



**Ministry for Regulation
Te Manatū Waeture**

Identifying the distortionary effects of regulation and the implications for long-run economic outcomes

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Abstract

- Regulation is an important tool of government that, if designed well, brings benefits to society.
- Regulation also has costs. Besides its obvious compliance and administrative costs, regulation can impose what we refer to as distortionary costs. These are the foregone benefits of desirable activity that is hindered when regulation distorts beneficial market outcomes or incentives.
- Regulation can create distortionary costs when, for example, it undermines competition, reduces efficient investment and innovation, or interferes with price signals.
- Because foregone activity is difficult to measure and monitor, distortionary costs are often overlooked in policy analysis.
- However, distortionary costs can be as large or larger than compliance and administrative costs and their effects on economic activity can compound over time. They can therefore be the most important type of cost influencing long run prosperity.

1. Introduction

Regulation is an important lever that government can use to direct and constrain behaviour to promote the public interest. For instance, good regulation can restrict anti-competitive behaviour by firms, fostering increased choice, improved quality, and greater innovation. It can require firms to provide information on product features and pricing, allowing for more informed choices. It can be used to set prices or standards for pollutants, achieving positive environmental outcomes. If designed well, regulation can benefit consumers, firms, taxpayers, community groups, and other members of society.

Regulation also generates costs. Regulation can impose direct financial and time costs on regulated firms and individuals. There are also costs to regulators to establish, monitor, or review regulations. These costs are typically the most salient, can be directly linked to regulation, and are relatively easy to measure. Accordingly, they are often the main or even sole focus when designing regulation, analysing its costs, considering ways to reduce or streamline regulation, or conducting cost-benefit analysis.

However, regulation can also impose costs when it distorts beneficial market outcomes or incentives, leading to lost opportunities and potential value that fails to be realised. This includes the lost opportunity for efficient pricing, investment and innovation, or beneficial competition. These costs are not associated with an explicit expenditure,

because they reflect activities that do not take place. They can therefore be hard to measure or monitor, leaving them hidden from most policy analysis. We refer to these costs as ‘distortionary costs’.

This note provides more detail on the nature of these distortionary costs and explains why they are often the most important type of cost influencing a country’s productivity, long-run growth, and prosperity. Importantly, it is not the intention to suggest regulation only imposes costs. Best practice regulation requires, among other things, an assessment of the costs *and* benefits. Rather, the intention is to explain why distortionary costs are an important component of this assessment. If government agencies, regulators, and politicians who develop and analyse regulation understand this, they are less likely to overlook this crucial category of regulatory costs. This knowledge can also help regulated parties understand and communicate to regulators where regulation may be imposing costs beyond just those associated with compliance. This motivates designing regulation or considering non-regulatory options that deliver public benefits while minimising these distortionary costs.

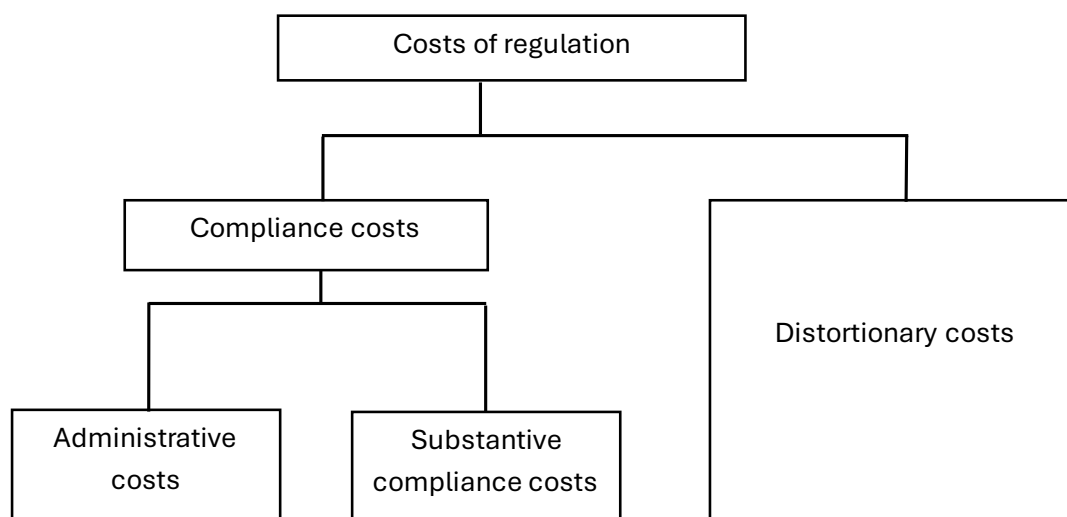
Section 2 of this note sets out a typology of the costs of regulation, distinguishing between compliance costs and distortionary costs. Section 3 provides a more developed description of the foundations of distortionary costs. Section 4 elaborates on the nature of distortionary costs, by explaining the common mechanisms through which regulation can distort market processes and outcomes. Section 5 outlines findings from the economics literature on the magnitude of distortionary costs and their impact on a country’s long-run economic outcomes. Section 6 offers concluding thoughts.

2. Typology of costs of regulation

A cost of regulation is generally defined to be any type of negative effect attributable to regulation, regardless of the group that bears it (firms, consumers, government, etc) and regardless of whether it is directly incurred or experienced through indirect channels (OECD, 2014, p.11). Different organisations and agencies categorise the costs of regulation in different ways, although there are some similarities. In this note, we follow the typology set out in Figure 1, adapted from NZIER (2016), Australian Office of Impact Analysis (2024), and New South Wales Better Regulation Office (2008).¹

¹ Our typology was also informed by OECD (2014) and Marneffe and Vereeck (2011), although both report a more detailed breakdown of costs than is captured in our simplified typology.

Figure 1: Typology of costs of regulation



The costs of regulation can be divided into compliance costs and distortionary costs. Compliance costs can further be divided into administrative costs and substantive compliance costs. Administrative costs are the costs to the regulator of administering and enforcing the regulation and the costs to regulated parties of demonstrating compliance with the regulation (such as the costs of record keeping and notifying the regulator of certain activities). Substantive compliance costs are the resource costs to the regulated party of complying in substance with the regulation. Loosely, substantive compliance costs are the costs of *doing* the regulated requirement, whereas administrative costs are the costs of *demonstrating* that it was done. Examples of substantive compliance costs include the costs of training employees to meet regulatory requirements, the costs of purchasing and maintaining equipment that would not be purchased absent the regulation, and the costs of providing required information to consumers.

The other category of costs is distortionary costs. In broad terms, distortionary costs are the costs that arise from regulations shifting resources away from their most efficient use. (We provide a more developed definition in the next section.) They are typically hidden; that is, they are not made salient through a direct financial impact on regulated parties or regulators. While they therefore tend to receive less attention than compliance costs, they are often more important for economic performance. In the remainder of this note we focus on the nature of these distortionary costs and their impact on long-run economic performance.

3. The foundations of distortionary costs

3.1. Markets and distortions

To better develop the foundations of distortionary costs, we first consider how regulation influences market transactions. A market is a setting in which buyers and sellers voluntarily exchange a particular good or service. Economists widely agree that, under certain conditions, market outcomes are economically efficient.² Economic efficiency means that scarce resources are used in a way that generates the greatest net benefit to society. Economists refer to the net benefit to society as ‘welfare’, so that an outcome that generates the greatest net benefit is ‘welfare-maximising’.

The conditions for economic efficiency include that all market participants are rational actors with complete information, markets are perfectly competitive, and all spillover costs and benefits are fully reflected in market prices. These are strong conditions, and they never hold exactly in real world markets. Nonetheless, they help us understand how real-world markets can fail to achieve the welfare-maximising outcome.

A market distortion is when a market does not achieve the welfare-maximising outcome, because prices, quantities, or choices depart from what they would be under that ideal set of conditions (Srinivasan, 2018). This departure may arise because one or more of these conditions is not met; that is, we have a ‘market failure’, such as incomplete information, limited competition, or spillover costs not reflected in market prices. Market failures can provide a rationale for government intervention, to steer the market back to the welfare-maximising outcome. But regulation, even if designed to address a market failure, may itself create distortions. For example, regulation can change people’s incentives or reduce the ability for prices to coordinate market behaviour, such that welfare is not maximised. (We provide further examples of how regulation can create distortions below.)

A distortionary cost of regulation is thus the welfare lost due to the market distortion created by regulation.³ It is not necessarily an accounting or financial cost, in the sense of being an expenditure item that is incurred in someone’s bank account. Rather, it is an economic cost, representing the value foregone to society.

3.2 Static and dynamic efficiency losses

Within economic efficiency, we can distinguish static and dynamic efficiency, and this can help in identifying the mechanisms through which distortionary costs lead to welfare

² The underlying theory is set out in many undergraduate microeconomics texts. For example, see chapter 1 of Varian (2003).

³ In some instances, indirect costs of regulation may occur through mechanisms other than market distortions. For the purposes of this note, we do not distinguish such costs from distortionary costs.

losses. Static efficiency reflects the efficiency of resource use at a point in time. It can be further broken down into allocative efficiency (goods and services are allocated to those who value them the most) and productive efficiency (goods and services are produced at least cost). Dynamic efficiency reflects the efficiency of resource use over time. It incorporates factors that change over time, such as investment, innovation, learning, and the entry and exit of businesses. A statically efficient outcome maximises welfare in a single time period, while a dynamically efficient one maximises the present value of welfare over time.

Distortionary costs can be attributable to one, or both, of static and dynamic efficiency losses. Moreover, regulation can improve static efficiency but harm dynamic efficiency, or vice versa. For example, consider price regulation of a monopoly, where the regulated price is set to allow recovery of only the variable cost of supply. This will maximise static efficiency but harm dynamic efficiency, because pricing at variable cost does not allow the firm to earn a return on the fixed costs of a new investment or innovation. This leads to suboptimal levels of investment and innovation.⁴

4. The nature of distortionary costs

In this section, we elaborate on the nature of distortionary costs, by discussing some of the more common mechanisms through which regulation can lead to a loss of static or dynamic efficiency. We focus on distortions to competition, distortions to investment and innovation, and distortions to price signals.

4.1 Distortions to competition

Competition is a process of rivalry between firms to win and retain customers. Strong competition creates incentives for firms to lower prices and costs, provide products of higher quality, and better cater to consumer preferences, generating static efficiency gains. Competition also generates dynamic efficiency gains from strengthened incentives on firms to invest and innovate to provide new or improved products and processes.

However, regulation can distort competition. For example, regulation often creates compliance costs that are invariant to firm size. Large firms can spread these costs across many customers, whereas smaller firms or entrants cannot. This constrains the ability of small firms to exert competitive pressure on larger firms and makes entry more difficult. New and younger firms are a strong source of industry dynamism and productivity growth

⁴ See Evans, Quigley, and Zhang (2003), who use simulation to show that there can be substantial losses of welfare when regulators focus on static efficiency by setting prices at or near marginal cost.

over the long-term,⁵ embodying the process of Schumpeterian ‘creative destruction’ (Schumpeter, 1942), where new firms, products, processes, and technologies continuously displace older and less productive ones. Industries with large, fixed compliance costs can therefore miss out on the benefits that arise from this dynamism.

Another example is where regulations set minimum standards for product quality. Standards can benefit consumers by addressing information deficiencies but can also harm competition. This can occur when different firms must comply with different standards, or where unduly strict standards are harder to meet for less well-resourced firms (which may adversely impact smaller firms, which as noted are a crucial part of the competitive process).⁶

Occupational licensing regulation is one area where distortions to competition are of particular concern.⁷ Many occupations require some form of certification or license that restricts who can perform the work, with the intention of protecting the public from poor quality work or underqualified practitioners. However, overly onerous licensing requirements create a disproportionate barrier to new people entering the profession, which pushes up wages and costs to consumers. In this regard, Greenwood and Menclova (2018) found that occupational licencing regulation in New Zealand is associated with a 5 percent wage premium.

4.2 Distortions to investment and innovation

Regulation may also create distortions by reducing incentives for firms to invest and innovate.⁸ The mechanism for this varies. For example, regulation that requires firms to use specific processes or technologies (e.g., to prevent the use of unsafe alternatives) may reduce their incentives to innovate and experiment to find more efficient options.⁹

Regulation may create an opportunity cost of compliance, where investment and innovation are not undertaken because resources are diverted towards compliance (Crafts,

⁵ This is supported in both theoretical modelling (e.g., Aghion and Howitt (1992), who develop a model of growth from newer innovations displacing older ones) and empirical analysis (e.g., Foster et al (2006), who show that virtually all labour productivity growth in the US retail trade sector in the 1990s came from more productive establishments entering and displacing less productive incumbents).

⁶ See OECD (2019) for this, and a number of other examples of how regulation can adversely impact competition.

⁷ The Commerce Commission (2025) has a set of guidelines to help ensure occupational licencing regulation appropriately considers the risk of distorting competitive market outcomes.

⁸ Regulation often positively affects investment incentives, such as strong patent protection that allows firms to capture the gains from knowledge creation (Blind, 2012); it is important to consider positive as well as negative incentive effects when analysing regulation.

⁹ This is known as the narrow version of the ‘Porter hypothesis’ (which is that properly designed environmental regulation can trigger innovation that may partially or more than fully offset compliance costs). See Ambec et al (2013).

2006). Regulation may also reduce the supply of skilled labour available for research and development (R&D). This can adversely affect investment and innovation through the complementary relationship between new technologies and skills (fewer skilled workers lead to fewer new technologies (Acemoglu, 1998)).

Regulation may alter the net returns from investment or innovation, changing firms' incentives to invest and innovate (Crafts, 2006). Or it can create uncertainty over potential returns, such as through uncertainty over future policy changes that either increase or decrease the stringency of regulation or uncertainty about the regulatory restrictions facing new technologies. This uncertainty can delay investment as firms look to preserve their options and wait for new information to arrive that addresses the uncertainty (Dixit and Pindyck, 1994).

Regulation that creates material delays in approval times for new investments can create substantial costs. Regulatory delays in approvals may also influence, for example: importing and exporting; the entry of new firms, expansion of existing firms, or exit of inefficient firms; and labour market mobility. The costs of delay can be material, particularly where new opportunities are foregone. For example, Hausman (1997) found that regulatory delays in licensing cellular technology in the US led to an annual loss of consumer welfare of approximately US\$34 billion (in 1994 dollars).

Pharmaceutical regulation is one example where empirical work shows regulation can have adverse effects on innovation. Many developed countries use pharmaceutical regulation to provide for safety and efficacy, such as price controls, rules around clinical trials and manufacturing quality, and protection for intellectual property. However, these regulations can reduce incentives for innovation in pharmaceuticals. In a classic study, Peltzman (1972) found that the introduction of pre-marketing approval requirements for new medicines in the US led to a sharp and persistent reduction in innovation. More recent work shows stronger price regulation reduces pharmaceutical firms' incentives to invest in R&D by limiting the recovery of R&D costs (Eger and Mahlich, 2014). Other research shows pharmaceutical regulations related to exclusivity and price controls compress the upside from R&D, weakening investment incentives (Santamaria, Portela, and Schwartz, 2026).

4.3 Distortions to price signals

A third area where regulation can create distortionary costs is through distortions to price signals in markets. Prices play a central role in markets. They coordinate the decentralised decisions of economic agents to direct resources to their highest-value use; they provide incentives for efficient production and consumption, investment, and innovation; and they summarise and transmit information about preferences and relative scarcities that is dispersed across the economy (Milgrom and Roberts, 1992, chapter 3).

Regulation can distort price signals in various ways. Explicit price controls, such as price ceilings or floors, prevent prices rising or falling to signal relative scarcity. This can lead to non-price mechanisms for rationing demand, such as queuing or quality degradation. For example, price controls on petrol in the US in the 1970s led to major shortages and long lines of cars queuing at petrol stations (Varian, 2003, pp.415-416). Price ceilings can also disincentivise entry into markets, or undermine incentives to introduce new products and process, thereby creating distortions through the aforementioned competition and innovation channels.

Regulation may also distort price signals less directly, such as by preventing firms from dynamic pricing or setting different prices to different customer groups. Setting differential prices (e.g., movie theatres with different prices for adults and children) allows firms to recover their fixed costs predominately from less price-sensitive customers. But it also allows firms to reach more price-sensitive customers whom they might otherwise not reach, thereby expanding output (Motta, 2004, pp.493-496). If differential pricing would have expanded output towards the efficient level, then regulation preventing it can create a distortionary cost.

Rent control also distorts price signals. Higher housing rents often generate calls for a policy response that limits rent increases. However, by preventing rents from signalling scarcity, such policies can have unintended consequences. For example, because rent controls limit the returns earned by landlords, they may cause landlords to shift to owner-occupied housing or reduce the incentives for new housing supply, ultimately making it more difficult for tenants to find a rental property. Rent controls can also lead to reduced maintenance by landlords, and a deterioration in quality (Kholodilin, 2024).

Empirical evidence from rent control in San Francisco shows rent control may make it less likely that landlords will try to remove tenants (since the reward from a new tenant is constrained), limiting displacement and improving security of a renter's tenure (Diamond, McQuade, and Qian, 2019). However, that same study found that this positive effect was outweighed by the adverse incentives facing landlords, leading to a reduction in rental supply and likely a long-run increase in rents, undermining the original intent of the rent control. It also found evidence that rent control made tenants less likely to move, due to the risk of moving to a non-rent controlled location. This results in an efficiency loss from a misallocation of housing across households, in the sense that households are not matched to the dwelling that best suits their preferences.

5. The impact of distortionary costs

5.1 *The relative magnitude of distortionary costs*

Economic theory suggests distortionary costs are generally considerably larger than compliance costs. Compliance costs are one-off or repeated costs faced by regulated parties. A firm paying a compliance cost faces increased total costs in a particular period, but these costs do not compound over time. In contrast, distortionary costs of regulation are likely to decrease the overall growth rate of industries, such as by reducing competition or the continual striving for innovation and improvement. Over time these costs compound and will come to dominate changes caused by compliance costs. Put another way, compliance costs affect only *levels* of economic activity, while distortionary costs affect *growth rates*. Moreover, if regulation distorts markets such that new or improved products are entirely foregone, the loss is the entire net surplus benefit to consumers and producers, which is usually material (Goolsbee, 2006).

Consistent with this theory, the empirical literature shows distortionary costs can be large. For example, Restuccia and Rogerson (2008) simulate the effect of policies that levy taxes or subsidies on output, labour, or capital. They show these policies distort prices from the competitive equilibrium, lead to a reallocation of resources across heterogeneous firms, and consequently decrease output and productivity by 30 to 50 percent. Jorgenson and Wilcoxon (1990) show US gross national product over a 12-year period was 2.59 percent lower as a result of environmental regulation, and the annual growth rate was 0.191 percentage points lower. The majority of the slowdown was attributable to regulations affecting investment. Hausman (1997), referred to above, found the annual lost consumer welfare arising from regulation that delayed the introduction of cellular technology was in the billions. These studies therefore show substantial distortionary costs. However, they do not trade off these costs against the welfare benefits from regulation, nor do they show the relative size of distortionary and compliance costs.

Only a few studies estimate the relative sizes of distortionary and compliance costs. Marten, Garbaccio and Wolverton (2019) compare the social cost of environmental regulations with compliance costs only. The social cost is the opportunity cost of current and future consumption and investment that is foregone due to regulation (which reflects distortionary costs). They find that the social costs of regulation are consistently greater than compliance costs for both small and large regulations. They estimate social costs to be 6% to 33% larger than compliance costs (in present value terms over 45 years) depending on the regulated sector and the compliance requirements. Similar analysis by Hazilla and Kopp (1990) compares compliance costs of environmental regulations with broader

distortionary costs that capture household behavioural changes, and finds distortionary costs exceed compliance costs over a 9-year period by 51%.

The tax literature provides an alternative setting for comparing distortionary and compliance costs. Taxation distorts the behaviour of those who are taxed, by incentivising a shift to untaxed or more lightly taxed goods and services. This creates a distortionary cost known as the ‘deadweight loss of taxation’. For example, income tax distorts behaviour away from working towards non-work activities such as leisure.

Empirical estimates of the deadweight loss of taxation vary widely. Browning (1987) estimates a deadweight loss of income taxation in the US in the range of 10% to 300% of tax revenue, which he acknowledges is a high level of imprecision, but which narrows to 32%-47% under his preferred set of parameter values. Ballard, Shoven, and Whalley (1985) estimate a range of 17% to 56% across all taxes in the US (corporate taxes, sales taxes, income taxes, etc). Diewert and Lawrence (1996) estimate a deadweight loss of consumption tax in New Zealand of 14% and income tax of 18%. The New Zealand Treasury’s (2015) *Guide to Social Cost Benefit Analysis* suggests using a rate of 20% in the absence of an alternative evidence-based value. In comparison to these distortionary costs, Vaillancourt et al (2013) find administrative and compliance costs of taxation in Canada of between 4% and 5% of tax revenue. These values suggest that the distortionary costs of taxation are likely to be at least four times as large as compliance costs, and possibly a lot larger.

5.2 Distortionary costs and long-run prosperity

Efficient and competitive markets are particularly important for a country’s productivity, long-run growth, and prosperity. The economics literature establishes that productivity increases explain most long-run growth,¹⁰ and shows the importance of efficient markets, competition, and innovation to productivity. For example, Hsieh and Klenow (2009) show that resource misallocation from distortions (including due to regulation) lowers productivity by 30-50% in China and 40-60% in India. Nickell (1996) shows that increased competition, as measured by increased numbers of competitors or lower excess profits, is associated with increased annual productivity growth for firms operating in more competitive markets of between 3.8 and 4.6 percentage points. Aghion and Howitt (1997) show that capital accumulation and innovation are both essential inputs to long-run productivity growth.

Early analysis by Solow (1957) shows that approximately 87 percent of economic growth in the first half of the 20th century can be explained by investments in research and

¹⁰ See, for example, Solow (1957) and Hall and Jones (1999).

development, rather than increases in capital and labour. This underscores the importance of investment and innovation. In the New Zealand context, the Treasury (2024) identifies a range of factors behind the recent slowdown in productivity, including weak investment in capital, weakening growth in innovation outputs, and worsening competition.

Therefore, the distortionary costs of regulation are particularly important to a country's long-run prosperity and are often more significant than regulation's compliance costs.

6. Conclusions

When assessing regulation, the focus is often on the most visible costs, these being the compliance costs borne directly by firms, individuals, and regulators to comply with or administer rules. However, this focus can obscure what is often the more important cost category of distortionary costs, which arise when regulation distorts markets, alters incentives, and prevents otherwise beneficial activity from taking place. Compliance costs largely represent static resource losses and are a level shift. In contrast, distortionary effects influence market signals, competitive pressure, and innovation and capital formation. By affecting how resources are allocated and how quickly firms and technologies evolve, these distortions can have compounding effects on productivity and economic growth. Distortionary costs are therefore typically more important for a country's long-run productivity, growth, and prosperity.

At the same time, recognising the importance of distortionary costs does not imply that regulation is undesirable. Many forms of regulation deliver substantial welfare gains by addressing market failures, such as through improving information or mitigating environmental externalities. The relevant question is not whether regulation creates distortions, but whether the benefits it delivers outweigh both its compliance costs and distortionary costs. By ensuring distortionary costs are a key part of this equation, government agencies, regulators, and politicians who develop and analyse regulation can ensure that it is well-designed. This allows regulation to be designed to generate the greatest gains to society while minimising not only compliance costs, but also the costs imposed by market distortions.

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