



Review of Red Dawn Consulting report – “MVNO landscape: Global perspectives and New Zealand Applications”

Spark New Zealand

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1. Introduction and Summary

1. In a report prepared for the Commerce Commission, released alongside the Preliminary Findings of the Commission’s mobile market study,¹ Red Dawn Consulting (**RDC**) conclude that regulatory intervention is warranted to increase MVNO participation in the New Zealand mobile market.²
2. We have been asked by Spark New Zealand to review the basis for RDC’s conclusions and whether they provide a sufficient evidence base to conclude that there would be net benefits from regulatory interventions of the types proposed.
3. In our view, the RDC report has not identified or defined a problem with respect to consumer outcomes that increased MVNO participation in the market would solve. Instead, the report observes that MVNOs have a low market share in New Zealand relative to a comparator group (Australia, the UK and the Netherlands) and then asserts that benefits would therefore flow from having greater MVNO participation in the market.
4. The RDC report argues that stimulating MVNO growth by regulatory intervention will provide the following benefits:³
 - a. Protect customer interests from a pricing perspective;
 - b. Ensure customers benefit from new service creation and innovation;
 - c. Provide converged media players, large retailers and enterprises with the ability to bundle mobile services to provide a more rounded service offering; and
 - d. Help develop new data services that will be an efficient way of utilising the extra network capacity that will arise with the introduction of 5G.
5. Such a conclusion requires establishing that these outcomes are currently poor (and therefore can be improved) and that there is a causal link between MVNO participation in the market and the consumer outcomes in question. The RDC report has not done this. The RDC report provides no evidence that prices are excessive, or service innovation is stagnant. Nor does the RDC report demonstrate that increased MVNO participation would improve these outcomes.
6. In contrast, the Commission’s draft mobile market study report found that “*competition is trending in the right direction*”⁴ and we presented evidence in our previous two reports in this process that the New Zealand mobile market is delivering good consumer outcomes⁵ and that better *pricing* outcomes do not appear to be associated with higher MVNO participation in the market.⁶ The current outcomes are likely driven by the presence of three infrastructure-based competitors in the downstream mobile market. As we noted,⁷ and the Commission agreed in its preliminary findings,⁸ imposing access regulation in the presence of three competing networks would require “*compelling evidence of a competition problem or market failure*”.⁹ In the absence

¹ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019.

² Red Dawn Consulting, *MVNO landscape: Global perspectives and New Zealand Applications*, 14 May 2019. (the “RDC MVNO Report”)

³ *RDC MVNO Report*, pg.50.

⁴ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019

⁵ NERA, *Competition in the New Zealand Mobile Market – Spark New Zealand*, 26 October 2018

⁶ NERA, *Competitive effects of MVNOs and assessment of regulated MVNO access – Spark New Zealand*, 26 October 2018

⁷ NERA, *Competitive effects of MVNOs and assessment of regulated MVNO access – Spark New Zealand*, 26 October 2018

⁸ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019

⁹ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, par. 4.63.

- of a demonstrated competition problem or market failure, intervention is likely to result in few, if any, benefits, yet could result in material costs - therefore intervention should not occur.
7. In this report, we present further evidence suggesting no link between other measures of consumer outcomes (download speed, data usage and 4G uptake) and MVNO participation in the market.
 8. Having asserted that MVNO regulation would result in benefits, the RDC report then claims these benefits could be achieved by a number of “light touch” regulatory interventions, including:¹⁰
 - a. Setting cost-based wholesale rates for MVNO access, potentially using a LRIC style cost model;¹¹
 - b. Setting asymmetric mobile termination rates (MTRs) in favour of MVNOs; and
 - c. Imposing conditions to support MVNOs as part of the spectrum licenses awarded in future 5G spectrum auctions.
 9. These are clearly not “light touch” interventions. Any intervention to control price or force an asset owner to provide access is highly intrusive and therefore heavy handed. “Light handed” regulation typically refers to interventions such as information disclosure.
 10. Indeed, New Zealand’s recent experience developing cost-based prices for the copper broadband network suggests that repeating such a process for mobile networks would be anything but light touch. Asymmetric MTRs could also have significant unintended consequences that the RDC report has not considered. Furthermore, asymmetric MTRs have previously been specifically rejected by the Commission.
 11. In summary, while the RDC report provides a useful overview of the different potential MVNO business models and the MVNO business case, it is not a cost benefit analysis of regulatory intervention - it does not rigorously identify benefits and it essentially ignores costs of intervention.
 12. The remainder of this report is set out as follows:
 - a. Section 2 assesses the extent to which the RDC report has defined a problem and conducted a cost benefit analysis of the proposed regulatory interventions;
 - b. Section 3 briefly reviews the evidence that is already before the Commission in relation to mobile market outcomes and presents some additional high-level analysis of the relationship between MVNO penetration and consumer outcomes; and
 - c. Section 4 provides a high-level consideration of the costs of the regulatory interventions proposed by the RDC report.

¹⁰ RDC MVNO report, pg.7.

¹¹ RDC MVNO report, pg.51-52.

2. The RDC report does not consider the costs and benefits of intervention

13. Any regulatory intervention should be based on a robust consideration of the relevant costs and benefits. MVNO penetration should only be regulator encouraged to the extent that it improves consumer outcomes, and then only if the benefits of intervention exceed the costs. In this section we point out the RDC report has not adopted this framework.
14. Rather, the RDC report asserts without evidence that higher MVNO penetration would improve consumer outcomes and therefore regulatory intervention is warranted. The RDC analysis effectively treats increased MVNO penetration as a desirable outcome in and of itself, rather than a *potential* means to an end. This matters, because if competitive consumer outcomes are already being achieved by other means, forcing more MVNO participation is likely to result in additional costs but few, if any, benefits.
15. The RDC report concludes that “*there is further scope for MVNO growth, however this growth potential is limited.*” Specifically, the RDC report argues that the market share held by MVNOs could rise from 1% today to a 10-15% share in the next 5-10 years, an increase of 900-1,400%.¹²
16. This growth appears to be based on the observation that MVNOs have a low market share in New Zealand relative to Australia, the UK and the Netherlands. Therefore, the RDC report argues New Zealand could have a much higher share of MVNOs than it has currently. We note this large growth expectation is not reconciled with the RDC report’s own assessment that the potential for MVNOs in New Zealand is “limited” and that New Zealand’s MVNO share when sub-brands are included is equal to the global average.¹³ Nor does the RDC report comment on the fact that overall penetration is higher in New Zealand than the countries it is compared to.¹⁴
17. The RDC report does not define why a low MVNO market share is a problem worthy of a regulatory solution. Specifically, the RDC report does not provide any evidence that consumer outcomes are poor in New Zealand and that this could be remedied by regulatory interventions to increase MVNO participation in the market.
18. It is also not clear that Australia, the UK and the Netherlands represent appropriate comparators. The RDC report’s justification for using these countries appears to be the following:¹⁵

To derive relevant comparisons to NZ, we have focused on countries which have been saturated in terms of mobile penetration for some time, given the MVNO model has greater relevance to markets looking to take growth beyond levels which can be achieved by the main operators only.
19. Accordingly, the argument seems to be that once a country has high penetration by MNOs, we should expect to see more MVNOs entering and expanding. However, a high-level empirical analysis suggests this is not the case. Figure 1 below shows there is no statistically significant correlation between penetration and MVNO market share for OECD countries – there are countries with materially lower mobile penetration than New Zealand that have high MVNO penetration, and countries with much higher mobile penetration with lower MVNO penetration.

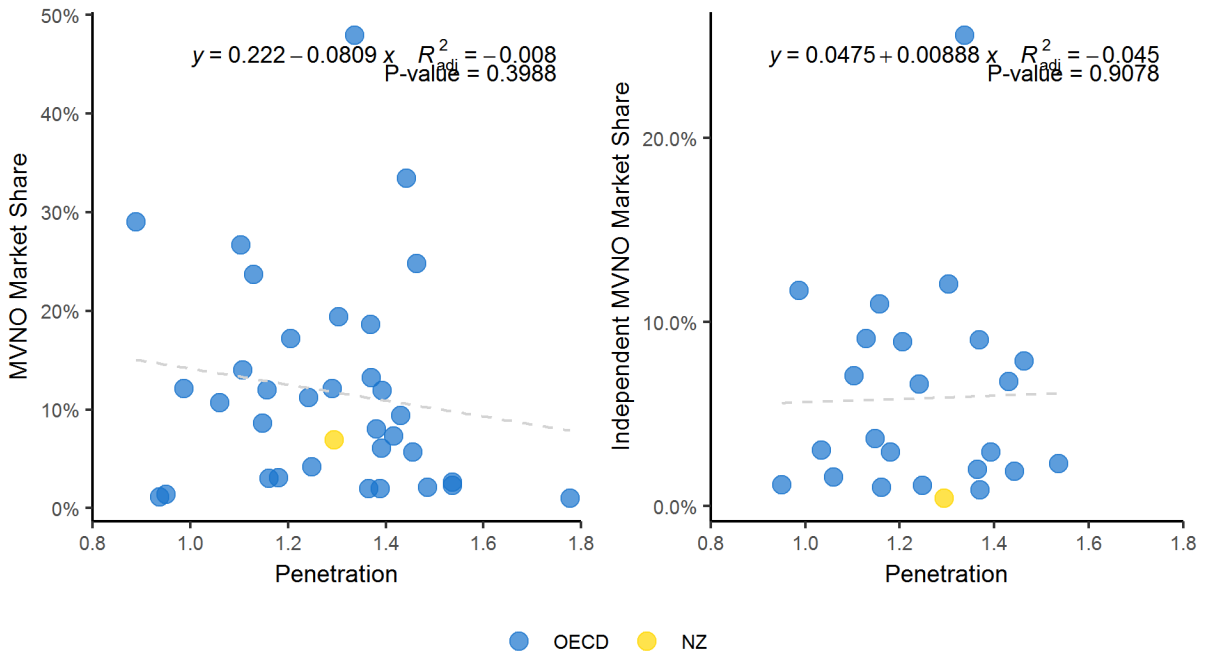
¹² RDC MVNO report, pg.6

¹³ RDC MVNO report, pg.50

¹⁴ RDC MVNO report, pg.27

¹⁵ RDC MVNO report, pg.5

Figure 1
Mobile Penetration and MVNO Market Share

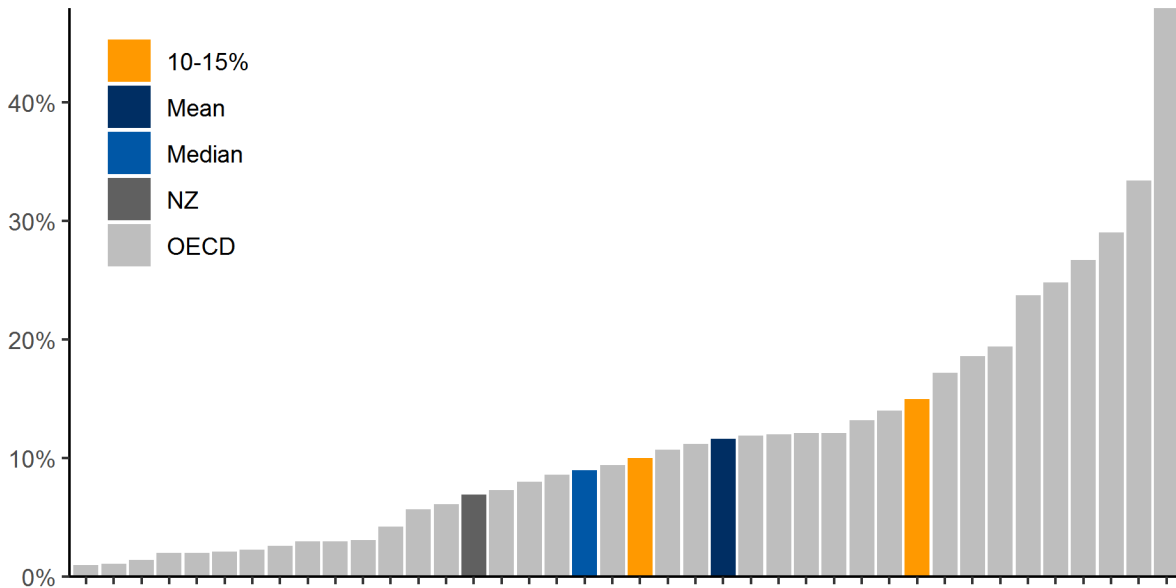


Source: TeleGeography, GlobalComms Database, March 2019

Note: Independent MVNO market share graph does not include 9 countries with no independent MVNOs

20. In this context, we note that the Red Dawn report's 10-15% market share would move New Zealand from being below the median for MVNO penetration in the OECD to above the median (based on current levels), as shown in Figure 2. The RDC report does not reconcile this with its assessment that there would be limited potential for MVNOs in New Zealand.

**Figure 2:
MVNO Market Share**



Source: TeleGeography, GlobalComms Database, March 2019

21. More generally, the RDC report does not appear to assess the relative brand positioning of the players in New Zealand and the extent to which MVNOs are likely to be (or not) an important tool for the MNOs to reach consumers. It is not obvious that the RDC report’s discussion of “monolithic brands” applies to Spark following its structural separation and extensive rebranding, as opposed to the old vertically integrated Telecom. Similarly, in the lower value segment Spark has had success growing its Skinny sub-brand.¹⁶ Likewise, 2degrees entered and aggressively gained market share by targeting the pre-paid segment. These points may partly explain why New Zealand has higher overall penetration than the RDC report’s comparator countries. As we noted in our previous report, a lack of MVNOs in New Zealand may simply reflect that they are not able to offer a compelling competitive value proposition to the MNOs and to customers.
22. In short, the RDC report has not established a problem. In fact, despite low MVNO penetration, consumer outcomes in New Zealand are relatively good and therefore the benefits of intervention are likely to be low, as we now discuss.

¹⁶ After the launch of Skinny in 2012, Spark’s market share (including Skinny) reversed its downward trend and has been increasing most years since. See Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, pg.34.

3. Benefits of intervention are likely to be low

23. As we noted in an earlier report,¹⁷ and the Commission agreed in its preliminary findings,¹⁸ imposing access regulation in the presence of three competing networks would require “compelling evidence of a competition problem or market failure”.¹⁹ In the absence of a demonstrated competition problem or market failure, intervention is likely to result in few, if any, benefits, yet could result in material costs - therefore intervention should not occur.
24. In this section we:
- a. Consider whether there is evidence to suggest there is a market failure or competition problem, as would be demonstrated by poor end consumer outcomes in New Zealand; and
 - b. Examine whether there is evidence to suggest that increased MVNO penetration would improve market outcome, were they found to be poor.

3.1. Outcomes in New Zealand are already relatively good

25. Previous analyses of the New Zealand mobile market have concluded that New Zealand generally has relatively good consumer outcomes compared to other countries, and that these outcomes are improving.
26. The Commerce Commission found in its Preliminary Findings Report that consumer outcomes in New Zealand have been improving, specifically with respect to: “lower prices, increased quality, and a greater choice of services”.²⁰ The report finds that:²¹
- a. All three MNOs have invested in new generations of mobile technology;
 - b. All three MNOs perform well on technical measures of quality;
 - c. Prices for mobile services have been falling, and prices for low and medium usage bundles compare well with other OECD countries;
 - d. Call volumes have continued to increase and, although still low compared to other OECD countries, data use has also been increasing; and
 - e. Residential customers find it easy to switch providers.
27. The Preliminary Findings Report also highlights that Spark and Vodafone have recently entered into MVNO agreements with Trustpower and Kogan Mobile respectively. These deals suggest commercial arrangements can occur without the types of interventions the RDC report promotes (as we discuss further below).²²
28. Our previous report on competition in the mobile market also looked at consumer outcomes, and found that:²³
- a. New Zealand mobile prices are generally lower than the OECD average, and prices are declining in both nominal and real terms;

¹⁷ NERA, *Competitive effects of MVNOs and assessment of regulated MVNO access – Spark New Zealand*, 26 October 2018

¹⁸ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019

¹⁹ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, par. 4.63.

²⁰ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, pg.11

²¹ Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, pg.11

²² Commerce Commission, *Mobile Market Study – Preliminary Findings*, 16 May 2019, pg.12

²³ NERA, *Competition in the New Zealand Mobile Market – Spark New Zealand*, 26 October 2018

- b. Despite claims to the contrary, mobile ARPU does not appear to have been rising in New Zealand;
- c. New Zealand mobile subscriptions, call minutes and particularly data traffic have increased over time faster than population and GDP growth;
- d. New Zealand mobile churn rates are high compared to the average of other developed countries;
- e. New Zealand MNO profitability (as measured by EBITDA) is lower than the average of other developed countries;
- f. The coverage and quality of New Zealand’s mobile networks compares favourably to other countries; and
- g. Spark has improved mobile service quality despite dramatic increases in traffic over its network. Mobile download and upload speeds in New Zealand are close to the highest in the OECD.

3.2. Evidence suggests MVNOs have little effect on consumer outcomes

29. The RDC report does not provide any evidence that having a higher share of MVNOs positively impacts consumer outcomes, nor acknowledge available evidence of a lack of such a relationship. Our previous report on regulated MVNO access looked at MVNO presence and competitive outcomes. That analysis found there is no statistically significant relationship between MVNO market share and prices, as measured by both the GSMA mobile tariff price index and Teligen benchmarked bundles.²⁴
30. To further test these issues, we also analyse the relationship between 4G uptake, mobile data speed and mobile data use and MVNO market share. We examine MVNO market share both with “sub-brands” included (“MVNO market share”) and also when only non-MNO owned MVNOs are included (“Independent MVNO market share”).²⁵ If, as the RDC report assumes, increased MVNO share would improve consumer outcomes, we might expect to observe a positive relationship between these quality and quantity outcomes and MVNO share.
31. Figure 3 shows no statistically significant relationship between monthly mobile data use and MVNO market share for OECD countries, and Figure 4 shows there is also no statistically significant relationship between mobile data download speed and higher MVNO market shares.²⁶

²⁴ NERA, *Competitive effects of MVNOs and assessment of regulated MVNO access – Spark New Zealand*, 26 October 2018

²⁵ The Independent MVNO market share = $\frac{\text{independent MVNO subscribers}}{\text{total subscribers}}$

²⁶ If we add GDP on the right-hand side of the regression underlying Figure 4, the coefficient on both MVNO market share and GDP per capita are not significant, and MVNO market share is even further away from being significant than in Figure 4.

Regressions of data speed against MVNO share and GDP per capita

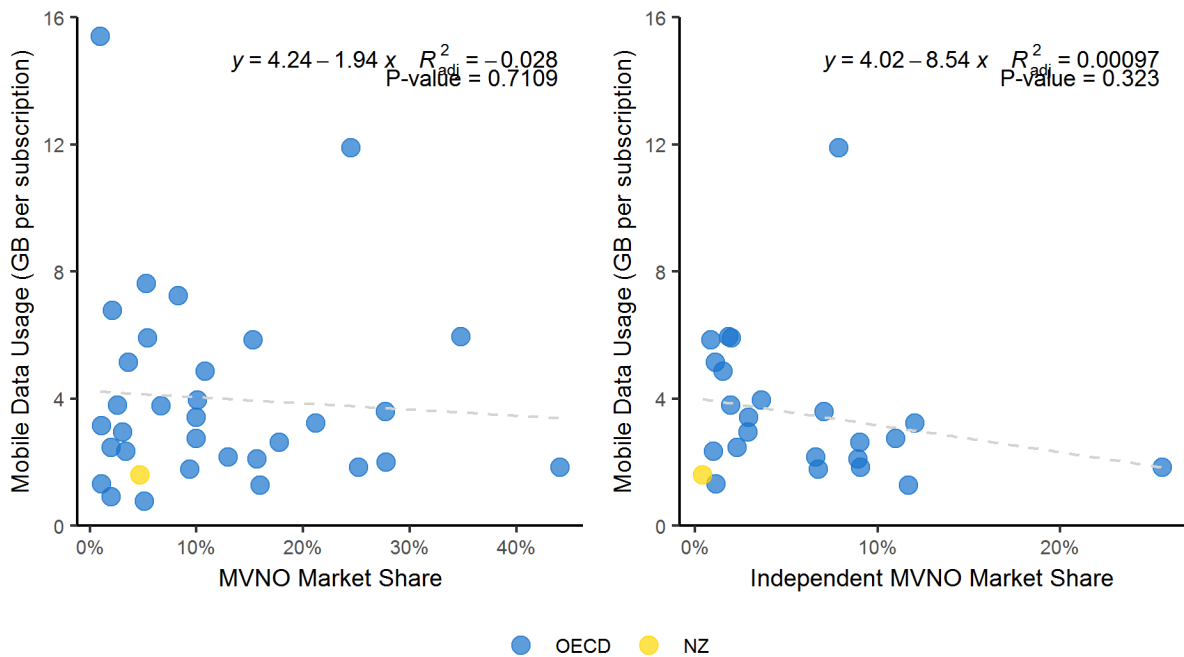
| | Data speed (Mbps) | | | |
|-------------------------|-------------------|----------|-------------|----------|
| | Coefficient | p-value* | Coefficient | p-value* |
| MVNO market share | 30.57 | 0.124 | 21.72 | 0.297 |
| GDP per capita (000s) | | | 0.15 | 0.225 |
| adjusted R ² | 0.042 | | 0.057 | |

Table Source: TeleGeography, *GlobalComms Database*, March 2019; Ookla *Speedtest Global Index*, June 2019
<https://www.speedtest.net/global-index>

These figures also show that the insignificance still holds when looking at the market share relating to MVNOs not owned by MNOs (i.e., independent MVNOs).

32. These graphs suggest that a higher share of MVNOs does not necessarily improve customer outcomes in relation to data use and speeds.

Figure 3
Mobile Data Usage and MVNO Market Share (2017)



Source: TeleGeography, GlobalComms Database, June 2017; OECD Broadband Statistics, Mobile Data Use, 2017

Note: Independent MVNO market share graph does not include 9 countries with no independent MVNOs

Figure 4
Mobile Data Download Speed and MVNO Market Share (2019)

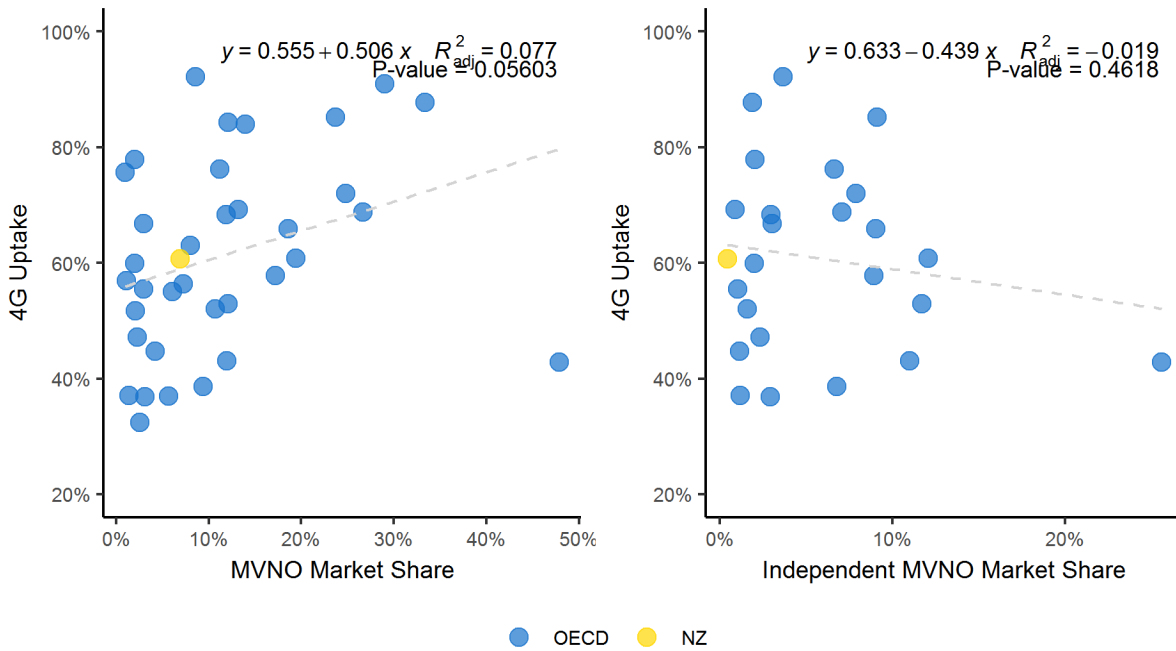


Source: TeleGeography, GlobalComms Database, March 2019; Ookla Speedtest Global Index, June 2019
<https://www.speedtest.net/global-index>

Note: Independent MVNO market share graph does not include 9 countries with no independent MVNOs

33. Figure 5 does show a positive relationship between 4G uptake and MVNO market shares (significant at a 90% confidence level, not a 95% confidence level). However, as also with Figure 3 and Figure 4, most of the variability in the outcomes being analysed is unexplained, reflected in the very low R^2 statistics. For example, if we add GDP on the right-hand side of the regression underlying Figure 5, the coefficient on MVNO market share becomes insignificant – see Table 1 (but GDP per capita does have a significant relationship with 4G uptake).
34. This suggests that the significant correlation between 4G uptake and MVNO market share in Figure 5 may be caused by omitted variable bias. There may be one or more significant variables (such as GDP) that are left out of the model, meaning that the significant effects of these excluded variables are attributed to the estimated effects of the included variables (i.e. MVNO share) where there would be no significant effect otherwise.
35. Additionally, when independent-only MVNO market share is considered, the relationship is no longer significant.

Figure 5
4G Uptake and MVNO Market Share (2019)



Source: TeleGeography, GlobalComms Database, March 2019

Note: Independent MVNO market share graph does not include 9 countries with no independent MVNOs

Table 1
Regressions of 4G uptake against MVNO share and GDP per capita

| | 4G uptake | | | |
|-------------------------------|-------------|----------|-------------|----------|
| | Coefficient | P-value* | Coefficient | P-value* |
| MVNO share | 0.51 | 0.056 | 0.34 | 0.201 |
| GDP per capita (000s) | | | 0.0031 | 0.058 |
| adjusted R² | 0.077 | | 0.149 | |

Table Source: TeleGeography, GlobalComms Database, March 2019; OECD, GDP per capita, OECD Indicators, GDP per capita, 2018

Note: * values below 0.05 are significant at a 95% significance level, values below 0.1 are significant at a 90% significance level

4. Costs of intervention are likely to be high

36. The RDC report states (page 7):²⁷

We propose some light touch regulatory measures to help stimulate the market. These include the use of asymmetric MTRs (i.e. higher inbound revenue to smaller new entrants), offering spectrum on a local level to support 5G applications, base cost wholesale price setting, and making MVNOs mandatory for 5G spectrum allocation.

37. Later, when setting these recommendations out the RDC report notes it is not proposing “heavy handed regulation”.²⁸

38. The RDC report provides no basis for the assertion that these interventions would be “light touch”. On the contrary, there are reasons to believe that the proposed interventions would be quite heavy handed and could have material unintended consequences. In particular, any intervention to force an asset owner to provide access, whether through spectrum license conditions or otherwise, is highly intrusive and therefore heavy handed. “Light handed” regulation typically refers to interventions such as information disclosure.

39. As we discussed in our previous report in this process, there is a risk that regulating MVNO access could discourage network investment by MNOs, resulting in efficiency gains through lower prices in the short term, but larger dynamic efficiency losses through reduced investment in the long term.²⁹

40. Supporting that discussion, recent studies on the effects of access regulation have specifically focused on investment in new communications technologies, such as 5G. For example, Briglauer, Cambini, and Grajek studied fixed broadband networks in Europe and found that access regulation causes a decrease in investment in new technologies.³⁰ Focusing specifically on mobile networks and the impact of mandated MVNO access, Bauer and Bohlin find:³¹

MVNO access has asymmetric effects on MNOs and the players seeking access. It reduces the ability of the MNO to negotiate custom commercial agreements and consequently the ability to appropriate returns from investment and innovation in network infrastructure. Other things being equal, this will reduce the incentives of MNOs to invest in network deployment and upgrades and incentives to innovate in network differentiation.

41. They also highlight that during the early stages of a network, as will be the case with 5G, MNOs have strong incentives to generate additional demand.³² They thus conclude:³³

Overall, the likely effect of regulated MVNO obligations at an early stage of 5G development is to reduce investment and slow innovation. Even though it may entail higher transaction costs initially, it is a preferable strategy to allow negotiations among interested players. Competition policy can serve as a backup in case such negotiations are abused by MNOs to impede competition.

²⁷ RDC MVNO report, pg.7.

²⁸ RDC MVNO report, pg.52.

²⁹ NERA, *Competitive effects of MVNOs and assessment of regulated MVNO access – Spark New Zealand*, 26 October 2018, pg.12

³⁰ Wolfgang Briglauer, Calro Cambini and Michal Grajek, “Speeding up the internet: Regulation and investment in the European fiber optic infrastructure”, *International Journal of Industrial Organization* 61 (2018): 613-652

³¹ Bauer, Johannes M. and Bohlin, Erik, *Roles and Effects of Access Regulation in 5G Markets*, September 4, 2018, pg. 29. Available at SSRN: <https://ssrn.com/abstract=3246177>.

³² *Ibid*, pg.30.

³³ *Ibid*, pg.30.

42. Regarding the specific interventions to set rates for MVNO access, this could also involve material transaction costs and unintended consequences. Beginning with the setting of **cost-based wholesale rates**:
- a. The Commission process to set cost-based rates for copper broadband access³⁴ took two years,³⁵ was expensive,³⁶ involved 240 submissions, totalling more than 6,000 pages and was described by the Commission as “[T]he most complex and extensive economic model the Commission has ever been tasked in creating.”³⁷
 - b. Furthermore, this would amount to price control (via intervention at the wholesale level) of what appears to be a healthy and competitive industry. Cost-based price control is generally reserved for (natural) monopolies.
43. Regarding **asymmetric mobile termination rates (MTRs)**:
- a. As an initial point, it is not actually clear how this would work in practice and what the direct costs for MNOs of implementing asymmetric rates for MVNOs would be. MTRs are charges levied by network owners for terminating traffic on their networks. Of course, MVNOs do not have a network. Depending on the MVNO business model (and the RDC report argues that the “light” end of the spectrum is most appropriate for New Zealand),³⁸ MVNOs may only have a contractual and physical relationship with their host MNO, and not other MNOs. This intervention would therefore require the host MNO to monitor whether calls/text messages are for an MVNO and levy a higher rate as appropriate, which may involve the development of separate systems and therefore incremental costs.
 - b. The Commission would presumably have to set the differential MTRs, which would no doubt be an intensive exercise like any price control process.
 - c. As the Commission noted when rejecting asymmetric MTRs during the MTAS process, asymmetric MTRs are likely to contribute to on-net/off-net price differentiation.³⁹ In the current context, asymmetric rates could contribute to prices for contacting customers on an MVNO being higher than contacting non-MVNO customers.
 - d. Furthermore, the literature on MTRs demonstrates the presence of “waterbed effects”,⁴⁰ whereby regulated changes to one price can result in alterations to other related prices, with flow on effects to the competitive dynamics in the market as a whole.

³⁴ Specifically, the unbundled copper local loop (UCLL) and unbundled bitstream access (UBA).

³⁵ From March 2013 to December 2015

³⁶ The year after the FPP process ended, the NZCC costs relating to determinations dropped over \$2m, from \$4.1m in 2015/16 to \$1.8m in 2016/17.

See: NZCC (2016), “Annual Report 2015/16”, pg.30, and NZCC (2017), “Annual Report 2016/17”, pg.28

³⁷ Commerce Commission, *Commission releases final decision on wholesale broadband prices – press release*, 15 December, 2015, From <https://comcom.govt.nz/news-and-media/media-releases/2015/commission-releases-final-decision-on-wholesale-broadband-prices>

³⁸ *RDC MVNO Report*, pg.7

³⁹ Commerce Commission, *Standard Terms Determination for the designated services of the mobile termination access services (MTAS) fixed-to-mobile voice (FTM), mobile-to-mobile voice (MTM) and short messaging services (SMS)*, Decision 724, 5 May, 2011, paragraph ix.

⁴⁰ Genakos, C. and Valletti, T. (2011), “Testing The “Waterbed” Effect In Mobile Telephony”, *Journal of the European Economic Association*

- e. More generally, Valetti argues that asymmetric regulation of MTRs is “an improper and inefficient way of enacting entry-assistance policies”⁴¹ Using an instrument (regulating MTRs) to target a different problem from its intended purpose, could result in unintended consequences. Valetti specifically argues that if asymmetric MTRs were used to assist smaller MNOs, this would blunt small firms’ incentives to grow, as they would no longer receive a subsidy from larger MNOs once they reached a certain size.⁴² Asymmetric MTRs can actually soften competition rather than enhance it, a proposition which Sidak et al have found empirical support for.⁴³

⁴¹ Valletti, Tommaso, “Asymmetric Regulation of Mobile Termination Rates”, Imperial College London and University of Rome, 2006, pg. 1, accessed June 12, 2019.

https://www.researchgate.net/publication/232710139_Asymmetric_regulation_of_mobile_termination_rates/download.

⁴² The precise disincentive would depend on the where the asymmetries in MTRs kick in. For MVNOs, this might be to do with size, and presumably also turning into an MNO - the incentive to invest in network equipment and become an MNO might be blunted at the margin if it meant the loss of the subsidy via asymmetric MTRs.

⁴³ Using a sample of 34 countries from 1996 through 2014, they estimate a model that relates operators’ long-run market shares to initial entry conditions and the degree of asymmetry among MTRs.

Their results show that a high degree of asymmetry among MTRs lowers an entrant’s long-run market share by roughly 4%, when compared with a regime of symmetric MTRs. This implies that the asymmetry in MTRs distorts competition and competitors’ incentives. Under asymmetric MTRs, competition becomes mute and prices rise or fall more slowly than they would in a regime of symmetric MTRs.

Source: Sidak, J. Gregory et al., “Did Asymmetric Mobile Termination Rates Help Entrants Gain Market Share?”, *The Criterion Journal on Innovation* 701 (2017).

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