

Australian Competition and Consumer Commission
Domestic mobile roaming inquiry 2016

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Prepared for: Telstra Corporation Limited

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1 Instructions and qualifications

- 1.1 I am instructed by Gilbert + Tobin, the solicitors acting on behalf of Telstra Corporation Limited. I have been asked to prepare a report as to whether, in my opinion, the declaration of a wholesale domestic roaming service in Australian would be in the LTIE.
- 1.2 I have read the Harmonised Expert Witness Code of Conduct (Annexure A to Federal Court of Australia Practice Note GPN-EXPT) and agree to be bound by it.
- 1.3 I have prepared my report for use in relation to the Australian Competition and Consumer Commission's inquiry into whether to declare a wholesale domestic mobile roaming service.
- 1.4 A copy of my letter of instruction is attached as Appendix 1 to this report.
- 1.5 I am currently Chair of the Regulatory Policy Institute, a charitable organisation dedicated to the promotion of the study of regulation for the public benefit, and Emeritus Fellow of Hertford College, Oxford University. Most of my academic career was spent at Oxford University. My main field of work has been in micro-economic policy, particularly as it concerns privatization, competition and regulation. This has encompassed both academic and advisory work, the latter chiefly, but not exclusively, for governments and international agencies. For about fifteen years prior to 2009 I was economic advisor to Ofgas and Ofgem, the UK government regulator for gas and electricity markets, then a Member of the Gas and Electricity Markets Authority.
- 1.6 My experience in telecommunications regulation and policy dates from the early 1980s, at the commencement of the UK's liberalisation and privatization policies (1981-4) and it was initially academic in nature. Later it became chiefly advisory, covering a range of issues including things such as number portability, access pricing, RPI-X price control, funding of universal service obligations, and general regulatory strategy and policy, the last including a longish period working on policy and institutional problems of transition in Central and Eastern Europe from November 1989 onwards. I was a member of an expert group set up to assist UK Ministers in developing the Communications Act 2003 and performed a similar function for Commissioner Bangermann in the early-stage development of EU policy in response to what was then called Audiovisual convergence. My last work in the sector was in connection with advice sought by the UK's new Payment System Regulator (launched 1 April 2015), which in part comprised a review of what usefully could be learned from experience drawn from the regulatory approaches adopted by Ofcom and its principal predecessor Oftel.
- 1.7 A copy of my CV is attached as Appendix 2 to this report.

2 The structure of the report

- 2.1 The structure of the report is guided by the ACCC's Discussion Paper on the declaration of a wholesale domestic roaming service, the purpose of which document I take to be to seek out views and further information on the issues relevant to the declaration decision, including, but not restricted to, the range of important questions specifically identified in that Paper. Following some preliminary remarks, Part I

introduces a number of economic concepts and strands of analysis that are incremental to the economic concepts referred to in the Discussion Paper, but which I believe are highly salient for the ACCC's decision. Part II addresses economic issues and trade-offs that are covered more explicitly and more fully in the Discussion Paper. The Conclusion, in Part III, gives my overall opinion.

- 2.2 Within this structure, there is one cross-over section concerned with economies of density. Although the concept is not explicitly mentioned in the Discussion Paper, it is implicitly noted at points along the way, most significantly, in the concluding Section 5 of that document. I have included an expansive discussion of economies of density and placed it in Part I, because the relevant economics seem to me to lie at the very heart of the declaration decision.
- 2.3 To explain, economic networks are frequently characterised by substantial differences in the costs of providing service to customers at different locations. This gives rise to a tension between achieving the benefits of competition, which we normally think of as driving prices towards costs, and achieving a geographically uniform price structure (or some reasonable approximation to such a structure) across a whole jurisdiction, which may be favoured on other public policy grounds. It is difficult to get the balance anything like right in the first place and, in the presence of technological change that is continuously changing the economic context, the most appropriate balance is constantly shifting. In my experience the result of these tensions tends to be either to fall back on monopoly provision, i.e. take the foot off the competition pedal, or to have recourse to what are relatively heavy handed, recurrent regulatory interventions, the efficacy of which tend not to be assisted by frequent interactions with politicians.
- 2.4 It was remarkable, then, to find that the balancing act has been accomplished in Australian mobile telecommunications in a way that appears to combine relatively light handed regulation (mast sharing arrangements, regulation of backhaul services, limited coercive taxation, i.e. fairly modest financial support from the public revenues) and vigorous competition, witnessed by the number and the commercial conduct of MNOs and MVNOs. Notwithstanding vigorous competition, there is geographically uniform (national) pricing and close to universal coverage for a population that is very unevenly distributed over a very large land mass.
- 2.5 Given this observation, two background questions kept occurring as I considered the detailed issues. Wearing an academic hat, the first question is simply: What factors sustain the favourable outcome? Wearing a regulatory hat, the question is: Is this a case where the assessment team might benefit from refreshing acquaintance with Aesop's fable of the dog with two bones? The second question here is meant seriously, not facetiously: dropping the bone can be highly adverse to the LTIE and paragraphs 14.9 - 14.12 below give an example of what happened when a UK regulator did exactly that, by seriously under-valuing its own previous accomplishments (the bone it had in its mouth).

3 Preliminary remarks

- 3.1 Consideration of whether the declaration of a wholesale domestic mobile roaming service in Australia will be in the LTIE boils down to a two-legged assessment of
 - how things look if a declaration is not made, and

- how will things look if a declaration is made.
- 3.2 Following language used in statistics, the first set of circumstances can be referred to as the Maintained Position (MP) and the second as the Alternative Position (AP). In terms of regulatory arrangements, the Maintained Position is simply things as they are now and the Alternative Position centres on a possible change in or perturbation to those arrangements.
- 3.3 In relation to the AP, there are also sub-cases to consider depending upon precisely what is envisaged for consequential regulatory conduct. Questions whose answers define these sub-cases include: Precisely what services are to be declared? What regulatory approach is to be adopted to the determination of the relevant access charges? Is it, for example, to be cost-based, or is some alternative, workable approach to be adopted
- 3.4 Such questions are of considerable importance, because they bear directly and materially on the likely consequences of a declaration for the LTIE. It is therefore appropriate that, as indicated in the ACCC's Discussion Paper, they be addressed prior to a declaration decision rather than left until later.
- 3.5 Since assessment in effect requires a comparison between two long-term forecasts or projections, there is inevitably a good deal of uncertainty surrounding the exercise. The regulatory exercise is therefore similar in many respects to long-term commercial investment decisions under uncertainty. Declaration will entail a commitment to incur irrecoverable (i.e. sunk) costs, including incremental administrative costs for the ACCC and compliance costs for businesses. The effect is to introduce 'options values' into the appraisals.¹
- 3.6 The implication is that a decision to trigger the cost causality cannot, or at least should not, be made on the basis of simple comparison of expected long-term benefits to end users in each of the two, relevant scenarios: there is a threshold minimum advantage (of the AP over the MP) required to substantiate a declaration decision. I note that this is an entirely economic point, distinct from any additional legal burden of proof that may be relevant (a matter on which I am not qualified to comment). I am not able to give any safe quantitative estimate of the level of the threshold, but can say that the threshold will tend to be higher (a) the greater the surrounding uncertainties and (b) the faster the rate of change of data-relevant information (roughly, the more that is likely to be learned over the next few years if a 'wait and see' approach is adopted).
- 3.7 While the ultimate criterion for judgment or objectives is the LTIE, the legislation indicates that regard must be had to three, particular sub-criteria or sub-objectives:
- promoting competition in markets for telecommunications services;
 - achieving any-to-any connectivity;
 - encouraging economically efficient use of, and investment in, network infrastructure.
- 3.8 There is inevitably a range of balancing judgments to be made in the process of evaluation – different factors and effects necessarily have to be weighed against each

¹ See A. Dixit and R. Pindyck, *Investment under Uncertainty*, Princeton University Press, 1994.

other in some way or other – but only one merits attention at the outset. It is crystallized in the distinction in the third sub-objective, concerning investment, between (a) efficient use of investment and (b) efficient investment in network infrastructure. It is a distinction that reflects a dividing line between what might be called the static and dynamic aspects of assessment.

- 3.9 The former takes the existing assets and the existing state of knowledge (which can be regarded as an intangible form of capital) as given and focuses on the economic value that can be created from them. The latter focuses on the economic value that can be created from changes in capital in all its forms, including economically valuable knowledge or ‘technological progress’ that is embodied in new investment.
- 3.10 Wide historical evidence and experience indicates that the great bulk of improvements in economic welfare over any extended period of time have come from the accumulation of capital, whether tangible or intangible, and telecommunications is distinctive only in the extent of this predominance compared with most, though not all, economic sectors. My judgment is that there is no reason to expect this position to change in the foreseeable future and, whilst I think that this is a view that should be uncontroversial, it is mentioned at the outset because it is influential in forming the end opinion.
- 3.11 Given these points, the discussion that follows is split into two parts. The second addresses economic matters that arise almost semi-automatically from the decision context. These include matters such as market definition and natural monopoly considerations, alongside the competition, any-to-any connectivity and investment objectives. There are, however, a number of other economic concepts and strands of analysis that appear to me to be highly salient to the task in hand. These are addressed first, in Part I, because they provide underpinnings for the considerations of the Part II issues.

PART I: SOME ADDITIONAL RELEVANT ECONOMIC CONCEPTS

4 Embodied technical change

- 4.1 Whilst there is a conceptual distinction between physical capital and the intangible capital of economically valuable knowledge, in practice the benefits of increments in either frequently depend upon joint delivery with the other. This fact is captured in the economic concept of ‘embodied technical change’.
- 4.2 In the old terminology of growth theory, technical change does not fall like manna from heaven on an existing state of affairs, but rather comes embodied in factors of production such as labour (human capital) and physical capital. Thus, as in a number of other economic sectors, in telecommunications the main transmission mechanism between technical change and end user benefits is physical investment in infrastructure of various types. This is the case whether the relevant investment simply replaces an existing asset or is intended to expand existing capacity: when an existing asset is replaced with a new asset, the latter will tend to embody technical advances that have been made since the existing asset was put in place.
- 4.3 The relevance of ‘embodied technical change’, which I take to be an obvious contextual fact, is that it points to the high importance of both infrastructure investment and

competition in the provision of infrastructure when assessing the LTIE. In a nutshell, competition is highly effective in discovering new, economically valuable knowledge and new investment is the principal mechanism by which that newly discovered “value” is transmitted to end users and thereby actualized. One without the other can be expected to be of much lesser significance for the LTIE.

5 Vertical product/service differentiation

- 5.1 In my experience, vertical product differentiation is one of those economic concepts that tends to receive a relatively modest amount of attention in university teaching, but in practice turns out to be of a significant influence on commercial conduct and outcomes in very many different economic contexts. Moreover, telecommunications is a sector where it appears to be of particular importance. Indeed, I have come to the view that it is not possible to understand the current state of affairs in Australian mobile telecommunications without some explicit or implicit reference to it.
- 5.2 To explain, there are four, differently located grocery stores in my neighbourhood and local demand is spread out among them. This is an example of horizontal product/service differentiation. Even if all four stores offered the same goods at the same prices, i.e. all other things are equal, there would still be a spread of customers among the stores, because of differences in their convenience for differently located subsets of the population.
- 5.3 In contrast, the computer on which I am writing this report has a CPU that is getting a little dated now: it is not of the most recent, more powerful vintage. In this case, if all vintages of CPUs were on offer and all other things were equal (including price), current buyers of computers would flock to the faster CPU. This is what is meant by vertical product differentiation. Speaking broadly, it can be thought of as differentiation by ‘quality’.
- 5.4 Recognising that product differentiation/innovation that occurs via enhanced quality – i.e. addition of a new, higher quality product or service – statisticians have sought to find ways of calculating quality-adjusted prices and (‘hedonic’) price indices, for example to better assess changes over time in consumer welfare and living standards. A very simple example in mobile telecommunications is not to measure prices as a ‘price per service plan’, but, say, as an implied price per MB of data transmitted. What this type of calculation demonstrates is that whilst prices-per-plan may not have changed radically over the past few years, ‘quality adjusted’ prices would show quite massive reductions.
- 5.5 Vertical product/service differentiation has radically different implications for competition, supply structures and price structures than does horizontal product/service.² Here however it suffices to note two points:

² For a succinct introduction see John Sutton, “Vertical Product Differentiation: Some Basic Themes”, *American Economic Review* (Papers and Proceedings), May 1986. A lecture presentation by J.L. Moraga sketches out a simple, formal model that is close enough to some of the features of mobile telephony to provide relevant insights (it is also close to my own Oxford graduate economics lecture notes from the 1980s on the same topic, currently undiscoverable). See <http://www.tinbergen.nl/~moraga/LawEconomics8.pdf> page 20, onwards. Moraga makes a relevant point, not contained in the Sutton synopsis, that quality tends to be a *strategic complement* (like price in a Bertrand-Nash analysis, but unlike output in the Cournot alternative), which carries the potentially important implication that a quality-improving service innovation by one competitor will tend to induce quality-improving responses from its rivals (see the first slide on page 21).

- The ‘flocking effect’ can be a powerful competitive force and can be a source of ‘tipping effects’ (more strictly, bifurcation points) in commercial strategies.
 - In practice, product or service characteristics are usually multi-dimensional, exhibiting a mix of horizontal and vertical product differentiation.
- 5.6 In relation to the declaration decision, the two most relevant vertical dimensions appear to be:
- vintage of technology (2G/3G/4G), reflecting the sequence of quality improvements embodied at each stage; and
 - coverage.
- 5.7 It can be noted in passing that these two particular dimensions of quality differentiation are to be found fairly generally across the economy, in different sectors. For example, suppliers of machine tools are highly focused on product innovation based on the embodiment of the latest technology in their products, whilst suppliers of major branded products retailed in grocery outlets tend to be highly interested in their availability statistics, e.g. measuring the percentage of stores for which one or other of their products is stocked on the shelves.
- 5.8 In mobile telecommunications, the different vintages of technology provide similar services and in that sense they are economic substitutes: an increase in the price of one will increase demand for the other. At the same time they are of different quality: at the same price, and offered the choice, end-users would flock to 4G.
- 5.9 Similarly, all other things being equal (which they are not in practice of course – see the multi-dimensional characteristics point above), end-users could be expected to flock to a supplier who offered wider and better coverage.
- 5.10 The nexus between vertical differentiation via enhancements to product/services quality, the investment in new infrastructure assets that embodies the technical progress underlying those enhancements in product/service quality, and the competition that drives this enhancement process is, I believe, the central dynamic that has advanced, and continues to advance, the LTIE in Australian mobile telecommunications. I will return to this nexus again later, in Part II.

6 Second-degree price discrimination

- 6.1 Vertical product differentiation is, in practice, very frequently accompanied by second-degree price discrimination. The price-cost differential of similar products of different qualities sitting on supermarket shelves tends to be higher for the higher quality product. Similarly, the price-cost differentials for a new generation of laptops tend to be higher than for older vintages of laptops with slower CPUs, and so on. This is because quality of product or service functions as a workable self-sorting mechanism, which distinguishes between sub-sets of consumers who are more willing to pay for incremental quality and consumers who are willing to pay rather less.
- 6.2 The salience of this self-sorting mechanism is that it can provide a highly efficient means of recovering fixed costs and, in doing so, can counteract a tendency for high

fixed-cost activities to be under-supplied.³ I can go to my supermarket and choose between a ‘higher quality’ product and a ‘lower quality’ product (a quotidian encounter with vertical product differentiation). Typically, the supplier’s price-cost differential is significantly higher for the ‘higher quality’ product: it attracts less price-sensitive customers who are willing to pay for the incremental quality. In making the choice I voluntarily contribute more, possibly substantially more, than a customer who chooses the lower quality product.

- 6.3 The most informative illustration of the point possibly lies in airline economics, where what is known in that sector as ‘yield management’ has been developed into a fine art. The effect is that a scheduled flight that might be loss-making with uniform pricing, i.e. all passengers paying the same fare, can become profitable. The wider consequences are that more routes can be sustained (the equivalent of coverage) and flight frequencies are higher (‘quality’ is improved in another dimension, with the nearest equivalent in mobile telecommunications being perhaps the ‘vintage’ of technology dimension).
- 6.4 As usual with inter-sector comparisons, however, these analogies have their limits. Air transport is, like mobile telecommunications, characterised by economies of density, but, other things equal, ‘dense routes’ tend to be priced lower.

7 Economies of density

- 7.1 Economies of density play a major role in public policy toward geographic networks, although the concept seems to be less referenced in regulatory literature nowadays.
- 7.2 Economies of density occur when costs-to-serve end users are negatively related to the population density of the area in which end-users are principally located. The problem they pose is that the locational differences in costs-to-serve can be substantial and a cost-reflective pricing structure would exhibit substantial locational differences in prices to end-users. In this context it can be noted in passing that a decision not to serve a particular geographic area, i.e. to provide no coverage, is economically akin to setting an exorbitantly high price for the service, such that demand is zero.
- 7.3 Unfortunately, cost-reflective price structures very frequently come into conflict with political preferences (and, to a lesser though still appreciable extent, with social preferences or norms) that tend to favour geographically ‘flat’ or near-flat price structures and universal (i.e. at all-locations) service availability, or at least some reasonably close approximation to the latter.
- 7.4 Historically, the politically desired flattening of prices has been achieved in one of two ways:
- publicly owned monopoly, or
 - regulated private monopoly.

³ The classic illustration is the Dupuit’s bridge problem. Building a toll bridge may be unprofitable if the same price is charged for every crossing, but it may be socially desirable in the event that, if it is built and if tolls are set at the marginal cost per crossing, consumers’ surplus exceeds the fixed cost of construction. Perfect price discrimination would align the private and social decision calculus, but then all the benefits would go to the bridge builder. For users of the bridge, a better result would be a lesser form of price discrimination that was just sufficient to make the bridge profitable. Although total net benefit would be less than at the social optimum, all of it would go to end users.

- 7.5 The common factor here is monopoly, construed to mean not only that there exists a single supplier to an identified consumer population (including both high- and low-cost-to-serve customers), but also that the single supplier that is invulnerable to competitive pressures. Such a monopoly makes feasible the setting of geographically uniform prices. Economic rents are created from the provision of services to customers in high-density areas which are then used to support service provision to consumers in low-density areas. *De facto* the traditional policy approach amounted to a tax-and-subsidise system in which the taxes are implicit and non-transparent, but coercive nonetheless.
- 7.6 These traditional structural ‘solutions’ persist in, for example, electricity, gas, postal and water networks, even though in recent times there has been a shift in public policy toward promoting greater competition where feasible. Given that the advantages of competition are greatest in circumstances of uncertainty and change, when there tends to be more economically valuable knowledge waiting to be discovered (see later, in Part II), it is not surprising to find that this relatively recent transition in policy towards competition has been led by telecommunications, the most economically dynamic of the major, geographic, ‘transport’ networks – the thing transported being an electronic signal. However, other sectors have followed or are or about to follow because of transformations that are occurring in those other contexts, for example driven by climate change issues in energy and water and by e-mail and on-line shopping in postal services.
- 7.7 The problem is that competition tends to shift prices toward cost-reflectivity and hence to lead to politically (and perhaps sometimes socially) unacceptable price structures. New entrants focus their attention on high density, high margin locations and competition erodes the economic rents that support services in low-density areas. Prices in the latter rise to meet budget or profitability constraints, service quality is reduced (e.g. in post by fewer delivery days) and in some cases services are withdrawn from particularly high cost-to-serve areas altogether.
- 7.8 This is, of course, why the traditional approach to utilities was to suppress competition as a matter of public policy. Indeed, Professor Sam Peltzman has ascribed the prevalence of private and public monopoly around the world more to this factor, linked to economies of density, than to the existence of conditions of natural monopoly, linked to economies of scale and scope.⁴ (Natural monopoly will be considered in more detail in Part II.)
- 7.9 The conflict between competition on the one hand, and uniform prices plus geographically wide service provision of acceptably high quality on the other, gives rise to a severe regulatory challenge. It is difficult to get the balance anything like right in the first place and, in the presence of technological changes that are continuously changing the economic context, the most appropriate balance is constantly shifting. The result has historically tended to be heavy handed, recurrent regulatory interventions, not assisted by frequent interactions with politicians. Better and worse solutions are possible, but even the better ones, such as levies on all service providers to fund ‘universal service provision’, as has sometimes been provided for in the context of fixed network telecommunications, have unattractive features. Levies, for example, are

⁴ S. Peltzman, “The Control and Performance of State-Owned Enterprises: Comment”, in P. MacAvoy, W. Stanbury, G. Yarrow and R. Zeckhauser (eds), *Privatization and State-Owned Enterprises*, Kluwer Academic Publishers, Boston, Mass., 1989.

a form of compulsory taxation and the resulting patterns of transfers almost inevitably distort competition.

- 7.10 These observations serve to highlight a feature of the Australian mobile telecommunications context that I found striking at a very early stage of my reading of relevant background information for the purposes of this report: it is remarkable by international standards that the balancing act has been accomplished in Australian mobile telecommunications in a way that appears to combine relatively light handed regulation (tower-sharing arrangements, regulation of backhaul services), limited coercive taxation (i.e. fairly modest financial support from the public revenues) and vigorous competition, witnessed by the number and the commercial conduct of MNOs and MVNOs. Notwithstanding vigorous competition, there is geographically uniform (i.e. national) pricing and close to universal coverage of high quality services.
- 7.11 Three major points of relevance to the declaration assessment in the context of Australian mobile telecommunications, each relating to the opening state of affairs in the Maintained Position, follow from this observation:

Uniform pricing

- (a) End users located in low population density areas, i.e. in regional and rural Australia, appear to get a very good deal in terms of pricing. Indeed, taking a traditional measure of the balance of benefits from transactions, the differential between prices and costs, whether calculated as an absolute dollar amount or as a price-cost margin (the Lerner index), these are the people who get the best pricing deal. If one were to examine a regression of price-cost differentials on population density, it is a reasonable expectation that the finding would be a strongly *positive* relationship, i.e. a finding of significantly or substantially *lower* price-cost differentials in *lower* density (LD) of population areas.

This runs counter to a commonly held perception that consumers in LD areas are people who do not share adequately in the benefits of competition – a belief that may be based on an observation that, for these end users, choice among services provided by MNOs is more limited than for customers in high density areas. Conjecturally, the underlying quasi-economics may be linked to a misreading or misapplication of textbook models that imply a positive relationship between price-cost margins and supplier concentration. That is, the number of suppliers in a geographic area is examined under the lens of a proposition that fewer suppliers means higher price-cost differentials. If that is correct, things are being viewed through a distorting lens.

Sections in Part II will touch on some of the issues involved, but it suffices here to note a general, empirical proposition: in competitive conditions, it is not at all uncommon to observe that price structures are ‘flatter’ than cost structures, i.e. that higher cost-to-serve customers face lower price-cost differentials than lower cost-to-serve customers, and hence get a better deal on this account. In particular cases the flattening may not be considered sufficient to satisfy political preferences, and that is when regulatory policy is faced with some challenging issues. However, on the evidence that I have seen, Australian mobile telecommunications does not appear to be one of those cases.

Demand complementarity

- (b) The uniform prices are achieved without the compulsion associated with the traditional, monopoly approach to matters. My judgment is that this is principally because the Maintained Position is characterised by a form of *second-degree price discrimination* among customers in high density areas. More will be said about this in Part II, but a brief introduction may be helpful at this point, not least to introduce another salient economic concept, *complementarities in demand*.

The relevant demand complementarity occurs because coverage is an aspect of quality of service *for end-users in high density (HD) urban areas*. Extension of coverage in a LD area *increases* demand from end-users in HD areas, yielding additional net revenues. Commercial consideration of such an extension will therefore not only take account of the costs incurred and the expected revenues from local inhabitants, but also of the additional net revenues from HD areas. Given the relative sizes of the different population groups, the latter may dominate the picture.⁵

The commercial decision still depends on whether the total revenue flow is sufficient to remunerate the fixed costs incurred as a result of network expansion, and it is here that price discrimination comes in. Efficient recovery of fixed costs requires the implementation of some or other form of price discrimination, and a form that is highly favoured in competitive market contexts (where powers of coercion are absent) is second-degree discrimination, as discussed above.

As an aside, since the word ‘discrimination’ tends to get a bad press – because of its negative connotations from its meanings in other social and political contexts – it is relevant to note that this form of discrimination is not only efficient in an economic sense, but progressive in a political sense. Prices reflect willingness to pay and willingness to pay is strongly correlated with ability to pay. Those with lower ability to pay therefore tend to contribute less to fixed cost recovery. The pricing structure discriminates in their favour.

Among end users located in high density areas will be some who will place a higher value on geographic coverage of a competitively offered service. From an economics perspective it does not matter why this is the case, only that it is the case: the propensity may derive from a customer’s personal value system – “all should pay the same for this type of service” – or it may be that they travel more frequently than most of their fellow citizens through low-density land areas and it is chiefly a matter of self-interested convenience.⁶ Either way, the point is simply that second-degree price discrimination, built around vertically differentiated product/service offerings, is a relatively efficient sorting mechanism for recovering the revenues required to sustain low price-cost differentials in less densely populated areas.

Putting things at their simplest, LD area expansion automatically creates an extra revenue source (HD area customers who particularly value coverage and are sorted via second-degree price discrimination) that substitutes for the coercive, implicit taxes or explicit levies upon which traditional approaches rely. Since the

⁵ The implications of such demand complementarity are discussed in Mr Wright’s Statement, paragraphs 239-242, where he explains how the effect is taken into account in Telstra’s appraisal of prospective, new investments in rural and regional Australia.

⁶ Another possibility is that it derives from demand-side ‘network’ effects: HD-area demand is an increasing function of the number of people connected to a network, including those people residing in LD areas.

outcomes are the result of voluntary trade in competitive conditions, all end users tend to benefit, although the LD end users can be expected to benefit most.

Fragility of the price structure

- (c) The above points are directly relevant to assessment of the Maintained Position. The mechanism just described and its outcomes are aspects of its features, and will likely remain so in the immediate future. As remarked earlier, however, the MP is not a ‘no change’ position: the market context can be expected to change over time.

Change raises a general issue for regulators concerning what I have elsewhere called the *fragility* or *robustness* of a regulatory structure.⁷ Briefly, arrangements are fragile when their effectiveness is particularly sensitive to exogenous changes in the market context. They are robust when they are relatively insensitive to such changes. It is a sliding scale, but by way of illustration it can be said in a UK context that banking supervision arrangements pre-2008 were unambiguously fragile, whereas the general pricing approach to regulation of electricity and gas distribution networks has proved relatively robust over a 25-year period (although it is currently under increasing pressure because of the radically changed context caused by climate change issues and the consequent upsurge in innovation).

Fragility is a negative feature of regulatory arrangements. It tends to entail recurrent regulatory adjustments in response to changing circumstances. This in turn tends to increase regulatory uncertainty (and increased administrative burdens on agencies), which is generally damaging to new investment and to the embodied service innovations that new investment brings to the market.

Assessment of fragility/robustness should be an aspect of both legs of the economic assessment, but it is also relevant for a very specific exercise. Declaration would itself be a perturbation of the Maintained Position and some analysis of the likely sensitivity of market outcomes to that perturbation is required. Among these is the risk that the perturbation could ‘unflatten’ the geographic pricing structure.

8 Regulatory reputation

An overview

- 8.1 In the economics literature the issue of regulatory reputation sometimes appears under the heading of ‘the credibility problem’ or ‘the time consistency problem’, although the reputational issues are more general in nature than the specific examples that much of this literature addresses. It is nevertheless helpful to start with consideration of the more familiar, narrower issues.
- 8.2 In relation to investment, the credibility problems arises from the fact that once capital expenditures have been incurred they are only partly recoverable from the sale of an asset for use to serve a different purpose, if they are recoverable at all. This puts the investing business in a position such that where a regulator can impose prices or access charges lower than those that would allow for full cost recovery, perhaps in response to

⁷ <http://www.royalmailgroup.com/sites/default/files/Yarrow%20-%20Universal%20service%20and%20competition%20discussion%20paper%2021%20Feb%202015.pdf>

political pressures to keep prices down, and the asset owner cannot then redeploy the asset to another use so as to mitigate the loss. The risk of such opportunistic behaviour by a regulator in turn tends to chill new investment, because of the lower expected returns that it implies. In the regulation of traditional network monopolies, the issue can be addressed via legal protections, for example in the US rate-of-return regulation and its underpinning legal supervision serves as a protection against regulatory ‘takings’. Some theorists believe that this correction or remedy then introduces a bias toward over-investment, although convincing evidence to support that proposition is relatively thin on the ground.

- 8.3 Incentive regulation, which contemplates the possibility of sub-normally low rates of return on investment alongside the possibility of super-normally high rates of return, is less easily policed by legal supervision. The tendency of jurisdictions that have made heavy use of this approach is to rely more on the use of regulatory reputation as the supervisory device. Reputation is developed and maintained by the decisions and conduct of the regulator, and the process is generally recognised to contain an asymmetry: a reputation for good regulation takes longer to acquire than to lose. Many years’ efforts spent building a reputation can be lost in consequence of one, opportunistic act or manifestly bad decision. This serves to strengthen the incentives for good performance, much in the way that it does for a commercial organisation with a strong brand reputation to protect.
- 8.4 Regulatory intervention in contexts where competition is an active force adds further difficulties to the task of establishing effective legal supervision: in competitive conditions it is much harder (than in monopolistic conditions) to establish lines of causality between decisions and effects with the definiteness required to meet normal legal standards and hence to police any inappropriate regulatory conduct in this way. Regulatory reputation therefore acquires an even greater salience in these contexts.
- 8.5 Whereas for a commercial business operating in a competitive market bygones are bygones and sunk costs play little or no role in the decision calculus surrounding new investments, that can never be the case for a regulator. Every decision made sends an information signal that may be liable to cause revisions to a regulator’s reputation in the perceptions of those who take an interest in its conduct. These decisions are closely watched because of the underlying market power that lies behind them: regulatory decisions can have significant effects right across a whole market or sector. More specifically, observers of regulatory conduct will tend to pay particular attention to the way in which the regulator approaches sunk cost issues. Even more specifically they will, implicitly or explicitly, be interested in the question of whether the fact that a cost is sunk will have any influence on decisions, i.e. on the question: would the decision have been any different if the cost had not been sunk? If the answer is yes, investors tend, metaphorically, to put their hands over their wallets.

Reputational effects with respect to the roaming declaration

- 8.6 Clear and explicit recognition of reputational effects is important for the current mobile roaming declaration assessment, as it is for all significant regulatory decisions. Consider, for example, the interpretation and use of coverage data. In terms of the proportion of the population that can receive mobile services, coverage in Australia can reasonably be described as very high, particularly taking account of the land area and the population distribution. There is an obvious temptation to infer from this

observation that infrastructure competition to increase coverage is therefore a matter of relatively minor significance, i.e. that competition has done its job and run its course in this particular dimension.

- 8.7 This misses a number of relevant points, the first of which is that assets do not last forever and there is a role for competition in relation to (like for like) replacement investment as well as to capacity expanding investment. Replacement investments can be made more or less efficiently.
- 8.8 More generally, coverage can shrink as well as expand, and that possibility should not be neglected. The rate of potential shrinkage is in part a function of economic asset lives and, more generally, of an asset's economic depreciation profile.
- 8.9 Second, a decision that signals that infrastructure investment can be put in a 'job done' box, and that this has had bearing on the decision that has been made, sends a wider information signal about the way in which the regulator sees things. Such a signal may, through reputation effects, have an impact on new investment across a much wider range of contexts than the one under immediate investigation, by inducing an expectation that, at some point, new investment will suffer a similar fate. Again, these potential implications need to be weighed and assessed.
- 8.10 Third, as already indicated, the LTIE is affected not just by the availability of a service, but also by the quality of that service. It is therefore necessary to consider quality of service issues alongside geographic coverage issues. Reduced competition in relation to service quality upgrades in a particular LD area may lead to a degradation in service quality in that area well before a service is withdrawn completely (see my earlier comment on the reduction of frequency in mail delivery).
- 8.11 Fourth, in telecommunications, new infrastructure investment is the principal channel by which technological advances are delivered to end-users. As indicated, all investment, whether new or replacement, can potentially serve in this way, with the biggest effects occurring when such advances come together in clumps, such as when standards for a new technology are agreed.

- 8.12 The point is most easily illustrated by reference to table 1.1 in the ACCC's Discussion Paper. As can be seen, 3G coverage is very high, but somewhat less high for 4G coverage, suggesting that there is still some way to go for full coverage by this technology, particularly for Optus and VHA.

Table 1.1 Mobile network coverage in 2005 and 2016 (percentage of the Australian population)²⁵

	2005 2G Coverage	2016 3G coverage	2016 4G coverage
Optus	94	98.5	90
Telstra	98	99.3	96
VHA	92	97	91

- 8.13 To see the problem, suppose that another column is added to the table, showing the position for 5G coverage. This column would comprise a string of zeros: there would be therefore quite a long way to go for the prospective technology and it could certainly not be concluded that the role of infrastructure competition in increasing 5G coverage was a matter of little significance.

Limitations in the scope of declaration

- 8.14 On the basis of the numbers in the table it could be argued that a declaration that was restricted to existing technologies (3G and 4G), but which exempted later technologies, would have little or no effect on competition and incentives to invest to increase 5G coverage, but that would be to ignore reputation effects. The very act of making such a declaration signals a regulatory approach that distinguishes between sunk costs and forward-looking costs. This affects expectations of what the ACCC might do in a future context in which 5G coverage had attained a somewhat higher level of coverage than zero, but in which there was the prospect on the horizon of introducing yet another superior technology.
- 8.15 A declaration decision of this 'targeted' type would tend to raise the perceived likelihood that the ACCC would, at some later time, make a declaration in relation to 5G services, and such a shift in likelihoods amounts to a change in regulatory reputation. This in turn affects anticipated returns from investment in 5G coverage, in a downward direction, and with lower payoffs, competition to increase coverage would also tend to be chilled. In general, the bigger the prizes the more intense the competition for those prizes, as is demonstrated repeatedly in sports competitions: taking away the prizes has the effect of turning 'competitive matches' into friendly matches.
- 8.16 The quantitative significance of these effects is a matter for assessment, although there can be no great optimism that safe and reasonably precise answers are attainable. The directional effects are, however, much more readily assessed.

- 8.17 Similar remarks apply to a regulatory sub-option associated with the alternative position in which only a subset of existing technologies, specifically 3G, might be subject to declaration. The logic is that (a) there remain benefits of competition still to be teased out from infrastructure competition in 4G – judging by the 3G coverage figures, Telstra potentially still has a little bit to do and each of Optus and VHA has rather more to do – and (b) non-declaration of 4G will preserve incentives to increase 4G coverage.
- 8.18 What this again lacks is any consideration of reputational effects via the signals that regulatory decisions send to the market. In addition to signalling a propensity to take decisions in a way that is influenced by old/new asset distinctions, it suggests a regulator who is interested in micro-managing the balance of competition and regulation in a market.
- 8.19 Micro-management in turn points to the occurrence of repeated interventions to alter a difficult-to-assess balance between competition and regulation, i.e. to more fragile regulatory arrangements, which can be expected to increase regulatory uncertainty and to be negative for investment prospects. Whether these latter effects outweigh the additional benefits that might flow from not declaring 4G services is probably anybody's guess, but it is not possible to conclude that declaring only 3G will necessarily have a lesser damping effect on competition and infrastructure investment than declaration of all services in the relevant area. Among other things, it might signal a regulatory approach that as well as being interested in micro-managing a competitive process at a finer level of granularity is also relatively indifferent to the technical, operational difficulties that establishment of a regulatory boundary between two, switchable/substitutable technologies might cause, neither of which appears to be helpful for infrastructure investment incentives.
- 8.20 By way of analogy, all this looks a little bit like a long-distance running competition in which the rules are such that when a contestant is first to a line across the track, the position of which is uncertain and unknown to the contestants *ex ante*, the payoff will be the imposition of a burden for the next part of the race. From a contestant's viewpoint, the thought may occur that it would be better to run a little more slowly at first, a spectator might wonder why the rule-maker thought it would be a good thing to do to fix the rules in this particular way, and an academic might write a paper on the new topic of "competition to be regulated".

PART II: MATTERS EXPLICITLY RAISED IN THE DISCUSSION PAPER

9 Market definition

- 9.1 The binary, comparative assessment of the Maintained Position and the Alternative Position does not require that a view be formed as to the scope of any relevant markets and Part XIC of the CCA does not require the ACCC to undertake or to pay particular regard to market definition. Legal requirements and good practice economic assessment are well aligned in this respect, because it is appropriate to take a broad look at the economic context so as to capture all material factors that are relevant to the decision and also all material effects of the decision that might be taken. In doing this it may be found that some aspects of the economic context merit greater attention than others, but market definition as such does nothing to assist in this exercise: indeed it is frequently a source of potential error.

- 9.2 To explain, market ‘definition’ is nothing more than a classification exercise. It looks at a particular product/service or a particular geographic area and decides whether to allocate it to a box labelled ‘in market A’ or to a second box labelled ‘out of market A’. Nothing factual in commercial reality is affected by this labelling.
- 9.3 This observation leads immediately to an invariance proposition: sound conclusions from assessment should be invariant to (i.e. not affected by) the allocation of products, services or geographic areas to the labelled boxes. If the invariance proposition is not satisfied – for example because (a) fewer products/services or a smaller geographic area are put into the box labelled ‘market A’, (b) ‘market shares’ are then found to be high, and (c), critically, an inference is made that high market shares signify significant market power – it can safely be concluded that something has gone wrong with the economics.⁸
- 9.4 The way that I have looked at the demand-side in mobile telecommunications is as follows. There are subsets of end users and potential end users that might be distinguished by policy relevant criteria (e.g. those living/working in LD areas, those living/working in urban areas; domestic end users, commercial end users, etc.); there are defined mobile services provided by identifiable suppliers who account for different shares of the business of different sets of consumers; there are uncovered/unserved subsets of potential customers; costs-to-serve differ, sometimes substantially, among different sub-sets consumer, as do price-cost differentials; crucially, there are economic interconnectivities/linkages that range across the whole network or large parts of it. There is no call to try to fit this complex web of connectivity into a highly simplified template drawn originally from abstract, fact-free economic theorising, and both assessment resource requirements and risks of error can be reduced by avoiding what Professor Stephen Littlechild has, in critiques of aspects of current energy policy thinking in the UK, called the Procrustean Bed approach.
- 9.5 All of the above points are valid irrespective of whether or not MNOs offer similar services and irrespective of whether their prices are the same across the country as a whole. It follows that these indicators cannot, in and of themselves, be regarded as reliable guides as to the geographic scope of ‘the market’. Indeed, *prime facie* a competitive national market with strong locational differences in costs-to-serve might be expected to give rise to prices that, reflecting costs, would show significant spatial variation. I therefore infer that the existence of national pricing is better read as a signal that something else is going on, i.e. that there are geographic, economic interconnectivities to be explored in order to gain a better understanding of the commercial realities.
- 9.6 I personally first encountered one aspect of what appears to be the ‘something else’ about 25 years ago in a study of competition in petrol retailing. In remote areas of the UK, such as the Scottish Highlands and Islands, retailing margins of the major, branded

⁸ There are probably two major sources of error. The first is failure to recognise that (a) the strength of competitive pressure on a business is co-determined by a set of factors, (b) the contribution of each to the total, as indicated by the usual metrics adopted when assessing competition (market shares, barriers to entry, substitutability with out-of-market alternatives) are interconnected, and (c) all of the metrics, i.e. not just market share, are affected when switching from one market ‘definition’ to another. Thus switching to a narrower market definition will certainly increase ‘market’ shares, but it will also increase pressures from out-of-market substitutes (there are more of them), thereby increasing the relevant ‘market’ elasticity of demand, and from potential entrants (suppliers who would be ‘in’ a broad market but are ‘out’ of a narrow market become new potential entrants for the redefined, narrow market. The second is that market shares tend to be much easier to quantify than market demand elasticities or entry barriers and, even when the interconnection among metrics is recognised, there tends to be a cognitive focus on market shares, leading to them being given undue weight in assessments. The numbers give an appearance of objective fact, although that is an illusion: commercial facts don’t change when their labels are changed.

suppliers (branding was more important than it probably is now) were negative, implying a geographically flatter pricing structure than might be expected on the basis of comparative costs-to-serve (although the price structure was not completely flat: there wasn't national pricing).

- 9.7 My conclusion then was that there were *demand complementarities* associated with the existence of geographically mobile customers. Major retailers did not want their brand-loyal customers taking holidays up north to feel that they were being ripped off, which customers not familiar with the precise extent of the cost differentials might have done from price comparisons alone. Since the notion of a brand is often closely tied up with notions that the brand owner will not behave opportunistically, fully cost-reflective pricing would, via risks of false inferences being drawn from limited datasets, have been potentially damaging to the brand more generally, harming sales volumes, revenues and profits further south, where those geographically mobile customers lived and worked for most of the year.
- 9.8 The misleading SSNIP test, built around the notion that markets are to be defined in terms of demand *substitutability*, would have given the wrong answer. It would have led to the conclusion that there were distinct 'markets', based on the notion that a hypothetical local monopolist would be able to charge elevated prices. Coupled with a further observation that the supply structure did, in fact, show a high degree of concentration in these remote areas, the conceptual Procrustean Bed would have led to a conclusion that there was a potential competition problem, possibly accompanied by a call for 'something to be done' to help protect the interests of the local inhabitants.

10 The concept of natural monopoly

- 10.1 The above remarks are directly relevant to the role that the concept of natural monopoly might play in assessments to inform the declaration decision. There is a tendency when discussing natural monopoly to put the primary emphasis on the existence of economies of scale and scope and, when natural monopoly conditions are found, also to assume that they give rise to market power problems. When the tendency is found, it is a signal that other (than cost structure) relevant considerations are being discounted or ignored.
- 10.2 Avoiding the (undefined) word 'market', it can be said that a natural monopoly exists if the requirements of an identifiable set or sub-set of end users can be met at least cost if they are supplied by a single firm. The following points are relevant when assessing the significance of this state of affairs:
- The vast majority of observed natural monopolies exist because the elements of the identified sub-set of customers are few in number and/or their aggregated transactions are of highly limited value. The 'last shop in the village' is a traditional example, although it is an example that may now be increasingly inappropriate in light of the development of on-line retailing.
 - Economies of scale and scope are generally observed across the economy, but even where they satisfy the formal definition of natural monopoly the resulting industrial structure is usually characterised by the existence of competing businesses. One inference that might be drawn from this is that some degree of 'duplication' in resource use is frequently (and, in practice, possibly near universally) to be found in competitive

markets. The supply of CPUs serves as one example, the supply of carbonated colas as another, but perhaps the most fascinating is water supply.⁹

- As usually defined and used, natural monopoly normally refers to a situation in which cost conditions are given, i.e. in normal usage it is a *static concept*. It does not, for example, take account of the fact that costs change over time and that one of the factors influencing their evolution is the number of firms operating in the market. Once the dynamics are taken into account and costs are evaluated over a longer time period on, say, a NPV basis, two competitors may be more cost efficient than one, even in the presence of economies of scale and scope.¹⁰
 - The existence of natural monopoly conditions does not imply an absence of competitive pressures, and probably most businesses that could accurately be characterised as natural monopolies operate under intense commercial pressures, because the level and elasticity (price sensitivity) of demand frequently means that the supply structure hovers between exhibiting one supplier or no-supplier at all (a village has one grocery store, or it has no grocery store). Alternatively there might be threat of complete displacement by a new entrant (a new store opens and the old store is closed down).
 - When thinking of the possible relationship between price and the number of businesses competing for revenues from a defined set of customers, the only fully safe inference that is not sensitive to contextual factors is that much the biggest price drop occurs when the number of suppliers increases from zero to one (taking zero – or ‘lack of coverage’ – to be economically equivalent to charging an exorbitantly high price). The effect of adding further suppliers can be an increase or decrease in price, depending upon the specific features of the relevant economic context.
 - It follows that an observation of a defined sub-set of customers, e.g. those located in a particular geographic area, being supplied by a single firm is not indicative of a competition problem *per se*, even in the absence of interlinkages to other markets via demand complementarity. It may be a normal outcome of a competitive process and when the relevant set of customers is small or the relevant cumulative transactions are of relatively low value, my own experience indicates that it nearly always is.
- 10.3 The last three points here are just a restatement of the point made in paragraph 9.3 at footnote 8. The competitive pressures on a business are jointly- or co-determined by a combination of factors, among which the number of actual competitors is just one and can therefore never be determinative when considered in isolation.

⁹ Nicola Tynan, “London’s Private Water Supply, 1592-1902”, in *Reinventing Water and Wastewater Systems*, P. Seidenstat, D. Haarmeyer and S. Makim (eds.), John Wiley & Sons, New York, 2002. As in many other cases, what is now called a natural monopoly in the supply of water to London end users resulted from a legislative act (in 1902). It is more accurate to call the businesses created in this way ‘statutory monopolies’. They are not ‘natural’ in the economic sense of evolving from a process of competition on account of their superior efficiencies, although arguably they might perhaps be considered ‘natural’ in a political sense.

¹⁰ To illustrate with a greatly simplified example, consider a cost function for a single supplier that takes the form $f + cQ$, where Q is output, f is fixed cost and c is unit variable cost. Suppose that a second supplier would need to incur the same fixed costs, i.e. there would be complete duplication of the relevant assets, but that the effect of having a competitor in the market is to reduce unit variable cost by Δc . Then the costs of supplying any given level of output will be lower in a duopoly if $\Delta cQ > f$. This will occur for any positive level of cost reduction, if Q is large enough, i.e. if the market is large enough.

11 Competition

- 11.1 The word competition, when unaccompanied by a qualifying adjective such as ‘perfect’ or ‘monopolistic’ means the same in economics as it does in ordinary language. In a nutshell, competition is *rivalry* or striving against others.¹¹
- 11.2 Rivalry can take many forms, some bad, some good. We are all familiar with its different forms: there can be sibling rivalry, rivalry between nations, rivalry between political parties and factions within those parties, rivalry in the playing of video games, rivalry on the sports field, and so on.
- 11.3 How rivalry plays out and what its effects will be depend upon a combination of a general factor, which can be referred to as ‘the rules of the game’, and a set of relevant contextual factors. Thus, if a Melbourne sports team is about to play a Sydney team, the prospective process and outcome will be influenced *inter alia* by whether the rules are those of soccer or rugby league (the general factor) and whether the match is home or away and/or whether half the Melbourne squad is down with the flu at the time (both specific contextual factors).
- 11.4 The governing legislation seeks to promote a good form of competition, specified broadly as promoting competition that advances the LTIE.
- 11.5 The LTIE is a broad criterion for judging the performance of any set of rules of the game against a possible alternative (which is the exercise engaged when considering the possibility of making a declaration). It inevitably necessitates some element of political/equity judgment as well as the more technical judgments required when assessing whether or not to make a rule-change. End users are differentiated from one another, for example by type (commercial or household), by location (work/reside in a low/high population density area) and time (consumption now or in the near future or consumption in later years).
- 11.6 Fortunately, matters are greatly simplified in mobile telecommunications by the fact of rapid technical change and its embodiment in infrastructure investments. The effect has been to deliver major benefits to end-users across the board on a scale that dwarfs any rebalancing of benefits among different types of end user that might have occurred along the way. Dynamic competition has been a major driver in the process because, as Hayek¹² has put it, developing a point first made in the classical period of political economy, competition is a process “... *for discovering facts which, if the procedure did not exist, would remain unknown or at least would not be used.*” Indeed, if we knew the facts and how to use them, competition would be largely redundant: optimum resource allocation, both now and in the future, could be prescribed by central planners to at least a reasonable approximation, cutting out the substantial ‘transactions costs’ that competitive markets entail.
- 11.7 Given these points, consider competition among MNOs with a particular eye on its implications for customers differentiated by two crude, binary criteria: low density (LD) versus high density (HD) location, and consumption in the short term versus consumption in more distant years. The rivalry is for the custom of end users and

¹¹ G. Stiger, “Competition”, entry in *The New Palgrave Dictionary of Economics*, Palgrave Macmillan, 2008.

¹² F.A. Hayek, “Competition as a discovery procedure”, *Quarterly Journal of Austrian Economics*, Fall 2002.

potential end users. What is offered is a multi-dimensional service package at a given price or set of prices. The various elements or components of the service package can, together with prices, be viewed as different ‘dimensions’ in which suppliers compete.

- 11.8 A simplification focused on these matters might assume that demand is a function of price and quality of service, and that businesses therefore compete in two dimensions. A more realistic development would recognise that ‘quality’ itself is multi-dimensional. In mobile telecommunications services, coverage is one of these more disaggregated dimensions in which businesses compete: it has value to end users and therefore is a factor that affects demand. Bandwidth/speed is another dimension of competition and for current purposes might be proxied by a 3G/4G distinction. Then there is latency, quality of voice reproduction, low hassle invoicing and payment, supplier responsiveness when things go wrong. The list can go on.
- 11.9 The effects of movements in these quality metrics on demand in LD areas is obvious, but the effects (of changes in end-user experiences in LD areas) are also to be felt on demand in HD areas: improved quality of service, including in the coverage dimension, in LD areas expands demand in the HD areas (see earlier at 7.11(b)).
- 11.10 For simplicity, let me assume at this point that all the quality dimensions of competition other than coverage can be grouped together, or that focus can be restricted to a dimension captured by a ‘generational measure’, i.e. 2G/3G/4G/..., so that we can think of the value of a service to an end user being a function of three factors, price (p), coverage and service quality (q), such that demand is a function of these three things. MNOs then compete in each of these three dimensions.
- 11.11 In thinking about effects on the LTIE, it can also be useful to make use of the notion of a quality adjusted price, $p_q = p f(q)$, where the function $f(q)$ represents a mapping from quality to monetary units based upon best evidence of consumer valuations of quality.
- 11.12 There are two important things to note at this point:
- Outcomes of the competitive process will be co-determined by competition in each of the three dimensions. A change in the ‘rules of the game’ that is directed at one of the dimensions will, as a general matter, affect competition in other dimensions. This is a proposition that can be demonstrated theoretically, but also, much more convincingly, by observation. Price controls, for example, are observed to reduce the intensity of competition among suppliers to strive for quality improvements. If patent and copyright protection were abandoned, we should not be surprised that not only price competition, but also competition to discover new, commercially valuable knowledge or creative ‘expressions’ would be simultaneously affected.
 - There can be some highly significant differences between the way in which competition plays out in the different dimensions, since the intensity of rivalry tends to be correlated with the size of the prize for which the contestants strive. Competition tends to be most intense in those dimensions where there is more at stake.
- 11.13 In relation to coverage then, the most pertinent question is not whether it is a dimension of competition among MNOs – it clearly is – but what the effect of declaration would be on competition in both the coverage dimension and in other dimensions.

Competition in the coverage dimension

- 11.14 The effect on competition in the coverage dimension is straightforwardly restrictive. If coverage has value to a sub-set of HD end users, increasing coverage *relative to rivals, whether by increasing an advantage or decreasing a disadvantage*, has financial payoffs to an MNO in the form of increased revenues from HD customers, either by allowing a higher price to be sustained or by increasing sales volumes or both. If coverage differentials among MNO's are eliminated, this incentive structure is undermined: all MNOs will likely have similar levels of coverage, none of them can get ahead of the rest and, if it does, the payoffs from so doing will be reduced. Just as a regulatory requirement that prices be the same for all firms would eliminate price competition, so legislating in a way that can be expected to tend toward equalisation of coverage would chill competition in coverage.
- 11.15 The same is true in LD areas. If coverage is equalised across the footprint the first business to serve a particular area, there is little incentive for other MNO's to compete with one another to close the gap with the first-mover by means of their own new investment.

Competition in service quality/investment

- 11.16 Service quality improvements generally entail investment in infrastructure or business systems (they are embodied in investment) and, in a short treatment such as this, the two can be considered together.
- 11.17 It can be expected that competition in service quality will be damped by declaration, but not eliminated. Consider the position of an MNO that takes advantage of the declared service in a LD area rather than investing in its own equipment. Without declaration, the benchmark against which the revenues from the investment would be evaluated is zero. With declaration, it can be expected to have derived some positive net revenue from being able to cover the area (otherwise it would not have sought service access in the first place). Note that one source of contributions to this net revenue will be the incremental revenues from the MNO's HD area customers. If the MNO now considers whether or not to invest in the LD area, including in ways that would improve service quality, the anticipated incremental payoffs will be lower (because existing net revenue is higher). Incentives for quality-improving investment are weakened.

Competition on price

- 11.18 It can be inferred from the price-cost differentials in LD areas that, under current arrangements, downward pressure on prices are intense (why else would prices be set so low in relation to costs?) The pressures do not emanate from direct rivalry for the custom of the relevant end users in their home areas – no such rivalry exists – rather they emanate from direct retail competition in HD areas and/or from threats of entry into direct competition in LD areas from other MNOs (they could extend their own infrastructure into those areas) and/or from inter-area arbitrage.¹³

¹³ LD area end users could potentially sign up for service contracts using HD area addresses. For such arbitrage to be hindered, some way of partitioning the market is required and this may be problematic when end users are themselves geographically mobile for at least part of the time, unless there is some other factor that serves to differentiate the value-to-user by location.

- 11.19 Equalisation of coverage among MNOs reduces the ‘out-of-area’ competitive pressures, by eliminating the payoffs in HD areas from increased coverage in LD areas. The expectation is that prices in LD areas will rise, to the detriment of the LTIE of customers located in those areas. In strict economic terms, the greatest hike in ‘price’ is likely to come when an area ceases to be covered at all.
- 11.20 In practice, the price effects will be entangled with quality effects. Dulled incentives for, say, extensions of 4G coverage that lead to reduced investment in 4G infrastructure might not show up in higher prices for service contracts, but rather in the reduced quality of service that will be offered at a given price (in the AP, relative to the MP), which remains constant. In that case it can be said that the quality-adjusted price has risen.
- 11.21 Irrespective of the precise details, it can be noted that geographic differentials in quality serve as an effective partitioning device between LD area and HD area end users (see footnote 13). It would be to little avail to an end-user in a LD area to seek to purchase a more favourable service from a HD area source: on returning home the quality of the service available would be lower than in the HD area, because quality of service at home is largely determined by infrastructure investment in the home area. By and of itself, this amounts to a weakening of cumulative competitive pressures in LD areas.
- 11.22 In my view, therefore, it is to be expected that declaration would induce some tendency toward ‘economic separation’ between HD areas and LD areas, which will be adverse to the LTIE of LD end users. Put another way, insofar as their effects on the LTIE in remote areas are concerned, there appears to be a degree of fragility attached to the current arrangements.
- 11.23 The effect on price competition and prices in HD areas is more uncertain. The price differentials among MNOs that exist in HD areas are likely to be partly underpinned by coverage differentials (this is an implication of the vertical differentiation literature referenced earlier). Perhaps the safest conclusion is that declaration will tend to reduce these price differentials, but whether or not the average level of prices will increase or decrease is a matter that is much more difficult to determine.
- 11.24 Telstra prices might decline in the AP because without its coverage advantage, some of its customers could be expected to switch to other providers who offer lower prices and now offer greater coverage than they would in the MP. However, quality of service would also tend to decline due to reduced infrastructure investment in LD areas, which, for any given actual price, would increase the quality-adjusted price. The overall implications for the quality-adjusted price are therefore unclear.
- 11.25 On the other hand, Telstra’s competitors would find themselves facing higher costs in the form of access payments and, simultaneously, being able to offer a service that was more valuable to their customers because of the higher coverage. These factors point to increases in their actual prices, with the quality-adjusted price effects again unclear.
- 11.26 The implications for the general level of prices relative to costs in HD areas are much more uncertain. Different factors point in different directions and outcomes can be highly sensitive to modest, even trivial variations, in contextual features. My general rule-of-thumb is that, if price undercutting by one competitor can be quickly matched by price responses from others – i.e. if the price cut offers only transitory competitive

advantage – do not expect much of price competition in a market. Nothing much of value is discovered by such transitory price movements.

12 Any-to-any connectivity

- 12.1 Paragraph 152AB(8) of the CCA says that “... the objective of any-to-any connectivity is achieved if, and only if, each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, with each other end-user who is supplied with the same service or a similar service, whether or not the end-users are connected to the same telecommunications network.”
- 12.2 This objective is currently achieved for existing end-users who live and/or work in LD areas, and who therefore have purchased services from the MNO or MNOs that serve the area. It is not achieved for customers who are passing through an area that is not covered by their own MNO or by end users living/working in areas not covered by any MNO.
- 12.3 Assuming for the moment that the area of the country covered by at least one MNO can be taken as a given, there is no doubt that declaration would contribute to the formal any-to-any connectivity objective. Specifically, customers of a particular MNO who were travelling in an area that was not covered by that MNO’s infrastructure would benefit from connectivity with other end users, whereas in the MP they don’t.
- 12.4 That is not the end of the matter, however, at least if regard is also to be paid to the number of end users who have access to a service. As discussed, suppression of competition in coverage in the AP could be expected to lead to a gap opening up between coverage achieved in the Maintained Position and in the Alternative Position. This could be because extension of coverage was less rapid in consequence of a declaration decision or because the aggregated area of coverage shrinks (e.g. because new technologies come to be deployed less widely and existing assets are not maintained or replaced when they become non-functional).

13 Efficient Investment

- 13.1 The LTIE criterion is specified in terms of encouraging economically efficient use of, and investment in, network infrastructure. It therefore has a ‘static’ aspect, “use of”, and a dynamic aspect, “investment in”. Where public policy objectives are of a long-term nature, as the LTIE criterion indicates they are in this case, it is the dynamic aspects that are typically the most important quantitatively. Today’s citizens are relatively affluent compared with earlier generations not because we were educated by 18th and 19th classical economists in the art of more efficiently making use of the scarce resources then available, but because of technological progress. Indeed, the *Wealth of Nations* opens not with a theory of value but with a broad outline of a theory of economic development, i.e. a theory of dynamics, and it is abundantly clear where the *Wealth* of the title comes from.
- 13.2 This is true for all sectors. In what at the time was the leading work on electricity sector reform, Professors Joskow and Schmalensee¹⁴ showed a graph of the large

¹⁴ P. Joskow and R. Schmalensee, *Markets for Power*, MIT Press, 1983.

reduction in electricity generation costs over a period of several decades. Again, it was this cost decline, resulting from advances in knowledge, that was manifestly the source of increasing consumer benefits.

- 13.3 The relative significance of dynamics is rather greater in telecommunications than in the generation of electricity because of the higher rate of technological change. Also, unlike in electricity generation, the technological change involved in telecommunications is much more tilted toward a product-enhancing, rather than a cost-reducing, form. As such it is transmitted much more directly to consumers: introduction of new technology leads almost immediately to enhancement in service quality, without further ado. As stated at the outset, new investment plays a critical role in this process of development because technological progress arrives *embodied* in new investments.
- 13.4 The balance of the trade-off between statics and dynamics is reflected in telecommunications by the very high-level distinction between service-based competition and infrastructure competition, with most economists tending to favour the latter, wherever it is realistically feasible, for the kinds of reasons just spelled out. UK regulatory reform started from that position in the 1980s, whilst recognising that (a), in a starting position of full monopoly, access to services would play an important role in the transition to structures that were substantially more competitive and (b) there could be a more enduring role for regulation of access to services provided by ‘essential facilities’, meaning facilities for which infrastructure or facilities-based competition was not realistically possible, i.e. ‘no-go’ areas for competition, at least within a given or in-prospect state of knowledge.¹⁵
- 13.5 The waters became muddled by EU policy which, as is frequently the case, emerged from political compromises among parties with rather different views as to the merits of competition, of any sort, in the sector. Notwithstanding attempts to insinuate some sort of coherence to the muddle via metaphors such as the ‘ladder of investment’, that is how things have remained.
- 13.6 Given these points, I think it can safely be said that declaration of a roaming mobile service can be regarded as presumptively adverse for new investment, including new investment that is of a replacement nature as well as new investment aimed at attracting additional customers, and, since new investment comes with embodied, service-improving technical change, also adverse to the LTIE. This follows from (a) the fact that service access would be an immediate substitute for incremental (realistically feasible) investment by new direct competitors to the incumbent provider(s) in a LD area and (b) the incumbent’s incentives to invest in these areas, and in extending coverage to other areas, would be diminished, particularly in the light of the demand-side linkages with sales of services in HD areas.¹⁶ A presumption is not a final conclusion of course, but I think there would need to be convincing and substantiated reasoning and evidence to overturn it, not just speculation and metaphor.

¹⁵ Since good regulation is itself a discovery process, things that are considered impossible at one time often turn out to be possible later, and the time lag can sometimes be remarkably short. The best case study is radio spectrum, where the first major advocate (Professor Ronald Coase) was in a minority of one, even the Department of Economics at the University of Chicago. By the 1990s things had speeded up. It took only three or four years from engineers in the UK falling about laughing at the prospect of a market in reactive power in the electricity sector to implementation of trading in reactive power. This accelerated pace (relative to the radio spectrum case) was itself largely due to technological progress in the interim: advancements in information and control technologies have made markets much easier and less costly to establish than before.

¹⁶ The implications of these points are discussed in the Statement of Mr Wright at paragraphs 251-4.

- 13.7 It can be noted that there is a significant difference here compared with mast sharing arrangements. The erection of new masts is often subject to delay as a result of “lengthy local planning and development approval processes (including community consultation) and protracted tenure negotiations.”¹⁷ These delays are a result of the social costs/externalities that are involved and of the lack of any quickly feasible ways of capturing them via the price mechanism. The delays do, however, have the effect of slowing down new investment, sometimes substantially, which can be a major problem when new technologies are developing relatively quickly. I tend to see mast sharing, which is a facet of the established arrangements, as being chiefly a pragmatic ‘work-around’ for this problem of social cost, which can stimulate, rather than substitute for, new investment in the round.
- 13.8 Turning to the efficient use of existing infrastructure, there is more to be said in favour of declaration from the perspective of the interests of end users and the most important questions are probably just to do with the magnitude of the benefits, relative to the significance of the effects of such a decision on new investments. The magnitude itself can be expected to depend on factors such as:
- the extent to which the new, direct competitors in LD areas would expand traffic in the relevant areas, rather than simply displace the existing traffic of the incumbent supplier (displacement does not increase the intensity of use of existing assets);
 - the value to LD area end users of the greater differentiation of services in the market, for example via the introduction of a wider range of tariffs on offer;
 - the costs of implementation, which will indirectly affect prices.
- 13.9 In relation to the second point, it might be noted that there has been an active debate in the UK about the number of tariffs on offer, in the energy sector as well as in telecommunications. Some parties have argued that tariff proliferation has served to befuddle end consumers and is not in their interests. In energy Ofgem, under political pressure, introduced a rule that no supplier can offer more than four tariffs. This is now in the process of being unwound following the Competition and Markets Authority’s (CMA’s) recent investigation of the sector, but there continues to be advocacy at the political level for the number of tariffs any supplier can offer to be restricted, to as low as one!
- 13.10 The centre of gravity of economic opinion on these matters has been that (a) no such restriction is warranted, (b) if there is to be a restriction it should be at a substantially higher number (than one or four), but (c), from a consumer perspective, the number of tariffs on offer is likely to be subject to the law of diminishing returns, and that the incremental benefits may, past some undetermined number, turn negative.
- 13.11 The most important relevant factor, however, in considering the *use* of infrastructure is interpretation of what this exercise entails. As discussed in relation to natural monopoly above, it is important not to neglect the dynamics. As discussed in paragraph 10.2 (third bullet), there are many examples of economic contexts in which, taking cost functions as given, the most cost-efficient supply structure is a single supplier, but where the observed outcome is, *de facto*, unregulated oligopoly. The key

¹⁷ See the Statement of Mr Bob Joice, paragraph 16.

general point is that, particularly when we move from consideration of things in a very short time horizon, *duplication is not necessarily inefficient*, which encompasses the narrower point that ‘excess capacity’ is not necessarily inefficient.¹⁸

14 Pulling together the pieces

- 14.1 Let me now summarise the picture that I have formed of how the existing arrangements work, and of the major, likely effects of applying a perturbation via a declaration decision. This could be done with the aid of a little mathematics, but Marshall’s rules indicate that that is not necessary.¹⁹
- 14.2 The hinge on which things turn is a demand complementarity between what an MNO offers in LD areas and its service offerings in HD areas, coupled with the competitive nexus linking vertical product/service differentiation with opportunities to make improvements in quality of service which are achieved via new infrastructure investment that embodies the ever-improving technologies (see paragraph 5.10 above).
- 14.3 In relation to demand complementarity, the economic connection between areas could arise from any of a number of factors that might be of interest to the HD end-user, but the principal focus for current purposes is the coverage dimension. Other things equal, *increased coverage of LD areas by an MNO stimulates demand for its services in HD areas*.
- 14.4 The general picture is one in which an MNO’s revenue is highly geared to its relative success in providing and improving quality of service, which includes coverage as one of its dimensions and is principally achieved via new investment, thereby increasing overall demand for its services at a given price.
- 14.5 Second-degree price-discrimination is a feature of the market: higher quality of service is associated not only with a higher price, but also a higher price-cost differential. This is a relatively efficient means of recovering fixed costs, which, in competitive conditions, will be favourable to the LTIE.
- 14.6 The relevant geographic cost differentials are driven mostly by differences in new investment costs. Once an area is covered at a particular level of quality, e.g. 3G or 4G, these costs are sunk and economic (avoidable) costs, which are then what matter for price determination, become much more homogeneous across areas. While an economic model might only imply completely homogeneous prices (national pricing) in special cases, I suspect the latter comes about largely in response to convenience in administration and the additional marketing advantages it brings for MNOs pursuing national branding strategies. For example, consumers often use price differences/comparisons when making inferences about the qualities of different products and services. A uniform price might therefore more clearly signal that what is on offer is a high coverage service that seeks to provide similarly high standards of service in all areas, a characteristic that may be particularly valuable to more geographically mobile end users.

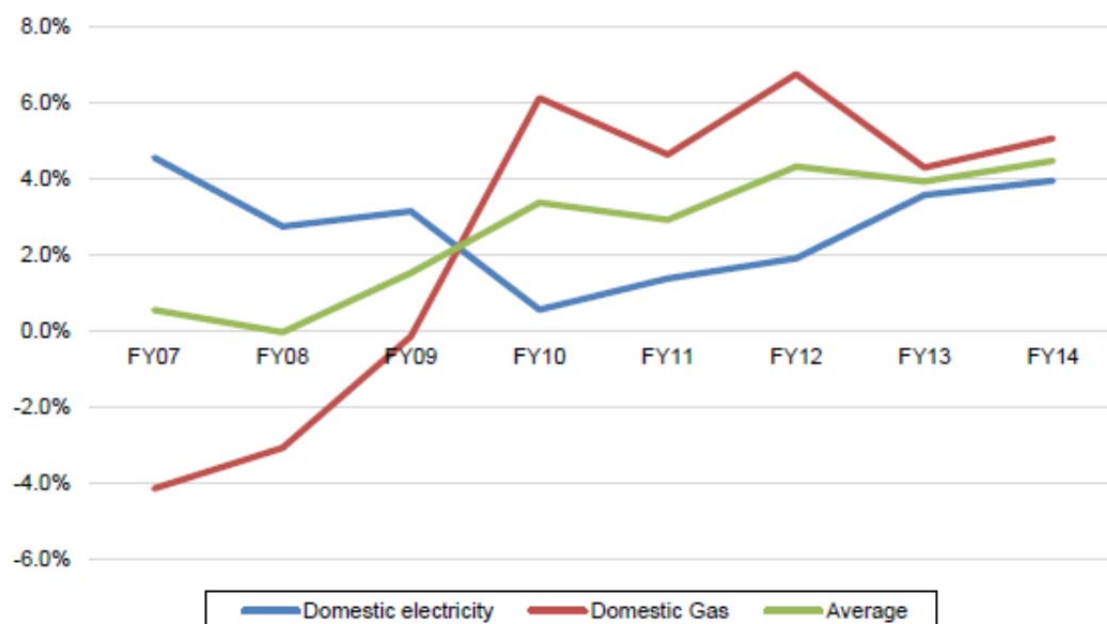
¹⁸ The most familiar example of the efficiency of excess capacity arises from the existence of indivisibilities in capacity increments, but arguably a more frequently observed cause is the option value it provides. Demand may turn out to be higher than expected and, if that occurs, capacity will be available to meet the demand quickly. Failure to do so imposes costs on consumers, either via higher prices caused by excess demand, unavailability or, in transport systems, congestion costs. In competitive contexts, these can damage a supplier’s reputation more generally.

¹⁹ <http://www.rasmusen.org/zg601/readings/marshall.htm>

- 14.7 Declaration of a mobile roaming service would weaken the demand complementarity by suppressing coverage differentials among MNOs and would serve to unravel at least some of the above effects. In LD areas the direction of travel might be expected to be toward less coverage (either via inhibition of expansion of coverage or via withdrawal from areas previously covered) and higher prices.
- 14.8 In HD areas the effects are less certain being a mix of counteracting effects. These are:
- Downward effects on average prices due to a shift toward inter-area cost reflectivity.
 - Upward effects on average prices resulting from a shift toward intra-area (non-geographic) cost reflectivity, effects that arise from diminution of the (average) price-lowering effects of price discrimination.
 - On the basis of available and likely-to-be available information, indeterminate effects on prices arising from suppressing competition in its coverage dimension, there being arguments in all directions – which is not unusual when trying to forecast the outcomes of the discovery process that we call competition.
- 14.9 Since it is the second of these effects that may be the least familiar, a final remark, based on bitter experience, may be in order. It is to the effect that this is a factor that should not be ignored.
- 14.10 The relevant experience is based on a piece of Ofgem rule-making, foreshadowed in 2008 and finally implemented in 2009, which prohibited a form of third-degree, inter-area price discrimination by (competing) electricity and gas retailers. The intended (and actual) effect was to reduce disparities in intra-area price-cost differentials (margins) among energy suppliers, which is precisely the effect that can be expected from the reduction in vertical product differentiation that declaration would tend to induce.
- 14.11 The decision marked a shift in Ofgem policy, which had previously encouraged inter-area price discrimination on the ground that it could be expected to be pro-competitive. The decision was taken under some political pressure: all senior internal and external advice was opposed, favouring the established policy, but its protagonists argued that the price-flattening would reduce consumer prices.
- 14.12 The subsequent pattern of retail margins was examined in CMA's recently published (2016) report on the sector. The data indicate an increase in the retail average retail margin of around 3.5 percentage points in the period 2009-14 compared with earlier periods (see Figure 8.26 of the CMA report)²⁰. For given costs, that implies that (average) prices in the later period were 3.5% higher. The policy was abandoned in 2012, but, having shifted the price dynamics, its effects have lingered.

²⁰ The CMA's figure covers only 2007 onwards, but Ofgem data indicate that the 2007 and 2008 figures are in line with earlier years that are not shown. It is the average margin (the green line) that is most relevant, since retailers supply both fuels and rebalance cost recovery according to changing market conditions, principally swings in the relative wholesale price of the two fuels, which can be quite substantial from one year to the next. See Competition and Markets Authority, *Energy Market Investigation Final Report*, 24 June 2016.

Figure 8.26: Total domestic EBIT margins 2007 to 2014



Source: CMA analysis of data submitted by the Six Large Energy Firms.

15 Regulatory implications

- 15.1 As foreshadowed in the ACCC's Discussion paper in Section 5, a declaration decision would have major implications for the future conduct of regulatory policy. The traditional regulatory approach is based on cost-of-service regulation, with or without incentive-based add-ons. Where they are implemented, the function of the latter is to introduce performance incentives, not to augment or subtract from a base cost-recovering level of revenue.
- 15.2 The approach is appropriate for the regulation of a monopoly or of access to essential facilities and it can be regarded as best-practice in terms of international standards. It is not, however, well suited to addressing problems when competition is a major influence on prices, which, for all the reasons elaborated above, is the case in relation to the current declaration decision.
- 15.3 Demand complementarities link quality-adjusted prices in LD areas to similar prices in HD areas, and the latter are manifestly influenced by competitive pressures. There is therefore no strong form of economic separation between the two types of geographic area and the linkages must be taken into account in the assessments.
- 15.4 With reference to the earlier market definition discussion, defining the market as national would make clearer the presence of competitive pressures across the market, including in LD areas. A narrow market definition should, to satisfy the invariance proposition, yield the same results, and it will do so as long as it is recognised that the 'market' so defined would then have demand and cost linkages with a series of related markets. The risk in adopting the narrow option is that a local 'market' might then be (wrongly) interpreted as an example of an economically isolated/separated market, served by a single supplier with significant market power.

- 15.5 What a declaration would do is to change the ‘rules of the game’ in a competitive process. This is very different from regulation of monopoly or of access to an essential facility and anticipating the effects of changes in the ‘rules of a competitive game’.
- 15.6 Suppose, for example, that the existing cost-of-service approach is retained. In the event that a particular, remote area was fully de-linked from other areas on the demand side of things, this would be relatively unproblematic. It would, however, tend to lead to cost-based prices, whereas in the MP actual prices appear to be somewhat lower than that.
- 15.7 The question then becomes: would cost-of-service regulation preserve the existing financial transfer mechanisms by which the lower prices are supported in the MP? Putting things another way: are these mechanisms robust to the policy perturbation? It is very far from clear that they are, so further assessment would be required.
- 15.8 I could go on, but will instead simply say that this is marshy ground for regulation, *inter alia* requiring very detailed assessment of the resulting competitive process in HD areas and its likely outcomes. Since the outcomes of competitive processes are almost definitionally uncertain – they are things that are discovered only by the process itself – this is a challenging task.
- 15.9 If it is concluded (weakly) that the transfer mechanisms may not be robust in the face of perturbation, the next question is: how then are the LTIE of those located in LD areas to protected? No immediate answer comes to mind.

PART III: CONCLUSION

- 15.10 At the very broadest level, the declaration decision can be viewed as engaging a trade-off between infrastructure competition and service-based competition. In this light, and adding the further assumption that the situation is static, i.e. existing technologies and the disposition of assets is to be taken as given, it is not difficult to see sources of benefit to end users in remote areas from opting for the Alternative Position. End-users would have a larger range of service providers from which to choose, bringing greater variety in tariffs, and there might be some increase in efficiency in the use of existing assets.
- 15.11 There are, however, questions to be asked about the magnitude of such benefits. In my view it is not clear that they are at all large. They might be significantly greater if it were the case that price-cost differentials were in some sense unusually high in the relevant LD areas, but they are not. Indeed they are particularly low. Moreover, there appears to be no great scope for improvements in quality of service from better operational performance at the relevant stage of the supply chain since, by definition, the relevant service would be obtained from the access service provider. It is possible that there is other evidence that suggests that these are incorrect views, but, if so, it is to be expected that it will fully laid out before the ACCC in the course of its assessment.
- 15.12 If the diagnostic question *cui bono?* (ie who benefits?) is asked, the most obvious answer is an access seeker currently not covering the relevant areas, although this clearly depends on the terms of access. If access terms are reasonably favourable, the access seeking MNO is given an alternative route to increasing its coverage. Interestingly, the benefits come from the increased marketability, relative to

competitors, in higher population density areas: demand for its services in the HD areas is stimulated by its ability to offer coverage that is closer to that of its rivals. In effect, competitive conditions and incentives are perturbed in the HD areas to its advantage.

15.13 In my opinion, however, this change in competitive conditions in HD areas amounts to a manifest suppression of competition in one of its significant dimensions. The incremental payoffs in HD areas from seeking out higher coverage (a form of vertical product differentiation) via infrastructure investment are damped, which has negative consequences for dynamic competition.

15.14 Given the centrality of dynamic competition for the LTIE, I attach much more weight to this factor than to the static effects. It is not just a matter of filling in a relatively limited number of geographic coverage gaps: the improvements in quality of service associated with the roll-out of successive vintages of technology are also affected. Thus, even in the event of no shrinkage in the geographic area covered by at least one MNO, an outcome that is by no means guaranteed, it is easy to see how the rate of diffusion of higher quality services associated with new investment and the later technologies that it embodies, could be slowed by declaration. The effect of that would be higher quality-adjusted prices in LD areas in the AP, relative to the Maintained Position, absent any corresponding drop in actual service prices in the LD areas – pressures for which are difficult to identify

15.15. On the basis of these and previous considerations therefore, and without need to address either the difficult matter of the option value of deferring a declaration decision (see paragraphs 3.5 and 3.6 above) or the administrative costs that declaration would entail, I do not think it can be concluded that declaration would advance the LTIE. Indeed, it appears to me that it would be a backward step that would be adverse to the LTIE, particularly the LTIE who reside or work in low population density areas.

Signed:



Chair, Regulatory Policy Institute
Emeritus Fellow, Hertford College, Oxford University

Date: 1 December 2016

Appendix 1 - Letter of instruction

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30 November 2016

By email

Professor George Yarrow
Chairman, Regulatory Policy Institute

Email: George.Yarrow@rpieurope.org

Confidential

Dear Professor Yarrow

Response to the Australian Competition and Consumer Commission regarding potential declaration of a wholesale domestic roaming service on behalf of Telstra Corporation Limited

1 Background

- 1.1 We act for Telstra Corporation Limited (**Telstra**).
- 1.2 On 5 September 2016, the Australian Competition and Consumer Commission (**ACCC**) commenced an inquiry into whether to declare a wholesale domestic mobile roaming service (**ACCC Inquiry**). As part of that inquiry, on 26 October 2016, the ACCC released a Discussion Paper seeking views on a range of issues it considers relevant to whether such a declaration should be made.
- 1.3 The ACCC has invited submissions to the Discussion Paper from mobile network operators, including Telstra. Set out in the ACCC's Discussion is a description of the legal framework and the assessment approach.
- 1.4 In accordance with section 152AL under Part XIC of the *Competition and Consumer Act 2010* (Cth) (**CCA**), the ACCC may only declare a telecommunications services if (among other things) it is satisfied that doing so will be in the long-term interests of end-users (LTIE). Under section 152AB of the CCA, in deciding whether the declaration will promote the LTIE, the ACCC must consider whether declaration is likely to result in the achievement of the following three objectives:
 - (a) the objective of promoting competition in markets for telecommunications services;
 - (b) the objective of achieving any-to-any connectivity in markets for telecommunications services; and
 - (c) the objective of encouraging the economically efficient use of, and investment in, telecommunications infrastructure.

- 1.5 In determining the likelihood to which a particular thing is likely to result in the achievement of promoting competition in markets for telecommunication services, regard must be had to the extent to which the thing will remove obstacles to ensure users of telecommunications services gain access to those telecommunications services.¹
- 1.6 In determining the likelihood to which a particular thing is likely to result in the achievement of encouraging the economically efficient use of, and investment in, telecommunications infrastructure, regard must be had to the following matters:²
- (a) whether it is, or is likely to become, technically feasible for the services to be supplied and charged for, having regard to:
 - (i) the technology that is in use, available or likely to become available; and
 - (ii) whether the costs that would be involved in supplying, and charging for, the services are reasonable or likely to become reasonable; and
 - (iii) the effects, or likely effects, that supplying, and charging for, the services would have on the operation or performance of telecommunications networks;
 - (b) the legitimate commercial interests of the supplier or suppliers of the services, including the ability of the supplier or suppliers of services to exploit economies of scale and scope;
 - (c) the incentives for investment in:
 - (i) the infrastructure by which the services are supplied; and
 - (ii) any other infrastructure by which the services are, or are likely to become, capable of being supplied.
- 1.7 In determining incentives for investment, regard must be had to the risks of making the investment³.
- 1.8 We have been instructed to engage you, on behalf of Telstra, to prepare a report based on your expert opinion, for use by Telstra in relation to the ACCC Inquiry. Telstra may seek to rely upon your report in any subsequent review of the ACCC's final decision. If that occurs, we will contact you.
- 1.9 By this letter, we set out our written instructions to you.

¹ See section 152AB (4) of the CCA, noting that this subsection does not limit the matters to which regard may be had (see section 152AB(5) of the CCA).

² See section 152AB(6) of the CCA, noting that this subsection does not limit the matters to which regard may be had (see section 152AB(7) of the CCA)

³ See section 152AB(7A), noting that this subsection does not limit the matters to which regard may be had (see section 152AB(7B) of the CCA)

2 Scope of work

- 2.1 You are retained to provide an expert report which addresses whether, in your opinion, the declaration of a wholesale domestic mobile roaming service in Australia is in the LTIE.

3 Guidelines for preparing your report

- 3.1 While you have not been engaged in respect of any legal proceedings, Telstra is seeking a robust and rigorous independent expert report. We request that you prepare your report in accordance with Federal Court of Australia *Harmonised Expert Witness Code of Conduct*. A copy of the Code of Conduct is enclosed at **Attachment A**.
- 3.2 In particular, in preparing your report, we ask that you please:
- (a) identify your relevant area of expertise and provide a curriculum vitae setting out the details of that expertise;
 - (b) only address matters that are within your expertise;
 - (c) where you have used factual or data inputs please identify those inputs and the sources;
 - (d) if you make assumptions, please identify them as such and confirm that they are in your opinion reasonable assumptions to make;
 - (e) if you undertake empirical work, please identify and explain the methods used by you in a manner that is accessible to a person not expert in your field;
 - (f) confirm that you have made all the inquiries that you believe are desirable and appropriate and that no matters of significance that you regard as relevant have, to your knowledge, been withheld from your report; and
 - (g) do not provide legal advocacy or argument and please do not use an argumentative tone.

4 Confidentiality and legal professional privilege

- 4.1 Presently, your report and all correspondence between us (excluding this letter) is subject to legal professional privilege. In addition, the information we have provided to you is commercially sensitive and confidential. For these reasons, we request you do not disclose or discuss your report, our correspondence or any information we provide to you with any third parties.

Yours faithfully
Gilbert + Tobin



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Attachment A

Harmonised Expert Witness Code of Conduct **(Annexure A to Federal Court of Australia Practice Note GPN-EXPT)**

APPLICATION OF CODE

1. This Code of Conduct applies to any expert witness engaged or appointed:
 - (a) to provide an expert's report for use as evidence in proceedings or proposed proceedings; or
 - (b) to give opinion evidence in proceedings or proposed proceedings.

GENERAL DUTIES TO THE COURT

2. An expert witness is not an advocate for a party and has a paramount duty, overriding any duty to the party to the proceedings or other person retaining the expert witness, to assist the Court impartially on matters relevant to the area of expertise of the witness.

CONTENT OF REPORT

3. Every report prepared by an expert witness for use in Court shall clearly state the opinion or opinions of the expert and shall state, specify or provide:
 - (a) the name and address of the expert;
 - (b) an acknowledgment that the expert has read this code and agrees to be bound by it;
 - (c) the qualifications of the expert to prepare the report;
 - (d) the assumptions and material facts on which each opinion expressed in the report is based [a letter of instructions may be annexed];
 - (e) the reasons for and any literature or other materials utilised in support of such opinion;
 - (f) (if applicable) that a particular question, issue or matter falls outside the expert's field of expertise;
 - (g) any examinations, tests or other investigations on which the expert has relied, identifying the person who carried them out and that person's qualifications;
 - (h) the extent to which any opinion which the expert has expressed involves the acceptance of another person's opinion, the identification of that other person and the opinion expressed by that other person;
 - (i) a declaration that the expert has made all the inquiries which the expert believes are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which the expert regards as relevant have, to the knowledge of the expert, been withheld from the Court;
 - (j) any qualifications on an opinion expressed in the report without which the report is or may be incomplete or inaccurate;
 - (k) whether any opinion expressed in the report is not a concluded opinion because of

insufficient research or insufficient data or for any other reason; and

- (l) where the report is lengthy or complex, a brief summary of the report at the beginning of the report.

SUPPLEMENTARY REPORT FOLLOWING CHANGE OF OPINION

- 4. Where an expert witness has provided to a party (or that party's legal representative) a report for use in Court, and the expert thereafter changes his or her opinion on a material matter, the expert shall forthwith provide to the party (or that party's legal representative) a supplementary report which shall state, specify or provide the information referred to in paragraphs (a), (d), (e), (g), (h), (i), (j), (k) and (l) of clause 3 of this code and, if applicable, paragraph (f) of that clause.
- 5. In any subsequent report (whether prepared in accordance with clause 4 or not) the expert may refer to material contained in the earlier report without repeating it.

DUTY TO COMPLY WITH THE COURT'S DIRECTIONS

- 6. If directed to do so by the Court, an expert witness shall:
 - (a) confer with any other expert witness;
 - (b) provide the Court with a joint-report specifying (as the case requires) matters agreed and matters not agreed and the reasons for the experts not agreeing; and
 - (c) abide in a timely way by any direction of the Court.

CONFERENCE OF EXPERTS

- 7. Each expert witness shall:
 - (a) exercise his or her independent judgment in relation to every conference in which the expert participates pursuant to a direction of the Court and in relation to each report thereafter provided, and shall not act on any instruction or request to withhold or avoid agreement; and
 - (b) endeavour to reach agreement with the other expert witness (or witnesses) on any issue in dispute between them, or failing agreement, endeavour to identify and clarify the basis of disagreement on the issues which are in dispute.

Professor George Yarrow: Summary CV

Born: Sunderland, UK, 27/02/48

Education: St John's College, Cambridge University

Degrees: MA (Cantab), MA (Oxon)

Current positions: Chair, previously Director, Regulatory Policy Institute; Emeritus Fellow, Hertford College, Oxford University.

Previous and other academic positions: University of Warwick (faculty 1969-71, later visiting); Newcastle University (faculty 1971-8, later visiting); Oxford University (faculty, later Emeritus, 1978-); Queen Mary and Westfield College, University of London (visiting); Harvard University (visiting); University of California (San Diego, visiting); University of Urbino (visiting); International Institute for Management, Berlin (visiting); Jagiellonian University, Krakow (visiting).

Research activities: Principal area of work has been the economics and political economy of competition, regulation and privatization. Secondary areas include: monetary theory; environmental policies; corporate objectives and the market for corporate control; aspects of industrial organization theory; health economics; and the reform of social security. Best known works are "Privatization in theory and practice", *Economic Policy*, 1986, variously reprinted including in the International Library of Critical Writings in Economics, and, with Professor Sir John Vickers, *Privatization: An Economic Analysis*, published by MIT Press in 1988, and subsequently in Spanish and Chinese editions. Most recent major paper is *Brexit and the Single Market* (July 2016).

Other academic: Served as nominator for the Nobel Prize in Economics and was a member of the editorial boards of *Economic Policy*, the *Oxford Review of Economic Policy*, the *Journal of Industrial Economics*, *Applied Economics*, and *Applied Financial Economics*.

Government panels, reports and advisory: A wide range of activities over the years for virtually all major UK government departments and regulatory agencies concerned with micro-economic policy issues. The most enduring was an association with Ofgas, then Ofgem, extending from 1993 to 2009, first as a member of the Ofgas academic panel, then as economic advisor to Ofgas/Ofgem, finally as a Member of the Gas and Electricity Markets Authority. At the international level this strand of activity has encompassed work for the European Commission (including on issues of transition in Central and Eastern Europe (1989-95), the Republic of Ireland's Dept of Transport (serving twice on the Aviation Appeals Panel) and Commission for Communications Regulation, the Australian Commonwealth Government and AEMC, the NZ Commerce Commission, the Government of Japan (Ministry of Finance), the Government of Hong Kong, World Bank, OECD,

UNCTAD and the UN Development Programme. The latest published report was on the regulation of insurance provision in legal services, for the UK Legal Services Board (2016).

Private reports and advisory: mostly concerned with competition law cases and regulatory issues, including reports, expert witness testimony and advice. Pre-Ofgas/Ofgem energy projects included offshore oil and gas taxation and contractual issues and the development of transmission system charging methodologies for first National Grid then British Gas (the basic principles of which are still operative). Involvement in a number of international dispute resolution exercises and as an assessor sitting with Lord Woolf on a UK dispute resolution panel. Most recent major competition law case was *Intel* (European Court of Justice decision pending) and current major client in this area is Warner Brothers.