

Purpose of foundation paper

Law and Economics Consulting Associates (LECA) were commissioned to research and report on five specific topics.

1. Are there examples of governments **regulating ahead of the technology or social curve**? If so what factors led to these decisions and what were the outcomes?
2. What are the keys to success when using **social marketing** rather than regulation to change behaviour? What are the implications for transport of experience in other sectors?
3. How is **new technology** being used in regulation and what new technologies are emerging which could add to the regulatory toolbox including enforcement?
4. In what ways are **social media** being used in regulation now? In what circumstances could they be used to deal with problems of information asymmetry previously dealt with using regulation?
5. What are the alternative **models to pay for the cost of regulation**? Are there new models emerging? How do these models balance competing objectives (such as efficiency, natural justice and equity)?

LECA addressed the following three overarching questions. The five topics outlined above are addressed under the third question.

- ▶ what is regulation?
- ▶ why and how do we regulate?
- ▶ what are major social and technological pressures on the transport regulatory system in New Zealand and internationally?

Key themes and emerging findings

What is regulation?

Regulation includes the use of the state's coercive powers to allocate legal rights, and enforce them. Fundamentally, it is about influencing behaviour of individuals or organisations. It takes various forms such as Acts, regulations and rules made by Ministers.

Alternative means of government influence include state ownership and control, co-regulation, social marketing or advertising, and collective action for non-market production by private individuals. In the transport sector, ownership of assets in support of public production of transport services, has been prevalent. It is important to delineate state regulation which is independent of ownership, and that which is a function of it.

Why and how do we regulate?

LECA answers this partly by reference to government strategic outcomes. For example, the Ministry of Transport's high level objectives are to develop a transport system that maximises the economic and social benefits for New Zealand and minimises harm. These objectives apply to transport regulation as much as to other government instruments, such as transport funding. The rationale for regulation also depends on the (transport) markets in question and the competitiveness of these markets. Regulation is sometimes intended to address monopoly power i.e. one important example of market failure. Overlaid on competition concerns are other forms of market failure such as the negative externalities (safety, noise, emissions) associated with

transport. LECA notes “the relevant question for regulators is not whether market failure exists, but how to address an issue of concern using the most efficient institutional arrangement.”

Regulation provides the framework and permissible set of conditions under which decisions can be made on such features of transport markets as entry, price, access obligations and quality or conditions of service. To be efficient over time the regulatory framework will need to evolve as technological and social change expands the feasible set of opportunities, or introduces new constraints limiting them.

The social and technological context for transport regulation

The evolution of information and communication technology (ICT) is a key influence on transport and other sectors and the way they are regulated. This technological change:

- ▶ Increases the power of the individual to capture and use information: social media are altering how we think about information asymmetry. The circumstances in which government has a useful role in dealing with such asymmetries is changing.
- ▶ Brings forward the development and uptake of automated vehicles on land, and in air and maritime applications.
- ▶ Changes the boundaries between different transport modes. Convergence and greater intermodal competition can be foreseen. For example, Remotely Piloted Aircraft Systems (RPAS) may become intermodal – used to pick and deliver goods and perhaps move them from point to point on land.
- ▶ Have implications not just for how we regulate transport services but also for the regulation of transport infrastructure or transport rights of way across multiple modes.
- ▶ Contributes to increasing unbundling of transport services, e.g. information from service, vehicles from infrastructure. Users can access service on demand and also potentially design their own bundles and switch back and forth between being users and providers. The same is happening in other sectors, especially media.

Regulating ahead of the technology or social curve

This section addresses the question whether there are examples of governments regulating ahead of the technology or social curve? If so, what factors led to these decisions and what were the outcomes?

Fundamentally this question is understood to be about the timing of regulatory change in response to technological or social change. The question for a regulator confronted by new technology or social change is whether new regulations need to be introduced or whether current regulations need to be adapted, or removed. The problem however is that with new technology or social change the regulator faces information problems and uncertainty about the existence of a market problem, and the effects of regulation. To regulate ahead of the curve may prevent a well functioning market from emerging. Sometimes it is better to wait and see. Regulatory failure can be worse than market failure.

Sometimes technological or social changes may clearly reduce the probability of market failures. These will reduce the net benefits of current regulation and therefore justify deregulatory processes, including steps to reduce the scope, breadth, depth, duration, frequency and intensity of current regulation over time. In transport, ICT developments have had three effects which potentially support a reduction in regulation: increased competition and reduced natural monopoly, safer roads and other transport networks, and less information asymmetry.

Good examples of regulation ahead of the curve include the common law which seeks to minimise harm while facilitating market entry, competition and innovation. It does this by enforcing property rights and contracts ex-post. In the case of statutory regulators the best examples of regulation ahead of the curve which facilitated efficient technological and organisational change have involved "general and light handed" regulation. In transport, examples of such regulation ahead of the curve has been more common in relation to "carriage services" rather than infrastructure services. An example of this is New Zealand's regulation of the taxi industry which has allowed greater competitive entry like Uber. It can also be seen in the United Kingdom's proposed light touch non-regulatory approach which provides the clarity industry needs to invest in further research and development for driverless vehicles. On infrastructure services, examples of regulation ahead of the curve include early adoptors of regulatory approaches permitting greater private sector involvement in transport infrastructure, which recent developments in technology especially ICT have allowed. These include early adoptors of private providers in transit (e.g. Hong Kong), in roads (Melbourne's CityLink, which combined tolling with a public private partnership structure, Norway and Spain), and in airports (e.g. Australia).

There are thus examples of regulating ahead of the curve in carriage services. Regulating ahead of the curve in infrastructure services has been more difficult. The factors that affect success depend on the form of the regulation. The common law and general light-handed regulation tend to foster more innovation while safeguarding the public interest. The first minimal step to achieve leadership in regulatory policy is a regulatory stocktake, which would subject current regulation to a forward looking cost benefit analysis, particularly in light of opportunities created by recent developments in ICT.

A current example of technological change prompting the need for a regulatory stock take is the prospect of automated vehicles including driverless vehicles on smart networks. Automated vehicles may deliver significant economic, environmental and social benefits but current regulations may (unnecessarily) impede market entry.

Globally, reviews of current regulation affecting such technologies are gathering pace. The United States has been the first country to introduce legislation to permit testing of automated vehicles. In contrast, the United Kingdom found that current legislation already permitted such testing.

Uncertainty about regulation is a key problem for investors in new technology. This is especially so when there are multiple regulators. Attention thus needs to be paid to ensuring an efficient structure of regulation, ownership and control, which minimises transaction costs and facilitates markets.

Changing behaviour – social marketing rather than legislative regulation?

This section provides an overview of the regulatory issues raised by social marketing including the implications for transport of experience in other areas.

Social marketing involves activities aimed at changing or maintaining people's behaviour for the benefit of individuals and society as a whole. These activities can occur across various media platforms including radio, television and social media. They can be undertaken by government (including regulators) or private sector parties.

The world of smart phone and tablet "apps" is an especially fertile field in social marketing. Information about transit schedules and traffic conditions are already mainstreamed. But technology is going well beyond this. An app has been developed targeting young male drivers to record their driving behaviour, and give them real time-feedback intended to encourage safer driving. An example of an initiative exploring social marketing is the United Kingdom government

'nudge' unit established in 2010 that was specifically established to design policies in such a way as to account for known human decision-making tendencies, which include a preference for the status quo, a “present bias” and aversion to loss.

The problematic issue (for social marketing, as for conventional regulation) is changing behaviour in ways which may not be aligned with their self-interest. The broader issue is the appropriate role of government in influencing people’s behaviour through nudging, social marketing, or conventional regulation. The use of social marketing should be subjected to the same tests as traditional regulation. Social marketing, even simple interventions that focus on improving consumers information, however, needs to be subject to considered cost benefit analysis, randomised trials and effectiveness reviews. Questions that need to be asked include whether the Government is better at social marketing than the private sector, and if so, to what extent Government-sponsored social marketing may drive out private sector social marketing?

New technologies and the regulatory toolbox

The rise of ‘big data’ and ‘big data analytics’ is key to transport regulation and management. Most transport systems comprise many individual transactions that are now amenable to direct physical measurement and can typically be monetised as well. Widespread digitisation has made possible real-time accumulation of very finely grained and precise micro data.

New technology has expanded the scope for better transport pricing, enhanced competition, and increased transport privatisations within and across modes. Examples include expansion of private providers in transit (e.g. Hong Kong) in roads (e.g. Spain) and in airports (e.g. Australia). In each case, increased competition and private involvement has resulted in and driven improvements in project delivery and oversight.

Privacy of personal information stands out as a major concern affecting the use of big data and smart transport networks with automated vehicles. Individuals will be concerned with who can monitor their movements and what might be done with such information. These privacy issues are not easy to address adequately either in terms of types of data collected or inadvertent release of information.

Use of social media in regulation

This section addresses how social media is being used in regulation now, and in what ways it could be used to deal with problems of information asymmetry previously managed by regulation.

Social media is/are mainly being used by regulators as an information delivery device to affected parties and other users and as a means of listening to their communities. Social media in transport is still mainly used towards shaping behaviour, e.g. getting people to use public transport, rather than overseeing regulated people/entities to make sure they comply or to collaborate with them to design efficient regulations. The public health sector is further advanced – in transport, governments tend to be reactors rather than actors.

Models to pay for the cost of regulation

This section discusses alternative models, whether new models are emerging, and how the various models balance competing objectives such as efficiency, natural justice, and equity.

It is important here to distinguish between the direct costs of regulation and indirect costs. Direct costs include the administrative costs to government of the regulatory process plus the compliance

costs to those being regulated. Indirect costs, sometimes referred to as efficiency costs, are welfare losses attributable to regulations or changes to them.

Models or principles for funding regulation depend on the nature of the regulation. For example, 'user pays' might be efficient and equitable in the case of private good transport regulation. Taxpayer funding, or partial taxpayer funding, may be more appropriate for public good legal regulation.

There has been a tendency recently for the costs of sector specific statutory regulation to be financed increasingly by the industry being regulated rather than out of general taxation. If most of the benefits of regulation accrue to the industry this can be efficient. It reflects the underlying benefit principle and can be seen as the analogue of 'polluter pays'.

Conclusions

This paper covers a broad spectrum of the law and economics of transport regulation. We focus here on the highlights from the discussion of regulation, technology, and social change, and within that the five specific topics.

- ▶ The evolution of information and communication technology is a key influence on transport and other sectors and the way they are regulated.
- ▶ New technology has expanded the scope for better transport pricing, enhanced competition, and increased transport privatisations within and across modes.
- ▶ The question *for a regulator* confronted by new technology or social change is whether new regulations need to be introduced or whether current regulation can be adapted. This is part of decisions about regulating 'ahead of the curve'.
- ▶ Uncertainty about regulation is a key problem *for investors* in new technology. This is especially so when there are multiple regulators, which will become more likely where new technologies cause convergence across modes (e.g. RPAS that fly over and land on public roads).
- ▶ Social marketing is increasingly being used in transport e.g. road safety campaigns, as well as in many other areas of government such as public health. The problematic issue (for social marketing, as for conventional regulation) is changing behaviour in ways which may not be aligned with their self-interest.
- ▶ Models or principles for funding regulation depend on the nature of the regulation. For example, 'user pays' might be efficient and equitable in the case of private good transport regulation. Taxpayer funding, or partial taxpayer funding, may be more appropriate for public good legal regulation. However, new technologies might blur these disruptions.

Disclaimer

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