiving one-off compensation as well as an ongoing earning stream for the use of certain infrastructure assets (mostly ducts, pipes, and exchanges).

**Chart 2**

**Telstra’s Reported EBITDA Breakdown**

![Chart showing Telstra's Reported EBITDA Breakdown]

Source: Company reports and S&P Global Ratings’ estimates. Copyright © 2018 by Standard & Poor’s Financial Services LLC. All rights reserved.

**Moves To Protect NBN Co. Are Propelling Mobile Bypass**

The Australian government has moved decisively to protect NBN Co. against competition from rival fixed broadband networks. Competitors can no longer "cherry-pick" high-value customers in dense metropolitan areas with vertically-integrated service offerings. They must also contribute to NBN’s "noncommercial" rollout to regional areas via a levy (currently A$7.09 per month per premise). The large-scale rollout of competing fixed networks, therefore, is no longer economically viable.

MNOs, on the other hand, are subject to a much lighter regulatory touch. They currently have no obligation to functionally or structurally separate nor are they required to participate in the cross-subsidization of "non-commercial" areas. Indeed, the Australian Competition and Consumer Commission (ACCC) has argued firmly against MNO’s inclusion in this regime.

In our opinion, regulatory distortions will exacerbate the nascent trend toward mobile substitution. NBN Co.’s average access charge of A$44 per premises per month simply leaves too much money on the table. This has spawned an infrastructure arms race among MNOs as they seek to bypass the NBN with their own "wireless fiber" networks. The corollary, in our view, is that Australia will likely be a global leader in mobile broadband adoption.

We believe NBN Co.’s high access charge has already led to lower speeds (both headline and actual), as well as lower adoption rates. According to Akamai’s State Of The Internet report, Australia’s average fixed broadband speed ranks 50 out of 148 countries (64 for average peak connection speed). While there already exists higher speed plans that would lift Australia’s
ranking, their widespread availability is academic if subscribers do not view them as affordable (see table 1). By contrast, average mobile speeds ranks 11 out of 74 countries. In our opinion, this is symptomatic of the prevailing incentive structures.

Chart 3

Australia’s Speed Rankings
Quarter ended March 31, 2017

Table 1

International Comparison Of High-Speed Stand-Alone Fixed Broadband Prices

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Monthly charge in US$PPP</th>
<th>No. of plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Finland</td>
<td>$31.85</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
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<td>3</td>
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<td>4</td>
<td>Belgium</td>
<td>$37.35</td>
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<tr>
<td>5</td>
<td>Germany</td>
<td>$41.06</td>
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<tr>
<td>6</td>
<td>Estonia</td>
<td>$43.43</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Austria</td>
<td>$44.44</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Greece</td>
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<td>9</td>
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<td>10</td>
<td>Switzerland</td>
<td>$47.15</td>
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</tr>
<tr>
<td>12</td>
<td>Portugal</td>
<td>$47.85</td>
<td>2</td>
</tr>
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<td>13</td>
<td>Netherlands</td>
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<td>6</td>
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<td>15</td>
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<td>16</td>
<td>United Kingdom</td>
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<tr>
<td>17</td>
<td>New Zealand</td>
<td>$59.61</td>
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Table 1

International Comparison Of High-Speed Stand-Alone Fixed Broadband Prices (cont.)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Monthly charge in US$PPP</th>
<th>No. of plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>United States</td>
<td>$ 61.78</td>
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<td>19</td>
<td>Australia</td>
<td>$ 65.22</td>
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<tr>
<td>20</td>
<td>Spain</td>
<td>$ 69.65</td>
<td>21</td>
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<tr>
<td>21</td>
<td>Canada</td>
<td>$ 69.65</td>
<td>20</td>
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<tr>
<td>22</td>
<td>Norway</td>
<td>$ 70.18</td>
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<td>23</td>
<td>Mexico</td>
<td>$ 75.39</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>$ 51.52</td>
<td>346</td>
</tr>
</tbody>
</table>


Fixed And Mobile Markets Are Converging

A handful of large and overlapping competitors dominate Australia’s fixed and mobile retail markets. These markets are set to further converge: Vodafone Hutchison Australia (unrated) launched as a NBN retailer in December 2017 and TPG Telecom Australia (unrated) will leverage its extensive fiber assets to launch its own mobile network during the second half of 2018. NBN Co., too, is taking tentative steps to participate in the development of 5G infrastructure(2).

We also expect network infrastructure to converge with fixed and mobile networks sharing the same physical transport layers. Taken to its logical conclusion, fixed and mobile networks might only be distinguishable by the “last 100 meters”. Both will require fiber deep into the network and
the performance characteristics will be undiscernible to most end-users.

In our opinion, MNOs will initially target their wireless offerings at profitable customer segments in dense urban locations. This is one reason why NBN market share is so important. It provides horizontally-integrated MNOs with optionality to channel individual customers toward the most profitable network. Fixed-line modems capable of 4G network backup are a step in this direction.

To be clear, we do not anticipate mobile networks to completely supplant the NBN anytime soon. The threat posed by mobile networks is more chronic than acute. In the near to medium term, capacity constraints will limit the widespread adoption of mobile broadband. However, we expect technological advances, regulatory distortions, and elevated mobile network investment to slowly tilt the balance.

A Writedown Of The NBN Appears Inevitable

NBN Co. was incorporated under the Corporations Act 2001 on the expectation that it would conduct commercial or entrepreneurial activities that generate profits for distribution. This allowed the Australian government to keep its investment "off-budget". The price elasticity of demand was thought to be very low: broadband connectivity was increasingly viewed as a subsistence item and the nascent threat posed by mobile technologies was supposedly benign.

Successive Australian governments have underestimated the complexity of the NBN rollout. And the more the NBN costs, the more end-users are expected to pay. NBN Co. will need to substantially achieve its forecast revenue growth in order to generate a positive internal rate of return (IRR). This includes aggressive activation targets and average revenue per user (ARPU) growing to A$52 in the year ending June 30, 2021, from A$44 presently, despite several years of stagnation (see chart 6).

We believe it is getting harder for the government to stand behind the presupposition that NBN Co. will generate a commercial return on investment. NBN Co.’s unusually complex pricing model is part of the problem. Moreover, NBN Co. operates in an industry where consumers have become accustomed to a long-run price deflation (see chart 7).

Slower price escalation, let alone price cuts, raise the prospect of writedowns. So, too, does more generous bandwidth inclusions intended to support NBN Co.’s competitiveness and activation targets (see chart 7).
NBN Co.’s regulatory framework for long-term cost recovery will work hard to underwrite its profitability. Indeed, similar frameworks have provided steady price escalation for regulated utilities. However, NBN subscribers are not as “sticky” as once thought and regulatory mechanisms risk becoming obsolete should enough subscribers switch to mobile substitutes. The worst case scenario is that the NBN will be relegated to the network of last resort. This threatens to unravel the cross-subsidization mechanism for “noncommercial” areas.

In our opinion, there appears to be ample justification for additional financial support on the grounds that the NBN generates social and economic benefits that cannot be captured by a commercial return on investment. For example, the policy objective of “bridging the digital divide” has always been in sharp conflict with the commercial objective of prioritizing the network rollout to profitable areas.

We will know NBN Co.’s true enterprise value when it is privatized, most likely post-completion. Ultimately, the network is only worth what buyers are willing to pay. The perceived security of cash flows will play a major role in its valuation. A key uncertainty is whether the government will tighten regulatory protections in order to shore up NBN’s value before privatization. This would have wide-ranging consequence for the broader telecommunications industry.

**Will RSPs Benefit From Changes To NBN Co.’s Wholesale Pricing Model?**

In our opinion, it is uncertain whether RSPs will accrue a lasting benefit from any recalibration of NBN Co.’s wholesale pricing model. The retail market is intensely competitive and a clampdown by the ACCC has made it more difficult for RSPs to overpromise on service standards.

We also note that NBN Co.’s recent “Focus on 50” promotion was carefully designed to improve end-user experience rather than to simply reducing the wholesale access charge. And it appears to be working. Bandwidth purchased by RSPs has grown for the first time in years, relieving congestion across the network (see charts 8 and 9).
NBN Co. has reported that 44% of new connections are on a 50 megabytes per second (mbps) speed plan or higher, a threefold increase since May 2017 (see chart 10). The "Focus on 50" campaign ends in October 2018. It remains to be seen whether NBN Co. will achieve its forecast speed tier mix (see chart 11) without more permanent changes to NBN Co.’s wholesale pricing model.
Regulatory Distortions Have Spawned An Arms Race Between Mobile Network Operators

Capital expenditure has remained elevated over the past few years. This is largely a consequence of prevailing incentive structures that have driven investment in network capacity as well as the development of enabling infrastructure for 5G. At the same time, intense competition across fixed and mobile networks is pressuring earnings (see chart 12).

Chart 12

Profit Pool Of Mobile Network Operators (MNOs)
S&P Global Ratings' estimates and adjustments

Vodafone has bolstered its metropolitan network whereas Optus has targeted second-tier regional centers, where Telstra faces limited competition. Telstra has invested to buttress its network advantage but has also made a number of noncore investments. Telstra's recent establishment of InfraCo is telling—it excludes mobile network assets such as spectrum, radio access equipment, towers, and fiber backhaul. Vertical integration of its mobile business is a central tenet of its revised operating strategy. In addition, TPG has acquired A$1.26 billion of spectrum and will invest a further A$600 million to build a mobile network that it expects to launch during the second half of 2018.

MNOs have also invested heavily in backhaul, virtualization platforms, as well as new radio and antenna technologies in the lead-up to 5G. We expect 5G will be initially deployed to enhance MNOs' existing core mobile networks. However, NBN bypass is the ultimate prize and the development of "wireless fiber" infrastructure will be a key enabler. 5G's high frequency spectrum requires a much denser network on small cell infrastructure connected by deep fiber. This is capital intensive and will take many years to fully develop.

Both Optus and Telstra have announced their intention to launch 5G services from early 2019, and Vodafone by 2020. TPG's 4G network will launch during the second half of calendar 2018 with a limited metropolitan network. We believe TPG's mobile network will be more directly aimed at NBN bypass and is designed with 5G in mind.
Uncertainty Risks The Misallocation Of Capital

Traditional categories of fixed and mobile telecommunications are dissolving. NBN Co.’s role within the Australian telecommunications industry can no longer be confined to the fixed market. The Australian telecommunications landscape has fundamentally changed and the government faces tough decisions that have widespread consequences for the broader industry:

- Will the government insist NBN Co. deliver a commercial return on its investment? NBN Co.’s regulatory framework for long-term cost recovery will do its best to achieve this aim. However, we believe the status quo is becoming increasingly untenable.

- Will NBN Co. have sufficient balance sheet capacity to respond to emerging competitive threats with network upgrades or tactical pricing?

- What is NBN Co.’s future wholesale pricing model? Access charges and service standards have a direct impact on the network mix for MNOs. While change appears inevitable, the form and timing are uncertain.

- What are the future funding arrangements for noncommercial areas? Options available to government include: maintaining the status quo at great disadvantage to NBN Co.; widening the cross-subsidization umbrella to include mobile services; or, direct subsidies.

- Will NBN Co.’s mandate expand? While it is unlikely that NBN Co. would offer retail mobility services in direct competition to MNOs, NBN Co. has further scope to participate in the rollout of 5G small cell network infrastructure as a wholesaler. We note that NBN Co.’s New Zealand counterpart, Chorus Ltd., has made strong overtures in this direction.

- To what extent will NBN Co. continue to be used as a vehicle for industry reform? The Australian telecommunications industry is no stranger to balance sheet competition (see sidebar). In a survival of the fittest scenario, it is small to mid-size telcos (made viable by the NBN) that would be pushed out of the market first. Hard-won industry reform could quickly unravel.

- When and in what form will NBN Co. be privatized? It is unclear whether regulatory protections will be used to optimize sale proceeds.

The prevailing incentive structures are pushing MNOs to heavily invest in their own networks in competition to NBN Co. and each other. Regulatory settings have a direct impact on these investment decisions. In our opinion, intransigence over the future regulatory environment and NBN Co.’s role within it risks the widespread misallocation of capital. Uncertainty is already raising the cost of capital across the industry.
Sidebar: Case Study--HFC Rollout In The Mid-1990s

In the mid-1990s both Telstra and Optus planned to rollout HFC networks for the delivery of pay-TV services. The scale of Optus' proposed hybrid fiber-coaxial (HFC) network was more ambitious and incorporated voice and broadband services in direct competition to Telstra's monopoly. Telstra responded by aggressively expanding the scale and accelerating the timing of its own rollout. Telstra duplicated Optus' rollout street by street, resulting in overbuilding of at least 80%.

Telstra sustained heavy losses pursuing this strategy. However, it succeeded in forcing its weaker rival to scale-back its HFC rollout, allowing Telstra to respond in kind. In this "game of chicken", Optus blinked first. Both subsequently booked material writedowns of their cable networks: A$960 million for Telstra in July 1997 and A$1.4 billion for Optus in 2002. However, Telstra has remained unassailed ever since.

In our opinion, this episode underscores the symbiotic relationship between balance-sheet strength and market position. It would ultimately take the establishment of the NBN via unprecedented levels of market intervention for the Australian government to dismantle Telstra's fixed-line monopoly.

Balancing The Interests Of Shareholders And Creditors Is Key To Ratings Stability

The recent downward rating action reflects our view that the competitive landscape has fundamentally changed: On May 28, 2018, we lowered the long-term issuer and issue ratings on Telstra to 'A-' from 'A'. Also, on May 19, 2017, we lowered Optus' stand-alone credit profile to 'bbb+' from 'a-' (we affirmed our 'A' long-term rating, reflecting our view that Optus remains a core subsidiary of Singapore Telecommunications Ltd.).

It is likely that the next few years will be characterized by a high degree of uncertainty. Our ratings are predicated on the expectation that creditors will not be disadvantaged if cash generation further weakens. Ratings stability relies on balancing the interests of shareholders and creditors: Telstra is Australia's most widely held share with a vocal retail base and Optus has shown little willingness to reduce the size of funds it repatriates to its Singaporean parent. Where the interest of shareholders and creditors come into conflict, we expect the interests of creditors to take precedence.

Endnotes

[1.] A small share of remote subscribers will be connected via fixed wireless and satellite technologies.

[2.] NBN Co. intends to utilize 5G as part of its existing fixed wireless footprint and already offers a Cell Site Access Service. MNOs can use the NBN’s extensive backhaul infrastructure to connect cell sites as well as co-locate their antennas on NBN towers used for its fixed wireless product. NBN Co. has expressed no intention to offer mobility services in competition to MNOs.
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