

Agenda

Advancing economics in business

When markets fail: lessons for policy-makers

The idea that markets do not consistently deliver optimal outcomes should come as no surprise, particularly in the current environment. The challenge for regulation (whether financial, competition, environmental, health, or utility policy) is to identify when markets fail and the most appropriate instruments to deal with the issues

(Most) economists have long dismissed the idea that free markets consistently deliver the optimal outcome for society. If they did, why bother with competition policy, patent rights, state aid rules, economic regulation of utilities—or indeed financial regulation—if markets always work well?

Modern economics shows that the ideal of perfect information being captured in markets, and resources being efficiently allocated in the economy, is rarely realised. The literature on environmental externalities, industrial organisation and behavioural economics (to name but a few) shows how market structure and the behaviour of consumers and producers often deviates from what is required for markets to function perfectly, and that this is more of a problem in some situations than in others.

The crucial issue is the degree to which markets fail, and what governments (and others) can do to remedy the situation. Two fundamental questions need to be answered:

- in which markets should governments (or regulators) intervene?
- how should they do so?

This article takes a step back from recent events in financial markets and examines market failures more generally, using examples from other sectors. It outlines how a clear understanding of policy objectives, and of what the economic problems that need to be targeted are, is crucial before governments or regulators intervene. If intervention is deemed necessary, governments and regulators have a variety of options at their disposal, ranging from prescriptive approaches (controlling quantities and behaviour) to approaches that are based more on changing incentives (influencing behaviour through modifying prices). The different

approaches have their respective advantages and disadvantages.

Why do markets fail?

Markets tend to be favoured as a default option since, in many situations, competition between suppliers in the market leads to lower prices, better quality and more innovation. However, markets fail when the action of agents, left unhindered, delivers materially sub-optimal outcomes for the economy and society. As discussed, the concept of market failure is nothing new. Indeed, economics over the past 50 years has tended to study markets when they fail, as deviations from the neoclassical model, rather than when they work.

One reason why a market might fail is that its structure hinders competition. When a firm has significant market power—eg, due to the presence of large fixed entry costs—it can act somewhat independently of its competitors, and will have an incentive to raise prices, reduce quantities sold, or impede innovation. Firms might do this unilaterally (monopoly power), or through collusion. Thus, market structure can lead to too little rivalry, to the detriment of consumers. This is why competition policy and, to some extent, state aid rules exist. It is also why naturally monopolistic network utility businesses are regulated.

Another problem is that of ‘externalities’. In a sense, these stem from too much, rather than too little, rivalry between agents. Externalities occur when an agent does not price in the wider impact of their own behaviour on others. Externalities may occur in production or consumption, and can be positive or negative. Positive externalities include the benefits for firms working jointly on R&D projects, or governments finding global solutions to climate change (such efforts may be undermined by excessive rivalry). Negative externalities can include:

- carbon emissions from electricity generation (electricity generators may not bear the environmental costs of their actions);
- systemic consequences of the behaviour of individual banks (individual banks may not take full account of the wider impact of their actions on the system as a whole, which may be exacerbated by financial contagion);
- over-extraction of limited common resources (such as fisheries or forestry, which may be excessively depleted in the absence of well-defined property rights or controls).

Markets also fail to work when there are information problems. In consumer markets, firms face an incentive to lower prices only if consumers are willing, and able, to shop around. So when 'search costs' are high, or when people fail to fully understand the conditions relating to a complex transaction, competition may not work effectively. Regulators may then take steps to improve consumer education, and require firms to supply standardised products, and so on.

Moreover, where information (and governance) is poor, accountability can also be poor. A principal-agent problem can occur, for example, between shareholders (principal) and managers of financial institutions (agents) if shareholders cannot observe or influence the decisions taken by managers, and managers have a sufficiently short-term outlook. The agent fails to act in the long-term interests of the principal. Some of these problems are due to information per se, but also reflect issues of internal governance and incentives.

What can be done?

What are the options available to policy-makers to deal with market failures? In practice these will depend on the nature of the market failure. Options include, for example, tax or other market incentives, market structure remedies, and behavioural conditions. Regulation may be prescriptive, or it may rely on economic incentives. The key difference is the flexibility offered to those being targeted to meet the regulatory requirements.

Regulations that specify the production process, or a consumer's use of a product, are generally considered the most prescriptive, since they offer little scope for flexibility in interpreting the rule. Examples include drink-driving bans, the mandatory fitting of catalytic converters to cars, and hosepipe bans during summer months. The most prescriptive regulation might specify the level of output, price, product characteristics and even the form of investment to be undertaken, although it is likely that at least some of these factors will need to be allowed to vary in order to provide sufficient 'degrees of freedom'. For example, it may be possible to set quantities or prices, but not both.

To allow some flexibility, regulation might set output targets at an individual firm level, but allow firms to decide how such output targets are met. In dealing with pollution externalities, take the example of an energy generator which faces a restriction on carbon production of 10 tonnes maximum. If the current level of carbon production exceeds this quota, the firm could meet the target by reducing either total energy output or the amount of carbon produced per energy unit. The requirement to reduce carbon output by a particular amount is prescriptive, but the firm faces an economic decision in terms of whether to invest in carbon-reducing technology at existing plants, build new (more carbon-efficient) plants, or shut down production during part of the year. The firm will assess the profit implications of these options and select that which has the least detrimental impact.

In addition, consider the example of utility regulation and the problem of natural monopoly. In practice, sector regulators adopt a combination of prescription and incentives, by specifying the maximum charges that companies can levy on customers (and minimum quality standards), but leaving companies to decide how best to achieve the cost reductions required to meet (and, potentially, beat) the regulatory settlement. However, one area where there is increasing divergence in regulatory intervention is the approach to capital investment. While, in the energy sector, Ofgem (the GB regulator) has sought to enhance economic incentives to invest in the gas and electricity networks through competition, capacity auctions and amendments to price controls, there has been a move towards a more centralised planning approach in the rail sector (through both government and Network Rail's policy in this area). In both sectors, the balance between economic incentives and investment prescription is likely to evolve.

Figure 1 provides a reference for examining the range of options available to governments and regulators. What the above discussion illustrates is that, in practice, a combination of prescriptive- and incentive-based approaches can be used to tackle market failures. Incentive-based measures have the advantage of providing agents with greater discretion in altering their behaviour to meet the policy objectives, which is valuable if different agents face differences in the costs of meeting the regulations (eg, in carbon abatement). More prescriptive approaches generate greater certainty in outcomes. These may also be more relevant to situations in which the intention is to draw a clear line in the sand (eg, a ban on drink-driving), or where current incentives appear to have been part of the problem.

Identifying 'optimal regulation'

The process of developing good policy is, of course, highly complex. Moreover, identifying ex ante the

economic effects that policy will have ex post can be difficult. In assessing the desirability of policy, key factors to consider are:

- is it feasible politically?
- what is the regulatory burden?
- is the policy likely to have the intended effect?
- how certain is it that the policy will be achieved?

Political feasibility

It is important to identify inappropriate policies at the earliest possible stage. Some policies may simply be politically infeasible, or too costly to monitor effectively, and these aspects should be considered early on in the decision process. In many cases, as stated above, both prescriptive and incentive-based instruments may feasibly be adopted, but introducing all measures at once from the outset may not be politically feasible. The attitudes of society need to adjust in line with government efforts to tackle a policy. In addition, if governments offer carrots as well as sticks, it is likely to be more acceptable to the public.

For example, in relation to smoking, it has taken a number of years to put in place a raft of measures that are now adopted in many European countries. In the UK, significant taxes were first imposed at the point of sale; prescriptive regulations were then adopted to deal with packaging, advertising and sales (which have been ratcheted up over time); and more recently smoking has been banned in public places. The National Health Service now also offers one-to-one or group clinics to assist smokers in giving up. Arguably, some of these measures are aimed at tackling the externality effects of smoking: smokers do not take account of the direct health effects on others of passive smoking, or the more subtle influence on the propensity of others to smoke (smoking as a visible social norm). But the measures are also aimed at protecting smokers themselves (smokers may not take full account of the effect of their current smoking on their future health).

There are, however, examples where ‘too much, too soon’ has led to failure. For example, proposals to develop extensive trials of road-user pricing by the UK government were shelved in 2007, in part due to the significant public opposition mounted against the idea, with over 1.8m people signing a petition against road pricing on the website of the Prime Minister’s Office.¹

Regulatory burden

Regulation generates costs. In addition to the direct costs associated with administration and compliance (by both regulatory bodies and regulated companies), regulation may incur indirect costs by limiting innovation or distorting the market.

Typically, if incentive instruments function effectively, they should achieve a given policy target at less cost than prescriptive regulation. The degree of monitoring and compliance required for prescriptive measures may be high. Again, the specific features of the market failure should be taken into account, and it may be that set-up and compliance costs of some complex market incentives (such as an emissions trading system which requires markets to be set up, and ongoing verification of emissions) can also be high.

A second type of ‘burden’ to take into account when assessing the overall impact of policy options is the risk of perverse incentives. For example, the US Endangered Species Act 1973 seeks to protect the habitats of species at risk of extinction. However, due to the costs incurred by landowners when the presence of endangered species is identified, it also created a number of perverse incentives. Firms that perceived a risk of such a discovery increased harvesting rates for forests in order to mitigate the costs of the legislation, which led to greater, rather than less, degradation of habitat.²

These unintended consequences may of course also occur in the context of pricing-based mechanisms—eg, where high taxes encourage individuals to pursue

alternative supply options, whether legally permissible or on the black market. It is particularly important to recognise the effects of inconsistent policy across borders. For example, the differential of taxes on tobacco products between the UK and Continental Europe has led to a problem of smuggled tobacco in the UK. The UK government faces a choice between reducing taxation or increasing border controls, both of which have their costs.

Efficiency and effectiveness

Perhaps the most fundamental issue concerning the assessment of a potential regulatory measure is how well it will work to

Figure 1 Prescriptive versus incentive-based policy options

Prescriptive		Incentive	
Quotas	Standards	Permits	Prices
Drink-driving ban Hosepipe ban Carbon-reduction targets (aggregate and firm level) Limits on water abstractions	Uniform technology requirements Qualification criteria Safety and environmental standards Alcohol licensing rules	Permit trading for carbon (cap and trade) Abstraction trading in water Effluent discharge rights trading Auctioning of capacity or rights	Taxes and subsidies Price regulation (right to manage) Preferential loan terms Government equity stakes Performance-related pay

encourage or discourage behaviour as intended. Mechanisms should also be 'additional' rather than crowd out desirable behaviour that would otherwise have occurred.

The additional flexibility associated with pricing incentives provides scope for those firms or individuals with maximum ability to respond to do so, while a prescriptive approach may fail to account for variations in individual circumstances. For example, with an emissions tax, firms will abate until the marginal cost is the same as the fee rate and, under a cap-and-trade scheme, firms will abate until their marginal cost is the market price of the permits. With quantity targets, or technology standards, the firm must comply with the regulation regardless of internal costs. However, cap and trade works best when there is a high degree of heterogeneity between firms in terms of their costs of abatement, the permit market is competitive, and transactions costs are low.

In addition to maximising static efficiency, incentive instruments can provide ongoing incentives to develop new technology, whereas technical standards can freeze technology, leaving little scope for innovation.

Ability to achieve the policy target

There are three parameters with which the ability to achieve the policy target should be assessed:

- the degree of certainty that the target will be met;
- the speed at which the target might be achieved;
- the adaptability of the regime to new targets and changes in economic circumstances.

As stated above, prescriptive approaches may deliver greater certainty of outcome than incentive-based approaches. For example, a requirement that all cars have catalytic converters is very prescriptive, but does guarantee a reduction in carbon monoxide emissions (and other pollutants). However, incentive-based approaches are more readily adapted over time. In terms of carbon trading, the cap adopted as part of the EU trading regime generates some certainty regarding the number of permits in circulation and hence overall emissions abatement, while trading allows for flexibility for individual firms covered by the scheme to decide on their degree of abatement given their cost structure. The cap may also increase the speed at which targets can be achieved.

Conclusions

Markets fail for many reasons, and it is critical to ensure that the causes are understood in order to design a policy to deal with them. However, it is not sufficient merely to identify the nature of the market failure. Policy instruments need to be politically acceptable and effective in achieving their aims, and avoid the prospect of unintended consequences. Where policy-makers fail to pay sufficient attention to the details of the context in which the policy will be deployed, this can lead to significant design flaws in the policy adopted. Prescriptive- and incentive-based approaches have their advantages and disadvantages, and affect behaviour in different ways. In either case, adequate monitoring and enforcement is necessary to ensure that policies actually deliver.

¹ <http://petitions.number10.gov.uk/traveltax/#detail>.

² See Adler, J.H. (2008), 'Perverse Incentives and the Endangered Species', *Resources for the Future*, available at http://www.rff.org/Publications/WPC/Pages/08_08_04_Adler_Endangered_Species.aspx.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email d_holt@oxera.com

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