Regulation of the Food and Beverage Industry

Prepared by
Credit Suisse First Boston
for the
New Zealand Business Roundtable
New Zealand Food & Exporters' Council
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IMPORTANT NOTE

This report has been prepared at the request of the New Zealand Business Roundtable and the New Zealand Food & Beverage Exporters' Council by Credit Suisse First Boston. The authors of the report are Susan Begg, Credit Suisse First Boston; Tyler Cowen, George Mason University; and Bryce Wilkinson, Capital Economics.

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Executive Summary

Introduction

This report was written by Credit Suisse First Boston at the request of the New Zealand Business Roundtable and the New Zealand Food & Beverage Exporters' Council Inc. These organisations were motivated to commission the report because of the high costs imposed on industry by health, safety and environmental regulations. They were also concerned that related government charges lacked a coherent, agreed framework.

The terms of reference for this report required Credit Suisse First Boston to develop an analytical framework and then apply it to the regulation of food safety, product information, biosecurity, and fisheries management.

Section 2 of the report briefly reviews existing food-related regulations. Sections 3 and 4 present a general efficiency-based framework for evaluating government regulations. Principles for efficient user charging are developed in section 5. Section 6 applies the framework and principles to the regulation of food safety and quality. Section 7 uses the framework to consider the regulation of biosecurity. Section 8 examines the cost recovery principles in relation to the fishing industry.

Review of Current Institutional Arrangements

Food safety for domestic consumers is governed primarily by the Food Act 1981 and the Food Hygiene Regulations 1974, which are administered by the Ministry of Health (MoH). The safety of animal, plant and primary products produced for export as well as meat, game and dairy products produced for the domestic market is governed primarily by the Meat Act 1981 and the Dairy Industry Act 1952. These Acts are administered by the Ministry of Agriculture (MAF).

MoH, MAF and territorial authorities (which have a food safety role in the domestic market) can impose user charges to recoup their expenses in relation to food safety. The MoH proposes setting its charges to cover all its related costs (with no profit element). MAF imposes user charges based on the average costs of services provided but is in the process of further developing cost recovery principles.

New Zealand has adopted regulated standards for a multiplicity of activities relating to food. The standards go well beyond issues of food safety and public health to encompass issues of consumer information and fair trading.

New Zealand and Australia have recently set up a body, the Australia New Zealand Food Authority (ANZFA) which is responsible for proposing common food standards. New

Zealand is not obliged to accept proposals arising from this process, but it seems likely that, in time, most food standards will be common to New Zealand and Australia. The New Zealand government currently funds New Zealand's contribution to ANZFA entirely out of general taxation. While the current government is not proposing to recover costs from local industry, industry is required to contribute in Australia.

Biosecurity legislation aims to prevent unwanted organisms from entering New Zealand and to curtail or eliminate those that do establish locally. Currently the costs of border protection, surveillance, and response readiness are largely funded by general taxation, as were the government's expenses in eradicating recent outbreaks of imported pests. The costs of managing pests that have established themselves locally are funded from general taxation, rates, and private sources.

Many local authorities and government agencies are involved in administering the regulations and legislation related to food. The major overlap is between the responsibilities of MAF, the MoH and local authorities. This overlap creates problems of consistency and jurisdiction. MoH and MAF have signed a memorandum of agreement aimed at achieving better coordination between the two agencies.

Framework for Assessing Regulations

Determining when regulation might be justified requires a framework. Regulations are unlikely to be satisfactory if:

- the problem they are attempting to address is not clear;
- objectives conflict and it is not clear which objective is paramount;
- regulatory proposals take inadequate account of the difficulties created by limited information, regulatory bias, interest group capture, and loss of consumer choice;
- regulatory proposals fail to adequately consider alternatives; and/or
- the criterion for choosing between alternatives is deficient.

Unless the objective of regulation is clearly stated and meaningful, it will be difficult to assess the merits of the proposed regulation and to review its operation in practice.

Objectives such as 'increasing food safety', or 'providing consumer protection', fail to identify a problem that regulation might address. They fail to explain why consumers cannot buy safe food. Such objectives presume that more safety or consumer protection is always better. They do not recognise that consumers do not want to pay for safer food or more protection without limit. More is not always better since consumers have competing priorities for their spending.

In contrast, a more clear objective would be assisting New Zealand exporters to meet certification requirements imposed by importing countries at least cost.

The case for regulation must be based on an objective assessment of what it is likely to achieve in practice – as distinct from what its promoters or defenders hope it will achieve. Wishful thinking has no place in this analysis. Food poisoning will occur under all arrangements. Much harm occurs if market or regulatory failure is pronounced when problems occur (for example when an outbreak of food poisoning occurs). Such claims imply without proof that further government intervention will improve matters. It is neither desirable nor practicable for government to intervene whenever anything unfortunate happens.

Regulation is not designed and does not operate in a vacuum. Instead it is shaped and modified by a complex interaction of different interest groups, regulatory agencies, and politicians who use the available processes to pursue diverse objectives. The regulator's own lack of information about consumer preferences, market constraints, and future innovations may reduce the efficacy of regulations.

None of this is to argue that all regulation is bad; to the contrary, the point is that all options are flawed compared to an ideal situation and these flaws must be taken into account.

The flawed outcomes likely under regulation must be compared with an objective assessment of the flawed outcomes likely under other arrangements. One option is to have no sector-specific regulation. Examining this option thoroughly requires assessing the mechanisms which consumers and providers might use to address food safety and related matters.

Where importing countries impose regulatory requirements, exporters have little option but to comply. However, there may be options for meeting requirements at lower cost. These may involve greater use of private sector auditors, removing unnecessary requirements, simplifying administration and so on. In the longer term, if the regulatory requirements are unreasonable, negotiation of a change in requirements might be feasible.

The approach that we have just summarised, and recommended, is known as the comparative institutional approach. It considers how the many constraints on the actions of governments and individuals may change under different institutional arrangements.

Once realistic alternatives have been identified, a choice must be made between them. The choice of criterion to be used matters. Confusion or disagreement about what criterion to use is a potential source of poor quality regulation.

Economic efficiency should be the primary criterion for assessing regulatory options. The efficiency criterion asks which option is likely to allow individuals to best apply scarce resources to goals of their own choosing. This criterion is not usually concerned with the distribution of benefits. Its application to industry regulation would not limit the government's ability to use tax and welfare policies to redistribute income and wealth.

In principle, choosing between competing alternatives using the efficiency criterion can be thought of as comparing the costs and benefits of the options. This assumes that costs and benefits can be quantified with reasonable precision and objectivity. Often this is not the case. Future outcomes can be hard to predict in detail. Where this is the case a judgement must be made about the balance of probabilities.

Often one can be more confident about the set of institutional arrangements which offers the best prospect for satisfactory outcomes than about the detailed outcomes. For this reason, the institutional approach often focuses on which of the competing alternatives best provides incentives for efficient behaviour.

Possible 'Problems' Justifying Regulation

As discussed above, the first step in assessing a regulation is to determine what problem it seeks to address. Once this is known it is easier to identify relevant alternatives. Regulation can then be assessed against other sensible options.

Identifying the problems that might arise between individuals in the absence of the regulation requires in-depth analysis. These problems, which abound in our imperfect world, are often referred to as potential 'market failures'. Potential market failures have diverse sources. These can be categorised:

- an individual's activities may impose costs or confer benefits on another party that are outside any contractual agreement ('externalities');

- outputs are public goods, i.e. one person's consumption of the product does not detract from another's enjoyment of it and non-paying users cannot be readily excluded from consumption of the product;

- consumers are uncertain about the quality and safety of the products they consume; and/or

- individuals may over-react or under-react to perceived risks.

All of these problems can arise in varying degrees in market situations. In many cases, markets adequately solve the problems. In some cases they may not.

In every case, the issue is whether government action can improve matters. Commonly it cannot. There are good reasons for this. First, governments also lack information about quality, safety and risk. Worse, they lack information about each individual's willingness to pay for less risk. Second, governments commonly face transaction cost problems similar to those faced by individuals in the market place. Third, governments can generate significant externalities through taxation and regulation. For example, government may create an externality if it restricts land use to achieve environmental objectives without compensating owners. Fourth, numerous commodities have public good attributes, but are provided privately. Governments do not generally have superior information about the willingness of

individuals to pay for public goods. Finally, governments are subject to their own failures. For example, politicians cannot perfectly control government agencies, and politicians themselves do not act completely in accord with voters' preferences.

The process of assessing regulatory options compares likely market 'failures' with likely government 'failures'.

Cost Recovery Framework

Governments must fund their expenses. They do so from some combination of general taxation and user charges. When expenses are funded through user charges, decisions need to be made about who to charge, how much to charge and how to best structure those charges. These choices should not be made arbitrarily. Instead they should be based on a criterion of welfare maximisation.

The decisions on funding will depend on the criterion chosen – be it equity or efficiency.

One commonly proposed charging standard is the so-called benefit standard. This standard stipulates that those who benefit from a government activity should pay for it. Producers in the private sector do not follow this principle. Instead, they charge buyers without regard to the ultimate beneficiary. For example, a bookseller charges every buyer the full price of a book regardless of how many people might subsequently read the buyer's copy. Similarly, sellers of food are not concerned to know who might eat the food that they sell.

The benefit principle is fundamentally an equity principle. It is sometimes defended on the grounds that recovering the costs of a service from those who benefit prevents one group from benefiting at the expense of others.

The benefit principle conflicts with concepts of fairness, which favour some groups at the expense of others. For example, it does not seek to make the distribution of wealth more equal by charging the wealthy more than the poor.

The benefit principle is not well defined when the benefits are less or more than the costs of providing a service. It provides no guidance on how to apportion common costs amongst beneficiaries.

The benefit principle is silent on how best to structure charges. For example, it has nothing to contribute to the issue of marginal-cost pricing.

When the buyer of a government service on-sells its products to others, the charges and the benefits of the service will generally be passed down the chain to the end user. User charges levied at the point of sale, the practice of centuries, may therefore give results that are consistent with the benefit principle.

Efficiency provides an alternative standard for evaluating government cost recovery and taxation options. The efficiency standard seeks to fund costs in a manner likely to allow the individuals in society to get maximum benefit from scarce resources.

Marginal-cost pricing is the efficient means of covering costs when markets are competitive, the good is private in nature and marginal cost is equal to average cost so that marginal-cost pricing allows full cost recovery. A fundamental proposition of efficient pricing is the price for a service should track the cost of producing an additional unit of that service (ie marginal cost). Price indicates willingness to pay and therefore benefit at the margin. If a price is set above marginal cost some buyers are deterred even though they would be prepared to fund the cost to society of meeting that need. Conversely, when price is below marginal cost some users will purchase additional units when the benefit they derive is less than the cost.

However, determining efficient prices becomes more complex when marginal cost is below average cost (because of common costs, increasing returns to scale and/or public good aspects); the market is not competitive; or purchasing of a service is mandated by government decree.

Where there are common costs, private sector firms use bundled prices, 'Ramsey' prices,[1] two-tier prices and 'subsidy-free' prices as best they can to fund total costs. The efficient solution varies according to the constraints particular to each case.

Private clubs (whose members may be the producers in an industry) may be able to fund goods which have some, but not all, characteristics of a public good. Clubs have to be able to exclude non-members from the benefits provided by the club. Clubs may adopt two-tier pricing (a charge for membership and a use-related charge) to gain the efficiency advantages of marginal-cost pricing while still covering total costs.

The efficiency standard favours tax-based funding of genuine public goods (such as national defence) where private provision is not possible because of the difficulty of excluding those who will not pay voluntarily.

But the efficiency standard would avoid tax-based funding of club goods which could be supplied privately since the annual access or membership charge is part of the test that members are prepared to fund the total costs of their activities.

Thus, in relation to government charges:

- The efficiency standard favours government charging industry the marginal costs of regulatory services which are provided solely in the interests of the purchasers of the industry's products, if the services provide commensurate value to end users of the

[1] Under Ramsey pricing, the prices charged to each customer are set so that those customers that are least responsive to prices are charged the most and those that are most responsive are charged the least.

industry's products. Lower charges encourage excessive entry into the industry. Higher charges may lead to excessive exit.

- The efficiency advantages of government charging an industry group or club for services provided are much less certain when the service level is mandatory and/or is supplied non-competitively. In these circumstances, the charges (and service levels) may be excessive in relation to the benefits derived from the services.

- The case for charging for Crown services supplied to members of a group is stronger the greater the ability of the group to determine the service level, the easier it is for members to opt out, and/or the more competition there is for the supply of the mandated service.

- Where the government service is provided in whole or in part to serve the interests of non-users of the industry's products (eg to protect air quality or recreational fisheries), the question of who should pay depends in part on collection costs. Where the beneficiaries are so dispersed that collection costs would be excessive, funding from general taxation may be efficient.

The efficiency standard favours private sector supply of private goods. Where privatisation is not possible, the Crown-owned provider should adopt a competitively neutral commercial structure to the greatest possible extent and be exposed to full competitive pressures. The requirement for competitive neutrality implies that Crown entities should not have access to tax funding.

Efficient market prices may often be compatible with the benefit principle. Marginal-cost pricing commonly allows producers to recover average costs. In these cases, buyers (those who benefit) will pay the full costs of supply.

In summary, the benefit principle is contentious on equity grounds, is likely to be ill defined and difficult to apply in practice, and can conflict with efficiency. Its virtue is that it appeals to a powerful notion of fairness and is compatible with many long-standing (and efficient) government and market practices.

In contrast, efficiency provides a more fundamental and subtle framework for evaluating how governments can best fund their expenses. Furthermore, the virtues of the benefit principle – namely that those who benefit should pay – appear to be broadly compatible with efficient market prices.

Food Safety and Quality

Information costs are at the root of suggested failures in the food market. The assessment of some aspects of food is complex. Consumers may not understand the risks posed by different foods. Information about product contents may be difficult to obtain if not disclosed by the producer. Consumers typically have less information about food quality than producers. They do not know how the food has been treated or stored, or the hygiene procedures

followed by producers. Consumers cannot easily test the safety of food prior to consumption. Even after food poisoning is contracted it can be difficult to trace the source of contamination with certainty.

Yet, in the absence of regulation, most food suppliers have strong incentives to produce the type of food which consumers value and are prepared to pay for. Consumers' choices strongly influence producers' investments in food safety and quality. They can directly assess many of the quality attributes of food. Food producers strive to meet their customers' requirements for food quality, safety and information. Niche producers target special needs. Firms advertise and use labels to inform their customers about their products. A wide variety of other sources provide consumers with information about food and nutrition.

Some firms invest in a reputation for good quality. The more reputable the supplier, the more confidence the consumer can have in the quality and safety of food. Reputation is very important to firms that depend on repeat sales. Loss of reputation may be very costly. Supermarkets may monitor food standards for their customers. A reputation for stocking high quality food attracts those who value quality.

Even heavily regulated regimes cannot prevent buyers from making choices based on personal experience, firms' reputations, private and public sources of information, contracts and legal remedies. The resources of government regulators are small relative to the size of economic activity even in heavily regulated economies.

Although it appears that the market can deliver something like the quality and safety of food that consumers are prepared to pay for, this does not rule out the possibility that regulation might improve matters. In assessing the scope for regulation to improve outcomes, the costs of regulation need to be taken into account.

'Public choice' economists have documented the tendency of bureaucracies and agencies to over-regulate, to overspend and to be influenced by particular interest groups. Regulators pursue larger budgets and staffs, and they do not necessarily suffer when their agencies impose significant costs on businesses and consumers. Regulators tend to be too cautious in the standards they adopt since they are blamed if the standards are inadequate, but they are less accountable for the costs they impose through unduly high standards. For example, governments in the European Union have proposed strong constraints or the outright prohibition of genetically modified foods. Such a prohibition would substantially increase the costs of food supply – yet these costs cannot be easily quantified or attributed to governments. Not surprisingly, researchers find that many regulations are issued which are not cost effective. New Zealand's food regulators – the Ministry of Health and the Ministry of Agriculture – are unlikely to be exempt from these tendencies.

We do not expect regulators to come even close to adopting optimal standards for product safety or quality. Regulators cannot easily divine the optimal levels of product safety and quality desired by consumers. Regulators do not know what trade-offs individuals are prepared to make. Attitudes toward risk and other product characteristics may vary greatly across individuals, be highly product specific, and difficult to measure. Regulators, like

individuals, lack information about food quality, safety and risk. In some situations, regulators, consumers and producers do not fully understand the risks. Regulators' incentives may be flawed. Regulatory decisions are likely to be politicised, with little guarantee that efficiency is always a primary influence.

Many food-related problems are outside the control of regulators. Consumers, for example, may cause food safety problems. Food is often left to sit for too long before use, or is not adequately prepared and cooked. Individuals may not wash their hands before eating. Regulation of suppliers does not solve these problems. Short of having a regulator in each kitchen, the problem of poor consumer care remains whatever the regime.

Regulation cannot prevent consumers from making lifestyle choices that adversely affect their own health. For example, even well-informed individuals may choose not to eat a healthy diet. This suggests that in the consumer's view, the benefits of a healthier diet do not outweigh the costs.

Individual behaviour can subvert the intentions of regulation in more subtle ways. If the government imposes a high standard of food safety, consumers may make offsetting choices to move closer to their preferred safety level. In the case of food safety, individuals may choose food less carefully, and take less care in preparing food. This offsetting effect is well documented for car safety, where individuals tend to drive faster if they are in cars fitted with air bags.

These regulatory costs and limitations must be taken into account in examining the scope for food regulation to improve outcomes.

The main options for regulation of food are:

- information disclosure requirements;
- establishment of food product standards; and
- requirements for food safety.

Information disclosure can take a number of forms. The government may require disclosure of information on product ingredients, nutritional information, warnings, directions for use, date marking and so on. Regulation may require that information be presented in a particular way. Food standard regulation prohibits the marketing of a product using a generic name unless it conforms with a specific description, contains a specified set of ingredients or has undergone specified processes.

Many of these requirements are designed to reduce the costs to consumers of obtaining information about a product. They are not aimed at food safety.

Given the costs of regulation and the strength of incentives for producers and third parties to inform consumers about food, regulations which mandate the provision of information about

food ingredients and food standards unrelated to food safety seem unlikely to bring benefits that outweigh the costs.

This is not to deny a possible role for the government in setting standards. Information costs are real, and government may be able to reduce the costs of reaching agreement on product standards, or a standard format for information presentation. However, this does not justify the government imposing the standards on all. A possible option is for the government to define standards but allow companies selling food to the domestic market to choose whether or not to adopt the standards. Companies that complied would be permitted to advertise that their products conformed with the government standards. Although a voluntary regime increases search costs for consumers, it gives them more choice. It restricts the possible costs imposed by regulation.

Incentives for organisations to produce safe food are provided by reputation, contract, monitoring by third parties such as supermarkets, and legal remedies. These incentives are likely to be strongest for organisations that have a substantial investment in reputation. Organisations that produce a range of products, supermarket chains and branded restaurants and branded fast food outlets may lose substantial sales if there is a food safety failure in any line of product at any outlet. The costs could be very high. Thus, where the consequences of a food safety failure are the most serious (where large numbers of individuals may be affected) the incentives for performance produced by reputation are strongest.

The constraint imposed by reputation is weaker for smaller operations that have less invested in maintaining a good reputation and which deal directly with customers in non-repeat buying situations. Smaller operations are likely to be subject to much less media and other scrutiny. They may lack the resources to maintain consistent quality standards. Although any food safety failure by a small firm is likely to affect smaller numbers of individuals, the probability of a failure appears to be higher for small restaurants, butchers, delicatessens, sandwich bars and food producers that deal directly with end customers. Of course, the costs of effectively regulating these outlets may also be high. Thus, the identification of a potential problem does not by itself constitute a case for regulation.

It is possible that food safety regulation may improve safety outcomes. Ultimately, whether this is the case or not is an empirical question. Cost benefit analysis is the primary tool for evaluating whether regulations will bring net benefits. Unfortunately, cost benefit analysis suffers from a number of theoretical and practical shortcomings that limit its usefulness in making this evaluation.

New Zealand has adopted a risk-based approach to food safety regulation. The regime ensures that regulatory effort is focused on the highest risk foods and processes. In most part it allows a substantial degree of self-certification, with auditing by independent agencies. Oversight is provided by government regulators auditing the auditors. This allows organisations some flexibility in meeting regulated standards.

The requirement for audited food safety programmes may provide consumers with an additional level of comfort about food safety in a relatively cost effective manner. However,

there is a risk that regulated standards will be set too high, the regulations will prove inflexible, compliance costs will be excessive, or the government agency's role will expand over time beyond that originally envisaged.

An option for dealing with the risk of over-regulation would be for the government to allow companies to opt out of the regulatory regime affecting domestic food safety if they clearly signalled this to consumers. This option might apply for all organisations or could possibly be restricted to those organisations considered likely to impose relatively low risks. Another option, as with regulations governing information disclosure, would be to allow an industry to agree on its own food product standards.

Opting out would increase search costs for consumers (since they would need to determine whether they were dealing with a certified or a non-certified supplier). It would possibly raise the optimal level of inspection of certified product. However, opting out brings a number of benefits. An important benefit is that it allows consumers a wider choice – individuals can choose the price-risk trade-off they are prepared to make. Opting out removes the regulator's monopoly position. Allowing opting out would improve the regulator's incentives to respond to producer and consumer requirements and to minimise the costs of service provision.

In the case of exporters, opting out of the regulatory standards imposed by importing countries is not a feasible option. In the longer term, our government should challenge inappropriate standards through government-to-government negotiations or through other international arrangements. The New Zealand government has actively pursued options for challenging inappropriate standards through direct negotiations with individual countries and in international fora.

However, there is scope to reduce the costs of meeting international standards. Exporters are concerned about the Ministry of Agriculture Regulatory Authority's (MAFRA) interpretation of importing countries' requirements. Consistent with the 'public choice' theory, MAFRA's requirements sometimes appear to be excessive. Overlapping and conflicting regulatory requirements also create problems.

Rationalisation of the regulation of all primary products might reduce costs. Although different products impose different levels of risks, bringing them into a single regime based on a risk management approach could accommodate this. Rationalisation would help ensure that MAFRA applied a consistent approach to all primary products.

A government review team concluded in 1997 that priority should be given to the reform of all law related to the regulation of food safety. Industry and government officials have supported the proposed rationalisation of food safety regulation. However, other legislative priorities have precluded the implementation of the proposed reform.

In the interim, MAFRA could focus (and indeed has made progress) on removing inconsistencies in the approaches taken by its different regulatory divisions. Even within the

current regulatory regime, MAFRA appears to have considerable discretion over its approach. In some cases its interpretation of regulations appears to be overly restrictive.

Although importing countries often require government certification, this does not require the Ministry of Agriculture (MAF) itself to provide all of the auditing services. MAF has made substantial progress over the past few years in separating out the regulatory functions from the delivery of services and increasing the contestability of the latter. The regime applying to dairy products relies to a greater extent on private sector auditing than other regimes, with MAFRA ensuring that the auditors conform to the regulatory requirements. Application of this regime to other sectors could substantially reduce the costs exporters face in meeting importing country requirements.

Charging for Services Provided to the Food Industry

The case for government charging for services it provides to the food industry is strongest where purchase is voluntary. With a voluntary regime, producers are able to assess whether or not the benefits of the service outweigh the costs and to adjust demand accordingly. This places a strong discipline on the government provider even when it is a monopolist. Charging industry the marginal costs of a service helps ensure that the food sector produces at its optimum output level.

However, where services (such as food certification services) must be acquired from the government agency, the case for user charging is less clear cut. If industry is required to buy more certification than its customers would willingly fund, or if the services are provided at an excessive cost, at least part of the charge would be, in effect, a tax on the food industry. This tax would encourage excessive exit of producers from the industry. This possibility is of concern, given the well-documented tendency for regulatory agencies to expand their area of influence beyond that justified on efficiency grounds. MAF's moves to introduce contestability into service provision have helped to alleviate the efficiency costs. However, even with contestability, if the required level of certification is higher than the level desired by consumers then the result will be excessive exit of food producers from the market.

The efficiency of user charging is not clear cut where the benefits from the service extend beyond the producers and/or consumers facing the levy. For example, negotiation of market access by the government may provide benefits to a particular industry, or to a range of industries. With public good outputs an important consideration is which arrangement might best ensure the optimal level of output is produced at minimum cost. A number of options for funding outputs with public good elements are possible:

- industry could determine the funding it was prepared to contribute and contract with government for the supply of services;
- the government could determine the level of service and levy charges on industry; or
- the government could fund the activity from taxpayers.

The option chosen depends on trading off a number of conflicting considerations. These include the following:

- the likelihood that individual industry members would 'free-ride' (ie not contribute) if levies were voluntary;

- the deadweight losses from taxation compared with the efficiency costs of mandatory charges on individual firms (they would need to be mandatory if the free-riding was severe);

- the extent to which the industry receiving the benefits of the service was already organised, could determine the preferences of its members and recover charges from them;

- the ability of the industry to affect the level of output if it does pay the costs; and

- the likelihood the industry would lobby for excessive levels of output if it did not bear the costs.

The balancing of these effects can only be determined on a case-by-case basis. However, the greater the number of parties that benefit, and the less organised the beneficiaries, the stronger the case for government funding.

Biosecurity

The case for regulating biosecurity is based on externality and public good considerations. In the absence of regulation, an individual responsible for importing an unwanted organism or pest would not bear the full costs of that importation. The management of pests by some provides benefits to others. Once biosecurity services are provided, they are available to all at no additional cost. The costs of providing the services may be common to protection against a broad range of pests (and may be common to a range of different beneficiaries). These services help prevent all pests from entering the country, or restrict their impact once here, providing benefits to all New Zealanders.

Deciding on the appropriate level of expenditure on border control, surveillance, response readiness and management is difficult because the government does not know the true preferences of those who benefit from the services. The determination of the optimal level of resources to devote to aspects of biosecurity involves complex trade-offs between the costs of preventing pest entry, the costs of eradication or management after entry and the incentives provided to travellers and importers to take appropriate levels of care not to import unwanted organisms.

It is sometimes suggested that biosecurity risks are 'caused' by international travellers and traders – the costs could be 'avoided' if there was no trade or travel. This observation leads to the suggestion that the costs of the services provided should be 'internalised' to those creating the costs, ie importers and travellers. However, it could equally be suggested that the risks

would be 'avoided' if we closed pest-susceptible industries. In either case, we wish to devote the appropriate level of resources to preventing the entry of unwanted pests and mitigating their impact if they are introduced. The choice of approach depends on assumptions about the allocation of rights, and the transaction costs associated with different arrangements.

The preferred arrangements will involve a combination of taxation funding of biosecurity services, charging for the marginal costs of some product inspection and fines imposed for breaches of biosecurity standards.

Levying biosecurity charges on travellers is unlikely to be an efficient approach to the biosecurity problem. This blunt approach distorts the decisions of many and may have little influence on those likely to breach biosecurity requirements. Instead, incentives for travellers to conform with the biosecurity requirements are best provided by the threat that they will be fined if a breach of the provisions is detected.

Levying importers with the marginal costs of inspecting products (if services are targeted at the highest risk imports) could be justified if it provides incentives for care, and it deters those most likely to cause harm. Incentives for care should also be given by a regime of fines.

Where the benefits of biosecurity fall narrowly on an organised industry group, levying that group might provide it with incentives to trade off the benefits of more or less biosecurity services. It may also provide industry members with incentives to take preventative measures such as using pest-resistant crops. For example, some exporters require certification that their product is free of certain pests and diseases. The surveillance is undertaken for the sole benefit of the exporter and the exporter should pay for the services provided. This charging is happening to some extent already.

The charging approach outlined would not ensure that the government's costs were fully recovered. Where the benefits of border protection, surveillance and response readiness fall widely, there is a public good case for government funding any shortfall between fines for breaches, charges levied for inspection and the government's expenses.

Cost Recovery in the Fishing Industry

Many of the services provided by the Ministry of Fisheries involve common costs. Once provided they can be supplied to another party at zero cost. For some services a range of parties benefits from the services.

For example, research into the fishery stock is necessary to administer existing government policy. It supports the quota management regime which protects the interests of recreational fishers, Maori, the fishing industry, environmentalists and future generations. The costs of providing the level of research that achieves this objective constitute common costs. These should be recovered from general taxation unless levying the fishing industry, Maori, environmental or other groups, improves efficiency through monitoring. The charges levied

on any party on these grounds should not exceed the valuation of the benefit of the output to that party, or exceed the costs of supplying that party alone.

If one group requires a higher level of research than others, then requiring that group to fund the extra output may encourage it to assess whether the costs outweigh the benefits. If the group that benefits from additional output is not organised, it may not be cost effective to collect funding from them. If others benefit from the additional output as well, a contribution from them or from the government may be needed to reach the optimum level of output.

The level of common costs may differ between the different fisheries. For example the in-shore fisheries are used more by recreational fishers than are the deep sea fisheries. Thus, different arrangements might be optimal in the different fisheries. Where the interests in a fishery are confined largely to the fishing industry, a club arrangement may be feasible. Under this option, the government would no longer dictate the level and quality of output that must be purchased by industry. Instead, the industry would be free to organise itself, and purchase the outputs it desires and arrange funding.

The government's objective of ensuring that the quota management regime protects the fisheries resource for the various parties with an interest in its management does not require the government itself to supply research services. The government or the industry could contract for the services from the private sector on a contestable basis.

The Ministry of Fisheries justifies many of its industry charges on the basis of 'the avoidable cost principle'. The avoidable cost principle asks what costs would be avoided if the fishing industry did not exist at all, and presumes that all of these costs should be recovered from industry. Paradoxically, the ministry appears to believe that the cost of enforcement, for example, would be zero in these circumstances.

The costs of supplying fisheries management services, policy advice, enforcement and research can only be avoided if these services are not supplied. They are not avoided by postulating that the industry does not exist. The relevant consideration is whether or not more or less of the services should be provided (since this affects actual costs) rather than what might happen if a particular class of customers ceased to exist. The avoidable cost principle does not equate benefit and cost at the margin. This is the economist's typical strategy for finding an efficient pricing structure.

Section 1: Background

1.1 Introduction

In this section we describe the motivation for the current study and provide an outline of the structure of the report.

1.2 Nature of Project

The New Zealand Business Roundtable and the New Zealand Food & Beverage Exporters' Council commissioned Credit Suisse First Boston to examine regulations applying to the food and beverage industry and the principles of cost recovery adopted by government service providers.

The study is motivated by concerns about the increasing burdens that health, safety and environmental regulations are imposing on industry. These regulations impose direct costs on industry and also require industry to obtain services from government agencies. Increasingly, the government agencies are recovering the costs for these services from industry. Industry is concerned that the policies for cost recovery of government services lack a cogent agreed framework.

The report presents a conceptual framework, comprising two elements. The first develops a framework for evaluating food regulatory issues and examines situations where government regulation might be justified. The second considers the principles which government agencies should adopt in considering cost recovery.

The second part of the report applies these principles to the regulation of food safety, product information, biosecurity and fisheries management.

1.3 Structure of Report

Section 2 provides an overview of the legislative provisions and administrative arrangements relating to food in New Zealand. It briefly outlines New Zealand's biosecurity measures.

Section 3 presents a framework for reviewing health, safety and environmental regulation.

Section 4 examines possible 'market failures' that might justify government intervention. It compares these market failures with 'government failures'.

The issue of how government-provided services should be funded is examined in section 5. This section reviews the implications of efficiency and equity standards for government charges.

Section 6 applies the framework and cost recovery principles to the regulation of food safety and quality. The paper examines possible problems that might arise in the food market. It discusses how markets handle these problems and reviews whether regulation might improve on market outcomes.

Section 7 examines biosecurity issues.

In section 8, the cost recovery principles are applied to the recovery of the costs incurred by the Ministry of Fisheries in managing New Zealand's fisheries.

Section 2: Current Institutional Arrangements

2.1 Introduction

This section examines the regulation and administration of food produced and/or consumed in New Zealand. It also briefly reviews New Zealand's biosecurity measures. Sections 2.2 and 2.3 describe the provisions regulating food safety and food standards. Food labelling requirements are outlined in section 2.4. Section 2.5 discusses biosecurity. The administration of food regulation and biosecurity is examined in sections 2.6 and 2.7. A brief summary is provided in section 2.8.

2.2 Food Safety

The safety of food produced for domestic consumption is currently governed by the Food Act 1981 and the Food Hygiene Regulations 1974, administered by the Ministry of Health (MoH).

The Food Hygiene Regulations 1974 define a number of prescriptive requirements that businesses must meet before they are permitted to handle food. Food businesses can apply under a voluntary regime for an exemption from the requirements of the Food Hygiene Regulations 1974 if they have implemented an effective food safety programme based on hazard analysis critical control point (HACCP).[1] Food safety programmes must be audited by an independent auditor (approved by the Director-General) paid for by the food business. Exemptions to the Food Hygiene Regulations can be granted by the Director-General of Health or a territorial local authority (TLA). If the voluntary approach proves successful, the Food Hygiene Regulations will eventually be revoked and an approach based on food safety programmes will become compulsory for all food businesses.

The MoH and others such as the TLAs can charge for the food safety related work they undertake. Fees may be payable for work in relation to the registration of food safety programmes; the registration or accreditation of auditors; the administrative clearance of imported food, including administrative fees; and when necessary, for inspection and analysis costs and the costs of issuing any certification documentation. The MoH proposes that its fees and charges be 'fiscally neutral'. Fiscally neutral is defined as allowing the MoH to cover all costs associated with the process without making a profit.

[1] HACCP involves identifying the hazards associated with a particular food operation, establishing the most effective way of controlling or eliminating the hazard, implementing the controls and ensuring they are maintained. The provisions governing the voluntary regime are found in the Food Amendment Act (No 2) 1996.

The safety of exported food is governed primarily by the Meat Act 1981 and the Dairy Industry Act 1952. These Acts are administered by the Ministry of Agriculture (MAF). Regulations, standards and edicts made by MAF under these Acts govern food safety for the production and processing of animals, plants and primary products for export and meat, game and dairy products for the domestic market. These regulatory requirements are accepted as an alternative to the Food Hygiene Regulations 1974.

Regulations, manuals, circulars, and technical directives dictate requirements that must be met if product and by-product is to be branded or certified by MAF. Many of the requirements are imposed by the importing countries (although New Zealand often has an input into negotiating standards) and are not necessarily relevant to New Zealand's animal health and husbandry conditions.[2]

Inspection of dairy and fish exports is undertaken by the producers or independent suppliers (including MAF Quality Management (MQM) on a contestable basis) with (in some cases) private sector auditing. MAF Regulatory Authority (MAFRA) provides an overall audit function. The Dairy Industry Act 1952 and the Meat Act 1981 both allow regulators to set and charge fees for services.

It is only in the meat industry that food safety inspection services must be provided by government inspectors. The cost of these services has been recovered from industry since 1985 (via an annual contract). The government and the industry have questioned the necessity and cost effectiveness of this approach.

2.3 Food Standards[3]

2.3.1 New Zealand Standard Setting

Food standards can be issued for the following: food safety; the composition of food (including the maximum amount of contaminants or residues that may be present in food, the maximum or minimum amounts of additives or other substances that must, or may be present in food, and the microbiological status of food); the production, manufacture and preparation of food; the genetic modification of food; the sampling and testing of food to determine its composition or safety; the packaging, storage and handling of food; materials, containers, appliances, and utensils used or designed for use in relation to food; the carriage and delivery of food; the sale of food; information about food, including the labelling, promotion, and advertising of food; food safety programmes; the keeping of records by people who import, produce, manufacture, prepare, pack, store, handle, carry, deliver, or sell food (and the

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2 Ministry of Agriculture Regulatory Authority (1995), *Food Safety: Maintaining a Relevant Meat Inspection Programme*, p 5.

3 Discussion draws on Ministry of Health (1996), *A User Guide to the Food Amendment Act 1996* and Ministry of Health (1996), *A Process for Developing Food Standards: A consultation paper on New Zealand food standards that are outside the joint food standard-setting system with Australia*.

inspection of these records); and any other matters relating to food that may affect the public health.

Until recently, food standards were set by regulation via a process which required extensive legal drafting by parliamentary counsel, Cabinet approval and final approval by the Governor-General through an order in council.

New Zealand and Australia have recently adopted a joint regime for setting food standards.[4] Under the joint system, the Australia New Zealand Food Authority (ANZFA) recommends new or amended food standards to the Australia New Zealand Food Standards Council. ANZFA must have regard to the following objectives in establishing food standards:

- protecting public health and safety;
- providing adequate information to enable consumers to make informed choices and to prevent fraud and deception;
- promoting fair trading in food;
- promoting trade and commerce; and
- promoting consistency between domestic and international standards where these are at variance.

If the council agrees to the joint standard, that standard is made law in New Zealand by the New Zealand Minister of Health issuing a food standard. The minister cannot issue a food standard without being satisfied that appropriate consultation has taken place. The issued food standards must be published in the New Zealand Gazette as soon as practicable. In certain circumstances New Zealand can set its own standards if it objects to the ANZFA-developed standards, but it is expected that the majority of food standards will be joint Australia and New Zealand standards.

The following standards are not within the scope of the joint system: the specification of maximum residue limits for agriculture and veterinary chemicals in food; the specification of food hygiene provisions, including requirements for food safety programmes or other means of demonstrating the safety and compliance of foods; and export requirements for third country trade (eg MAF requirements).

The MoH is responsible for developing the standards that fall outside the ANZFA process. It has released for comment a discussion document that outlines possible processes for developing such standards. A recommended approach will be adopted following a round of consultation.

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[4] The regime is provided for in New Zealand by the Food Amendment Act 1996 which came into effect on 1 July 1996.

The new regime allows for the prescribing of high-risk foods, including imported foods, and for the making of emergency food standards. A 'prescribed food' is defined as food that may impose a high risk of illness or injury because of its inherent nature or the way that it is handled. If a food is declared to be prescribed, the people dealing with the prescribed food must provide evidence that it complies with New Zealand's food standards. The Act also provides for the development of emergency food standards. Emergency standards may be required to deal with emerging public health issues or with a new type of product contamination not adequately addressed by existing standards.

The Act allows for a transition period of a few years during which existing standards will be replaced by standards issued by the Minister of Health.

The New Zealand government funds New Zealand's contribution to ANZFA. Industry contributes funding towards ANZFA committees. There is no current suggestion that the government will seek additional funding from industry. In Australia, industry is expected to provide some funding for ANZFA. The budget constraints faced by ANZFA mean that applications for standards must be prioritised. It is possible that in the future industry might be required to contribute towards funding of lower priority applications.

2.3.2 International Standard Setting

The Sanitary Phytosanitary (SPS) Agreement came into force with the establishment of the World Trade Organisation (WTO) in 1995. The SPS Agreement aims to maintain the sovereign right of governments to provide the level of health protection they deem appropriate, while ensuring that such rights are not misused for protectionist purposes.[5] The agreement stipulates that any requirements and procedures be justified on the basis of appropriate scientific and risk assessments. The SPS Agreement encourages governments to establish national SPS measures consistent with international standards, guidelines and recommendations.

Australia and New Zealand are members of the WTO. The WTO itself does not develop standards. However, most of the WTO's member governments participate in the development of the standards in other international bodies. The WTO recognises the Codex Alimentarius Commission (Codex) as the international body responsible for standards and guidelines that protect public health, ensure fair trading in food and promote harmonisation. The Commission Secretariat is made up of staff from the Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO). The Commission brings together scientists, technical experts, government regulators, consumer activists, and industry representatives to develop standards for food manufacturing and trade. Codex standards have a significant impact on New Zealand.[6]

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5 WTO Secretariat (July 1996), *Understanding the World Trade Organization Agreement on Sanitary and Phytosanitary Measures*.

6 ANZFA (undated), *Introducing the Australia New Zealand Food Authority*, p 10.

The Codex Alimentarius is a code of food standards for all nations. The purpose of the Codex Alimentarius is "...to guide and promote the elaboration and establishment of definitions and requirements for foods, to assist in their harmonisation and, in doing so, to facilitate international trade".[7]

2.4 Food Labelling

Labelling, advertising and promotion of foods are covered in New Zealand by the Food Act 1981, Food Regulations 1984, the Dietary Supplements Regulations 1985 and the Fair Trading Act 1986.

The regulations are prescriptive and require manufacturers to put certain information on labels or to undertake certain procedures. The legislative requirements cover the following:

- the descriptive name of the food;
- the main ingredients it contains;
- who made it and where it was made;
- how much is in the package;
- directions for use;
- warnings about the adverse health effects of using the food;
- the lot or batch number of the food;
- date marking – when it was packaged, or when it should be used by;
- information about the main nutrients in the food;
- claims about the properties of the food; and
- the presentation of information – size, form, location, colour, background, orientation, visibility, legibility, conspicuousness, language.[8]

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7 Electronic Products, internet page.

8 Tough, P (March 1997), *Labelling and the Trans-Tasman Agreement*, presentation to the ICM conference "Food Standards & Regulations: Maximising Business Opportunities", pp 1–2.

The Fair Trading Act 1986 also has implications for food labelling and promotion. The Act:

- prohibits misleading or deceptive conduct and false representation about the provision of goods and services;

- prohibits certain unfair trading practices; and

- provides for consumer information and product safety standards.

The Fair Trading Act 1986 is not prescriptive in the area of food labelling. It requires that information used on food labels or in advertising is not false or misleading. A factually correct statement (consistent with the Food Regulations 1984 for example) on a product label can be considered misleading by the Commerce Commission (or the courts) and therefore a breach of the Fair Trading Act 1986.

The Commerce Commission has taken a number of successful court actions over food labelling issues. Its activity has focussed on claims about fat content and the definition of 'pure' and 'fresh' orange juice.

A review of labelling is currently being conducted by ANZFA, and should be completed by the end of 1999. ANZFA has released a number of discussion papers on labelling issues.

2.5 Biosecurity

The purpose of the Biosecurity Act 1993 (which includes provisions of the Animals Act 1967 and Plants Act 1970) is to enable New Zealand to exclude, eradicate or effectively manage pests and unwanted organisms. The Act has two major components:

- prevention of unwanted organisms not already established in New Zealand, ie border control; and

- management of unwanted organisms established in New Zealand through the development of pest management strategies.

The sections of the Animals Act 1967 and Plants Act 1970 dealing with the introduction of new organisms to New Zealand will continue in force until the Environmental Risk Management Authority (ERMA) becomes fully operational. When this happens assessment of new organisms prior to introduction into New Zealand will fall under the Hazardous Substances and New Organisms Act 1996. Border control and pest management will remain under the Biosecurity Act 1993.[9]

[9] Ministry for the Environment (March 1997), internet pages.

2.6 Food Administration

2.6.1 Ministry of Health

The Ministry of Health (MoH) is accountable for providing policy advice to government on all matters relating to human health in New Zealand. This includes all aspects of food safety as it affects the domestic consumer.

The MoH administers the Food Regulations 1984 (controlling labelling, food composition and other matters), the Food Hygiene Regulations 1974 (setting standards for food safety) and the new food safety regime. The MoH's primary focus is on food produced and sold domestically. It also has responsibility for monitoring imported food and issuing export certificates for processed food products.

The ministry investigates food-borne illnesses; monitors imported food; undertakes food recalls; samples product for chemical and microbiological analysis; monitors labelling; and approves premises not covered by MAF.

The MoH delivers some of its services through statutory officers such as Health Protection Officers and Medical Officers of Health appointed by the Director-General of Health under the provisions of the Health Act 1956. These staff are employed by the various Crown Health Enterprises but are subject to direction by the Director-General.[10]

2.6.2 Ministry of Agriculture

Although MAF's core functions relate largely to the certification of primary product for export, in practice it has assumed responsibility for all facilities processing primary products for domestic consumption and export.[11] MAF advises government on food safety matters within MAF's area of responsibility. MAF is responsible for New Zealand's agricultural security system comprising border protection; import health standards; post-entry quarantine; surveillance; and emergency disease and pest response.

Recent government policy has required MAF to separate standard setting for safety programmes from the delivery of front-line inspection services. The former is provided by MAFRA and the latter by MQM.

MAFRA has as its primary objective "maintaining and improving health guarantees to domestic and international consumers while facilitating optimum industry returns". It is responsible for developing and setting New Zealand standards for agricultural security, food product safety for exports of horticultural, dairy, meat and seafood products, and for meat and dairy products for domestic consumption; pest and disease management; and agricultural compounds and animal welfare.

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10 Ministry of Commerce (1996), *Food Administration Framework: Review Programme*, p 1.

11 *ibid*, p 1.

MAFRA is responsible for negotiating agreements on sanitary and/or phytosanitary standards with trading partners and in international fora. It sets and approves rules and standards within New Zealand. It accredits agricultural security and quality assurance systems and providers. It audits compliance with systems and standards and purchases services on behalf of the government.[12]

MQM delivers a range of quality assurance and risk assessment services to industry. It is managed through a separate advisory board, chaired by the Director-General of MAF, and has a staff of 1,800.

MQM provides border surveillance at all points of entry to New Zealand. MQM is also involved in the management of quarantine. MQM provides a nationwide team, which is ready to respond to an exotic disease or pest outbreak.

2.6.3 Memorandum of Agreement Between Ministries of Health and Agriculture

Both the MoH and the MAF have responsibilities for food safety and food standards. The functions common to the two ministries at a national level include standard setting; registration of food/product safety programmes; regulatory policy; approval of codes of practice; accreditation of auditors; and national regulatory intervention.

A memorandum of agreement was signed in 1996 between the two agencies. The purpose of the agreement is to:

- clarify the accountabilities of the two parties in relation to food safety administration and food safety issues;
- coordinate input into international agreements;
- ensure New Zealand practices are consistent with international norms;
- coordinate the introduction of new food safety management tools;
- effectively respond to new and emerging food safety hazards;
- ensure consistency in standard setting between the two parties;
- provide for a mechanism to enable cooperation in relevant areas; and
- ensure information flows between the two parties.[13]

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12 Ministry of Agriculture (1996), *MAF Regulatory Authority: 1996/1997*, p 2.

13 *Memorandum of Agreement between the Ministry of Agriculture and the Ministry of Health*, October 1996.

The memorandum establishes a Food Safety Coordination Group with a small number of senior staff from each ministry. The objective of the group is to better coordinate the activities of the two agencies.

In the memorandum the parties agree that:

- MAF and MoH will supply each other with technical advice on food safety issues;
- MAF will coordinate New Zealand's technical involvement in the international standard setting process; and
- the parties will work together to
  - develop standards where there is a joint interest,
  - develop and apply a risk analysis approach,
  - consult and work together when 'new' health hazards are identified,
  - align monitoring and surveillance programmes,
  - work together in promoting and advising on food safety programmes,
  - work together to promote integrated regulatory compliance programmes, and
  - exchange information, consult, advise and liaise on administrative matters.

The government has directed the ministries, in consultation with the State Services Commission and The Treasury to review and report back to ministers by 30 June 1997 on:

- the effectiveness of the Food Safety Coordination Group and the memorandum of agreement in improving the coordination between both agencies; and
- whether the food regulatory functions of MoH and MAF should be integrated.[14]

2.6.4 Territorial Local Authorities

Territorial local authorities (TLAs) have statutory responsibilities for food safety under the Food Hygiene Regulations 1974. Each TLA has its own systems and procedures for the administration of the Food Hygiene Regulations 1974 developed according to local needs. Arrangements are not necessarily compatible between TLAs, nor with those undertaken by the MoH and designated officers.

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[14] Ministry of Commerce, *op cit*, p 7. The report has been requested from the Ministry of Health under the Official Information Act 1982 but no response has been received.

The Food Act 1981 provides for TLAs to grant exemptions from the Food Hygiene Regulations 1974. The Act sets out the criteria that the TLAs need to follow. It also explains how the TLAs and the MoH will cooperate to form a food administration regime that is consistent and has an acceptable degree of integrity. The Act provides for the Minister of Health to establish uniform performance criteria that must be met in the approval of food safety programmes.[15]

TLAs will be able to offer an audit service to the food industry. The service must comply with the same criteria applying to other service providers. In addition, the TLAs must ensure that there are no conflicts of interest between their regulatory and provider functions.[16]

2.6.5 Ministry of Foreign Affairs and Trade

The Ministry of Foreign Affairs and Trade is responsible for representing New Zealand's interests in bilateral and multilateral government-to-government negotiations involving food safety and food standard issues, including market access matters.

2.6.6 Ministry of Commerce

The Ministry of Commerce is involved in food policy formulation as an extension of its work in the maintenance of market access and the monitoring of border control issues. The ministry has worked, for example, to overcome the use of food standards as non-tariff barriers to trade. It has worked to ensure that New Zealand does not adopt standards for chemical and mineral residues that are significantly more restrictive than our overseas trading partners, and thus could impede trade. The ministry has also been involved in efforts to minimise the costs to New Zealand companies of complying with food safety requirements.

2.6.7 Commerce Commission

The Commerce Commission is responsible for enforcing the Fair Trading Act 1986.

2.6.8 Officials Committee on Food Administration

The Officials Committee on Food Administration was established by Cabinet in July 1993 to formulate a strategic overview of food administration. The committee is convened by the Department of Prime Minister and Cabinet, and has representatives from the MoH, MAF, and the Ministry of Foreign Affairs and Trade. The committee has been charged with identifying and assessing options for reorganising New Zealand's system of food administration to make it more coherent, transparent and efficient.[17]

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15 Ministry of Health (1996), *Procedures Relating to the Approval of Food Safety Programmes: A Consultation Paper*, pp 1 and 4.

16 *ibid*, p 40.

17 *ibid*, p 2.

2.6.9 Australia New Zealand Food Authority

Australia New Zealand Food Authority (ANZFA) is an independent expert body which is responsible for developing, varying and reviewing standards for food in Australia and New Zealand. It has a range of other functions in Australia including coordinating national food surveillance and recall systems, conducting research, assessing policies on imported food and developing codes of practice with industry. ANZFA works in partnership with the Australian and New Zealand governments, the Australian states and territories and other government agencies. ANZFA contributes to debate at the Codex meetings and takes account of Codex principles in establishing food standards.

ANZFA is established as a statutory authority under Australian commonwealth law. The Authority has a board with a full-time chairperson who is also the chief executive, plus six part-time board members. Members are government-appointed and can hold office for up to five years.

The Australia New Zealand Food Standards Council (ANZFSC) is made up of Australian commonwealth, state and territory health ministers and the New Zealand Associate Minister of Health. ANZFSC considers recommendations made to it by ANZFA on draft food standards or draft variations of standards and generally oversees the implementation and operation of uniform standards. ANZFSC may adopt, amend or reject the authority's recommendations or return them for consideration.

The Australia New Zealand Food Authority Advisory Committee (ANZFAAC) advises on matters referred to it by the authority or by the states or territories or New Zealand. It helps progress ANZFSC issues and plays a role in advising ministers and the authority on all matters taken up at ANZFSC meetings.

ANZFAAC is made up of the authority chairperson, members nominated by each state and territory, New Zealand and other specific government agencies from Australia and New Zealand.

2.7 Biosecurity Administration

The Biosecurity Act 1993 establishes a Minister of Biosecurity, but no ministry. The Ministries of Health, Agriculture, Forestry and Fisheries and the Department of Conservation all have biosecurity responsibilities. A council has been established to coordinate biosecurity responsibilities across the different organisations. The council has an independent chairman, and representatives from each of the organisations.

MAF is accountable for preventing the introduction and establishment of pests and unwanted organisms affecting animals, plants and the environment by prohibiting or restricting the importation into New Zealand of risky goods, and eradicating or controlling such pests and unwanted organisms within New Zealand.

2.8 Summary

The safety of food for domestic consumption is largely governed by the Food Act 1981 and administered by the MoH. The safety of primary products produced for export and domestic consumption is governed for the most part by the Dairy Industry Act 1952 and the Meat Act 1981 and administered by MAF. Food standards are set through a joint standard setting regime with Australia and administered by ANZFA. Local authorities and a number of government agencies are involved in food and biosecurity administration. The primary agencies are MoH, MAF and ANZFA.

Section 3: Framework for Reviewing Regulation

3.1 Introduction

This section presents a framework for reviewing regulations applying to the food and beverage industry. We begin in section 3.2 by presenting an overview of the proposed framework. Sections 3.3 to 3.7 expand on the key elements of the framework. Section 3.3 examines the efficiency and equity criteria that could be used for assessing regulation. Section 3.4 examines real world constraints that affect both market and government actions. The case for a clear specification of the objectives of regulation is made in section 3.5. Section 3.6 reviews possible tools for comparing regulatory options. Some elements of a robust process for introducing and reviewing regulation are examined in section 3.7 and a brief examination of New Zealand's approach to regulation is provided. Section 3.8 summarises the discussion.

3.2 Overview of Framework

In this section we summarise the components which together form a framework for reviewing regulatory options. The components, which we discuss in more detail in the following sections, are outlined below:

- A criterion is needed for choosing between different alternatives. We propose that economic efficiency be adopted as the sole criterion for reviewing health, safety and environmental regulation. While equity considerations are a valid concern for governments, these are more effectively achieved through social policies rather than industry regulation.

- The analysis should recognise that real world constraints apply to both markets and government actions. A comparative institutional approach recognises that both the private sector and the government must contend with constraints such as information costs, uncertainty, and the costs of negotiating, monitoring and enforcing contracts. The analysis should also recognise that regulation is shaped and modified by a complex interaction of different interest groups, regulatory agencies and politicians who use the available processes to pursue their own objectives.

- The objectives of regulation need to be clearly stated and meaningful, otherwise it is difficult to assess the merits of a proposed regulation or to hold the proponents of regulation and the agencies that implement them accountable for their performance.

- Tools are required for assessing whether regulation is likely to bring net benefits. The basic framework involves assessing the likely costs and benefits of regulation

(against the status quo) and considering whether the institutional arrangements proposed are likely to facilitate efficient behaviour.

- A robust process should be in place that ensures that due consideration is given to the relevant options.

These steps are discussed in more detail below, followed by a brief review of how New Zealand's regulatory approach measures up against the framework.

3.3 Criteria for Assessing Regulation

3.3.1 Introduction

In choosing between different regulatory options (including the option of no explicit regulation) it is necessary to have criteria for making the choice.

In our view, the criterion for reviewing regulations applying to the food industry should be the efficiency with which society uses its scarce resources to satisfy competing demands. The objective should be to obtain the most efficient possible outcomes given the constraints (such as barriers to trade) which are outside New Zealand's control.

Efficiency is not advocated as the sole criterion for guiding government policy. People are legitimately concerned about equity objectives. However, we believe that there are sound reasons for not pursuing equity objectives through industry-specific regulation.

3.3.2 Economic Efficiency

A concern with efficiency is a concern about enabling individuals to attain, at the least possible cost, any number of ends that they value. An efficiency criterion accommodates the value to individuals of leisure, culture, environmental amenities and the like. It incorporates consumer preferences for the availability of services, quality of output, the safety of products, and service levels. Economists use the concept of efficiency to evaluate the success with which an economic system combines scarce resources to satisfy competing wants.

In principle, an economic system will be efficient if the following conditions hold:

- It is not possible to produce more of any one commodity which contributes positively to an individual's welfare without having to sacrifice production of another commodity. Economists call this *productive efficiency.* At the level of the firm, productive efficiency exists when a firm has adopted the least cost methods of production including the most efficient internal organisation for producing a given set of goods and services.

- No alternative combination of outputs in the economy would enhance the welfare of any one individual, except at the expense of someone else. Economists call this *allocative efficiency*. At the enterprise level, allocative efficiency requires that the quantity of each good or service produced is such that the incremental or marginal cost of producing an extra unit of output just matches consumers' willingness to pay for it.

- The optimality of consumption, savings and investment over time is also critical. Economists say that *dynamic efficiency* has been achieved when it is not possible to increase anyone's welfare without reducing that of someone else by altering savings and investment decisions.

Strict application of the efficiency criterion holds that one alternative is only superior to another if no individual is expected to be worse off under that alternative. This is the Pareto criterion. Strictly applied it would not provide rankings for many choices so that decisions would have to be made on some other basis.

A more practical approach is to consider which of the alternatives is more likely to result in incentive structures and institutions that allow the members of society as a whole to obtain the best possible outcomes from scarce resources. This approach, which is the one adopted here, considers which alternative might allow prices to most accurately track costs and create the best incentives to discover consumer preferences and to meet them at least cost.

Acceptance of efficiency as the sole objective for government policy in industry regulation provides no general implications as to the extent of government involvement in the relevant sphere of activity. A moderate degree of government intervention may be efficient in some circumstances and inefficient in others.

3.3.3 Fairness

In a society in which resources are scarce and one person's use of a scarce resource affects its use by another person, the equity or fairness of public and private arrangements is likely to concern people and hence governments. There are a range of different concepts of equity which might guide the formulation of policy. These include the fairness of outcomes (eg the distribution of income), the fairness of processes (eg treatment on merit rather than treatment based on status) and the 'benefit' principle which stipulates that the individuals and groups who receive the benefits of a government-provided service should pay for its costs.

As a matter of economic policy, the question of whether to use regulation of industries to pursue distributional or other equity objectives is part of the task of cost-effectively matching government policy objectives with policy instruments. In our view, the pursuit of equity objectives through industry policy would be likely to prove a costly means of transferring wealth, and would barely affect overall wealth distribution, given the relatively small sums at stake. In most circumstances, distribution objectives are achieved at least economic cost through the tax and welfare systems.

Fairness of process and efficiency can be compatible objectives. Often the most efficient solution to a problem will promote healthy cooperation and competition, confront individuals with the costs they impose on society and reduce the likelihood of subsequent costly disputes over fairness.

3.4 Real World Constraints

3.4.1 A 'Comparative Institutional Approach'

In determining whether there is a market 'problem' that warrants a regulatory 'solution', it is important not to assume away constraints that affect alternative options. These constraints are unavoidable features of reality: information costs including the costs of uncertainty; limits on the ability of individuals to process information and make decisions; and the costs of negotiating, monitoring and enforcing the explicit and implicit contracts that underlie all transactions. These costs are collectively termed 'transaction costs'.

The attractiveness of alternative regulatory options (including the no regulation option) depends on their comparative strengths and weaknesses in dealing with these features of the real world. It is not sufficient to demonstrate that market processes do not conform with a theoretical model which ignores real world constraints. Government interventions are also inevitably less than ideal. Justifying a particular intervention therefore requires comparing two flawed alternatives. Regulation can only be justified on the basis of its comparative strength in achieving specified goals. This is the comparative institutional approach to policy evaluation. In addition the logic of this approach requires that any intervention which passes the test must also be superior to all alternative interventions since governments should choose the best course of action.

Harold Demsetz coined the phrase 'nirvana approach' to describe the approach whereby regulations were justified on the basis of the failure of the market to measure up to a theoretical ideal.

> The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing 'imperfect' institutional arrangement. This *nirvana* approach differs considerably from a *comparative institutional* approach in which the relevant choice is between alternative real institutional arrangements. In practice, those who adopt the nirvana viewpoint seek to discover discrepancies between the ideal and the real and if discrepancies are found, they deduce that the real is inefficient. Users of the comparative institutional approach attempt to assess which alternative real institutional arrangement seems best able to cope with the economic problem. Practitioners of this approach may use an ideal norm to provide standards from which divergences are assessed for all practical alternatives of interest and select as efficient that alternative that seems most likely to minimise the divergence.[18]

[18] Demsetz, H (1969), "Information and Efficiency: Another Viewpoint", *Journal of Law and Economics*, 12, p 1.

The comparative institutional approach maintains that much harm, and little useful purpose is served by pronouncing market failure when no superior alternative has been shown to exist. All achievable regulatory options must contend with unavoidable features of reality and are therefore 'imperfect' and 'inefficient' when compared with stylised models that ignore costly features of the real world. However, this notion of imperfection is not only irrelevant but also potentially misleading when used to evaluate alternative regulatory arrangements.

An important consequence of the comparative institutional approach is that real world details matter in determining the reasons for observed 'problems' and for assessing the impact of different regulatory options. Analysts assessing regulatory alternatives must gain a detailed understanding of the technological, legal, informational and incentive dimensions of the 'problem' being analysed.

Public policies oriented towards efficiency must focus very closely on the institutional environment that is created by government action. A crucial determinant of the quality of economic outcomes is the quality of institutional arrangements that mould behaviour by determining and constraining individuals' rights, incentives, opportunities and costs of transacting.

The task of determining the optimal institutional arrangements in complex situations can be extremely demanding. The scope for market and political failures must be carefully assessed and actions taken to deal with them. Difficulties which may need to be considered include: those associated with uncontracted-for third-party effects (for example, it may be hard to stop people benefiting from activities for which they have not paid and/or to ensure that others are adequately compensated for the costs imposed on them by others); possible abuse of market power; the scope for opportunism and gaming; the possibility of regulatory and bureaucratic capture; and disputes arising over historical property rights.

3.4.2 The Political Dimensions of Economic Regulation

Proponents of industry-specific regulation usually argue that government intervention is required to correct 'market failures'. Regulation has been frequently proposed on the basis of natural monopoly, spillover effects, imperfect or asymmetric information, contracting costs, and free-rider issues. These are the concerns that we believe should motivate policy-makers.

But recent economic analysis has provided support for an explanation for regulation that is known as the political theory of regulation or public choice analysis. The public choice approach suggests that rather than regulation being designed by decision-makers who are always motivated by the common good, regulation results from the complex interaction of different interest groups, regulatory agencies and politicians attempting to use available processes to pursue their own objectives.

Interest groups can use the legislative process or influence regulatory agencies to promote regulations which provide benefits to themselves. Politicians use regulation as a device for transferring income to well-organised groups in exchange for political support.

Even when politicians are motivated by economic efficiency or other 'public spirited' objectives, there are limits to their ability to design policies which achieve these objectives. Actual outcomes will depend on the institutional arrangements in place (for example, the existence or non-existence of a specialist regulatory body). More generally, interest groups are likely to influence the actual operation of regulations in ways that were not intended by the policy-maker.

Similarly, regulatory agencies can affect the way that regulations operate in practice. Once a regulatory agency is established, it develops behavioural patterns and a dynamic of its own that may be only partially constrained by politicians. It is costly for governments to control agencies and to ensure that they pursue objectives specified by politicians. Agencies generally possess better information than politicians about the functions they perform. Monitoring them tends to be costly. Regulators may have their own political agenda or be captured by interest groups. And they may lobby for interventions that maximise their own influence by giving them greater discretion over the implementation of policy.

Regulators have incentives to seek out new areas of activity even if these would reduce efficiency or if the original reason for regulation no longer exists. Since bureaucrats are unable to capture profits directly, they sometimes have incentives to increase the size of their agency as a means of increasing their influence and remuneration. The inclination of regulators to involve themselves in activities outside their intended jurisdiction is an important characteristic of regulation.

The political environment will influence the behaviour of regulatory agencies. The political environment often provides incentives for agencies to minimise the risk of outside criticism and strain, and may result in agencies focusing on the short, rather than the long term. Agencies will generally be exposed to greater criticism for allowing products that create safety problems (and identifiable victims), than for allowing lives (unidentified) to be lost by delaying entry of products on to the market. For example, the consequences of approving the use of a pharmaceutical drug that subsequently proves to be unsafe are likely to be more serious for an agency than the failure to approve treatments that could have saved many lives.

In terms of efficiency, the net effect of regulation can be either positive or negative depending on whether it usefully ameliorates a problem that would arise in the absence of regulation. An assessment of the case for regulation must determine not only whether in theory it would improve outcomes, but whether, given the existence of various interest groups and the difficulty of controlling regulatory agencies, it would maximise overall welfare in practice. The political forces that influence regulatory outcomes need to be taken into account in assessing the likely benefits from regulation and in designing robust regulatory arrangements.

3.5 Clear Specification of the Objective(s) of Regulation

A prerequisite for the rigorous analysis of alternative regulatory solutions is a clear understanding of the nature and extent of the underlying problems the regulation is designed to address. This should clearly identify the supposed 'market failure' that might justify intervention, and specify what are the hoped-for benefits of intervention. While this may sound trite, poorly specified policy concerns frequently lead to poorly focused analysis and inappropriate solutions.

An understanding of the nature of the problem should be followed by a clear specification of the policy objective or objectives to be achieved by regulation. Unless the objective of regulation is clearly stated and meaningful, it will be difficult to assess the merits of any proposed regulation or to hold the proponents of regulations and the agencies that implement them accountable for their performance.

It is common practice for government to adopt objectives such as 'less crime', 'safer roads', and 'safer food' which take no account of costs. Such objectives imply that, for example, more safety is better irrespective of the costs of achieving it. Any money spent in reducing risks would seem to meet the objective, regardless of how costly or how inefficient the measures were. Given the lack of explicit regard for cost, it is impossible to measure the performance of an agency charged with achieving such an objective.

Applying multiple objectives to regulation of an industry may lead to poor outcomes. Unless trade-offs among conflicting objectives are clearly specified and agreed to, multiple objectives provide no workable criteria for making well-focused decisions or monitoring their success. The adoption of non-conflicting objectives makes it much easier to monitor the effectiveness of regulation. Politicians and officials can be more readily held accountable for the resulting outcomes.

The clear specification of policy objectives is also necessary to enable the sensible matching of policy objectives and policy instruments.

The scope for rent-seeking and use of regulation in inefficient ways will be minimised where the objective is clearly specified, conflicting objectives are absent and the law is administered in a transparent manner. The clarity of regulation will be assisted by refusing to extend it into areas where it is not essential.

3.6 Assessment of Costs, Benefits and Incentives

The basic framework for assessing a proposed regulation involves requiring that the benefits of regulation outweigh the costs compared with the status quo, and that the net benefits of the proposed regulatory option (including the no regulation option) are greater than alternatives. In making this assessment it is important that the costs and benefits are assessed in terms of how the policy is likely to be implemented in practice – ie comparing 'market failures' with

problems created by 'government failures' rather than assuming that government interventions can solve any problems that are identified.

A cost-benefit approach recognises that it is inevitable that trade-offs be made between objectives such as 'safer food' and the costs of achieving such outcomes. Because resources are constrained it is not possible to achieve absolute levels of health and safety. For example, the only way to achieve absolute safety on the roads would be to prevent anyone from using them. Trade-offs must inevitably be made between different objectives with expenditure rationed between safety, for example, and other opportunities.[19]

Exactly how a cost-benefit test should be specified is controversial. If all consequences of regulation could be monetarised, there would be few difficulties in specifying a test. But social regulation efforts are often directed at outcomes whose market values are not independently observable. Many outcomes have non-monetary consequences for which attaching dollar values remain quite controversial.

A number of other criticisms are levelled at cost-benefit analysis. Cost-benefit analysis using market prices applies only to decisions made at the margin. Non-marginal projects might change prices, so that analysis using market prices is invalid. The analysis assumes that peoples' preferences are well informed, and their preferences are identical and remain stable through time, when this is not necessarily true.

Because of the difficulties of making cost-benefit analysis operational, alternative more limited analytical approaches are sometimes proposed. Risk-risk analysis recognises that measures adopted to reduce risks can create risks of their own and that regulation aimed at risk reduction should only be adopted if it results in a net reduction in risks.

An assessment of the relative costs of different regulatory approaches to achieving a stated objective – a cost-effectiveness study – is another tool that can be used for assessing regulatory options. This analysis assumes that alternative approaches produce the same outputs and seeks to identify the minimum cost approach. This approach could be relevant to considering how to meet regulatory requirements imposed by our trading partners at least cost.

A more general approach to reviewing regulatory alternatives involves identifying arrangements that are likely to facilitate efficient behaviour. Developments in economic thinking have clarified the principles that should govern the search for efficient institutional arrangements. In particular, arrangements are likely to be more efficient the more closely they conform to the following principles:

- individuals bear the full costs and benefits of their decisions;

[19] Viscusi, WK (1996), "Economic Foundations of the Current Reform Efforts", *Journal of Economic Perspectives*, 10, 3, p 120.

- precise limits to actions are specified – a high degree of precision reduces the costs of determining how resources can be used;

- the owners of assets enjoy a high degree of exclusivity in their ability to decide how to use their property, to retain income from that property, and to transfer the property rights to others; and

- coercive regulations are avoided except where they are warranted by specific difficulties in the relationship between the users and suppliers of a commodity. Where possible, parties should be given the opportunity to contract out of regulatory provisions.

3.7 Regulatory Process

The process whereby regulations are proposed, assessed and reviewed will affect the quality of regulation.

3.7.1 Analysis by the Government Agencies

Regulations are generally developed by government departments and ministries. Internal processes (for example peer review) that ensure high quality analysis at this stage of the process could help screen out many poor quality regulations. Once regulations have been developed, scrutiny by other departments and interdepartmental committees can provide another filter. Budget constraints and bureaucratic objectives will affect the quality of people employed and therefore the quality of the analysis. The political process (select committees and parliament) further shapes regulation. The nature of these institutions may also affect the quality of regulation.

3.7.2 Consultation

Public consultation encourages people from outside the public service to contribute to the assessment of regulation, better ensuring that all the relevant costs and benefits are calculated and that the relevant regulatory alternatives are identified. The industry subject to regulation generally has much more information about the industry than the government.

Consultation is costly both for the bureaucrats and for private individuals and firms. The collection of information and presentation of a case can involve significant resource costs. The private sector will only be willing to make this commitment if there is a real prospect that its input will influence outcomes. Thus consultation must be meaningful to be effective.

Consultation and input from the private sector can also help to counteract the tendency of regulatory agencies to seek to expand their area of influence irrespective of the net costs or benefits. On the other hand, there is a risk that consultation will result in those with a strong interest in a particular outcome being represented and possibly capturing the regulatory

process, while those affected to only a small extent (although they may be many in number) may be under-represented.

3.7.3 Monitoring and Review

A general problem with regulatory interventions is that they are not subject to a budget constraint, they often lack transparency as to impact, they are not generally subject to regular review, and regulatory oversight is often spread throughout government. Under current arrangements the review of regulations is undertaken on an *ad hoc* basis.

The overall quality of regulation could be improved by the government requiring a regular review of the performance of regulation and regulatory bodies against the objectives of the regulation. This monitoring could be undertaken by departments, by The Treasury, by an independent body, or by a select committee. If a process of regular monitoring were adopted there would need to be some way of prioritising the review work so that those regulations that were potentially the most costly were reviewed most frequently, but that over time all regulation was subject to review.

3.7.4 New Zealand Regulatory Processes

New Zealand has adopted some measures designed to improve the quality of regulation. Controls include chief executive performance agreements, Cabinet Office rules, analytical frameworks developed by a number of government departments and the requirement that all proposals going to Cabinet include an assessment of the likely compliance costs. Quality control provisions apply to the later stages of the regulatory process, eg parliamentary counsel has a role of ensuring the consistency and quality of drafting and coherence between drafts and existing law. Bills must be approved by the Cabinet Committee on Legislation and House Business before they are introduced to the House.[20]

A draft officials' paper (which was never finalised) identified a number of weaknesses in the regulation-making process.[21] These included:

- "poor policy analysis, in particular inadequate problem identification and failure to identify significant impacts of a proposed regulation;
- inadequate consultation;
- poor understanding of Ministers' concerns by policy advisers;
- insufficient time devoted to policy development;

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[20] Government officials (undated), *Improving the Quality of Regulation: Response to the Finance and Expenditure Committee on Improving the Process and Framework for Making and Reviewing Regulation*, pp 3–4.

[21] *ibid*, pp 4–7.

- poor communication between those who develop policy and those who will be required to carry it out, resulting in the regulation having unintended effects;

- departments giving a low priority to comprehensive monitoring of the impacts of regulation and to reviewing the need for existing regulation;

- departments being unaware of changes in the impact of regulation in a dynamic economy and social environment. This can result in regulation that is no longer relevant or is not amended to meet changing circumstances which may therefore impose unnecessary costs."

In designing a process which would address these weaknesses the government has rejected prescriptive approaches such as establishing a regulation review office, or a formal quality assurance scheme on the grounds that these would be relatively ineffective in New Zealand's contestable policy environment and could weaken the accountability of departments for the quality of the policy outputs.

The government instead endorsed a 'best practice' approach. It recommended that a working group of departmental officials be charged with responsibility for identifying 'best practice' approaches to making and reviewing regulation and promoting these approaches throughout the public service.

The paper proposes that officials promoting regulation be required to prepare a statement of the proposed objectives and likely impact of regulation. It proposes further that departments responsible for regulation prepare periodic statements of the actual impact of regulation.

3.8 Summary

In choosing between different regulatory options (including the option of no regulation) it is necessary to have criteria for making the choice. In our view the criterion for reviewing health, safety and environmental regulation should be efficiency. The objective of policy should be to maximise efficiency given the constraints over which New Zealand has no control. Acceptance of efficiency as the sole objective for government policy in industry regulation provides no general implications as to the extent of government involvement in the relevant sphere of activity.

In assessing whether regulation is justified, the costs of 'government failure' need to be assessed along with the costs of 'market failure'. Regulation is often proposed as a solution to 'market failure' where the failure is measured against a theoretical model which ignores real world constraints. This textbook approach differs considerably from the comparative institutional approach in which the relevant comparisons are between different real world arrangements. Both the private sector and the government must contend with constraints such as information costs, uncertainty, limits on the ability of individuals to process information and make decisions, and the costs of negotiating, monitoring and enforcing the implicit and explicit contracts that underlie all transactions. Determining the best option (no

regulation, or alternative regulations) therefore requires comparing flawed options and choosing the one that best serves the objective of efficiency. Much harm, and little useful purpose is served by pronouncing market failure when no superior alternative has been shown to exist.

Regulation is not designed and operated in an institutional vacuum. Instead it is shaped and modified by a complex interaction of different interest groups, regulatory agencies, and politicians who use the available processes to pursue their own objectives. While politicians and regulators may be motivated by the public interest (however defined) the range of individuals' objectives and their ability to pursue these should be recognised when designing regulation.

A prerequisite for the rigorous analysis of alternative regulatory solutions is a clear understanding of the nature and extent of the problems the regulation is designed to address. Unless the objective of regulation is clearly stated and meaningful, it will be difficult to assess the merits of the proposed regulation or to hold the proponents of regulation and the agencies that implement them accountable for their performance.

The basic framework for assessing a proposed regulation involves an assessment of whether the benefits of regulation (or deregulation) outweigh the costs compared with the status quo, and that the net benefits of the proposed regulatory option are greater than alternatives. A related approach involves examining whether the institutional arrangements proposed are likely to facilitate efficient behaviour by individuals. Where regulation is imposed by international requirements, the efficiency standard suggests achieving the minimum standard at least cost.

Section 4: Possible 'Problems' Justifying Regulation

4.1 Introduction

In this section we consider whether there are any 'market failures' that might justify health, safety or environmental regulation. The section notes that most so-called market failures arise because of transaction costs – that is information costs, costs of negotiating and enforcing contracts and so on. These costs affect both market and government approaches to resource allocation. It is the comparative advantage of markets versus government intervention in handling these problems that is important in determining preferred options.

The section begins by comparing the common law and regulation as means of governing market relationships. Section 4.3 examines externalities, section 4.4 reviews public good issues, section 4.5 discusses information costs and section 4.6 examines health and safety risk. Concluding comments are presented in section 4.7.

4.2 Common Law and Regulation

The 'counterfactual' against which explicit regulation (ie regulation via statute) must be considered is common law.[22]

Common laws are the rules created by judges as the by-product of deciding cases or any field of law shaped mainly by judicial precedents.[23] The common law can be viewed in three major parts: the law of property concerned with creating and defining property rights; the law of contracts concerned with facilitating the voluntary movement of property rights into the hands of those that value them most highly; and the law of torts concerned with protecting property rights. In the absence of explicit regulation, property rights will generally be defined and enforced through the courts.

Common law relies minimally on public officials and mainly on private individuals (and their lawyers) motivated by self-interest to bring cases to the court. The government establishes the court system and provides judges who are public officials. The government does not directly intervene in determining specific decisions.

The common law process is an evolutionary one in which rights are defined and reassigned as relative values of competing rights change and the costs of enforcing rights change. The legal system has tended to define property rights when the benefits of the activities

[22] General statutes may also provide protection to consumers.

[23] Posner, RA (1986), *Economic Analysis of Law*, Little, Brown and Company, Boston and Toronto, p 29.

encouraged by such recognition exceed their social costs. Incentives to obey the rules established by common law rely on the threat of having to compensate victims for violation of the rules.

However, in more recent times some judges have adopted a more interventionist role, using the courts to pursue notions of fairness – rearranging contracts in accordance with what they regard as 'fair' rather than enforcing them. This means, for example, that it may be unwise to expect the courts to respect traditional contract or tort principles in the absence of regulation or if regulation is suddenly removed. This tendency towards interventionism reduces the contribution of common law to economic efficiency.

The common law process will not always resolve conflicting rights or result in a fair representation of all interests. In many cases, the costs of involvement in the legal process mean that some interests will not be represented. A problem may arise if the injury to each victim is too small to make a lawsuit worthwhile but the overall damage is large (although class actions may resolve some of these problems). Where the damages suffered are very large and the person imposing injury would not have the resources to pay a very large damages judgement, that person's incentive to comply with the law will be reduced. Another potential problem arises when the causal relationship between a particular injurer (or class of injurers) and a particular victim is obscure. For example, nuclear waste from a reactor may increase cancer by a measurable amount but it may not be possible to determine which cancers were caused by the reactor. Direct regulation may improve on outcomes in some circumstances.

Regulations, which are the rules established directly by the legislature, rely much more heavily than common law on politicians defining property rights and public officials (the staff of the regulatory agency) administering rules and modifying and enforcing rights. Government may have a limited ongoing role in monitoring the rights conferred by such regulations.

In some situations, regulations are an efficient means of resolving interdependencies between individuals. Where transaction costs are high and the common law is unable to facilitate mutually beneficial exchange, regulations may be efficient. For example, a regulation which limits the right of a factory to pollute may improve welfare. Regulation may increase the degree to which individuals have the exclusive right to use property, as in the definition of fishing quota, thereby improving welfare.

Regulation tends to be more costly overall than the common law process (although access to the courts may be very costly for individual cases). Regulation is continuous whereas the common law machinery is invoked only if someone is hurt; regulation tends to be more politicised; regulation may involve serious information problems; and resource use decisions may be made by people who do not bear all of the costs or benefits of their decisions. For both approaches, not all interests will necessarily be represented in the process. The legislative decision-making process appears to be more likely to take into account any income distribution implications of the proposed legislation than the common law adversary system

which, being concerned with concrete conflicting activities, is more likely to emphasise questions of relative costs.[24]

In summary, the different processes (common law or regulation) will tend to lead to different incentives for decision-makers and hence different outcomes in terms of economic efficiency.

4.3 Externalities

Externalities are said to occur when an individual's activities impose costs or confer benefits on another party that are outside any contractual agreement. Positive externalities are those that benefit others; negative externalities are those that make others worse off. The existence of externalities is commonly held to be a reason for government discouraging or encouraging an activity.

Externalities arise because of transaction costs. If transaction costs were zero, all people affected by the use of a resource could be identified and contracted with. Resource use decisions would, by definition, fully reflect the costs and benefits to all individuals of alternative resource use. Alternatively, in the absence of transaction costs a central planner could perfectly allocate resources to their best uses. Information about preferences, production technology and so on would be obtained costlessly by the central planner and goods could be allocated in such a way that the highest possible level of welfare was obtained.[25]

In the absence of transaction costs, a factory and its neighbours could get together to negotiate the optimal level of pollution. A factory could compensate neighbours for the right to pollute air. Alternatively, neighbours could pay the factory to restrict pollution if they valued clean air more than the factory valued the right to pollute. Whatever the initial allocation of rights, the same quality of air would be obtained through negotiation: it would be determined by the relative value of the clean air to neighbours and the value of the right to pollute to the factory.[26] A perfectly altruistic central planner would set allowed pollution at the same level.

This theoretical world of zero transaction costs does not exist. Transaction costs make it difficult and costly for private parties to identify and negotiate contracts between all parties. The common law can handle some of these third party problems particularly when the source of the third party effect is traceable and the number of parties affected is relatively small. For example, under the doctrine of nuisance, courts have followed a standard of reasonable use in many cases. An action is held to be lawful if reasonable in the circumstances, which has meant (approximately) that the benefit from continuing to undertake the action has exceeded

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24 *ibid*, p 496.

25 Cheung, SNS (1986), *Will China Go 'Capitalist'?*, Hobart Paper 94, 2nd edition, The Institute of Economic Affairs, London, p 37.

26 Thus the externality problem is 'reciprocal' – while it might be obvious that a polluter harms others by exposing them to pollution, a requirement that the polluting party reduces pollution harms that party.

the cost to the victims of either tolerating it or eliminating it. However, common law solutions have not always been effective where it is difficult to trace the source of pollution and each individual affected has had little incentive to take court action.

Given transaction costs, potentially beneficial transactions do not take place because the costs (including the transaction costs) of undertaking them outweigh any expected benefits. Although in these circumstances government action might be suggested, it also needs to be recognised that transaction costs prevent government agencies from obtaining full information about supposed problems, or costlessly reallocating resources, and that government action may be far from perfect.

Possible options for government intervention include actions which might decrease the costs of private individuals transacting in the market (eg by better defining property rights) or other options such as the use of taxes, legislative action, standards, and prohibitions.[27]

Defining more exclusive property rights, as has occurred in the fishing industry, is an example of where government intervention has probably yielded efficiency benefits. When the fishing resource was owned in common, people were able to use the resource without paying for it and without taking into account the impact on third parties using the resource. Although the community had a collective interest in investing in the resource and limiting exploitation of it, individuals could not be assured that they would capture any return on their investments. While the establishment of fishing quota has enhanced the value of the resource, defining property rights has not overcome problems such as the high cost of enforcing private property rights that led to the resource being owned in common in the first place.

Another example of government intervention is the Resource Management Act 1991, which is the main regulatory tool used to deal with environmental and planning externalities. The Act is widely regarded as imposing substantial costs on individuals and businesses. For example, the costs of securing approvals is higher than originally anticipated, resulting to a large extent from poor practice on the part of local government. The Act continues to be used as a tool to prevent competitors entering the market despite provisions in the Act aimed at preventing this. It also provides opportunities for some to hold up developments opportunistically, perhaps in the hope of being 'bought off' by the developer. The limited terms of consents and uncertainty over conditions applying during the term of a consent adversely affect long-term investments. Whether the benefits of the regulation outweigh the costs remains an open question.

Whatever regime is adopted, uncontracted-for costs and benefits (relative to a perfect competition benchmark) will remain, because the costs of 'correcting' such externalities will outweigh the benefits. For example, private bookshops do not need, or attempt, to charge people who browse and/or borrow books and magazines bought by someone else. Public spaces are provided in privately-owned malls with the costs recovered from those who shop

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[27] Dahlman, CJ (1979), "The Problem of Externality", in *The Theory of Market Failure: A Critical Examination*, ed Cowen, T (1988), George Mason University Press, Fairfax, Virginia, pp 209–234.

in such facilities. People may derive pleasure from well-maintained private gardens but this does not justify the government subsidising private gardens.

We consider whether safety externalities are an issue that justifies government intervention further below.

4.4 Public Goods

Public goods are a variation of the 'externality' problem. Public goods are not a problem in the absence of transaction costs. The problem is that when a large number of people potentially benefit from the production of a good, it may be very costly to identify and negotiate with them to determine their preferences and to obtain a contribution towards the production of the output.

An output is defined as a public good if two conditions are met: first, that one person's consumption of the product does not detract from another's enjoyment of it; and second, that non-paying users cannot be readily excluded from the consumption of the product.[28] Public goods include street lighting and national defence where exclusion is difficult. They also include the provision of uncrowded parks where exclusion is possible but considered undesirable because the same output can be supplied to additional people at no additional cost.

Where exclusion is possible, public goods can be provided privately. Even where exclusion is difficult the public good may still be provided by the private sector. For example, in a classic exposition Coase discusses how the private sector had been adequately supplying lighthouses (often cited as a clear case of a public good) since the seventeenth century.[29] Thus the existence of public goods may (or may not) justify government funding and/or providing the good or service. The optimal extent of government involvement has not been resolved conclusively and must be determined on a case-by-case basis.

4.5 Information Difficulties

Information problems are too often invoked as a justification for government intervention. If the government were to act whenever individuals had to take decisions with incomplete information, it would have to take over people's lives. In any case, governments themselves are handicapped by limited information, so to make a case for government intervention one has to demonstrate that governments better handle information difficulties.

Information is costly to obtain and individuals rationally choose not to be fully informed about all of the choices that they face. Because of imperfect information, individuals are

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[28] Some people emphasise the first part of this definition.

[29] Coase, RH (1974), "The Lighthouse in Economics" in *The Theory of Market Failure: A Critical Examination*, ed Cowen, T (1988), George Mason University Press, Fairfax, Virginia, pp 255–277.

likely to take decisions from time to time that they later regret when they have more information. Consumers have incomplete information in respect of the most important decisions in their lives – educational options, choice of country, career, and marriage partner. Even if consumers had much fuller information sets, a respectable case can be made that their ability to gather and process additional information is limited.[30]

In most circumstances, information about consumer preferences and production opportunities is so widely dispersed and costly to accumulate that efficient economic outcomes can be achieved only through heavy reliance on market arrangements. A market provides a powerful means of harnessing widely dispersed information and coordinating economic activity. It produces, uses and processes information without the conscious effort of any information collection agency and without individual participants needing to have a great deal of knowledge beyond their own firm's production possibilities, the value of their own labour, or their consumption preferences.

Prices, reflecting underlying conditions of supply and demand, are the by-product of the many exchanges that take place in the economy. Market-determined prices are commonly vastly superior to any other mechanism for disseminating information about relative scarcities and wants. The price mechanism coordinates individual actions and resolves many problems of interdependence.

It is suggested that private markets will 'under-provide' information because of their public good characteristics. The argument is that information can be passed at low cost once it is produced, so that private firms may not be able to reap a commercial return from investing in its production. However, in practice a great many individuals make a living from gathering, processing and communicating information that is valuable to consumers. Lawyers, research analysts, authors, editors of newspapers and magazines, architects, engineers and economists, to name a few, are all in the business of trading in information. Specialist consumer organisations provide information about products on a private (usually non-profit) basis. In fact often the real problem faced by consumers is a surfeit of information. Not all individuals have the time or inclination to sample all of the information available.

Although governments may sometimes have better information than individual consumers on the safety characteristics of particular products or the risks associated with activities, they generally have less information than individuals on preferences for risk and other features of a product. For example, the government cannot know what an individual's preferences are for different characteristics of food including flavour, texture, appearance, and calorific value, and the trade-offs that any individual is prepared to make between these characteristics, price and health risks such as food poisoning.

4.6 Inability to Properly Assess Risks to Health and Safety

[30] See Stiglitz, J (1985), "Information and Economic Analysis: A Perspective", *The Economic Journal*, 95, 0, supplement, pp 21–41 and Viscusi, WK (1989), "The Political Economy of Risk Communication Policies for Food and Alcoholic Beverages", p 91 in *The Political Economy of Government Regulation*, ed Shogren, JF, Dordrecht, Norwell, Massachusetts; and Kluwer Academic, London.

The presence of risks does not *per se* constitute a case for government regulation. Individuals accept risks voluntarily in a wide variety of circumstances, and the occurrence of negative or unfavourable outcomes is part of the relevant cost-benefit trade-off. We do not, for instance, argue that the speed limit on highways should be lowered until there are no more accidents. Preventing accident costs would also eliminate the benefits of driving at higher speeds. For similar reasons, an optimum does not involve perfectly safe food for everyone. Consumer welfare is not necessarily enhanced by the production of less risky products or by interventions that assign risks to producers if this is accompanied by higher prices. Some consumers may prefer to bear more risk in return for cheaper products. The critical question is whether the market will produce the levels of product safety which consumers desire, taking all relevant costs into account and, if not, whether regulation would improve matters.

In principle, if consumers want higher levels of product safety, they can contract with producers, either explicitly in the form of written agreements or third party guarantees, or implicitly, by agreeing to pay higher prices to higher quality suppliers. The contracting model, in which safety attributes are reflected in the price of products, works well in a wide variety of situations. Of course, while it generally costs more to produce a safer product, there is no guarantee that the most expensive product on the market is the safest.

A 'market failure' is sometimes proposed where one person's actions affect the risks or costs faced by a third party. For example, a car driver imposes risks on other road users which he or she may not bear fully, and therefore take into account in making decisions. Other drivers are aware of such risks when they choose to drive, so that arguably the perceived risk forms part of their decision on whether or not to drive. It is just one factor among many that affect the decision (for example the quality of the roads would also affect safety). The owner of the road, particularly if operating commercially, would have an incentive to establish rules to control risky behaviour (and would do so to the extent that the benefits outweighed the costs). Profits would be adversely affected if road users reduced their use of the road because of the behaviour of others. Thus, the third party problem might in this case be created by the lack of a commercial incentive on the owner of the road. Privatisation might help with this problem.

In the absence of New Zealand's 'no-fault' approach to accident compensation, tort rules could play a significant role in allocating responsibility for risk. Tort provides for people who impose costs on others to bear the brunt of those costs themselves; in other words, it promotes the internalisation of the costs of dangerous or obnoxious activities, including those that fall on outsiders. The incentives provided by tort rules are likely to be most significant in situations involving individuals who are strangers to each other (where the costs of contracting around risks beforehand can be very high), as is the case with a large proportion of motor vehicle accidents. There is some evidence that the adoption of 'no-fault' regimes for motor vehicle accidents, in a number of jurisdictions, has led to reduced incentives for care and increases in the costs imposed by accidents.[31]

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[31] See, for example, Rea, SA (1987), "Economic Analysis of Fault and No-Fault Liability Systems", *Canadian Business Law Journal*, 12, pp 444–472.

The capacity of tort to assist in accident deterrence would depend very much on both the choice of liability rules and the legal process adopted,[32] and the nature of any ongoing government role in regulation of insurance markets. The experience in the United States suggests that the combination of flawed tort regimes and at times extensive government intervention in insurance markets can produce decidedly unhealthy – and unhelpful – results. There is a need, therefore, for careful analysis not only of the deterrent effects of differing tort rules, but also of the way in which regulatory and legal regimes interact, before reintroducing access to tort in New Zealand.

A call for regulation of risky activities is sometimes made on the observation that even where individuals fully bear the costs of their own decisions, they may incorrectly assess the extent of risks. One of the principal anomalies that has been documented in the risk-perception and choice under uncertainty literature is that individuals tend to overreact to increases in the risk level. Viscusi has termed this a 'reference risk' effect whereby changes in the risk level from the accustomed risk lead to an exaggerated response in terms of the implicit risk-dollar trade-off reflected in individual's decisions.[33] Individuals generally overreact to highly publicised and dramatic risks. People often react with alarm to risk increases but are less concerned to achieve a comparable risk reduction.[34]

Because of the sensitivity of people's perceptions of risk to publicity as well as to the level of risk, the pressures that will be exerted on regulatory agencies will not necessarily be in line with the directions that would maximise welfare if the real risks were known. An issue is whether government's response should be based on public perceptions of risk and therefore their fears, or the actual risks assuming that government has this superior information.[35]

The other well-documented perception bias is the pronounced tendency for individuals to overestimate low probability events and underestimate larger risks. There is a tendency to overestimate the risks associated with lower probability events such as botulism, tornadoes, and floods, and a tendency to underestimate the risks associated with higher risk events such as cancer, heart disease, and stroke.

The difficulty of interpreting probabilities does not necessarily favour government regulation over private market alternatives. If individuals cannot properly interpret probabilities in a private market context, most likely they cannot form the correct interpretation as regulators either, or as voters evaluating the performance of politicians and regulators. The case for

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32 For example, the problems experienced with recourse to tort remedies in the United States appear to derive at least in part from the practice of relying on juries to decide both liability and the level of damages, and from the tendency to allocate liability according to the relative depth of the pockets of the parties' insurance companies. One way of addressing the problem of excessive payments associated with the use of tort in the United States is for fines to be paid into the state coffers rather than being treated as compensation for the 'victim'.

33 Viscusi WK (1995), Carcinogen Regulation: Risk Characteristics and the Synthetic Risk Bias", *The American Economic Review*, 85, 2, pp 51–52.

34 Viscusi, WK (1992), *Fatal Tradeoffs: Public and Private Responsibility for Risk*, Oxford University Press, New York, p 9.

35 Viscusi WK, Vernon JM and Harrington JE (1995), *The Economics of Regulation and Antitrust*, The MIT Press, Cambridge, Massachusetts, London, England, pp 662–663.

regulation increases in strength, however, to the extent that individuals 'underestimate' the relevance of small probabilities. Since governmental bureaucrats tend to impose higher levels of safety than is optimal, the two biases would offset each other to some extent. If consumers tend to be too careless, government could provide information or enforce standards of relatively high care. Alternatively, if individuals tend to overestimate the relevance of very small probabilities, the case for government regulation is correspondingly weaker, since individuals are being excessively cautious in any case.

The literature on cognitive biases can be criticised on the grounds that incorrect estimation of probabilities does not necessarily represent an imperfection to be corrected. Individual perceptions of risk reflect a complex mix of attitudes about the kinds of risks people are willing to take, the timing of those risks, and the mix of different kinds of risk. Given the complexity of the entire judgment, it is difficult for outside observers to ever know that a given probability estimation is 'incorrect'. To consider a concrete example, some individuals may feel that drowning is a worse death than a fatal heart attack. When asked about the relative risks of the two fates, these individuals may attach an excessively high likelihood to drowning, as a reflection of the horror they feel at the idea. If we compare the questionnaire answers to the statistical numbers, it will appear that individuals err and overestimate the risk of drowning. Nonetheless it would be incorrect for public policy to 'correct' this reported preference and act on the statistical number. The reported number, although mathematically inaccurate in one regard, does in fact reflect a real difference in cost between the two alternatives. Individuals do not always report their preferences correctly, but their underlying behavioural propensities are not necessarily irrational.

A range of government interventions has been aimed at affecting product risks. These interventions include the allocation of product liability to manufacturers, mandating quality standards (eg food safety standards), or requiring particular consumer behaviour (eg the wearing of seat belts).

Mandating risk levels is problematic since individuals' preferences as to the trade-off between cost and risk differ, just as do tastes and preferences for other economic goods. Regulation for a single risk standard imposes costs on those who would have been prepared to accept a higher level of risk for a lower price. Product standards may require producers to produce and consumers to pay for a standard of output that is higher than many consumers would choose voluntarily. Although product standards impose requirements on suppliers, in reality the higher costs are ultimately borne by consumers. To the extent that consumers would rather not pay for the level of quality required, resources are wasted. The consumers who are disadvantaged by such requirements are those who place the most emphasis on a low price. Arguably these are low income individuals.

Determining individuals' actual preferences for risk reduction is also difficult. For example, large discrepancies are observed between the buying and selling prices for risk reduction. People may be prepared to pay more to prevent a risk from increasing than they are willing to spend to achieve a comparable risk reduction. Substantial differences in the valuations derived raise the issue of which valuation is appropriate.

In assessing the benefits of safety intervention, it is important that what is assessed are the actual benefits rather than the hoped-for benefits.

For example, it was expected that requiring drivers to wear seat belts or cars to be fitted with air bags would result in a reduction in injuries and deaths. However, empirical studies indicate that drivers compensate for their increased safety by driving more dangerously (since the safety benefits from added care are diminished). The result is that injuries and deaths suffered by third parties (passengers, pedestrians and other road users) increase while injuries and deaths of car drivers decrease by less than expected.[36] There is some controversy as to the extent of this effect, although experts accept its existence.

Another impact that is observed could be described as a 'lulling' effect. The requirement for child-resistant (not child-proof) caps to be put on chemicals and drugs has not had the impact on child deaths that was expected. The explanation for this outcome is that consumers are induced into a false sense of security by the safety mechanism and take less care with the storage of such products, so that children have greater access to them and some are able to remove the caps.[37]

The scope for regulatory action needs to be kept in perspective. Accidental deaths, which are one of the primary focuses of regulatory efforts, make up less than 6 percent of the total death rate so that even a fully effective regulatory regime would play only a small part in reducing mortality. Even for those activities that are potentially responsive to regulation, outcomes are very dependent on individual behaviour, which may or may not be consistent with regulatory intentions.[38]

4.7 Other

A number of regulations are designed to facilitate transactions between individuals within a country or to facilitate international trade. Some regulations in effect codify common law practices (for example the Sale of Goods Act 1908).

Regulations may be required to implement the requirements imposed by foreign countries as a prerequisite for export to those countries. In the short term, exporters must conform to the regulatory standards imposed by foreign countries. In the longer term, foreign regulatory requirements that are inappropriate can be challenged through government-to-government negotiations or through other international arrangements.

4.8 Summary

Regulation is commonly defended on the grounds of the following potential 'market failures':

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36 Viscusi, Vernon and Harrington, *op cit*, pp 761–762.

37 Viscusi, Vernon and Harrington, *op cit*, p 764.

38 *ibid*, p 657.

- an individual's activities impose costs or confer benefits on another party that are outside any contractual agreement ('externalities');

- outputs are public goods, ie one person's consumption of the product does not detract from another's enjoyment of it and non-paying users cannot be readily excluded from consumption of the product;

- consumers have imperfect information about the quality and safety of the products they use and the food and beverages they consume; and/or

- individuals have difficulty correctly assessing the risks of harm from products.

None of these failures provides compelling grounds for government intervention. First, governments also lack perfect information about quality, safety and risk. Second, they lack information about individuals' diverse willingness to pay for less risk. Third, governments commonly face similar transaction cost problems to those that generate externalities in the market place. Fourth, governments, through taxation and regulation, can generate significant externalities themselves in the form of costs that lie outside any contractual agreement. Fifth, numerous commodities have public good attributes, but are provided privately. Governments do not have superior information about the willingness of individuals to pay for public goods. Finally, governments are subject to their own failures. For example, government agencies cannot be constrained to act entirely in accord with politicians' objectives and politicians themselves do not act completely consistently with voters' preferences.

Regulations may also be required to conform to the requirements of importing countries. In the short term, exporters must conform to the foreign country's requirements. In the longer term, government can challenge inappropriate standards through government-to-government negotiations or through other international agreements.

Section 5: Cost Recovery Framework

5.1 Introduction

For the purposes of this section, we assume that the government is providing services to private producers. The issue we discuss is how such government-provided services should be funded.

This section examines two distinct standards for determining the funding of government services: equity and efficiency. Section 5.2 examines equity bases for charging, focusing on the benefit standard of equity. Section 5.3 examines the implication of the efficiency standard. Section 5.4 compares the two standards. A summary is provided in section 5.5.

5.2 Equity

5.2.1 The Benefit Standard

The benefit standard for government funding stipulates that the individuals and groups who receive the benefits of a service should pay for its costs. It commands support since it accords with some notions of fairness.

This principle was cited by Adam Smith, in *The Wealth of Nations*, and has remained prominent in the theory of taxation since that time. Throughout this discussion we refer to this principle as the benefit standard. We take it to specify that costs should be recovered in proportion to the benefits conferred.

Applying the benefit standard raises many practical and conceptual difficulties. Before exploring them we first compare the benefit standard with other fairness standards.

5.2.2 How Equitable is the Benefit Standard?

The benefit standard does not command universal acceptance as a normative principle. In particular it conflicts with egalitarian principles. It also conflicts with the efficiency standard. Given that most individuals attach at least some weight to efficiency and egalitarian goals, the benefit standard is correspondingly weakened.

Unlike egalitarianism, the benefit standard does not seek to equalise the distribution of wealth or make that distribution more equal. The costs of the policy are imposed on the policy beneficiaries, who may be either wealthy or poor. The benefit standard does not mean that the government should eschew all redistribution, but it does require an acceptance that

funding of particular government services should not be the means towards that end. As explained in section 3, governments have better means to hand for redistributing income.

Some conceptions of fairness are derived from the notion of reciprocity. If Smith does a favour for neighbour Brown, it is only fair that Brown reciprocate, at an appropriate opportunity. This notion of fairness, again plausible, does not directly support the benefit principle of cost recovery. When Smith does the favour, fairness does not require that Brown pay for the benefits he receives. The reciprocal notion of fairness only requires that Brown also be willing to produce comparable benefits for Smith, should the opportunity arise.

Another definition of fairness, applied with special frequency to matters of government and law, refers to equal procedural treatment under the law. This standard requires that any system of charging be approved through a legal process that does not embody unjust discrimination against particular groups. While the benefit standard is consistent with this idea of fairness, so are many other principles of taxation. These include efficiency and egalitarian criteria, at least provided that these principles could be established through just political procedures.

The benefit standard is sometimes advocated on the grounds of distributional neutrality. If project beneficiaries are levied to pay for a service, the combined costs and benefits of the policy would leave the initial distribution of wealth intact. These principles have been used to justify user fees (levies or charges). User fees place the costs of a given project on those who benefit if users are the only beneficiaries. User charges cannot readily shift burdens to those who benefit but who do not transact in the product.

A related conception of fairness proposes that government levy charges to ensure all individuals receive the same net increase in value. Individuals would be levied in proportion to benefits, at least until the costs of the project were recouped. As a result not all the benefit needs to be taxed away. Nevertheless this approach tends to collapse into the egalitarian standard. If the government is intent on equalising the net increase in value from a given project, why not apply that same standard more globally?

Some economists have suggested a 'contractarian' justification for the benefit principle. The proposition is that the benefit principle is consistent with an implicit contract formed between the state and citizens for the provision of public goods. However, the benefit approach assumes that the contract takes a particular form, which may or may not be the case.[39]

The above discussion does not refute the benefit standard as a principle of cost recovery. Rather, the benefit standard is just one of many possible equity considerations. Any conclusions produced by the benefit principle (and any other equity standard) therefore must be regarded with hesitancy. *Any* equity standard lacks a firm normative base, or any justification for exclusive use as a principle for funding expenses. Notwithstanding its

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[39] See for example, Wagner, RE (1991), "Tax Norms, Fiscal Reality, and the Democratic State: User Charges and Earmarked Taxes in Principle and Practice", in *Charging for Government: User Charges and Earmarked Taxes in Principle and Practice*, ed Wagner, RE, Routledge, London and New York.

durability and intuitive appeal, the benefit standard is just one of many competing standards of fairness, in a world where fairness is not the only value.

5.2.3 Problems with Applying the Benefit Standard

The application of the benefit standard depends upon the particular definition of benefit that is adopted.

The benefit to end consumers is typically defined in terms of consumer surplus. But benefit could be assessed as the total consumer surplus, the change in consumer surplus due to a given policy, or the consumer surplus at the margin. The total consumer surplus refers to the amount by which the benefit to consumers of all units consumed exceeds the total price paid. The change in consumer surplus refers to how much the benefit of all 'new' units consumed exceeds the price paid for the new units (new, following the institution of the government policy under consideration). The marginal concept refers to how much the value of the final unit consumed exceeds the price paid. These different ways of defining benefit would generally yield quite different assessments of benefit.

Exponents of the benefit standard often focus on the marginal case,[40] yet the logic of the benefit standard suggests considering the net benefits from all units. If the given government policy produces 100 more units of good X, the relevant benefits involve the change in consumer surplus created by those additional units of X. But measuring the consumer surplus accruing to all consumers for all units consumed is not straightforward. The marginal standard should be applicable only when the government policy creates a very small or marginal change in the output of the commodities under consideration.

The benefit principle is most simply applied when we are dividing a fixed quantity of resources or a fixed 'pie'. When more pie is being produced concepts of fairness are less directly applicable. Somebody must end up with more benefit than before, by the nature of the increase in value. The benefit principle does not indicate which party should receive the surplus benefit.

The benefit principle also ceases to be well-defined when total benefits are less than total costs, ie there is a net benefit reduction. In this case there is an issue as to who should bear the net costs of the policy – taxpayers or users.

A redistribution policy, which is funded by charging the beneficiaries of a redistribution of income the value of the benefits they receive, is futile. The benefit standard is ill suited to such situations.

The benefit standard requires further definition where services are provided to producers. Those producers who directly receive a subsidised good or service are not necessarily those

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[40] Dating from Erik Lindahl. See also the essays in Wagner, RE, ed (1991), *Charging for Government: User Charges and Earmarked Taxes in Principle and Practice*, Routledge, London and New York.

who are the ultimate beneficiaries of it. Similarly, consumers or producers who pay a tax are not necessarily those who will bear the burden of that tax. This is because market prices are likely to change in response to a tax or subsidy. For example, farmers used to complain in the past when top-dressing pilots raised their fees in response to an increase in the fertiliser subsidy provided by government. Such price responses shift the incidence of a tax or subsidy. The concept of incidence refers to the ultimate distribution of the benefit of a subsidy, or burden of a per unit tax or charge, once suppliers and consumers adjust to the changes introduced by the subsidy, or tax or charge.

Where a service is provided to a producer, the benefits may be captured in full or in part by consumers, or by other factors of production. Because of this, charging producers can only be justified, if the charges are passed on to each customer, supplier, employee and so on, in the precise degree to which these parties benefit. Where goods are private, there is likely to be a reasonable matching of benefits and charges even if the charges are levied on the producers. Where the ultimate beneficiaries can escape the higher charge, for example because of public good problems or externalities, levying the producers would not be consistent with the benefit principle.

These incidence issues are examined in more detail in Appendix A.

5.2.4 Institutional Arrangements and the Benefit Principle

The benefit principle is concerned only with imposing the burden of a charge on those who benefit from a service. It is not concerned with the incentive effects embodied in the way the levy is structured or in the organisational arrangements of the producer. Thus it provides no basis for choosing between private or public provision or between monopoly and competitive supply.

5.3 Efficiency

5.3.1 Introduction

Cost recovery could be based on efficiency considerations. The efficiency standard seeks to recoup costs in a manner likely to allow individuals in a society to get maximum benefit from scarce resources. The efficiency standard, as defined by economists, does not attach independent value to the distribution of the benefits of the output that is produced.

The efficiency standard supports 'marginal-cost' pricing. Prices which track marginal cost are attractive on efficiency grounds because they oblige users to balance benefit and cost. Where benefits and costs are out of line, users will modify their purchasing decisions to bring the two into balance. When producers observe users making such judgements they gain information about consumer preferences. This information may help them better meet user preferences in the future. Producers also have to make adjustments of their own when consumer demand changes. Their reactions give users information about supply conditions.

The efficiency benefits of market prices result, therefore, from the incentive they give producers and users to modify their behaviour to better balance marginal benefits and marginal costs. It is this balancing which allows society to get maximum value out of scarce resources. In practice, market prices depart from marginal cost for many reasons. These reasons include public good issues, economies of scale, common costs, joint costs and the costs of billing systems.

The concept that output should be produced to the point where the costs of extra supply equal the benefits to consumers applies to both private and public goods.

In contrast, a lump sum levy or charge that is imposed regardless of user reactions has no such efficiency virtues. This is because it cannot induce users to modify their behaviour in any way (except perhaps by exiting the industry). Such charges are much more like a tax than a price.

5.3.2 Government Production of a Private Good

Marginal-cost pricing is indicated when the government is producing a private economic good or service. A private good provides a benefit to the consumer that varies at the margin, depending upon the customer's demand for the service. More of the product or service is worth more to consumers than less, and the decisions of consumers determine how much of the good or service they receive.

The per unit price of the government-supplied service should be based on the cost of providing an increment of the service. If the marginal cost of supplying the government service does not depend on the user's level of output, then the government supplier's charges should not generally be levied on the producer's unit of output (unless other factors intrude).

However, if the good is purely private, the private sector should be supplying the good rather than government. The same principles that imply marginal-cost pricing also imply privatisation of the given service.

Marginal-cost pricing *and* production by the government is a first best policy only when the government has a cost advantage in producing the relevant good or service, or when the private sector cannot provide the good or service at all. Ministry of Agriculture Food Regulation Authority (MAFRA), for example, has suggested that this assumption applies to the case of food certification. If the assumption holds, then the efficiency standard suggests that the government agency should set charges according to marginal cost considerations.

Efficiency dictates that the government should price private goods like other market-provided services with prices set to track marginal costs. For example, if certification is a private good, and certification were offered to producers for free, or below marginal cost, producers would use more certification services than would be socially optimal. Outputs in foodstuffs industries would be too high, relative to a first best optimum, and certification would consume an excess of real resources. As a result, efficiency requires that the government

charge food producers a fee for certification services per unit of service provided based on the marginal cost of those services.

The analysis is modified where the government forces the private sector to purchase the good or service. If the compulsory level is at or below the level that users actually wish to purchase at the prevailing market price, and they are free to top up the amount demanded, the compulsion has no effect on the analysis. However, if users choose not to top up, the government cannot rely on users' reactions to the marginal-cost pricing to establish the efficient level of output. The assumption that this outcome is efficient relies on the government selecting the optimal level of output. For example, if food producers are required to pay for more certification services than they judge their consumers would be willing to fund, and these additional costs are passed on to consumers, the compulsion may reduce the welfare of those consumers.

Suppose the organisation would have chosen to purchase 'x' units of output and the government mandates that it buy 'x+k' at the same price. In this case there is a risk that some firms will exit the industry because of the cost of this levy. This may be undesired and inefficient. To prevent inefficient exit from the industry, the government would need to reduce the total amount of funds extracted from the firm by enough to induce it to remain in production while still levying the marginal cost for units above x+k. Conversely, if the government underprices its services, there is a risk of inefficient entry by producers. Achieving the correct price could be difficult.

The case for marginal-cost pricing holds even when inefficient government provision inflates marginal cost to a level higher than would prevail in a less regulated market. Given that it now costs more to produce the government services, we would wish to discourage consumption to a corresponding extent. Inflated costs weaken the case for government ownership, and strengthen the case for privatisation, but they do not weaken the case for marginal-cost pricing.

5.3.3 Economies of Scale, Joint and Common Costs, and Public Goods

Marginal-cost pricing may fail to recoup costs when there are economies of scale or joint or common costs in production. In these cases marginal-cost pricing fails to solve the funding problem, even if it would otherwise be optimal. Where a good provides external benefits, the price of all units should be below the supplier's marginal cost to encourage additional consumption.

Related problems arise when the service or product produced by the government is a non-rivalrous public good. The marginal costs of supplying an extra customer are close to zero. Efficiency considerations suggest charging nothing for the public good. Again, pricing at (*ex post*) marginal cost would not allow costs to be fully recovered.

When marginal-cost pricing does not allow an organisation to cover its total costs, either prices must average above marginal cost, or (if government is the supplier) tax revenues can make up the shortfall. Since the common costs cannot be attributed to any particular

customer, and are not increased or decreased if consumption changes, the recovery of the costs should be designed to minimise the impact on any customer's decision on whether or not to consume or by how much.

Thus, the efficiency principle suggests that common or joint costs should be recovered in the way that minimises distortions to output. It also supports a charging regime that best induces the producer to provide the quality and quantity of output desired by consumers at least cost.

The efficiency standard suggests four options for funding these common costs when government produces outputs. The viability of these options depends on the relative distortions created as well as public choice and political constraints. The options include funding the common costs out of general revenue; levying the charges on an identifiable group; attempting to replicate the funding strategy of a private club; or applying 'Ramsey' pricing rules. These are considered below.

The first option involves covering the costs from taxation. Users would be charged marginal cost, inducing an optimal level of consumption and an optimal degree of entry to and exit from the industry. Ideally, the common costs would be covered by lump sum taxation, avoiding all distortions on the funding side.

The ideal tax, in terms of economic efficiency, seizes wealth or resources without inducing offsetting changes in behaviour; the phrase 'lump-sum taxation' is used to describe this polar case. If the government can take wealth without affecting resource allocation, the private sector bears only the burden of the lost resources. There are no further distortions resulting from allocating resources to minimise the tax burden. Consumption decisions, investment decisions, labour supply decisions, etc are all left unaffected by lump-sum taxation. Distortive taxation, in contrast, induces individuals to change their allocations of resources at the margin away from a value-maximising outcome.[41]

Taxes approach the lump-sum ideal to the extent they are applied to supplies and demands that are least responsive to the tax. The efficiency standard provides no reason for levying taxes on particular groups, unless there is some special reason to believe that the responsiveness to the tax is especially low for that group. In principle the optimal charges could be levied anywhere in the economy. Relatively unresponsive supplies and demands may be found across a wide variety of economic sectors, not just in the sectors which benefit from government services, or which export food products. The exact application of optimal taxation remains an open question, but the efficiency standard does not provide a general rationale for levying the burden on particular sectors that might benefit from a service, or indeed on any other particular group of individuals associated with that sector.

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[41] The theory of the second best suggests that otherwise distortive taxation may in fact sometimes correct for other distortions, such as when the government taxes the output of a polluter. The tax induces an output decline, but this may be desirable, all things considered, once the costs of pollution are taken into account. See Atkinson, AB and Stiglitz, JE (1980), *Lectures on Public Economics*, McGraw-Hill, New York.

The optimal tax rules may prove impractical for a variety of reasons, including our imperfect knowledge of responsiveness, and equity considerations. Taken literally, for instance, the tax rules may suggest levying relatively high taxes on insulin, which is often regarded as a commodity that is relatively unresponsive to price. Many individuals object to this conclusion on equity or other normative grounds. In response to these criticisms, many public finance scholars have developed more robust and more easily applicable recommendations. Once the relevant practical and moral constraints are taken into account, public finance scholars often recommend a consumption tax or a value-added tax as the best means for minimising distortions and efficiency losses. Again, this recommendation suggests a broad distribution of the tax burden.[42]

Taxation-based funding may be problematic in practice for several reasons. Funding the fixed costs out of taxation distorts resource allocation. Goods and services tax (GST) and income tax, for example, decrease labour supply, involve positive costs of tax collection and encourage individuals to invest resources in tax avoidance. The government's promise to cover fixed costs may lead to over-provision of the good and/or excessive production costs. It could eliminate competitors, creating a cost-plus environment for the tax-funded producer. In this case, the service provider would face all of the information and incentive problems that plague nationalised or government-run industries.

A third option, which may address some of these incentive problems, is to tax a coherent well-organised group. When this group comprises beneficiaries of the service, it may be compatible with the benefit principle.

Levying a small coherent group is likely to involve greater distortions to behaviour than raising the revenue from a more broad-based tax. However, there may be efficiency reasons for levying an identifiable group of beneficiaries. Levying a coherent, well-organised minority may provide that group with an incentive to monitor the government provider, countering the tendency of the government agency to spend to excess. The incentive for the minority to monitor and challenge the government agency will depend on its ability to actually affect the costs and level of service provided and to thereby affect the costs that are borne. The efficiency standard suggests that if efficiency gains are to be achieved through levying an industry group, that industry group should be able to have a real influence on the nature of the outputs provided and the way they are delivered. The exact arrangements chosen will have an important influence on the efficiency of outcomes.

There are a number of risks to levying an identifiable group on these public choice grounds. The first is that relieving the government of the burden of charges may reduce the government's own incentives to minimise costs and provide only those services that generate net benefits. Second, monitoring can involve significant costs. The benefits from monitoring must outweigh the costs to be justified. Third, where common costs are involved in the production of outputs, the allocation of costs between different parties will always be somewhat indeterminate. Given the costs that might be at stake, the group (and government)

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[42] Atkinson and Stiglitz, *op cit*, or other public finance textbooks, provide a good survey of the relevant issues.

may be prepared to expend a significant amount of real resources in an attempt to shift the burden of these costs to another party. Given the nature of public goods, there is also scope for parties to understate the value they attribute to outputs in an effort to avoid contributing towards common costs. Fourth, those incurring the compliance costs of regulations may already have a strong incentive to question regulatory activities. Judgements about the degree to which a further levy usefully heightened this incentive could be arbitrary and divisive. For these reasons we would not generally recommend this option.

The third option for recovering common costs involves attempting to replicate the funding strategy of a private club. In a club, the fixed costs are often covered by fixed charges or 'membership charges' and marginal costs are covered by marginal cost-based charges (a 'two-part tariff'). The fixed 'membership' charges typically will be related to the surplus enjoyed by each member (if this can be identified). The higher the surplus, the higher can be the fixed 'membership' fee without inducing exit from the industry or to another supplier. If the total surplus exceeds the total costs, this scheme of a two-part tariff will allow the supplier adequate capacity to cover costs and continue providing the service, while minimising distortions to consumption.

In other words, two-part tariffs are an efficient way of recovering common costs, as long as the membership fees do not exceed the benefits members expect to receive from the public good.[43]

A major potential advantage with a private club arrangement is that the level and quality of output desired by club members is determined through competition between clubs. Competition between clubs helps resolve the issue of deciding what level or quality of outputs should be provided. By internalising the costs and benefits within the club, this arrangement can help in the decision as to whether or not a good with 'public good' characteristics should be supplied at all, or whether the quality of the good should be increased or decreased.

It also overcomes the problem which exists when the unit of demand (an individual's demand for the service, eg a seat on a plane) is less than the unit of supply (capacity that could serve a number of customers, eg a plane flight). A club can aggregate individuals' demands so that the unit of demand is closer to the unit of supply, and the conglomerate purchaser faces the marginal costs of an increase in capacity, or quality. The club approach may not resolve this issue if members have diverse preferences.

The theory of clubs does not support an optimistic view about government's ability to find the optimal level of output or to produce that output at minimum costs when services are mandated. First, to be an efficient mechanism, the club goods must be 'rejectable'. In other words, consumption must be voluntary rather than forced.[44] In the absence of 'rejectability', the private sector cannot adjust consumption to optimal levels, and the associated pattern of

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43 Presuming that membership of the 'club' is voluntary, or the members can influence the level of output provided.

44 Cornes, R and Sandler, T (1996), *The Theory of Externalities, Public Goods and Club Goods*, Cambridge University Press, Cambridge, p 347.

funding may not be optimal either. Second, club theory typically postulates a large number of private clubs that compete for members. In equilibrium, each club is homogeneous, that is, composed of identical members. A single monopolistic government club, comprised of non-homogeneous members, lacks these mechanisms for solving the problem of what level of public good to provide.[45]

The fourth approach to recovering common costs is to adopt Ramsey pricing. Under Ramsey pricing, the prices charged to each consumer are set so that those customers that are the least responsive to prices are charged the most and those that are most responsive are charged the least. This form of pricing means that all demands are reduced by the same proportion relative to the quantities that would be demanded if prices were set at marginal cost.[46] Insofar as a given demand is unresponsive to price, the price for a service can be raised without inducing a significant decline in the quantity of services purchased. The Ramsey rules simply reflect the underlying logic behind lump-sum taxation. Because the rules are applied to the consumers of the service rather than the population more widely, the resulting distortions are likely to be larger than if funds are raised from general taxation.

Ramsey pricing may fail for a number of reasons. For example, where it is not possible to discriminate between various classes of customers (for example, because the customer who bought cheaply could profitably sell the output to customers charged higher prices) it is not possible to apply Ramsey pricing.

These methods all represent variants on a theme: common costs should be recovered from those who are least likely to change their behaviour in response to the levy. The choice between the options involves trading off the costs from distorting behaviour, incentive problems, and the costs of obtaining information to implement the options and political constraints.

5.3.4 Private Solutions to Common Cost Problems

Common cost situations occur frequently in the private provision of goods and services. Producers 'solve' the problem of recovering common costs from customers as best they can. This may mean formation of a club (formally or informally) and the levying of multi-part tariffs, or it may mean charging customers above incremental cost depending on the competitive and other constraints which they face.

Because the private sector does not have the option of taxation, it must recover common costs out of user charges, even though this may imply some potential efficiency losses from pricing above incremental or marginal cost. In contrast, the public sector has an additional degree of freedom because its common costs can be recouped from taxation.
The level of competition is a constraint on the recovery of common costs because if suppliers charge a customer or group of customers more than the stand-alone costs of providing the service, those consumers will have incentives to leave and go to another provider. Their

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45 *ibid*, chapter 13.

46 Assumes that the cross-elasticities of demand between goods are zero.

contribution to common costs would be lost. This provides an upper bound on the recovery of common costs from a particular customer. A supplier will not supply a good or service to a consumer or group of consumers unless the consumers are prepared to pay at least the marginal (or incremental) costs of the service provision. This suggests that in a competitive environment no group would pay more than its stand-alone costs or less than the incremental costs. However, it says nothing about how charges should be allocated between these two points.

5.3.5 The Efficiency of User Charges v. Taxes

Consistent with the discussion above, the efficient finance of public goods typically involves taxes, whereas the efficient finance of government-produced private goods typically involves user charges. User charges are attached directly to the consumption of a good or service; road tolls or fees for national parks provide classic examples of this means of finance. Taxes, in contrast, are levied on the basis of some measure of income, wealth, or consumption, rather than directly on the use of a resource. When the good in question is a private good, efficiency suggests marginal-cost pricing and thus user charges. When the good in question is a public good, and is non-rivalrous in consumption, efficiency suggests a zero price for the good, and finance through general taxation.

Some forms of taxes, such as petrol taxes, provide a halfway house between user charges and taxes in the narrower sense. The payment of a petrol tax is not directly linked to road use, but in practice petrol consumption, and thus payment of the tax, is closely linked to the use of the roads. Taxes of this sort represent an imperfect form of user charge, and will be efficient only to the extent that more direct forms of user charges are impossible. It might be too costly, for instance, to collect a toll from every driver who uses a given road if the tollbooth must be manned and each driver must stop at the booth to pay the toll.

Many goods have mixed public and private good characteristics but are still supplied privately. Private suppliers may recoup costs in many ways. One is to charge for a composite product that contains a bundle of services. An example is the single charge for a hotel room to cover the multiple and diverse bathroom, bedroom and lounge-related services provided in that room as well as the public areas of the hotel. Another option is multi-tier pricing; for example there may be a charge for access and a charge for use. Tying products is a third possibility – one good can only be purchased in conjunction with another.

Public choice considerations are also relevant to the relative efficiency of funding from general taxation or targeted levies or charges. These public choice considerations introduce the imperfect operation of government as a relevant economic constraint and for this reason modify conclusions about the most efficient funding arrangements.

Earmarked Taxes

Earmarked taxes are collected with a specific promise that they will be allocated towards the provision of a predefined set of goods and services. Earmarked taxes, however, do not necessarily differ from non-earmarked taxes, despite the explicit promise that defines the former. Governmental funds are fungible, and can be reallocated across uses without leaving visible traces of a shift. In other words, if a government planned to spend on a given service anyway, earmarked taxes devoted to that service would have no net effect. The earmarked revenues will be devoted to the service in question, but the government will divert the funds that would have been spent on the service anyway.

The earmarking of taxes has real net effects only when the government would not otherwise spend a comparable amount on the area earmarked for receipt of the revenue. In this case earmarked taxes will produce a direct link between the collection of the funds and expenditures in that area. If the expenditures benefit the interest groups in the designated area, those interest groups will be less likely to oppose increases of earmarked taxes; the converse holds if the expenditures do not benefit the interest groups in the designated area. Earmarking tends to have favourable public choice consequences if the governmental programme is under-provided, and tends to have negative public choice consequences if the governmental programme tends to be over-provided.

5.3.6 Institutional Arrangements and the Efficiency Principle

The efficiency principle provides guidance on the appropriate institutional arrangements for service delivery. For example, it supports corporatisation and privatisation where the outputs produced are private, measurable and can be priced. It recognises the incentives to minimise costs provided by competition.

5.4 Comparison of the Benefit Standard with Efficiency Considerations

Efficient charging structures differ fundamentally in their motivation from those based on the benefit standard. The benefit standard is concerned with extracting funds from those who benefit; it is not concerned with the efficiency of the behavioural responses that the charging structure might induce.

The efficiency standard is almost the opposite. It is not concerned at all with who benefits. When charging their customers, suppliers of goods and services in the market place need give no consideration whatsoever to the question of who ultimately benefits. Transactions are voluntary and suppliers can only charge those who are their customers. Since they cannot charge ultimate beneficiaries, they do not need to spend any resources on trying to determine who these people might be.

Instead, the efficiency standard asks which of alternative funding regimes is likely to induce behavioural responses that should best balance resource costs and benefits. The efficiency standard therefore provides some guidance as to what might be the best means of recouping

costs even if the distribution of those costs might be determined by benefit standard considerations.

The differences in charging structures that can emerge from benefit and efficiency standards can be illustrated by the textbook case of a public good. The efficiency principle suggests funding the public good from general taxation, and charging beneficiaries nothing, or a relatively low fee to reflect the low marginal cost of supplying additional units. In contrast, under the benefit principle those who benefit would be levied for the public good. The benefit standard is not concerned about producing the optimal quantity of the public good – it is only concerned with recovering the costs of the good's provision.

The potential for efficiency losses through the benefit standard increases to the extent that the government mismeasures the relevant benefits received. If some users must pay fees or charges in excess of the benefits they receive, the governmental policy will induce exit from the benefit-receiving sector. To this extent, benefit standards are vulnerable to information problems. Application of the benefit standard may require more information than possessed by a planner or regulator.

For private goods with no externalities, the efficiency standard may be consistent with the benefit standards (but the reverse does not necessarily apply). Efficient charging on a marginal cost basis could, because of incidence shifting, be consistent with cost recovery based on the benefit standard.

However, charges consistent with the benefit standard may be inconsistent with the efficiency standard (because for example, they may ignore marginal-cost considerations).

5.5 Summary

The above discussion focused on two distinct standards for the recovery of the costs of government-provided services: the benefit standard and the efficiency standard. The latter gives prominence to marginal cost considerations but many factors can lead optimal charges to deviate from marginal cost.

For private goods with no externalities, the efficiency standard may be consistent with the benefit standard. Efficient charging on a marginal-cost basis could, because of incidence shifting, be consistent with cost recovery based on the benefit standard.

However, the reverse does not necessarily apply since charges consistent with the benefit standard may ignore marginal-cost considerations.

But while the two standards are similar in these respects, their concerns are fundamentally different. The benefit standard is concerned with placing the burden of any levy on those who benefit. It is not concerned about the incentive effects embodied in the way the levy is structured or the organisational structure of the producer. In contrast, the efficiency standard is entirely concerned with incentive effects and is unconcerned about distributional effects.

Public goods provide a clear example of the difference between the two approaches. The benefit standard would apparently seek to recover costs from those who benefit regardless of the difficulties. In contrast the efficiency standard would typically favour cost recovery through general taxation.

Increasing returns to scale create a cost recovery problem under the efficiency standard since marginal-cost prices would not recover costs. Ramsey pricing or taxes may be necessary adjuncts. In contrast, the benefit standard would not be concerned with such complexities.

Under the efficiency standard, public choice considerations may favour charging a well-organised interest group (regardless of benefit considerations) if that group would thereby be incentivised to take actions which would offset the tendency of a government agency to over-expand its operations. The difficulties of providing appropriate incentives mean this approach would not generally be justified on efficiency grounds. Such considerations would not arise under the benefit standard.

The remaining critical question then becomes how much relative weight should be assigned to the benefit standard and the efficiency standard. This question is fundamentally normative, and cannot be resolved by economic analysis. Nonetheless we can present a list of how each factor affects the cost recovery decision.

Benefit standard

- Conflicts with many competing equity standards, such as egalitarianism.

- May be impractical in many situations given definitional problems and the problems of assessing benefits at the individual level.

- Ceases to be well defined when benefits are less than costs. Even when benefits exceed costs it may not be clear whether it requires net benefits to be equalised across individuals or if it requires costs to be levied in strict proportion to benefits.

- Is broadly consistent with charging producers who do not ultimately benefit as long as those charges are fully passed on in the form of higher prices to all those who do benefit.

- Would not be consistent with levying producers to recover all costs where the ultimate beneficiaries would escape any attempt by producers to pass on these costs through higher prices. Examples might include third parties.

- Conflicts particularly strongly with the efficiency standard in the funding of public goods.

- Provides no guidance as to whether service providers should be privately or publicly owned, or whether services should be provided by a monopoly or on a contestable basis, or how charges should be structured.

Efficiency standard

- Starts with the proposition that marginal cost pricing is efficient when markets are competitive, the good is private in nature and marginal cost is equal to average cost so that marginal cost pricing allows full cost recovery.

- Becomes more complex when marginal cost is below average cost (eg because of common costs, increasing returns to scale and/or public good aspects) and the market is not competitive, perhaps to the degree that purchasing is made mandatory by government decree.

- Sees private sector firms using bundled prices, Ramsey prices, two-tier prices and 'subsidy-free' prices as best they can to overcome the problem of funding total costs when marginal cost is less than average cost. The efficient solution varies according to the constraints particular to each case.

- Sees the emergence of clubs (whose members may be the producers in an industry and which may be non-profit) for overcoming problems associated with goods which may have some, but not all, characteristics of a public good. Clubs have to be able to economically exclude non-members from the benefits provided by the club and may use two-tier pricing (a charge for membership and a use-related charge) to gain the efficiency advantages of marginal cost pricing for use while still covering total costs.

- Favours private sector supply of private goods or, where privatisation is not possible, putting a Crown-owned provider into a competitively neutral commercial structure to the greatest possible extent and exposing that entity to full competitive pressures. This would imply not allowing such Crown entities access to tax funding to cover any deficiency between marginal cost and average cost.

- Favours tax-based funding of genuine public goods (such as national defence) where private provision is not possible because of the severity of the problem of excluding those who will not pay voluntarily.

- Would avoid tax-based funding of club goods which can be supplied privately since the annual access or membership charge is part of the test that members are prepared to fund the long-run marginal cost of their activities.

- Favours charges to industry based on marginal costs for Crown regulatory services which are provided solely in the interests of the purchasers of the industry's products to members of an industry and which provide commensurate value to end users of the industry's products. Lower charges encourage excessive entry into the industry; higher charges may lead to excessive exiting.

- Sees the hoped-for efficiency advantages of charges to an industry group or club as being much more at risk when the service level is mandatory and/or is supplied non-

competitively and so could be imposing excessive costs in relation to the service level.

- Therefore sees the case for charges for Crown services supplied to members of a group being stronger: the greater the ability of the group to determine the service level, the easier it is for members to opt out, and/or the more competition there is for the supply of the mandated service.

- Where the government service is provided in whole or in part to serve the interests of non-users of the industry's products (eg to protect air quality or recreational fisheries), the question of who should pay depends on property right issues and collection costs. Where the beneficiaries are so dispersed that collection costs would be excessive, the public good aspects of this problem might require funding from general taxation to cover this element.

In summary, the benefit principle is contentious on equity grounds, is likely to be ill defined and difficult to apply in practice, and can conflict with efficiency. Its virtue is that it appeals to a powerful notion of fairness and is compatible with many long-standing (and efficient) government and market practices.

In contrast, efficiency provides a more fundamental and subtle framework for evaluating how governments can best fund their expenses. Furthermore, the virtues summarised by the slogan that lies at the heart of the benefit principle – namely that those who benefit should pay – appears to be broadly compatible with efficient market prices.

For all the above reasons we believe there is a strong case that efficiency should be the sole criterion for determining cost recovery.

Section 6: Food Safety and Quality Regulation

6.1 Introduction

The issue considered in this section is whether the market produces the levels of food safety, quality and information which best meet consumers' wants, taking all relevant costs into account, or whether government intervention can improve matters.

The existence of incompletely informed consumers, poor quality food, food poisoning, and even deaths from consumption of unsafe food do not of themselves imply a problem of market failure. Information is costly to obtain so that individuals rationally choose not to be fully informed. Individuals accept risks voluntarily in a wide variety of circumstances, and the occurrence of negative or unfavourable outcomes is part of the relevant cost-benefit trade-off. The optimum level of risk does not involve perfectly safe food for everyone, since increased safety can generally only be achieved at a higher cost or through sacrificing other qualities of food valued by consumers. No real-world option will eliminate the risk of food poisoning or ensure that every consumer is fully informed about product choices.

Section 6.2 notes the possible market failures that might justify government regulation of the food market. Section 6.3 discusses how the market, regulated by common law and general consumer legislation, would handle the information problems relating to food safety and quality. The broad options for regulating food are considered in section 6.4. Section 6.5 briefly reviews the scope for cost benefit analysis to assess whether regulation brings net benefits. Section 6.6 examines some specific issues relating to food regulation in New Zealand. Concluding comments are provided in section 6.7.

6.2 Market 'Failures'

Information costs are at the root of suggested failures in the food market. The information difficulties discussed below are relative to a hypothetical situation in which information is costless. The identification of a possible problem does not make the case for regulation – the information costs exist whatever institutional arrangements are chosen and government does not necessarily have a comparative advantage in dealing with these costs. In this section we note the potential problems. The ways that the market or regulation deals with the information problems are discussed in sections 6.3 and 6.4 respectively.

The first potential information problem is that the assessment of 'food safety' is complex. Consumers might not understand much about food, or might not understand much about the probabilities of contracting various illnesses or the health risks posed by different foods. Even with full information, consumers may misunderstand the risks associated with food safety. For example, they might know that the risk of cancer associated with consuming fruit

contaminated by a particular pesticide is 0.0001 percent. But their responses to that probability may not be consistent. Experimental evidence suggests that people make apparently inconsistent choices when probabilities are known but small.[47]

A second argument for regulation notes that consumers typically have less information about product quality than do producers and even after consumption may not have full information on the product quality. Producers may have better information on the quality and risks associated with consumption of their products. They know, for example, how the product has been treated during production, how it has been stored, the hygiene procedures followed by their workers and so on. The company may have information from laboratory testing as well as information on nutritional content of the food. The producers may not have incentives to voluntarily disclose this information, particularly when it reflects adversely on the company.

Consumers may buy food products on the assumption that food risks are low when the producer knows they are high. Because the risks of contracting illnesses from food are small and cause and effect links uncertain, individuals may not significantly improve their interpretation of the probabilities through repeated purchases.

Even when producers have strong incentives to disclose information, different suppliers might adopt different formats or approaches, making cross-product comparisons difficult. Differences in product formulations may increase the costs to consumers of finding a product with particular characteristics.

Another possible problem is that the 'public good' nature of information may make it difficult for a third party to collect and sell information about food quality to consumers. The public good nature of information may reduce a potential source of information to consumers.

Finally, consumers cannot easily test the safety of food prior to consumption. Even after food poisoning is contracted it is difficult to trace with certainty the source of illness. The consequences of food poisoning can be very serious and in the extreme case of death from contaminated food, redress for the harm suffered is not possible (although damages could potentially be paid to the victim's heirs).

These postulated market failure arguments are not specific to the food sector. The arguments propose generic difficulties that could apply to a wide variety of areas; the relevant problems arise from the dimensions of information about safety and quality, not food issues *per se*. Food markets may provide special problems if consumers find food especially difficult to judge in quality, or if food involves especially high dangers relative to most other defective products.

[47] Refer to the discussion in section 4.

6.3 Market Solutions to Food Quality Issues

6.3.1 Introduction

Product quality and safety are produced in a market system through the following means: private contract, independent private certification, reputational forces, and legal remedies for unsafe food and for fraud. We examine each of these options in turn, with an eye to considering how much regulation a system that is functioning well might need.[48]

6.3.2 Private Contract

Where customers are able to ascertain the quality of a product, they can make their own pre-purchase decisions on whether or not the product quality meets their preferences. Different customers have different preferences and make different trade-offs between the risks of different products, the cost, the characteristics of the product, the provision of information on product content, use-by dates and so on.

Consumers will buy more of the products that better meet their requirements. Producers have incentives to respond to these market signals. If consumers value information about nutritional content, they will tend to buy those products that display such information. Although producers may not have incentives to disclose undesirable aspects of their products, competing producers whose products do not suffer the same flaws will advertise the fact. For example, producers of hormone-free meat label their meat accordingly. Tuna caught in a 'dolphin-friendly' manner is advertised as such. Legal remedies are available if such claims prove to be false.

Producers that produce the quality of output preferred by customers and the desired information about product content will prosper. Those that fail to meet customer expectations will lose business.

While private contracting typically results in the voluntary disclosure of information, that information may not be presented in a way that facilitates easy comparison of products. Different producers may adopt different formats, for example, for display of nutritional information. Different producers may adopt different definitions of what is 'fresh', or 'pure' or 'ice cream' and so on, increasing the costs to consumers of determining the characteristics of a product, but with the trade-off benefit of allowing greater diversity.

Private contracts can internalise many problems of commodity quality. When buyers and sellers deal with each other on a well-identified, repeated basis, the quality of the product can be specified by mutually agreeable terms (which may be explicit or implicit). The contract can specify available penalties and means of redress in case one party does not meet his or her end of the bargain, or can rely on legal remedies for breach of contract. The contract can

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[48] The essays collected in Klein, DB, ed *Reputation: Studies in the Voluntary Elicitation of Good Conduct*, University of Michigan Press, Ann Arbor, Michigan outline ways in which the market can handle consumer safety, and also survey many of the relevant issues.

specify a level of food safety and quality, sidestepping the complexity issue to some degree. It is not necessary for each contracting party to understand the details of food safety and illness. Rather, the contract can specify a desired outcome, or a desired set of *ex ante* precautions. If the quality and quantity of the product can be specified by contract, individuals can simply pay more for higher quality if they want to.

The contracting model works well in a wide variety of situations but does not solve all problems of food safety or product information. If we consider consumers buying meat in a supermarket, for instance, the consumer and the meat producer do not have direct contact, and do not engage in transactions of sufficient value to justify writing or enforcing an actual or implicit contract. While direct contracting is infeasible, independent private certification (including certification of quality by supermarkets) is an option. Private certification is discussed below. There is always the possibility that a party to a contract will not act in good faith. Even where parties do act in good faith it is impossible for producers to eliminate risk.

6.3.3 Independent Private Certification

Given the costs of contracting with individual consumers over food items, companies could seek external private certification of the quality of their products. Third parties may evaluate the quality and safety of consumer goods and sell this information to consumers – external private certification is common in markets for consumer goods. Supermarkets may certify the quality of products that they stock.

In the United States, the group known as Underwriters Laboratories (UL) provides a good example of the potentially beneficial role of outside monitors contracted by producers. UL has operated in the US market for electrical equipment since 1923, establishing quality standards and then testing whether products meet these standards. Fire insurers have had a strong and particular interest in this information. UL standards have come to dominate the market, and UL sells its certification services directly to manufacturers in the form of a 'Symbol of Safety'. UL now publishes standards for over 600 types of products and dominates the field of safety inspection and certification.[49]

Some food manufacturers have sought and obtained ISO 9000 certification. The ISO 9000 total quality system requires that relevant quality control systems be established. For a food manufacturer, this would require quality management systems to ensure the maintenance of food safety.

Private sector monitors that sell information to consumers are common in a wide range of market contexts, including specialist car magazines (which rate new cars), consumer magazines, computer magazines and movie guides, among many other examples. A number of guides are published providing reviews of the quality of food produced at restaurants. Publicly owned foodstuff suppliers will also be monitored by the sharemarket with food safety failures being reflected in share values.

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[49] *ibid.*

In New Zealand, *Consumer* magazine provides tests of consumer products for its members and has published information, for example on the safety of salads sold in supermarkets and the quality of drinking water in all New Zealand cities. The Plunket Society has endorsed a range of baby food as meeting its nutritional standards. Many other books, newspapers and magazines publish articles on food risk issues – including information on cancer risks, irradiation, nutrition and so on. Consumer rights individuals such as Ralph Nader have found fame if not fortune through publishing information about product risks.

Private sector monitors that sell evaluations to consumers or producers are likely to be highly responsive to consumer demands. Profit-seeking monitors will focus on the features of the product of greatest concern to consumers, and will take care to produce neither an overly cautious nor an overly reckless estimate of product quality, risks and costs.

Private monitors go out of their way to demonstrate their credibility, make themselves easy to monitor, and illustrate the transparency of their decision processes. Private sector monitors of quality enjoy a flexibility and an efficiency that governmental regulators typically lack.

In many historical instances independent monitors have acted more rapidly than governments to spread information about health and safety risks. Consider the link between diet and heart disease. The scientific information about the costs of fatty foods was available by the early 1960s, and received widespread publicity through the press throughout the 1960s and 1970s. Shortly thereafter, food manufacturers themselves began to lower the fat and cholesterol in their foods, and to promote the virtues of safer and healthier products. In the United States, government attempts to provide this information lagged private efforts by at least 10 years.[50]

Supermarket chains can (and do) serve as monitors of food quality or safety, and we could imagine this role expanding in a regime with less government regulation. A supermarket can, for instance, present its buyers with guarantees of the product qualities in the store. The guarantee could take an explicit form, or could follow implicitly from the reputation of the supermarket. Supermarkets could require producers to disclose information about ingredients used in their products if it thought that of value to consumers, or else the supermarket itself could provide such information to consumers (as is done by some supermarkets in the United States). Supermarkets could market themselves to consumers on the effectiveness of their monitoring and quality control.

Even if individual consumers find it too costly to contract with each and every foodstuff supplier and monitor the quality of outputs, the supermarket may not. Unlike the individual consumer, the supermarket buys in bulk and has repeated interactions with most or all of its suppliers. These conditions provide a favourable environment for specifying and monitoring food quality. Transacting in large lots makes it easier for the parties to cover the fixed costs of monitoring (in contrast, imagine a single consumer who buys a $10 product once). Repeated dealings over time increase the importance of maintaining a good reputation and strengthen the incentive for honest dealing.

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[50] Pasour, EC (December 1996), "Consumer Information and the Calculation Debate", *The Freeman*, 46, 12, pp 780–786.

Foodstuff suppliers who fail to meet supermarket quality standards may find themselves unable to sell their products to those supermarkets aiming to provide high quality food. The suppliers would face negative reputational repercussions if major supermarket chains dropped them.

Supermarkets in the United States have responded to consumers' demand for information on food safety and nutrition concerns by stocking hormone-free beef (a move which appears likely to be followed by some New Zealand supermarkets), and placing shelf labels on products that meet specific nutritional guidelines.[51] In the United States, some supermarkets contract for private (third party) testing for pesticide residues in fresh fruit and vegetables. The independent testing organisation generally establishes residue standards in conjunction with the supermarket and enforces those standards.[52]

The potentially adverse impact of regulation on these private efforts can be illustrated by an example from the United States. In early 1990, the American Heart Association (AHA) decided to develop, as part of its overall educational programme, a seal-of-approval to appear on products that met its nutritional guidelines for total fats, saturated fats, cholesterol and sodium content. The programme was initiated in 1989 with applications for seals taken from manufacturers. On the eve of the launch of the programme the Food and Drug Administration (FDA) indicated to the AHA that it did not approve of third party endorsement programmes on the grounds that they might confuse and mislead consumers. The FDA noted further that it might find the products with seals to be improperly branded. As a result, many manufacturers withdrew from the programme and in the middle of the year the AHA discontinued the seal programme.[53]

Several arguments have been levied against giving the private sector a dominant role in quality certification. These arguments include the claim that information on food quality is a public good, private monitors cannot be trusted, and private monitoring involves an unnecessary duplication of effort. We consider each in turn.

The potentially public nature of information suggests that private markets may produce sub-optimal amounts of information about product quality. This argument can be illustrated by an example. If a magazine rates products according to their quality and safety, that information can be repeated or reproduced at very low cost. It is not necessary for each and every individual to buy a copy of *Consumer* to benefit from the produced information. Many individuals will borrow copies from their friends, or simply ask their friends about the reputations of various products. Alternatively, newspapers may publish or report on the quality rankings produced by the magazine. In these cases the information will be passed on without the certifying institution reaping a return. The certifying institutions will not be able to reap the full value of the information they produce, and for this reason they may produce

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51 Caswell, JA and Johnson, GV (1991), "Firm Strategic Response to Food Safety and Nutrition Regulation", in *Economics of Food Safety*, ed Caswell, JA, Elsevier Science Publishing Co, New York, Amsterdam, London and Tokyo, pp 280 and 284.

52 *ibid*, p 284.

53 *ibid*, pp 282–283.

less quantity and quality of information than if they were able to fully capture the returns from information.[54]

The citation of information as a public good, however, does not establish that it will be undersupplied. Producers of quality products and would-be consumers of quality products have an incentive to fund the production of quality information. In fact markets produce a wide variety of information about products through advertising, independent assessments, word-of-mouth recommendations and so on.

We may value the ability to advise our friends, or may trade such advice for reciprocal benefits. In this case our ability to reproduce or trade the information will increase the amount we are willing to pay for *Consumer* in the first place, which will increase supplier profits from producing and distributing the information. The external benefits of information are, to some extent, internalised by the middlemen and thus also by the providers.

The public goods argument may also cut against the need for government regulation. The argument implies that available food safety and quality information will in fact be distributed to consumers at relatively low cost. For example, the media will provide coverage of outbreaks of food poisoning and the source of food contamination. Because produced information will receive wide distribution, the argument suggests that regulation may not be needed, at least if the information can be produced in the first place.

Often the real problem faced by buyers is a surfeit of information of diverse quality. Not all individuals have the time or the inclination to sample the information that is available. Books, magazines, radio and television programmes, and the Internet all offer a panoply of information on how to eat well, how to prepare food well, how to live to a ripe old age, and other matters relevant to safety and quality issues. If anything, consumers are overwhelmed by such information; the conclusion of underproduction of information is difficult to justify.

Finally, the public good arguments do not apply to producers who obtain third party independent certification of their own product quality. The information produced relates only to the manufacturer's products, with little if any spillover to other producers.

A second criticism of private information production notes that the private monitors will not always be trustworthy. In some cases the private monitor may accept monetary payments or favours from the companies being evaluated. The companies can increase their profits if they receive a favourable evaluation, and may be willing to pay to achieve this end ('payola').

Imperfectly informed consumers cannot monitor the evaluator with complete accuracy. If the payments are kept secret, for instance, consumers will remain unaware of the chicanery. By assumption, consumers are not able to conduct their own low-cost, fully accurate monitoring of product quality. This implies that consumers cannot perfectly monitor an outside evaluator either. *Ex post*, consumers will have a general sense of whether they have been

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[54] For a discussion of information as a public good, and for further references, see Calfee, JE and Pappalardo, JK (Spring 1991), "Public Policy in Health Claims Issues for Foods", *Journal of Public Policy & Marketing*, 10, 1, p 35.

disappointed by the recommendations of the monitor, but this evaluation of the monitor will be imperfect and will come only with a time lag. The monitor might be tempted to sacrifice some reputation for payola income.

However, specialist monitors rely for their business on establishing and maintaining a reputation for honesty and impartiality. The monitor can itself agree to be periodically audited by a government agency or another private monitor. If an agency is providing certification services for a number of different firms, it stands to lose a substantial proportion of its business if it is found accepting bribes from one firm. If it accepts bribes from a number of firms, its dishonesty is more likely to be discovered and the company discredited.

If there were a number of competing monitoring agencies, each agency would have an incentive to publicise any failings of its competitors. In any case, if payola and private monitor corruption is a serious problem, this can be addressed directly, rather than through constructing an entire machinery for food safety regulation. Legal remedies exist for bribery of this kind, and corrupt private monitors would be liable to stiff penalties.

These effects are likely to ensure that a certification organisation is very cautious about accepting payola income.

Voluntary institutions can also provide reassurance to consumers by their choice of organisational structure. The non-profit organisational form, for instance, may inspire trust in both consumers and donors. We expect a non-profit to protect its reputation rather than maximise its profits. The absence of a residual claimant insulates non-profits from short-term financial pressures, and gives managers a strong stake in the long-term survival and reputation of the institution. Not surprisingly, many independent certifiers of quality, such as public health groups, hold non-profit status. Most western countries rely heavily on the trust properties of non-profits to provide charity, hospital, and educational services. Private non-profits often prove more effective sources of information than do governmental regulators. A non-profit organisation may be an effective form for independent private monitors of food quality.

Possible problems with private monitoring are not necessarily overcome by government agencies. Governmental regulatory agencies, like private monitors, will pursue their own agendas. To the extent that consumers find private agencies difficult to monitor, they also will find governmental regulators difficult to monitor. Private agencies, unlike government regulators, have an incentive to make themselves easy to monitor, and to demonstrate transparency to their constituencies. Consumer magazines, for instance, go to great lengths to demonstrate their independence to their readers. They will turn down advertisements from evaluated suppliers, commission outside experts with independent reputational capital, and explain their standards and processes of evaluation to their readers. Public agencies may have to gain the goodwill of major producers with the resultant risk that they will be 'captured' by those interests. They typically seek to avoid scrutiny and jealously guard their autonomy. The incentives of private and public sector monitors are diametrically opposed in this regard, and in a manner which favours the efficacy of the private sector.

A third criticism of independent monitoring cites the duplication of effort involved with private quality monitors. When entry into the monitoring business is free, more than one private organisation or individual will supply monitoring services. For instance, there are many magazines and newspapers which rate new cars, computers and discuss food issues. When the government controls a regulatory or informational function, individuals rely more heavily on a single central source for their quality information. Government intervention may therefore tend to reduce or eliminate the duplicate production of services.

This criticism is the weakest of the three presented. Typically the benefits of rivalry and competition outweigh the supposed costs of duplication. One does not, for instance, postulate significant costs of duplication from the multitude of Chinese restaurants in a city. Although consolidating these smaller restaurants into one larger restaurant might save on space and staff costs, consumers would forego diversity of product and the benefits of competition. If quality monitoring truly is a natural monopoly, we can expect the market to settle on a single dominant, monitoring firm, thus avoiding the costs of duplication. If quality monitoring is not a natural monopoly, then competition and diversity bring significant benefits, and we should not worry about costs of duplication.

6.3.4 Reputational Forces

Even in the absence of external monitors, reputational forces induce companies to invest in the quality and safety of their products and to ensure that labels truthfully convey a product's content. Companies which supply shoddy, low quality or unsafe products, acquire a bad reputation over time and lose customers who value quality. Similarly, a producer that defrauds its customers suffers a loss of reputation.

Producers with safe, high quality products attempt to signal their product quality to consumers. These producers engage in heavy advertising, offer warranties,[55] and money-back guarantees. The provision of a warranty or money-back guarantees can reduce consumer search costs. If the product proves unsatisfactory the consumer can return it. Many food producers do in fact warrant the quality of their product. However, the replacement of a food item or a refund may provide little comfort to a consumer who has suffered the effects of food poisoning.

Where producers have more information than consumers do about product quality, consumers may be reluctant to pay when a producer claims that products are of high quality in case the quality is not actually delivered. Warranties and money-back guarantees can address this problem where quality is discovered once the product has been purchased. For example, even though car salespeople might lie about their products, a warranty provides buyers with some assurance of quality.

Producers with safe, high quality products may make sunk cost investments in themes, or create impressive shops, or restaurant interiors. Individual food manufacturers or food sellers invest in brands that convey a quality signal to consumers. The investment in establishing

[55] Grossman, S (December 1981), "The Informational Role of Warranties and Private Disclosure about Product Quality", *Journal of Law and Economics*, 24, 3, pp 461–483.

the brand and advertising are sunk costs that will not be recovered if the business fails. The value of these sunk cost investments would be lost if the supplier failed to deliver the expected quality. Consumers, when they observe these forms of market commitment, draw the rational inference that the producer is committed to a particular level of safety and quality.[56]

Manufacturers with more than one product may face especially strong incentives to consider reputational costs. Consumers and/or supermarkets may assume that one defective product from a given manufacturer reflects negatively upon the safety or quality of other products from the same manufacturer. In fact, this plausible set of expectational conjectures may induce suppliers to over-invest in product quality. If producers increase product safety to prevent consumers from switching from all their products, producers may be treating the private costs of low quality as higher than the social costs. Producers worry about the loss of profits from consumer product switches, when in fact the social loss from such switches could well be much smaller (consumers may simply be switching to close substitutes).

Similarly, chains of supermarkets, restaurants, fast food outlets and so on, have a substantial investment in their brand name. A publicised food safety failure at one McDonalds restaurant would adversely impact on all of the other outlets. Even if the result was only a small reduction in patronage at each restaurant, the overall impact on value could be substantial. Because of this flow-on effect, each of the outlets has strong incentives to ensure that the others are carefully monitored for quality. Each member of the franchise has strong incentives to ensure that other members of the franchise do not undermine the value of the brand.

The costs to a producer from publicity relating to food safety failures may exceed the injury suffered by a consumer. The publicity may result in all consumers revising their view of the producer's products with the total impact on demand potentially being very large.

Reputational forces account for a good deal of the product quality and safety that exists. Even highly regulated systems rely on reputational forces to motivate the preponderance of investment in product safety and quality. The resources of government regulators are small relative to the size of economic activity, even in heavily regulated economies.

An investment in reputation makes sense only because of imperfect information. Firms that invest in a reputation for quality are able to charge a higher price for outputs than those that do not. The higher price is a return to a firm's investment in reputation. The ability to charge a premium for high quality induces the sellers to maintain their reputations.[57] If product

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[56] Klein, B and Leffler, K (1981), "The Role of Market Forces in Assuring Contractual Performance", *Journal of Political Economy*, 89, pp 615–641; Shapiro, C (1983), "Premiums for High Quality as Returns to Reputations", *Quarterly Journal of Economics*, 98, pp 659–686; and Ippolito, PM (1990), "Bonding and Nonbonding Signals of Product Quality", *Journal of Business*, 63, 1, pp 41–60.

[57] Milgrom, PR and Roberts, J (August 1986), "Price and Advertising Signals of Product Quality", *Journal of Political Economy*, 94, 4, pp 796–821.

attributes were perfectly observable, then a firm's reputation would not enter into consumers' evaluations of a firm's current product quality.[58]

There are some limits to the strength of reputational forces. First, reputation is a capital asset, and capital assets sometimes will be cashed in and liquidated. If the current producer has a high discount rate or a limited time horizon, and if the presence of the owner is vital to the company's success, cashing in on a previous reputation may prove a more profitable strategy than selling the company and maintaining the reputation through time. Where a company is in financial difficulties, it may cut corners in an attempt to prevent failure. In these circumstances, the firm has little to lose and 'all-or-nothing' strategies, including cost cutting that affects food quality, may become more attractive. In larger publicly traded companies, bonus schemes and short-term evaluations sometimes give managers an incentive to act myopically, rather than in the long-run interests of the shareholders. The difficulty of tracing with certainty food poisoning incidents also reduces the effectiveness of reputation as a constraint. There is a risk that firms will be wrongly accused of food safety failures and will wrongly suffer reputational damage.

Of course, businesses can only find the optimal level of product quality through a process of trial and error. In the process of discovery, they may over- or underprovide food quality for a period.

Critics also have charged that the private production of reputation brings significant drawbacks. Food companies may have the incentive to market superficially appealing products on the basis of relatively unimportant health and nutritional characteristics. Furthermore, the proliferation of claims about health and nutrition may cause the more reliable scientific claims to be drowned out in commercial noise. Consumers may end up doubting the veracity of all such claims, leading to a diminished impact for the correct information.[59]

The incentives for quality created by reputation may be weaker for a foreign supplier if the foreign firm exports only a small quantity of its output to another country. The impact of a failure to meet food quality standards in the foreign country may be less than a failure in its home country (assuming that its sales in the foreign country are smaller than in the home country). Thus, it may be less concerned about protecting its reputation in the foreign country. Of course, an exporter would generally use the same inputs to produce products for domestic and export consumption, so that the quality of output produced for the domestic market will be carried over to the export market.

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[58] Shapiro, *op cit*, p 659.

[59] For a discussion and a sceptical evaluation of these claims, see Calfee and Pappalardo, *op cit*.

6.3.5 Producer and Consumer Care

In the absence of specific food regulation, incentives to provide food safety would be provided by the common law and general consumer protection statutes. The Fair Trading Act 1986, the Sale of Goods Act 1908, and the Consumer Guarantees Act 1993 all provide protection to food consumers. The Sale of Goods Act 1908 requires that products be fit for the purpose. Thus, if food is sold that is not fit for human consumption, remedies would apply. These requirements reflect comparable common law standards. Under common law, warranties are implied in a sale of goods when liability is not assigned explicitly. The manufacturer is held to implicitly warrant those dimensions of performance largely within his or her control. The Fair Trading Act 1986 governs misrepresentation of products.

The law of contract provides remedies for breaches of contract including misrepresentation.

Liability law creates incentives for producers to provide safe food by imposing the threat that an injurer will have to compensate victims for harm done.[60] If producers assume liability, consumers (or their heirs) who are injured or killed through use of a product may have recourse through a court of law, and the ability to sue the producer for damages. The threat of such suits gives producers an incentive to make their products safe and reliable (but at a cost to consumers).

Of course, the probability of adverse outcomes from food consumption depends on the behaviour of both food producers and food consumers. Food poisoning is often the fault of consumers rather than producers. Shifting the liability for adverse outcomes from the consumption of food between the buyer and the seller would be expected to cause one party to take more care and the other to take less. In the absence of regulation, consumers and producers are likely to contract for the preferred allocation of liability. Within the constraints of information costs, liability is likely to be assigned through voluntary contracting to the party with the lowest costs of reducing the risk of injury. In the case of products with obvious risks, this could be the end user. Where producers best know the risk, producers may warrant product quality.

The assignment of liability to producers may have the impact of reducing customer care. Customers may be less careful in choosing their food supplier or in handling food properly once it has been purchased.

If product liability rests with consumers, the risks associated with the product would be higher but the price charged would generally be lower. This assignment of risks gives the buyer stronger incentives to treat the product with care and to avoid products with risks that the buyers do not wish to assume. Sellers have an incentive to reduce the perceived riskiness of their products if that increases the selling price by more than the costs.

Relying on liability law and general consumer protection legislation to provide incentives for producer performance raises difficulties for the particular issue of food safety. For many food

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[60] Posner, *op cit*, p 343.

safety incidents where only illness results, the high cost of private enforcement relative to the typically low value of a transaction to a particular individual might discourage private actions (the costs borne by any individual are small even if the aggregate costs are high).[61] Where products are sold through a supermarket, the supermarket may take action on the consumers' behalf. In many cases, consumers who are made ill by the consumption of foodstuffs may not know or be able to trace the source of their illness. Many symptoms occur with significant delays, and the product itself has been consumed and cannot be inspected or tested in any way. Many food products are sold with no labelling, and come from a wide variety of sources which cannot easily be traced. The incentives for producers to produce safe food may be somewhat weakened in these circumstances (compared with the theoretical counterfactual in which information costs did not exist).

Liability law has been of secondary importance in the New Zealand context. Under current Accident Rehabilitation and Compensation Insurance Corporation (ACC) law, the ability to sue for damages for injury from accident is extremely limited.

In any case, New Zealand should not follow the example of the United States, which has experienced widespread abuse of liability law in recent decades and is seeking to weaken standards of product liability. The horror stories of excessive liability in the United States are well known, including the woman who sued McDonalds for more than $1 million because she spilt hot coffee on her lap and burned herself (McDonalds had not labelled the coffee as 'hot'). Excessive reliance on liability law induces an excessive number of lawyers, and leads to the waste of real resources on rent-seeking litigation.

In some circumstances, criminal law sanctions also apply to food safety failures. If a food supplier causes death through negligence, then the charge of manslaughter may apply. The difficulty of tracing the source of illness or proving negligence sufficient to constitute manslaughter militates against this approach.

Neither the common law, nor general consumer protection legislation nor specific food regulation can fully address the issue of consumer care. Many cases of food poisoning are not the fault of the supplier, but rather are the fault of the consumers who store and prepare the food. Foodstuffs are often left to sit for too long before consumption, or are given inadequate cooking and preparation.

Short of having the government post a regulator in each kitchen, the problem of inadequate consumer care remains whatever the regulatory regime. In fact, more regulated systems may even worsen the problem. When the level of regulation is high, consumers may respond by slacking in their own monitoring of food preparation and storage. If government tries to impose a level of food safety higher than that which consumers would choose for themselves,

[61] However, the costs of publicising a food safety failure can be cheap for the victim and potentially very costly for the firm.

consumers will realign other choices in their life to move closer to the initially chosen safety level.[62]

Although direct regulation is not the answer to consumer care issues, the government can run informational campaigns about food safety, subsidise information about food safety, and emphasise food safety instruction in schools to supplement the vast array of information provided privately. An improvement in consumer care may save more lives, and at lower costs, than a regime of direct regulation.

6.3.6 Summary

We noted in section 6.2 possible information problems that might justify government intervention. The above discussion has examined contract, private third party monitors, reputation, and legal remedies as potential solutions to the market failures identified.

Definitive policy judgments are difficult to make, given the difficulty of estimating how alternative regimes might operate. Furthermore, only limited research on food safety issues has been conducted in New Zealand. However, the discussion above has indicated that market mechanisms will meet many of consumers' requirements for quality, safety and information about food.

The ways that the market responds to the information problems postulated are summarised below.

The Assessment of Food Quality is Complex

Consumers can assess many aspects of food quality – by appearance and smell prior to purchase and by taste once bought. Consumers will learn a lot about product quality through repeat purchases. Information about food is produced by a wide variety of specialist organisations, magazines, newspapers and other media. Consumers can also obtain advice from friends and families. Because information is costly to obtain and process, individuals will rationally choose not to be fully informed about all of the choices that they have to make daily.

Producers have incentives to respond to consumers' food preferences, including providing information about the product. Niche producers will try to meet the specialist needs of small groups of consumers. Information about a firm's products is conveyed by advertising and by the reputation of the firm.

Although producers have incentives to release information that consumers value, it may not be in a form that allows consumers to make ready comparisons of product characteristics. For example, the format of ingredient lists might differ, or the weight of the product might be

[62] A similar problem has been noted in the context of car safety. Lowering the speed limit may induce individuals to remove their seat belts, and the original change in policy may not do much to promote road safety.

quoted as including or excluding the packaging. The costs of voluntarily agreeing to standardisation between manufacturers could be high.

Where small risks are associated with the consumption of food products, consumers may under- or overestimate these risks. For example, consumers appear to overestimate the risks associated with irradiated or genetically altered food but underestimate the risks of food poisoning from non-irradiated food. Producers responding to consumers' preferences may therefore under- or over-provide safety where there is a known but small product risk.

Information Asymmetry Including the Difficulty of Tracing Food Poisoning

Producers may have more information than consumers about the safety of the food they produce and its quality. In some circumstances they may choose not to disclose that information to consumers.

Consumers can obtain some assurance about a firm's food quality and safety from the firm's investment in reputation. Reputational forces account for a good deal of the product quality and safety that exists. The potential costs to a company from a loss of reputation may be very high – potentially the costs are so high that manufacturers and supermarkets may be overly cautious in their food safety standards.

Producers may pay a third party monitor to provide an independent audit of their products. Supermarkets can better monitor supplier standards and, through their own investment in reputation, provide reassurance to consumers. Third party monitors, including magazines and newspapers, sell information to consumers about food issues. The result is that a substantial amount of information on food safety is available to consumers.

A variety of legal remedies exist under common law and consumer protection statutes if producers sell unsafe food.

Smaller food businesses with a lower investment in reputation (particularly those dealing directly with consumers) may face weaker reputational constraints. In some circumstances, it makes sense for a business to 'cash-in' its investment in reputation.

The difficulty of tracing with certainty the sources of food poisoning reduces the effectiveness of reputation and legal remedies as a protection for consumers. Cause and effect is hard to trace, so that consumers may not know with certainty whether their illness is caused by food poisoning, nor the source of contamination.

Public Good Nature of Information

There is a wide variety of information provided by a wide variety of organisations on food nutrition and safety issues. The 'public good' nature of information does not appear to be a major constraint on the provision of information.

Other

Regulations are also imposed to meet the requirements of countries importing New Zealand products. In the short term, New Zealand has little option but to conform with foreign country requirements. In the longer term, the New Zealand government can challenge inappropriate standards through government-to-government negotiations or through international fora.

6.4 Regulatory Options

6.4.1 Introduction

As discussed above, although it appears that market mechanisms can deliver to consumers a reasonable approximation of the desired level of quality and safety (given the reality of information costs), this does not by itself rule out the possibility that regulation might improve matters.

In reviewing the options for government involvement we need to consider the inevitable costs of government intervention. Regulators also have difficulty obtaining information about product quality, assessing the magnitude of risk, and the costs of remedying the risks. Regulators cannot know what each individual's tolerance of risk is or what characteristics of a product are valued. Even where there is full information about the probabilities of harm, individuals in regulatory agencies, like individuals acting in markets, may react in ways inconsistent with the risk.

The political pressures on regulatory agencies tend to encourage an overly cautious approach to risks – there are many examples where government regulators have imposed standards that are not justified on the basis of the risk. For example, the Occupational Safety and Health Administration in the United States proposed regulation of formaldehyde exposures would have required an expenditure of US$72 billion per life saved.[63] Regulators in a political environment will be blamed for any outbreak of disease, but are not generally held to account for the costs they impose by adopting an overly cautious approach.

Given the cost of obtaining information, government regulators are generally forced to rely on information provided by interest groups. Such information is unlikely to be independent. Firms with a stake in different outcomes will present information compatible with their position – and decisions based on the information available to the regulator may therefore be biased.[64]

Interest group pressures may result in regulations that have the effect of advantaging some interest groups over others. For example, the establishment of food standards might result in

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63 Viscusi, Vernon and Harrington, *op cit*, p 701.

64 Sykes, AO (1995), *Product Standards for Internationally Integrated Goods Markets*, The Brookings Institution, Washington DC, p 41.

the exclusion of new entrants from the market thereby protecting incumbent firms from competition. Information disclosure regulations may impose costs that vary with the size of the firm, thereby benefiting large firms at the expense of smaller ones. The susceptibility of a regulatory agency to interest group pressure may be particularly problematic when only some parties have effective access to the regulatory process (eg foreign producers may have less favourable access than domestic producers). The result may be that standards act as non-tariff barriers to trade, protecting inefficient domestic producers and raising the price to local consumers.

Regulations force individuals to pay for product characteristics that some would not voluntarily pay for. Although product standards and requirements for information disclosure are imposed on producers, in reality the higher costs are borne by consumers. To the extent that enough consumers would rather not pay for the regulated outputs, resources are wasted. Regulations inhibit choices, preventing experimentation and product innovation.

The main options for regulating food safety and quality are the following:

- information disclosure requirements (such as provisions prohibiting the publication or use of a label which is false or misleading, requirements to disclose food ingredients, use-by dates, weights and so on);

- the establishment of food product standards (which require that particular ingredients or processes must be used or followed before a product can use a generic title); and

- the establishment of standards of food safety (generally in terms of performance outcomes or the specification of particular inputs that must be used).

All three forms of regulation apply in New Zealand to food produced or consumed in New Zealand.

These options are discussed below.

6.4.2 Information Disclosure

Most Western governments have imposed information requirements on suppliers of food products. Information disclosure regulation has typically required producers to provide:

- a descriptive name of the food;

- the product's ingredients;

- nutrition information;

- warnings of adverse health effects (for example the warnings on cigarette labels and on alcoholic beverages in the United States, or to warn that a product is not suitable for infants);

- the name of the manufacturer and country of origin;
- directions for use;
- date marking – 'use-by' date or date of manufacture;
- evidence of certification; and
- how much is in the package (weight or volume).

Regulation can also prescribe the presentation of information – size, form, location, colour, background, orientation, visibility, legibility, conspicuousness, language, and constraints on pictorial representations.[65]

The government can itself produce and disclose information such as advice to individuals or companies on how to ensure that food is handled safely, or what food is likely to pose health risks.

Regulation of information disclosure is proposed on the basis that producers will not voluntarily disclose some information, or that even if information is disclosed it may not be in a form that minimises consumers' search costs.

Information regulation may allow consumers to economise on information – for example, regulation could ensure that the term 'fresh' had the same meaning across all fruit juice products so that the customer does not have to determine how fresh 'fresh' might be for each product.

It appears possible that the costs of private firms cooperating to agree on standard formats, descriptive names, definitions of 'fresh', food handling standards and so on could be high. The government may be able to reduce the costs of agreeing and implementing a standard for presentation of information.

However, this does not necessarily justify making government-defined standards mandatory. The government could establish standard formats for presentation of information with firms free to voluntarily adopt them. Firms voluntarily agreeing to the standards could use a compliance symbol. Other firms could adopt their own standards but would not be allowed to use the standard symbol.

Where information would not be voluntarily disclosed, information regulation might allow consumers to make decisions on the basis of fuller information. To be of use to consumers:

- the information should be considered by the typical consumer to be new and important;

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[65] Tough, P, *op cit*, pp 1–2.

- the information must be valued by a large proportion of customers;
- the information should substantially influence the consumer's choice;
- the person who can affect behaviour must receive the information; and
- risk information should be presented so that consumers can interpret it in a way that is consistent with the product's risks and act on the information to exercise the appropriate degree of caution (there are costs if they take too many or too few precautions).

As long as some producers disclose the information valued by consumers, the case for regulating that all producers supply the information is weakened. Consumers who value the information can buy the products that include the valued information. Those who did not value the information would not be forced to bear the cost of information disclosure.

Disclosure of information can serve as a substitute for direct regulation of the relevant risks or the content of products. Rather than prohibiting all risky foods, or prescribing standards, disclosure gives consumers the choice of how much risk they wish to take with their food products, or what composition best suits them. Levels of risk and quality can then be determined by market demands, rather than by regulatory fiat.

Different people will make different trade-offs between the risks of consuming a product, the desirable attributes of the product, the cost and so on. If consumers are provided with the relevant information and have the ability to comprehend the implications of the information, information disclosure allows them to make their own judgements about the level of risk that fits with their preferences.

Disclosure regulation can encourage the use of contract-based solutions by specifying standards for information disclosure and truth in labelling. The information on the label then provides a contract between consumers and producers. Producers are subject to suit or penalties if the provided information does not match the reality. Government policy may reduce transaction costs by effectively requiring producers to offer an implicit contract (defined by the product label) to consumers or, in a voluntary regime, by facilitating this process. However, if the information is not valued, the effect will be to raise the costs to consumers unduly.

In some cases the costs of disclosure regulation may outweigh the benefits. For example, one response to concerns about genetically modified food is to require labelling of all foodstuffs containing genetically altered food. However, for many products, the costs of tracing genetically modified food components would be very high relative to the likely benefits of such an approach.

Disclosure and labelling requirements do not eliminate the problem of food safety or quality. Providing information with the package does not guarantee that the accompanying contents match the description. A producer might be willing to violate the standards proscribed by the

label. Labelling and disclosure require the support of legal remedies for breach of the implicit contract created by the label.

Information regulation involves costs that may outweigh any benefits provided. These include the costs of interpreting the regulation, determining its scope and coverage, formulating a method of compliance, and designing and printing labels.[66] Costs may be incurred in obtaining an accurate analysis of the nutritional content of the food, or in changing the composition. The costs of US firms complying with an FDA requirement to specify the contents per serving of 14 specified nutrients for a wide variety of food have been estimated at $1.5 billion.[67]

Generally, these costs will be borne by consumers. Many consumers do not value, for example, nutritional information. Disclosure regulations force them to pay for information that they would not voluntarily buy. If the government limits its intervention to the establishment of voluntary standards, the value of such intervention will be tested in the market place.

The government has only limited knowledge as to what information is valued by any individual consumer. It does not know with certainty why producers might choose not to provide information valued by consumers. Governments are susceptible to lobbying and may be captured by special interest groups – for example those with environmental concerns – but the costs of regulation may be borne by all. Disclosure requirements are likely to focus on only some aspects of food considered important by consumers.

Individuals may have difficulty processing risk information provided on product labels. They may overreact, underreact or ignore the information provided. For example, the enactment by the state of California of a requirement that all products (including food) posing a cancer risk be labelled with a warning is an example of poorly conceived information regulation. The threshold risk that requires a warning is very low (lower than the probability of being struck by lightning), but individuals perceive the risks to be much higher.[68] Consumers have been discouraged from using products when the risks were not sufficient to justify the response. The establishment of standards of risk that are too low may also reduce consumers' ability to distinguish between low and high risk products.

The structure and content of information provided and the way that it is presented is important to determining the effectiveness of the information disclosed. Research findings suggest that the format, prominence, structure and amount of information are important in conveying the desired message.[69] There appears to be a trade-off between the amount of information that is provided on the label and consumer recall of the information. Label clutter appears to lead to information overload and a reduction in the efficacy of hazard

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66 French, MT and Neighbors, DM (1991), "A Model of Firm Costs of Compliance with Food Labelling Regulations", in *Economics of Food Safety*, ed Caswell, JA, Elsevier Science Publishing Co, New York, Amsterdam, London and Tokyo, p 306.

67 Sykes, *op cit*, p 22.

68 Magat, WA and Viscusi, VK (1992), *Information Approaches to Regulation*, The MIT Press, Cambridge, Massachusetts, London, England, pp 16–17.

69 *ibid*, pp 2–3.

warnings.[70] If too much information is provided, individuals may be unable or unwilling to process the information provided.[71] Government agencies are unlikely to have a comparative advantage in label design.

Not all individuals will read the information provided. Nor will all recipients of information act on it.[72] If individuals are unable to process information provided to reach the 'optimal' decision, disclosure regulation may not be the preferred option. There may also be a paternalistic concern that some people may not be capable of processing the information provided and reaching rational decisions – for example children. This raises the issue of whether further regulation might be need to protect such people.

If we do not believe that well-informed consumers will assess risks accurately, information provision may not be an appropriate response. As noted earlier, the risk literature suggests that individuals tend to mis-estimate small risks. If this is the case, then regulated standards might be the preferred regulatory response.

Information disclosure regulation will not result in producers disclosing that food has been produced in unhygienic conditions or that the probability of contamination is high. This potential problem is discussed in more detail in section 6.4.3.

In summary, the market will generate a substantial amount of information on product safety and quality in the absence of regulation. Thus only incremental improvements in consumer knowledge are possible through regulation. These increments come at a cost. Whether the costs outweigh the benefits for particular regulations would require a case-by-case examination of particular regulations.

Where a supplier has good incentives to respond to consumer demands for information (or where others are likely to supply the information) and the consequences of not being fully informed are not particularly serious, then the case for requiring disclosure is weak. Where some producers voluntarily disclose information, the case for regulating other producers is relatively weak.

For example, it is doubtful that a regulatory requirement that producers display nutritional information is justified. If consumers value this information and are willing to pay for it, some producers are likely to provide it voluntarily. Consumers with a strong preference for the disclosure of information will only buy products that display the relevant information. Those consumers who are not particularly interested in nutritional information will choose the product that meets their preferences at lowest cost whether or not information is provided.

There might be a case for government regulating that producers adopt a particular format if they choose to display information. The argument in favour is that a standard format would facilitate the comparison of products but may not develop spontaneously. The trade-off is

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70 *ibid*, pp 14–15.

71 Viscusi, (1992), *op cit*, p 153.

72 Magat and Viscusi, *op cit*, p 5.

that any format selected by government regulators may be inferior to those chosen (in a competitive market) by individual firms.

A further option involves the government developing a recommended format and allowing producers to choose whether or not to follow the format. This could achieve some of the benefits of standardisation while avoiding the costs of compulsion.

Producers may be reluctant to disclose information that might discourage consumers from choosing their products. For example, they may not disclose that fruit is subject to high pesticide residue levels or some of the ingredients have been genetically modified. In these circumstances, there may be a case for information disclosure that would enable consumers to choose the product characteristics they prefer. Of course, producers of products with low pesticide residues or without genetic modification have strong incentives to inform consumers of this fact, and supermarkets have incentives to monitor the food they are stocking.

6.4.3 Food Product Standards

Food standard regulations prohibit the marketing of a product using a generic name (such as 'ice cream' or 'jam') unless it conforms to a specific description, contains a specified set of ingredients, or has undergone specified processes.[73] Food standard regulations are related to information disclosure and labelling regulations discussed above. Australian food regulations, for example, require that every package of food be labelled with either a prescribed name, or where there is no prescribed name, an appropriate designation. The prescribed name is the name by which a food is designated in a standard.[74]

Food product standards may provide the following benefits:

- They may allow consumers to economise on information search (without any particular safety implications). The standard can serve as a signal of quality or give rise to expectations that the product will have certain attributes. While a list of ingredients might give a better indication of the quality and attributes of the product, people may not read or comprehend such information. Thus, the establishment of standards can economise on consumers' information costs.

- They can be used to set maximum levels of residues, or components of products known to impose health risks, or require particular processes be followed to ensure food safety.

- They can reduce producer uncertainty over whether particular terms such as 'fresh' or 'pure' are misleading.

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73 Ogus, A (1994), *Regulation: Legal Form and Economic Theory*, Oxford University Press, Oxford, New York, p 136.

74 Tough, *op cit*, p 5. New Zealand's food regulations require the use of a 'common name' which is defined in effect as the name by which the food is generally known.

Food standards may be developed voluntarily with suppliers agreeing to fund a private standard setting organisation. Consumers' preferences for one standard over another may lead to convergence on a single standard.

Because of the costs of coordination the private sector may fail to develop voluntary standards where consumers would value standards. If so, this might justify the government developing standards. However, these could be voluntary rather than compulsory. Under a voluntary regime, food producers could agree to standards and be allowed to use a standards symbol indicating that they had voluntarily met the standards. Those who did not meet the standards would not be allowed to use the symbol.

The advantage of a voluntary standard is that consumers' choices are better preserved. If the standard does not meet consumers' preferences they can choose to purchase products that do not conform to it. The cost of making standards voluntary is that consumers need to distinguish between those products that do and do not conform to the standard. For consumers who care about the characteristics conveyed by the standard, the cost of checking for the standard symbol would be relatively low.

The case for the government developing voluntary standards requires that there are benefits from standardisation (those discussed above) and that it can establish the standards more cost effectively than the private sector.

Mandatory standards might be justified where it is difficult for consumers to distinguish between products meeting the standards and those that do not, or where the consequences of a wrong choice are serious. The case for compulsory standards would be stronger where the risks to health and safety of deviations from the standards were high (since the costs of any mistakes would be relatively high).

There is a thin line between reducing consumer search costs through better signalling of the contents and nature of a product, and restricting choice through the adoption of mandatory standards. For example, requiring that ice cream have a particular fat content to be termed 'ice cream' increases the certainty as to the nature of the product customers are buying. However, imposing the standard may discourage producers from offering a variety of products, including low fat ice cream, which might meet some consumers' preferences. Although producers could make alternative products, they could not label them as 'ice cream' under a mandatory regime. Under a voluntary regime, producers not conforming with the standard could still label the product 'ice-cream' but would not be allowed to use the compliance symbol.

Food standard regulation may stifle innovation and erect barriers to entry around existing producers. If the regulations require that particular ingredients be used, or a particular process be followed, then manufacturers who develop cheaper substitutes for the products are prevented from using the same designation even though the consumer may be equally happy with the cheaper product. For example, particular processes must be followed for whisky to be defined as 'Scotch Whisky'. In Germany, strict restrictions were imposed on the ingredients that could be used if a product was to be labelled as 'beer'. The result was to shut

foreign beer producers out of the market. Product standard regulations may be slow to adjust to new and cheaper ways of manufacturing the same quality of product.

If the government decides that a single standard should prevail or that it will endorse a voluntary standard, it must decide which standard should prevail. Often there is no particular reason for choosing one standard over another, but the choice can result in some manufacturers being advantaged relative to others. Because of this, interest groups may lobby for the imposition of standards that disadvantage their competitors. Deciding on a standard can involve substantial costs in negotiations between different manufacturers (or between governments if the differences are between countries).

Given the potential costs of this form of regulation, the case for imposing mandatory standards on the grounds of information economisation (rather than food safety) are relatively weak. Government endorsement of a set of voluntary standards could be a less costly option.

Despite the fact that the case for regulating food standards (where food safety is not at issue) appears to be weak, political and economic forces outside of New Zealand are increasingly shaping food regulation. Most countries regulate food standards whether or not they are justified on economic grounds and firms exporting to other countries need to meet the standards that are imposed. Conflicts over regulation frequently take place in international rather than national fora and international agreements and treaties are important in affecting national standards.

Food quality and safety standards that are not justified can be (and are) used by importing countries as non-tariff barriers to trade. In practice, it is difficult to determine whether regulatory standards have been imposed to meet the preferences of consumers in the importing nation or whether they are intended as a non-tariff barrier to trade. The main recourse exporting companies have is a political one – through government-to-government negotiations or through international agreements. The World Trade Organisation (WTO) has sought to limit the use of product standards as non-tariff barriers. Signatory nations are required to use relevant international standards except where they deem the standards inadequate to protect public health.

Different countries may adopt different mandatory or voluntary standards. These different standards may create difficulties for trade. A country has the choice of harmonising standards with other countries, mutual recognition of standards, unilateral recognition of another country's standards, or the imposition of the country's own standards on importers.

Trade agreements require that standards should not be used as non-tariff barriers to trade. If a country can justify a standard on health or safety grounds, it can require importers to meet that standard. Where different standards might be acceptable mutual recognition allows different countries to adopt different standards. This requires states to permit the sale of products lawfully produced in the other country. There are a number of advantages with this approach. It avoids the time-consuming and cumbersome process of harmonising standards; it does not require extensive negotiation; it allows experimentation with different standards;

and consumers can signal their preference for a particular standard through the risk or quality and price trade-off they make. Consumers can choose which products they prefer.

Mutual recognition can make the costs of mandatory regulation more transparent. Producers manufacturing under a more liberal regulatory regime have a cost advantage in the marketplace. Mutual recognition may tend to 'drive out' regulations that raise prices by more than the value to consumers of increased quality or safety. The efficiency of this effect depends on whether consumers are well informed about the trade-offs they are making.

One option for implementing mutual recognition is to label the differences in products and allow individuals in the different countries to make their own choices. But labelling regulations themselves may become a source of conflict between countries.[75] If labelling requirements differ from market to market, manufacturers must produce different labels and maintain inventories for each market, potentially adding significant costs.

Harmonisation provides greater certainty to consumers as to the nature of products they buy. Harmonisation can also reduce the costs to producers of serving two or more markets since they need meet a single standard only. However, harmonisation involves costs.

As with harmonisation within a country, there may be no particular reason to prefer one standard over another. But the choice of a standard advantages some producers over others, leading to conflict and interest group lobbying of the regulatory body. Harmonisation, if the resultant standards are mandatory, reduces consumer choice.

Mutual recognition may be undesirable where the countries concerned have substantially different safety standards. For example, a developing country may tolerate levels of pesticide residue – required to overcome famine – that are unacceptable for a developed nation.

In practice, international trade has led to the harmonisation of standards. Standards could be harmonised at the level of the highest or lowest standard (and both of these have occurred). There is some suggestion that harmonisation leads to a 'race to the bottom' in which the weakest regulations prevail. However, other commentators suggest that the process of harmonisation is leading to the adoption of the highest existing standards – those of Germany and the United States, the wealthiest nations.[76]

Where rich nations such as Germany and the United States enact strict product standards, their trading partners are forced to meet the standards to maintain exports. This in turn may encourage consumer organisations to demand a similar standard for products sold domestically.[77] The pressures to impose the higher standards on producers in the domestic market are supported by those companies that also export, since they are already meeting the higher standards.

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75 Sykes, *op cit*, p 21.

76 See for example, Vogel, D (1995), *Trading Up: Consumer and Environmental Regulation in a Global Economy*, Harvard University Press, Cambridge, Massachusetts, London, England.

77 *ibid*, p 6.

New Zealand has chosen to join with Australia in developing joint mandatory standards for the New Zealand and Australian markets.

The Australia New Zealand Food Authority (ANZFA) process for setting standards appears to be an improvement over New Zealand's previous system for setting standards. The system allows wide industry input into the standards, using a transparent process. While there may be benefits from harmonising standards between New Zealand and Australia it is less clear that making the standards mandatory is justified.

6.4.4 Regulation of Food Safety

The earlier discussion noted that the incentives for organisations to produce safe food provided by reputation, third party certification and legal remedies are likely to be strongest for those organisations that have a substantial investment in reputation. These include organisations that produce a range of products, supermarket chains, branded restaurants and fast food outlets. Thus, where the consequences of a food safety failure are the most serious (where large numbers of individuals are likely to be affected) the market incentives for performance are strongest.

The market constraints are weakest for smaller operations that have less invested in maintaining a good reputation and which deal directly with customers rather than through another body, such as a supermarket, that has incentives to scrutinise quality. Smaller operations are likely to be subject to much less media and other scrutiny. Although any food safety failure by a small outlet is likely to affect smaller numbers of individuals, the risk of failure appears to be higher for small restaurants, butchers, delicatessens, sandwich bars and food producers that deal directly with end customers. The costs to a regulator of monitoring this group would also be high.

Four broad approaches to regulating food safety standards can be distinguished. Standards can be either prescriptive or performance-based. They could either be compulsory or voluntary – with those complying being allowed to market their product as meeting the regulated standards.

A performance or output standard requires certain conditions of quality to be met when a good is supplied, but leaves the supplier free to choose how to meet the conditions. A prescriptive standard compels the supplier to employ certain production methods or materials or prohibits the use of certain production methods or materials.

The adoption of a detailed set of prescriptive rules rather than a general standard involves costs both in detailing the standard initially and in revising the rules as conditions change. Prescriptive rules can provide certainty to the regulated firms and can offer benefits when there are few options for achieving particular outcomes and where future changes are limited. Monitoring of compliance with prescriptive rules is generally simpler than performance-oriented rules since the enforcement agency has simply to verify that the prescribed input or procedure has or has not been used by firms.

However, the more prescriptive a regulation, the more tied the regulations are to current conditions and technologies. Such regulations are likely to become outdated through time. Prescriptive regulations can erect barriers to new entrants. The case for prescriptive standards is generally weak unless the standard setter has better information than the firms do about the technology of production and the significance of unwanted effects.

Performance-based regulations define the outcomes desired by policy-makers, leaving the achievement of such outcomes up to the regulated industries. Performance-based regulations give the regulated firm flexibility over how standards are to be achieved, thereby providing an incentive to achieve desired standards at least cost. The performance-based approach gives the enforcement agency some discretion in determining what the standards might be and to tailor the regulatory goal of optimal care to the particular circumstances.

Performance-based standards are preferable where the desired outcome is readily measured, and universally preferred where technology is uncertain, and where there are a variety of ways of meeting a particular standard. However, these benefits must be weighed against the costs of administering performance-based regulations, and/or the costs to firms of acquiring the necessary information to achieve standards.

It is not sufficient to specify certain standards of food safety – producers must also be given incentives to conform to the standards. Conformity testing can provide sellers with incentives to meet the regulated quality standard. Incentives are provided both by the probability that breaches of the standards are detected and the penalties imposed.

Assessment of conformity with the regulatory standards can be undertaken either *ex ante* or *ex post*. With *ex ante* conformity testing, inspection, testing and certification of products takes place before products are sold. Decisions need to be made as to the rate of inspection or testing, the penalty for non-conformance, and what testing facilities are acceptable. It may not be necessary to impose monetary penalties when breaches are detected – the length of time that the manufacturer is denied necessary certification may be sufficient to provide an appropriate incentive.[78]

Ex post detection places the burden of conformity assessment on the supplier. Only those products with manifest quality problems after sale are then checked. When a product does not meet health and safety standards, various civil remedies exist and criminal penalties may also apply. Further penalty options exist in international markets – manufacturers of substandard products might be banned from the importing country or become subject to intensive *ex ante* conformity assessment after problems have been identified.

New Zealand has moved from a specification-based approach for food safety towards performance-based regulation for food for domestic and international consumption.[79] The approach focuses regulatory attention on the highest risk foods (foods that are most likely to be contaminated, and/or to affect large numbers of individuals) and aspects of food

[78] Skyes, *op cit*, pp 54–55.

[79] A more detailed description of the regulatory regime applying to New Zealand is provided in section 2.

processing that create the greatest risks. Firms must identify and manage food safety hazards in the production and distribution of food. The food safety programmes developed and implemented by food producers and suppliers must be audited by an independent organisation.

New Zealand's approach based on hazard analysis critical control point (HACCP) offers the advantages of a performance-based regulatory regime although it does involve mandating a process that must be used. It ensures that regulatory effort is focused on the highest risk foods and processes. It allows a substantial degree of self-certification, with auditing by independent agencies (including in some situations government agencies). Thus, organisations have flexibility to develop the lowest cost methods of complying with the requirements.

Regulation attempts to prevent harm from occurring, as compared with common law remedies, which seek to recover damages for adverse food safety outcomes. In practice, regulators also have difficulty in detecting food safety issues prior to an incidence of food poisoning. Because the risks of food poisoning are strongly influenced by individual behaviour (for example, hand washing), prescriptive regulations (for example, that food premises must have a wash basin) or performance-based regulation (for example, potential risks are identified and addressed), cannot provide a complete solution. The government cannot ensure with certainty that individuals or firms always comply with specified requirements when they are not under direct scrutiny. In practice, therefore, even under a regulatory regime, the threat of sanctions after the fact will be an important element of the incentive structure.

As noted earlier, reputable food producers generally have strong incentives to ensure that their food is safe and even in the absence of regulation are likely to institute programmes that manage safety risks in a manner similar to that which a regulation would require. Therefore many of the costs that appear to be generated by this sort of regulation would be incurred by food producers anyway.

However, the standards imposed by the government may be inappropriate to a particular organisation's operations or be considered unreasonable by that firm. Costs will be imposed on producers (and passed on to consumers) if the standards are mandatory and the government requires higher standards or ones that are different from those which would be voluntarily adopted. Reasonable people might differ as to the appropriate standard, or what needs to be done to meet a particular standard. Costs are incurred in ensuring compliance with the regime through voluntary or compulsory auditing or *ex post* prosecutions. There may be some duplication of auditing undertaken by the regulator and the private companies. If the private sector firms must pay for public sector auditing, there is a risk that the public agency will undertake more auditing than is justified, or will not produce the auditing in a cost-effective manner. (These issues are discussed in more detail in the section below.) Consumer choice is restricted since producers must produce and consumers pay for a higher quality product. Regulations may not be sufficiently flexible to adjust through time or to allow experimentation and discovery of better options.

Allowing a firm to opt out of the food safety regulation may reduce the costs that are imposed and allow consumers to make their own choices as to the level of safety they are comfortable with. Those conforming to regulations could be entitled to use a government-endorsed symbol. As long as uncertified firms disclosed (eg on food labels) that they did not conform, consumers could make their own choices as to the importance of food safety regulation through their choices of product.

Allowing opting out would involve additional search costs for consumers. Consumers would need to take more care in their choices, but would also have more choices. Allowing opting out would also make it easier for a producer of certified processed meat to cheat by using uncertified raw meat. This prospect would raise the optimal level of inspection of certified products.

Sometimes foreign companies impose food safety requirements as a condition of trade. Irrespective of the justification for such regulations, New Zealand exporters must conform with the requirements if they are to export food products. The best that New Zealand manufacturers and New Zealand regulatory agencies can do is to meet the imposed requirements at least cost.

6.5 Assessing the Costs and Benefits of Regulation

Whether or not the costs of regulation outweigh the benefits is an empirical issue that must be answered by careful research.[80] Cost-benefit analysis is the main tool used for assessing the impact of regulation. In the United States for example, the US Department of Agriculture must undertake economic analysis of proposed changes in significant rules and regulations using cost-benefit analysis. The department is required to conduct a thorough analysis that clarifies the nature of the risk, and alternative ways of addressing it, as well as undertaking cost-benefit analysis of options.[81]

In applying cost-benefit analysis all relevant costs and benefits need to be taken into account. Relevant costs include the costs of enforcement for the regulator and the costs of compliance borne by the regulated industry. Relevant benefits include benefits of illness averted, and the benefits of enabling consumers to make better informed trade-offs about the risks involved. The costs and benefits identified should be confined to those caused by the proposed rule change. Incremental analysis is a useful tool – this requires the analyst to consider the additional costs and benefits of an increase or decrease in the stringency of a proposed rule. This analysis can be particularly useful in health and safety regulation where an increment in the stringency of a proposed regulation can result in very high costs at the margin.[82] Income transfers should not be included as costs.

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80 Antle, JM (1996), "Efficient Food Safety Regulation in the Food Manufacturing Sector", *American Journal of Agricultural Economics*, 78, p 1245.

81 MacDonald, JM and Crutchfield, S (1996), "Modeling the Costs of Food Safety Regulation", *American Journal of Agricultural Economics*, 78, p 1285.

82 MacDonald and Crutchfield, *op cit*, p 1286.

Unfortunately cost-benefit analysis suffers from a number of theoretical and practical shortcomings that limit its usefulness as a tool for evaluating regulation. At best, costs and benefits can only be estimated crudely and large difference can be generated by different assumptions. For example, estimates of the costs of illness (and therefore the benefits of pathogen reductions from regulation) are at a developmental stage – as yet it is not clear how well such estimates represent the benefits to society of reduced illness.[83] The choice of the discount rate applied to future cost and benefits can have a major impact on the analysis. The choice of a value of life estimate is also controversial. The uncertainties mean that the analysis can be readily manipulated to generate the outcomes desired by a regulatory agency.[84]

6.6 Issues Specific to New Zealand

6.6.1 Introduction

There are a number of specific food regulation issues that arise in New Zealand. Some of these are discussed below.

6.6.2 Food Administration

There is some overlap in terms of regulatory requirements and administrative responsibilities of government agencies. Most important is the sharing of responsibility for food safety between the Ministry of Health (MoH) (generally responsible for food consumed domestically) and the Ministry of Agriculture (MAF) (responsible for exported food, and meat, dairy and fish products consumed domestically). The overlap of responsibilities has the potential to result in inconsistencies between the operations of the different regimes.

The potential problems with overlapping jurisdictions have been recognised by officials. Officials considered the following options for reform: transferring all responsibilities to either MoH or MAF; establishing a new stand-alone food regulatory agency; or attempting to better coordinate the activities of the MoH and MAF. The latter course was chosen with the two agencies signing a memorandum of agreement establishing a Food Safety Coordination Group, which had the objective of better coordinating the activities of the two agencies.

The government directed that the ministries, in consultation with the State Services Commission and The Treasury, review and report back to ministers by 30 June 1997 on the effectiveness of the Food Safety Coordination Group and the memorandum of agreement in improving on the coordination between both agencies, and whether the food regulatory functions of MoH and MAF should be integrated. The outcome of this review is not known to the authors.

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83 Unnevehr, LJ (1996), "The Benefits and Costs of Food Safety Policies: Discussion", *American Journal of Agricultural Economics*, 78, p 1303.

84 See for example, Cowen, T (1998), *Cost-Benefit Analysis*, draft paper prepared for the New Zealand Business Roundtable.

6.6.3 Inconsistent Regulatory Requirements

The regulatory regimes that apply to different primary products were developed at different times and apply different approaches and standards. Thus, for example, meat industry regulation is more prescriptive than dairy industry regulation. The level of self auditing allowed in the dairy industry is greater than that allowed for fish production. The safety standards applying to meat are higher than those applying to poultry even though higher food safety risks are associated with poultry.

Rationalisation of the regulation of all primary products (as has been proposed) could provide benefits. Although different products impose different levels of risk, bringing all products into a single regime based on a risk identification and management approach (an HACCP-based approach) could accommodate this. Rationalisation would help ensure that the regulatory agency applied a consistent approach to all products. Rationalisation could eliminate the situation in which factories making products with both dairy and meat components, for example, are subject to two different overlapping regulatory regimes.

Rationalisation of primary production regulation may address particular problems experienced by processed food manufacturers which must comply with food safety standards that were designed for the processing of raw meat without (apparent) regard to the different levels of risk.

A government review team concluded in 1997 that "priority should be given to the reform of all law related to the regulation of food safety. The law should facilitate the acceptance by food manufacturers and processors of their prime responsibility for producing safe food, thus allowing Government to provide independent assurance of safety through less intrusive and less hands-on methods".[85] Industry and government officials have supported the proposed rationalisation of food safety regulation. However, other legislative priorities have precluded the implementation of the proposed reform.

A further option for dealing with differing standards is to allow companies to opt out of the regulatory regime, as long as their non-compliance with the regulatory standards is clearly signalled to customers. Customers could then choose whether or not to buy the products produced by non-regulated suppliers.

In the interim, the Ministry of Agriculture Regulatory Authority (MAFRA) could focus (and indeed has made progress) on removing inconsistencies in the approaches taken by its different regulatory divisions, within the constraints of the regulation governing the different products. It appears that even within the current regulatory regime, MAFRA has considerable discretion over the approach it adopts. In some cases, eg the treatment of processed food, its interpretation of regulations appears to be overly restrictive.

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[85] Independent Scoping Review Team 1996/97 (1997), *Regulation, Biosecurity & Government: A Strategic View of MAF*, New Zealand Government, p iv.

Exporters sometimes complain that the food safety standards applied to food for export are much higher, and the compliance regime more rigorous, than that which applies to food for domestic consumption.

If the food safety standards are driven by export requirements, and are not justified on food safety grounds, there is no reason why the same standards should be applied domestically. Certainly in the past, the food safety standards applying to exports have been at least in part non-tariff barriers to trade imposed by importing countries seeking to protect domestic producers. Imposing similar standards on domestic producers or imported food would merely exacerbate the costs of inappropriate standards.

6.6.4 The Roles of Public and Private Auditors

Monitoring of food safety is shared between food producers, independent private auditors and government regulators. The boundaries for these responsibilities differ for different products and for domestic and export production.

Placing inspection in the hands of companies strengthens incentives to lower costs. When the government hires inspectors, as is the case for meat inspection, the incentives to keep costs down are weak. The government itself is less efficient than the private sector in most instances. Furthermore, if companies pick up the costs of inspection (as they do for meat inspection), the government need not be overly concerned with meeting its budget, since it can bill industry for the costs. The government will tend to offer wages which are too high and working conditions which are too generous.

A private company can undertake inspection more efficiently. Private inspectors could be multi-skilled individuals who work full time in a plant but spend only part of their time undertaking inspection. The private inspector would have a familiarity with the entire production process that an outside inspector who visited the plant only periodically could not match. At the same time, the inspector could work productively at other tasks when not occupied with quality monitoring.

The potential problems of placing inspection in the hands of the companies are obvious when the mandatory standards differ from those that the company would adopt voluntarily. If the inspectors are paid by the company, rather than by the government, the integrity of their opinions might be compromised if in fact the company does not believe that consumers are prepared to pay for the costs associated with meeting regulatory requirements. Inspectors might fear to speak up against violations of the regulations for fear of losing their job or diminishing their future prospects within the company.[86]

[86] Milgrom, PR and Roberts, J (Spring 1986), "Relying on the Information of Interested Parties", *Rand Journal of Economics*, 17, 1, pp 18–32, consider the issues related to the potential bias of interested parties.

Independent third party monitors present an alternative or addition to company-based monitors of foodstuff quality. There are already a number of private sector firms specialising in quality monitoring of final products and production processes.

The key issue is whether the third party auditor can provide an independent audit of the company it is monitoring if the company is paying for its services. Section 6.3.3 examined the issue of whether private monitors are likely to be trustworthy. It concluded that private certifiers have strong incentives to maintain a reputation for impartiality particularly when they provide services to a number of organisations. A further layer of protection can be provided by the government approving and periodically auditing the private auditor.

In any case, the discussion in section 6.3 indicated that quite apart from government regulation, private companies have strong incentives to produce safe food. This reinforces the case for the company inspecting product itself and using independent private auditors if it believes consumers would value this.

Foreign importers often require that products be certified in their home market. Some importing countries regard government ownership of the certifying body (MAFRA, in the case of New Zealand) as providing credibility for the certifying process, even if certifying functions could be handled adequately by private industry. Where importing countries require government certification, exporters have little option but to conform to these certification procedures. However, this does not require MAFRA to undertake all of the auditing itself.

It is only in the meat industry that government inspectors (MAF Quality Management or MQM) must provide food safety inspection. Industry and the government agree that inspection could be carried out more efficiently by company inspectors without compromising food safety standards. MAFRA would retain an auditing role. However, a number of difficult transitional arrangements need to be resolved before the change can be implemented.

A requirement by foreign regulators or consumers that New Zealand exports be certified by MAFRA gives MAFRA a monopoly position. Because of its monopoly position MAFRA need not be as concerned about running an efficient operation or meeting its clients' requirements as it would be in a competitive market.

We have noted that regulatory agencies have incentives to expand their areas of influence – thus it would not be surprising if MAFRA sometimes adopted standards that exceeded those of the importing country or if it required that exports be certified even when this is not required by the importing country. These issues are discussed in more detail below.

6.6.5 International Externalities

MAFRA sometimes imposes audit requirements even where an importing country does not require MAFRA certification. In some cases MAFRA is required by legislation to impose

such standards. Otherwise its justification is that certification is necessary to protect the reputation of New Zealand products or MAFRA's reputation as a certifying agent.

The suggestion is that foreign buyers, or foreign regulatory agencies, may form a common impression of all New Zealand products to some extent. If one New Zealand supplier ships products of defective quality, other New Zealand suppliers may suffer negative reputational consequences. Given that any particular company does not bear the full costs of low product quality, each company may tend to underinvest in product quality and safety. The reputation of New Zealand products could end up lower than would be optimal. Mandatory certification may be proposed as a way of 'internalising' the externality.

A further suggestion is that MAFRA's reputation might be adversely affected by non-certified product that turns out to be unsafe. In these circumstances, it is suggested that foreign regulatory agencies or foreign consumers might decide to discriminate against New Zealand products in general, including MAFRA-certified ones.

These arguments for regulation are speculative rather than concrete and it is difficult to evaluate their significance for current policy.

In general, we would expect foreign regulators to have access to good information about the procedures followed in the exporting country. They would be aware of the distinctions between MAFRA-certified and uncertified food and would be unlikely to withhold approval from certified food if there were food safety problems with uncertified food. Thus, it appears unlikely that a problem with unsafe uncertified food would affect MAFRA's international reputation.

A more plausible concern might arise if importing countries require MAFRA certification, but have different food safety standards. In that case, if MAFRA certified foods to different quality levels depending on the market, a problem with the food in the low standard market might affect MAFRA's reputation in the higher standard market. Thus, there might be a case for MAFRA requiring all certified food to meet a single standard, even if that standard was not required by all importing nations. The imposition of the single standard would increase the costs of regulation. This reputational argument does not provide a compelling case for mandatory certification of all food.

An externality problem is more likely to arise at the consumer level. Following the 'mad cow' scare in the UK, foreign regulators generally responded relatively rationally in not extending 'mad cow' sanctions against unrelated British products. However, consumer reactions were less focused – consumption of beef from countries not affected by the disease fell, and meat consumption in general also fell. (Of course this might be a rational response to the initial lack of information as to the safety of different products.) Another example is that when the MoH in New Zealand announced that natural toxins had contaminated shellfish, fish consumption also fell. Thus, there is a possibility that some foreign consumers might discriminate against all New Zealand products, if some New Zealand products turn out to be low quality or unsafe.

Nevertheless, this argument does not provide a compelling case for requiring regulation. First, the market constraints discussed above (contract, reputation, third party certification and so on) already provide strong incentives for reputable producers to deliver the level of food safety and quality which consumers are prepared to pay for in repeated transactions. Where producers produce both for the home and export markets, the level of quality produced for the domestic market would commonly be carried over to the export market.

Second, if foreign markets demand a significantly higher level of quality than do New Zealand consumers, market forces will induce New Zealand exporters to respond accordingly. If foreign consumers demand high quality products, they (or their agents – importers, supermarkets etc) will refuse to buy products that do not provide high quality and satisfaction across repeat buys. Individual New Zealand producers will need to meet these standards to maintain market share abroad.

Third, foreign consumers do not necessarily discriminate unjustly against products of a given nationality or products from New Zealand. To the extent that consumers or their agents monitor quality, they realise that foreign countries contain a variety of products, just as their own countries do. A bad experience with one kind of New Zealand product would not necessarily reflect negatively on other kinds of New Zealand products. For example in the case of food exported to Australia – one of the major destinations for New Zealand's food output – Australian consumers are likely to be aware that there are a range of companies producing products of different quality. Many of the New Zealand companies exporting to Australia are well known by Australian consumers (and vice versa). Australian consumers are no more likely to generalise about food safety standards than they would if the failure was by an Australian producer. Food producers themselves have a strong incentive to differentiate their products from other producers' products to reduce contamination effects.

Fourth, government regulation can create externalities where they might not otherwise exist. Heavy reliance on government certification implies that a single process – the regulatory one – is vouching for the authority of all New Zealand products. If foreign consumers encounter problems with a certified New Zealand product, they may assume that something is amiss with New Zealand regulation. That presumption might then be extended to other New Zealand products that fall under the common process. Market solutions to food safety problems, in contrast, rely upon a greater diversity of mechanisms as discussed earlier. To the extent that consumers understand the diversity of market checks and balances, a regime of less regulation involves smaller degrees of common prejudice in the case where one New Zealand product fails.

A requirement that all exporters obtain MAFRA certification of their products involves a number of costs. Companies must pay for certification services that they sometimes believe do not provide net benefits. If MAFRA's services are mandatory, MAFRA does not face any market constraints on its behaviour. The absence of market constraints means that the organisation does not have to pay close attention to what its clients require, or strive to minimise its costs.

Of course, government involvement in certification is not necessarily a guarantee of trustworthiness. For example, despite assurances by the UK government that there was no risk to consumers from mad cow disease, sales of domestic beef fell 20–30 percent. There was a general perception that the government was acting as the farmers' mouthpiece.[87]

6.6.6 Cost Recovery

The efficiency standard supports prices that track marginal costs. Prices or charges which track marginal costs provide producers and users with incentives to modify their behaviour to better balance costs and benefits. Common or joint costs (including the costs of providing public goods) should be recovered in a way that minimises distortions.

Where food producers can voluntarily contract for the certification services provided by MAFRA or MoH, the regulatory agencies should recover the marginal cost directly from users. The agency might also levy a fixed fee to cover fixed costs (for example, an annual fee). In considering how to recover common costs, issues of competitive neutrality may be relevant. The combined charges would provide users with an incentive to balance the costs and benefits of more or less certification of food.

In this voluntary situation, providers will assess consumer willingness to pay for the certified product (perhaps in the form of a higher per unit price) and opt into or out of the certification process accordingly.

With a mandatory certification process, user charges are likely to be less effective in terms of the efficiency standard. Unless the users of the service can force the provider of the regulated service to respond to consumer preferences, user charging does not lead to a better balancing of the costs and benefits of the service itself – the main potential benefit from user charging. This is because producers cannot discipline the certifier by opting out if the charge is higher than the willingness to pay of their consumers.

However, charges based on the optimal level of certification services passed on to the consumer through higher prices would duplicate the consumer demand and resource allocation outcomes which private contracting might have produced, if it had been feasible. Determining this optimal level would be almost impossible for a mandated monopoly supplier.

Recovering the charges for excessive levels of mandated service from producers (who would try to pass it on to consumers) may undesirably induce some producers to exit from production and reduce consumers' demand for the product (to the extent that they do not value the level of certification imposed). This could be justified only if these distortions to production and consumption were less than those that would result from raising the funding from general taxation. Whether these distortions are greater or less than those induced by taxation funding is an empirical optimal tax issue.

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[87] Vogel, *op cit*, p 46.

Where a service is mandatory, but the amount of inspection required varies according to the level of a company's output, the company can affect the level of resources devoted to certification through its choice of output. This presumes that the regulator reduces inputs when volume falls. If instead the regulator raises average charges this potential gain is lost. To the extent that the per unit amount of inspection services that are mandated is above the optimal level, levying charges on producers for the per unit cost will reduce output from the optimum level and impose a deadweight loss. Funding from taxation would also involve deadweight losses, including the costs resulting from a higher volume of unwanted certification services. It is not clear which funding option would minimise the deadweight losses. This could be a topic for further investigation.

Where food certification or auditing is mandatory, but competition for supply of that service is possible, the government could tender for the provision of the mandated level of service. Alternatively, if competition between certifiers is allowed food producers may be able to find a supplier that will undercut the costs charged by the government supplier. MAF's moves to introduce contestability into service provision have helped reduce the costs of mandatory requirements. However, such processes cannot address the problem of an excessively costly mandated level of service provision.

Where the services supplied are in the nature of a public good – that is they are non-rivalrous in consumption and exclusion is costly – then the costs should generally be recovered from taxation. Thus, the provision of public good services such as policy advice, investigation and prosecution of violations of regulations, and involvement in broad-based international negotiations, should be funded through general taxation.

Allowing producers to opt out of the regulatory regime would reduce controversy over the government recovering the costs of the services it provides. It would allow companies to choose not to purchase MAFRA's or MoH's certification services if producers did not believe the benefits provided exceeded the costs. Such an approach would strengthen the efficiency arguments for user charges.

6.7 Conclusions

In the absence of regulation, most food suppliers have strong incentives to produce food with characteristics that consumers value. Even heavily regulated regimes cannot prevent buyers from making choices based on personal experience, reputation, private and public sources of information, contracts and legal remedies. Consumers' choices thereby markedly influence producers' investments in food safety and quality. The resources of government regulators are small relative to the size of economic activity even in heavily regulated economies, and their incentives to provide the optimal level of intervention are weak.

Regulations impose costs. Regulators naturally want more resources than might be dictated by an efficiency objective. Public choice economists have analysed the tendency of bureaucracies and agencies to over-regulate, to overspend and to be captured by particular interest groups. Regulators pursue larger budgets and staffs, and they do not necessarily

suffer when their agencies impose significant costs on businesses and consumers. Not surprisingly, researchers find that many regulations are issued which are not cost effective.

Furthermore, regulators cannot easily divine the range of optimal levels of product safety and quality desired by consumers – regulators do not have information on the trade-offs that individuals are prepared to make. Consumer attitudes toward risk vary greatly across individuals, are highly product specific, and are difficult to measure. Risk information is generally best revealed through a market process based on consumer preferences, consumer willingness to purchase and consider information, and consumer demands for products of varying quality. We do not expect regulators to come even close to adopting optimal standards for product safety or quality. In the absence of satisfactory information, regulatory decisions are likely to be politicised, with little guarantee that efficiency is a primary influence.

Given the costs of regulation and the strength of private incentives to inform consumers about foods, regulations which mandate the provision of information about food ingredients and food standards unrelated to food safety seem unlikely to bring benefits that outweigh the costs.

This is not to deny a possible role for the government in setting voluntary standards. Information costs are real, and the government may be able to reduce the costs of reaching agreement on useful standards where the costs to the private sector of agreeing voluntary product standards, or a standard format for information presentation, may be high. However, even where this is true, it would not require that those standards be imposed on all. Producers should be allowed to opt out of the standards. Only those companies that did not opt out would be permitted to advertise that their products conformed with the government standards.

The report explains that the incentives for organisations to produce safe food provided by reputation, contract, third party certification and legal remedies are likely to be strongest for those organisations that have a substantial investment in reputation. These include organisations that produce a range of products, supermarket chains, branded restaurants and fast food outlets. Thus, where the consequences of a food safety failure are the most serious (where large numbers of individuals are likely to be affected, and serious illness results) the reputational incentives for performance are strongest.

This constraint is weaker for smaller operations that have less invested in maintaining a good reputation and which deal directly with customers in non-repeat buying situations rather than through another body, such as a supermarket, that has incentives to scrutinise quality. Smaller operations are likely to be subject to much less media and other scrutiny and may lack the resources to maintain consistent quality standards. Although any food safety failure by a small outlet is likely to affect smaller numbers of individuals, the probability of a failure appears to be higher for small restaurants, butchers, delicatessens, sandwich bars and food producers that deal directly with end customers. Of course, the costs to the regulator of monitoring these outlets could be high. Word-of-mouth information and the threat of

prosecution after the event may be the most effective discipline on these outlets. Regulations may induce a false sense of security amongst the more naive shoppers.

Independent auditing of safety programmes, and auditing of the auditors by a government agency, may provide consumers with an additional level of comfort about food safety in a relatively cost effective manner. However, there is a risk that regulated standards will be set too high, that the regulations prove inflexible, or that the government agency's role expands over time beyond that originally envisaged.

Thus, although the report supports New Zealand's move to a risk management approach to food regulation, it suggests that companies be allowed to opt out of the regulatory regime if they clearly signal this to consumers. This option could be allowed for all organisations or could possibly be restricted to those organisations considered likely to impose relatively low risks.

Opting out would increase search costs for consumers (since they would need to determine whether they were dealing with a certified or a non-certified supplier), and would possibly raise the optimal level of inspection of certified product, but it brings a number of benefits. An important benefit is that it allows consumers a wider choice – allowing individuals to choose the price risk trade-off they are prepared to make. Because the regulator would no longer be in a monopoly position, its incentives to respond to producer and consumer requirements would be improved as would its incentive to minimise the costs of service production.

The case for user pays charges for government-provided services is strongest when compliance is voluntary. With a voluntary regime, producers are able to assess whether or not the benefits of the service outweigh the cost and to adjust their demand accordingly. This places a strong discipline on a provider even when it is in a monopoly position.

There are grounds for concern about the efficiency of user pays charges when the regulation is mandatory. Concerns arise if:

- the benefits from the service extend beyond the producers and/or consumers who are being levied – in the case of food safety and disclosure the benefits of the services would be generally confined to consumers of the regulated products; and

- the charge for the service exceeds the value attributed to it by end users, and end users and their suppliers cannot effectively signal this to the government provider – this possibility is of concern, given the well documented tendency of regulatory agencies to expand their areas of influence beyond that justified on efficiency grounds.

Section 7: Biosecurity

7.1 Introduction

The Biosecurity Act 1993 provides the legislative framework for dealing with the exclusion, eradication and effective management of pests and unwanted organisms. The Act has two major components:

- prevention of unwanted organisms not already established in New Zealand, ie border control; and

- management of unwanted organisms established in New Zealand through the development of pest management strategies.

In section 7.2 we briefly review the case for regulation of biosecurity. Section 7.3 examines in general terms how resources should be allocated to different aspects of biosecurity. Section 7.4 examines how the costs of biosecurity measures should be recovered. Concluding comments are provided in section 7.5.

7.2 Justification for Regulation

New Zealand is an island nation free from a number of pests and organisms that could potentially damage the nation's flora and fauna. Given New Zealand's isolation from the rest of the world, protection against the entry of unwanted organisms is a feasible strategy. Absolute protection against pest incursion is not possible as long as New Zealand interacts with the rest of the world through trade and tourism.

The case for regulating biosecurity is based on externality and public good considerations. In the absence of regulation, an individual responsible for importing an unwanted organism or pest would not bear the full costs of that importation. Conversely, individuals taking care not to import organisms would not be rewarded for taking care. The costs of managing pests also involve externalities. If one person controls pests on a property, his or her neighbours will benefit. Conversely, neighbours will suffer if one property owner chooses not to undertake pest control.

The beneficiaries of biosecurity include a wide range of New Zealand individuals. Border protection, surveillance and response readiness have strong 'public good' characteristics. Once the services are provided they are available to all at no additional cost. An individual cannot choose whether or not to consume the service. It is not possible to exclude those who refuse to contribute towards the services from benefiting from the services. The costs of providing the services may be common to protection against a broad range of pests (and may

be common to a range of different beneficiaries). These services help prevent all pests from entering the country, providing benefits to all New Zealanders.

7.3 Border Protection, Surveillance, and Ex Post Management

Biosecurity measures take three broad forms:

- border protection;
- surveillance; and
- response to incursions.

Border protection attempts to prevent the entry of unwanted organisms. Entry of pests can occur through a number of channels including mail, imported commercial product (by sea or air), in personal baggage of passengers, on yachts, fishing boats and through natural means (in the sea or air). Border protection measures include establishing standards and procedures for importing commercial product, requiring disclosure of the importation of high risk material, surveillance of imported product and individuals at all ports of entry, information provision, and the imposition of fines on those found to contravene the biosecurity provisions.

Surveillance of domestic animal and plant populations is undertaken to detect emergent unwanted organisms. In general, the earlier an infestation is detected, the more readily it can be controlled and the more likely it is that eradication is a feasible response.

Once an incursion is detected, a variety of responses are possible, including investigation, containment, eradication, or no action. The maintenance of a response capability will enable a more rapid response should a problem be detected.

Allocating resources to biosecurity requires a complex series of inter-related choices.

In principle, the allocation of resources to border protection or management of the pest, or eradication if it enters the country, will depend on an assessment of the benefits of preventing an incursion compared to the costs of border control.

Greater border protection involves costs but decreases the probability that the costs of an incursion would be borne. The costs of border protection include the direct costs of staff and resources, paperwork, inconvenience to passengers, and delays in release of commercial products. In considering whether to increase or decrease border protection the following assessments must be made:

- the marginal cost of an increase in some aspect of border protection; and

- the marginal decrease in the expected cost of an incursion (the decrease in the probability of incursion times the cost of an incursion).

The costs of incursion are the minimum of the following:

- the costs of taking no action (the damage to flora and fauna including the reduction in the value of products and the loss of New Zealand's reputation as being free from some diseases);

- the costs of eradication (including the interim costs to flora and fauna and the loss of value of product); or

- the costs of containment (including the costs of more limited damage to flora and fauna and loss of value of animal and plant-based product).

Expenditure on border protection should be incurred up to the point at which the cost of a marginal increase in border protection is matched by a marginal decrease in the expected cost of an incursion (ie the marginal costs are equal to the marginal benefits). The optimal point will depend on the size of the penalty imposed on those breaching biosecurity provisions.

Decisions on where border protection resources should be spent also involve evaluating a range of options. For example, installing an X-ray machine for scanning incoming passenger baggage at secondary airports, increasing the number of inspection staff at ports, increasing the number of prosecutions of those contravening the regulations, or increasing the standards for commercial imported product.

The probability of an unwanted organism being introduced depends on the behaviour of individuals. That behaviour can be influenced by defining an expected level of performance either prescriptively or non-prescriptively, and imposing penalties for a breach of standards. Prescriptive standards could describe the treatment of product required to make it safe, eg fumigation or sourcing of product from specified areas free from pests. The prescriptive standard for passengers is that no undeclared agricultural product can be imported. Performance standards could be set requiring food to be free of specified pests with importers then able to choose how to meet the standards. Incentives to meet the standards are established by imposing penalties (with the incentive being equal to the probability of detection times the expected size of the penalty).

As with food quality standards, there is a risk that biosecurity standards will be used as a non-tariff barrier to trade. Restrictions and requirements should reflect the risks involved. If the standards are set too high, too many resources would be devoted to meeting the standards, the cost of imported product would be increased, domestic producers would obtain a competitive advantage and consumers might face higher prices.

The costs of eradication and containment depend on the nature of the problem and how quickly an incursion is detected and a response made. An increase in surveillance increases the probability that an incursion will be detected in a timely manner, thereby reducing the cost of management or eradication. Expenditure on surveillance should be incurred to the point that the marginal cost of an increase in surveillance matches the marginal benefit of a decrease in the cost of management or eradication. A similar assessment applies to response readiness.

Biosecurity efforts should be (and indeed are) targeted at the organisms likely to cause the greatest harm.

The decision on the appropriate level of expenditure on border control, surveillance and response readiness is difficult because the government does not know the true preferences of those who benefit from the services. The determination of the optimal level of resources to devote to biosecurity is complicated by the fact that provision of these services for one pest may provide protection against other pests. Thus expenditure on these services involves significant elements of common costs.

There would generally be fewer spillover effects from the management of a particular pest incursion, since the effort would usually be targeted on a single organism.

Once a pest or organism is established in New Zealand, the benefits of border protection against that pest will be minimal (depending on how localised was the infestation).

The relevant consideration would then be the design of an optimal management strategy for containing or eliminating that pest or organism. Deciding whether management, eradication or no action is the optimal strategy involves assessing the benefits against the costs. Organising a management strategy and funding it may involve substantial transaction costs where a large number of individuals are affected, and they are not already organised into, for example, a cohesive industry group. In some situations, where a relatively small group of well-organised individuals are affected, determination of an optimal strategy within the 'club' might be feasible, eg the apple industry with a monopoly producer board.

As the number of pests established in New Zealand increases (and those not established declines) the benefits of border protection measures would also decline.

7.4 Cost Recovery

The government provides and funds most border protection services, surveillance, a level of response readiness, and the initial response to an incursion.

The private sector incurs costs in meeting government standards for importing commercial product. For some pest incursions, the private sector also provides some response readiness services, and would be expected to contribute resources in the event that an organism, such as that causing foot and mouth disease, entered New Zealand. The private sector also bears the

costs of biosecurity failures – the impact of the establishment of an unwanted organism and some of the ongoing management costs.

It is sometimes suggested that biosecurity risks are 'caused' by international travellers and traders – the costs could be 'avoided' if there was no trade or travel. This observation leads to the suggestion that the costs of the services provided should be 'internalised' to those creating the costs, ie importers and travellers. However, it could equally be suggested that the risks would be 'avoided' if we closed pest-susceptible industries.

In either case, we wish to devote the appropriate level of resources to preventing the entry of unwanted pests. A possible argument for levying importers and travellers is that this would give them incentives to cut back on activities that create the externality (the introduction of the pest). Equivalently, the government or those who benefit from biosecurity could pay travellers and importers to conduct inspections (or government could do so on their behalf). The choice between imposing the costs on those possibly bringing in the pests or those who benefit from preventing the importation depends on who is assigned particular rights (eg the right to free entry to a country versus the right to be free from unwanted pests) and the transaction costs of arranging payments.

The case for levying travellers or importers rests in efficiency terms on the extent to which this provides incentives to them to minimise biosecurity risks. Where different travellers differ significantly in terms of the likelihood that they will import at-risk products and the high-risk individuals are not readily identified, it may be inefficient to charge the entire class of travellers the costs of screening them in order to detect the wrongdoers. Levying charges on this basis would be a poor form of targeting in terms of providing incentives for individuals to increase or decrease the care they take to prevent importation of unwanted organisms. It would not provide the government with any information on the level of resources it should devote to biosecurity. Such a charge may distort individual decisions on whether or not to travel to New Zealand.

Instead, incentives for travellers to take the appropriate level of care when importing agricultural products might be better provided through imposing fines on those detected breaching the regulations. This approach would not guarantee that the full costs of government-provided biosecurity services were recovered.

The risks imposed by importers are also likely to vary widely, but those posing the greatest risk are likely to be more readily identified than in the case of travellers (eg products imported from high-risk countries). Levying a fixed charge on importers would not be effective at deterring high-risk importations. However, if inspection is targeted to the highest risk imports, and is incurred on a per shipment basis, then levying them with the marginal costs of inspection might deter those most likely to cause harm. Incentives for care can also be given by a regime of fines.

The incentive for importers and travellers to conform to biosecurity standards depends on the probability of an offence being detected and the penalty imposed if caught. In principle, the same incentive to conform as measured by the expected penalty from wrongdoing is provided

by a low fine linked to a high probability of detection and a high fine with a low probability of detection. The optimal deterrence literature argues that in most cases a high fine linked with a low probability of detection is preferable since this reduces the overall resource costs of providing a given level of incentive (less resources need to be devoted to enforcement). However, if fines are too high, individuals may not be able to pay them. A very high fine may be considered 'unfair' and 'unreasonable' where individuals may be poorly informed as to the legal requirements (tourists may not know what the requirements are.) For traders, part of the penalty should be a refusal by the authorities to allow product that fails to meet the standards to be sold in New Zealand, or a requirement that the importer meets the costs of bringing the product up to standard (for example the costs of fumigation).

The beneficiaries of biosecurity include a wide range of New Zealand individuals. Border protection, surveillance and response readiness all have strong 'public good' characteristics. Once the services are provided they are available to all at no additional cost. An individual cannot choose whether or not to consume the service. It is not possible to exclude those who refuse to contribute towards the services from benefiting from the services. In any case, it would be difficult to determine the value any individual ascribes to the service. The costs of providing the services may be common to protection against a broad range of pests (and may be common to a range of different beneficiaries). These services help prevent all pests from entering the country, providing benefits to all New Zealanders.

The efficiency standard suggests that public goods be funded in a way that least distorts behaviour, and which ensures the production of the optimum amount of the public good at minimum cost.

Raising the required funds from taxation is likely to minimise funding distortions. This is the preferred approach to funding any deficit in biosecurity services unless there is a well organised group of beneficiaries who, if required to pay for the services, would have better incentives or ability to determine the optimal level of expenditure on the public good output than the government itself.

Once an incursion has been identified, then the costs borne in an attempt to eradicate or manage the pest are targeted on the incursion only. The costs are non-rivalrous in the sense that once the service is provided to one person, it is available to all at no additional cost. It would be costly to prevent people benefiting from the services even if they did not contribute towards the costs.

If pest management provides benefits to an identifiable group, then levying the beneficiaries might be justified on efficiency grounds if the group levied has better incentives or ability to decide on the optimal level of management than does government. An industry body, for example, might have incentives to trade off the costs and benefits of different levels of expenditure on management services if it faces the costs at the margin. If those who benefit are not already organised, then levying the individual members of the group is unlikely to improve decision making. Levying industry members may give them incentives to adopt strategies that would minimise the impact of a pest incursion, eg to adopt pest-resistant varieties of crop.

Where a pest is established in New Zealand, individual attempts to control it will provide spillover benefits to others. If it is difficult for people in a local area to cooperate and agree on a concerted strategy, there may be a case for the government subsidising private effort, or coordinating and partly funding management programmes.

7.5 Summary

The case for regulating biosecurity is based on externality and public good considerations. In the absence of regulation, an individual responsible for importing an unwanted organism or pest would not bear the full costs of that importation. The management of pests by some provides benefits to others. Once biosecurity services are provided, they are available to all at no additional cost. The costs of providing the services are common to protection against a broad range of pests (and therefore common to a range of different beneficiaries). These services help prevent all pests from entering the country, or restrict their impact once here, providing benefits to all New Zealanders.

Deciding on the appropriate level of expenditure on border control, surveillance, response readiness and management is difficult because the government does not know the true preferences of those who benefit from the services. The determination of the optimal level of resources to devote to aspects of biosecurity involves complex trade-offs between the costs of preventing pest entry, the costs of eradication or management after entry and the incentives provided to travellers and importers to take appropriate levels of care not to import unwanted organisms.

It is sometimes suggested that biosecurity risks are 'caused' by international travellers and traders – the costs could be 'avoided' if there was no trade or travel. This observation leads to the suggestion that the costs of the services provided should be 'internalised' to those creating the costs, ie importers and travellers. However, it could equally be suggested that the risks would be 'avoided' if we closed pest-susceptible industries. In either case, we wish to devote the appropriate level of resources to preventing the entry of unwanted pests. The choice of approach depends on assumptions about the allocation of rights, and the transaction costs associated with possible arrangements.

The report suggests that the preferred arrangements will involve a combination of taxation funding of biosecurity services, charging for the marginal costs of some product inspection and fines imposed for breaches of biosecurity standards. This is the approach currently applied by the government.

Levying biosecurity charges on travellers would not be an efficient approach to the biosecurity problem. This blunt approach would distort the decisions of many without achieving a corresponding benefit. Instead, incentives for travellers to conform with the biosecurity requirements are best provided by the threat that they will be fined if a breach of the provisions is detected.

Levying importers with the marginal costs of inspecting products (if services are targeted at the highest risk imports) might deter those most likely to cause harm. Incentives for care should also be given by a regime of fines.

This approach would not ensure that the government's costs were fully recovered. Since the benefits of border protection, surveillance and response readiness fall widely there is strong public good case for government funding of any shortfall between fines for breaches and the government's expenses.

Section 8: Cost Recovery in the Fishing Industry

8.1 Introduction

This section reviews the cost recovery regime applying to the fishing industry and proposes modifications based on the economic principles discussed in this report.

Section 8.2 begins by examining the application of the efficiency standard to cost recovery in the fishing industry. Section 8.3 reviews the 'avoidable cost principle' proposed by the Ministry of Fisheries, comparing the implications of this approach with that derived using an efficiency standard. This section also discusses the benefit principle. Section 8.4 applies the efficiency standard to the recovery of costs from the fishing industry. Section 8.5 briefly examines the implications for efficient institutional arrangements. A summary is provided in section 8.6.

8.2 Ministry of Fisheries' Costs

8.2.1 Criterion

If conflicting criteria are applied to the recovery of costs, confusion and inconsistency are inevitable. Conflicts can easily arise between the criterion of economic efficiency (getting the best overall value for the community from scarce resources) and other criteria such as the benefit principle (ie those who benefit should pay), the avoidable cost principle (ie those whose activities cause central government to incur costs should pay), and other fairness principles which are concerned with the distribution of income. These non-efficiency criteria can themselves result in charging rules that are mutually inconsistent.

A single, coherent criterion is needed if the government is to develop a consistent approach to cost recovery. We propose that the government adopt the single criterion of economic efficiency in its design of the cost recovery regime.

Economic efficiency is about obtaining the greatest possible benefit from scarce resources. Economists use the concept of efficiency to evaluate the success with which an economic system combines scarce resources to satisfy competing wants. A concern with efficiency is a concern with enabling individuals to attain, at the least possible cost, any number of ends that they value. An efficiency criterion accommodates the value to individuals of leisure, culture, environmental amenities and the like. It incorporates consumer preferences for the availability of services, quality of output and service levels.

Efficiency is not advocated as the sole criterion for guiding government policy since people are legitimately concerned about equity objectives. Rather, we believe that there are sound

reasons for not pursuing equity objectives through industry charging policies. Equity objectives are generally addressed more effectively through the government's social policies.

Using the single criterion of economic efficiency will ensure that the approach to cost recovery across sectors is consistent, and that arbitrary differences in the treatment of different groups are eliminated. Since all individuals and sectors will face the same treatment, the approach meets the general test of being fair and reasonable.

8.2.2 Efficient Recovery of Costs

The efficiency standard supports marginal-cost based pricing in situations where the consumption and supply of services is voluntary. This standard suggests that the fishing industry should at least bear the incremental costs of the provision of any particular service, which the Ministry of Fisheries supplies, and the industry voluntarily consumes.

If services are mandated, user charges are likely to be less effective in terms of the efficiency standard. The service provider does not receive feedback from users as to whether or not the benefits of the services provided outweigh the costs. The further service provision deviates from the optimum level, the less likely it is that charges based on the marginal costs of the supplier would promote efficiency.

For many of the services provided by the Ministry of Fisheries, 'common costs' – the costs incurred to supply the same good to a number of parties – are important. Under current arrangements, the allocation of all of these common costs to the fishing industry would be an arbitrary choice not readily supported by efficiency considerations. Arbitrary allocations of common costs lack an efficiency basis. Nor can any one allocation be necessarily shown to be superior to another on equity grounds.

The efficiency standard suggests the following for the recovery of the Ministry of Fisheries' common costs:

- common costs (including the costs of supplying public goods) should be recovered from general taxation, unless the incentive problems of general taxation are deemed likely to lead to over-provision of the good and/or excessive production costs;

- levying an identifiable group is more justifiable in efficiency terms if that group has the incentive and ability to affect the level and type of output produced and the costs of production;

- the sum of marginal costs and common costs recovered from any individual or group should be no more than the stand-alone costs of provision;

- the sum of marginal costs and common costs recovered from the industry and individuals should not exceed the industry's or individual's valuation of the benefit from consuming that service; and

- a two-part tariff may be an efficient method for recovering common costs. In some circumstances a private club can arrange for the efficient provision of some public good outputs.

However, even given these constraints, if common costs are not funded from general taxation, some arbitrariness as to the allocation of common costs may remain.

When provision is mandatory, the normal market mechanisms for determining an acceptable, sustainable and efficient allocation of common costs are inoperative. Without market mechanisms, there may be no solution that all parties can accept as being efficient, let alone as being fair. This is because the rules proposed above do not provide a determinate answer to the cost allocation problem. A definitive answer requires the application of some complementary criteria. Currently it is far from clear what these complementary criteria consist of.

8.2.3 Influence Over the Provision of Mandated Services

The efficiency criterion suggests that there might sometimes be a case for recovering common costs from an identifiable group that could monitor the government provider.

In the case of fishing services, the commercial fishing industry is a group with the incentives and ability to monitor the Ministry of Fisheries. Charging the commercial fishing industry for services that provide benefits to a number of groups would give it a clear incentive to lobby for programme limitation, rather than for programme expansion. Charging the fishing industry could provide it with incentives to assess whether the benefits of an increase in the quality or quantity of public good produced exceeds the costs. It is not necessary to levy all of the costs on the minority group to provide an incentive for monitoring.

The efficiency reason for levying charges can be illustrated by way of an example. Suppose the industry is charged $40 million and as a result spends $1 million identifying $10 million in excessive costs and unnecessary outputs. If the government provider responds in a way which reduces costs by less than $1 million, society as a whole is worse off as a result of the resources spent on monitoring. In the future the industry would be unlikely to spend as much on monitoring. In this case the $40 million is essentially a discriminatory tax. Alternatively, if the government responds by eliminating the $10 million of excessive expenditure, society is better off by $9 million.

The government need not levy the full $40 million of costs on the industry to provide it with an incentive for monitoring. In the example given, the incentives would be provided if industry faced only $10 million of costs – the amount that could potentially be saved by effective monitoring. There is no efficiency gain in this example from charging the industry for costs which are not excessive or potentially unnecessary.

If the government attempts to recover from an industry cost that it would not voluntarily incur, the government is likely to face strong opposition to such charges. In a normal market, the industry would choose not to fund the outputs. Where these are mandatory, the industry must resort to lobbying to reduce the outputs. If other parties in fact value the higher level of

output, the result may be an under-supply of the public good. The solution to this risk is for the government to fund this higher level of output or to seek a contribution from other beneficiaries.

There are a number of risks to levying industry to recover common costs on these public choice grounds. The first is that relieving the government of the burden of charges may reduce the government's own incentives to minimise costs and provide only those services that generate net benefits. Second, monitoring can involve significant costs. The benefits from monitoring must outweigh the costs for it to be justified. Third, where common costs are involved in the production of outputs, the allocation of costs between different parties will always be somewhat indeterminate. Given the costs that might be at stake, the industry (and the government) may be prepared to expend a significant amount of real resources in an attempt to shift the burden of these costs to the other party. Given the nature of public goods, there is also scope for parties to understate the value they attribute to outputs in an effort to avoid contributing towards common costs.

8.3 The Avoidable Cost 'Principle'

The Ministry of Fisheries has adopted the concept of 'avoidable cost' as the basis for recovering the costs of fisheries services. There is nothing in the Fisheries Act 1983 that defines the avoidable cost 'principle' or requires that it be used for the recovery of Ministry of Fisheries' costs. The 'principle' does not appear to have been clearly defined or justified in official papers. It appears to have changed somewhat over time.

A report prepared by Source Consulting for the Ministry of Fisheries in 1996 suggests that avoidable costs be defined as the "costs of the Crown that could be 'avoided' if fisheries were not used for commercial purposes".[88] These costs are suggested as including base-line costs arising from the need to undertake research and enforcement. Under the principle commercial fishers would be charged the common costs of services that are provided to both the commercial and non-commercial sector, as well as costs directly attributable to the fishing industry. Non-commercial users (or the government on their behalf) would be charged the incremental costs that result from services provided by the Ministry of Fisheries on their behalf.[89]

Although the efficient recovery of common costs results in rules that look somewhat like the avoidable cost principle they are quite different, at least in terms of how the avoidable cost principle is currently applied to the fishing industry.

An efficiency approach to setting prices asks what costs are avoided if less of an output is supplied at the margin to a user (or group of users), or what costs are incurred if more of the output is supplied to those users. It encourages users and producers to assess whether the benefits of an additional unit of output outweigh the costs.

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88 Source Consulting Limited (May 1996), *Review of Fisheries Cost Recovery Regime*, glossary.

89 *ibid*, p 10.

Real resource costs are incurred in providing fisheries management services, policy advice, enforcement and research. These costs can only be avoided if these services are not supplied. Costs can be reduced by reducing the supply of these services. These costs would not be avoided if the fishing industry did not exist. Even if the fishing industry did not exist the costs would only be avoided if the government did not produce the outputs (for whatever reason). It is not necessary to postulate that the industry does not exist to consider the impact of the government not providing any of these services.

As currently applied, the avoidable costs principle does not ask what costs would be avoided (or incurred) if less (or more) of a particular service was supplied. It asks instead, what costs would be avoided if the fishing industry did not exist at all. It postulates as a counterfactual a situation that could never prevail in reality. Since there will always be a global fishing industry and many vessels which can potentially fish in New Zealand waters either legally or illegally, the avoidable cost counterfactual adopted by the ministry appears to be irrelevant. In any case, preventing all commercial fishing would require a level of enforcement that was extensive. Paradoxically, the ministry appears to believe that the cost of enforcement would be substantially reduced in these circumstances.

The ministry's approach therefore provides no basis for deciding the level or type of services which should be supplied by the ministry or other providers to the fishing industry and others.

A further illustration of the point that the avoidable cost standard is not based on the efficiency standard is that it is silent on the issue of how best to recover the costs associated with providing services. Most notably, the avoidable costs standard does not equate benefits and costs at the margin, the economist's typical strategy for finding an efficient pricing structure. Lacking such a relationship, the avoidable cost principle is being applied as a benefit principle. It looks somewhat like an incremental cost-based efficiency standard but it misapplies this approach.

The avoidable cost principle has led the Ministry of Fisheries to seek to recover a given level of revenue from industry irrespective of user demand. This cost recovery approach is therefore more akin to a tax aimed at achieving a given revenue regardless of demand rather than a user charge which attempts to provide producers and users with incentives to modify their behaviour to better balance the marginal costs and marginal benefits. The avoidable costs principle attempts to capitalise upon our intuition that the fishing industry benefits from government regulation and therefore should pay the costs.

In summary, there are two major problems with the avoidable cost principle:

- it does not lead to a balancing of the costs and benefits of producing more or less output at the margin – which is the economist's main strategy for finding efficient prices and achieving the efficient allocation of resources; and

- it requires the definition of a counterfactual. But, because there are many possible counterfactuals, analysis based on a particular counterfactual is arbitrary. For example, the ministry assumes that the non-existence of the fishing industry would remove many of the costs of enforcement and research. Yet to prevent people catching fish to sell to others would involve a significant amount of enforcement.

Our conclusion is that the avoidable cost principle is ill defined and arbitrary in application. The concept, as it is currently being applied to the fishing industry, is not soundly based in economic theory. In its application, the avoidable cost principle appears to be a disguised benefit principle. As such it does not provide clear guidance on the allocation of the costs of fisheries services between the fishing industry and others.

8.4 Efficient Cost Recovery and the Fishing Industry

8.4.1 Introduction

In this section we consider in more detail what the implications of the efficiency standard are for the recovery of costs for specific services supplied by the Ministry of Fisheries, or required to be purchased by the ministry. We consider the following outputs in relatively broad categories: research; enforcement; policy advice; and registry services.

As noted earlier, levying charges on an industry for services may serve an efficiency purpose if it is able to affect the level of service that is provided (for example if use of the service is voluntary). If services are mandated, user charges are likely to be less effective in terms of the efficiency standard. The further service provision deviates from the optimum level, the less likely it is that charges based on the marginal costs of the supplier would promote efficiency.

8.4.2 Research Services

The government purchases research services. Research is undertaken to determine what the stock of fish is, and therefore what the annual catch can be while ensuring that fishing is maintained on a sustainable basis.

Some research is necessary to administer existing government policies, ie to support the operation of the quota management regime which protects the interests of recreational fishers, Maori, the fishing industry, consumers, environmentalists and future generations. Given that the research must be used to set the total allowable catch, the information must

become publicly available if the allowable catch is to be set. Once research is undertaken, it can be provided to others at a very low cost. The costs of undertaking a base level of research constitute common costs since all parties demand at least this level of quality and costs are not caused by any particular party.

The common costs should be recovered from general taxation, unless levying the fishing industry (or Maori, or environmental or other groups) is likely to improve efficiency. The charges levied on any party on these grounds should not exceed the valuation of the benefit of the output to that party, or exceed the cost of supplying that party alone. Where the services are contestable, the case for recovering common costs from users is stronger.

The level of joint costs may differ between the different fisheries. For example, the in-shore fisheries are used more intensively by recreational fishers than are the deep sea fisheries. Thus, different arrangements might prevail in the different fisheries.

Given a particular level of research, there are costs to providing more research or a higher quality output. If one group would be satisfied with a lower quality output, the provision of the higher quality becomes a marginal cost (or incremental cost) rather than a common cost. The party demanding the higher level of output should generally face the cost of that increment. Thus, if the government (or industry) requires a higher quality of research than the other parties, and the other parties do not value that additional output, then the government (or industry) should fund the additional research. That allows the party receiving the output to assess whether the benefits outweigh the costs and, assuming they can influence the level of output, they could choose whether or not to purchase it.

If the additional research provides benefits to other groups as well, a contribution from them may be necessary to ensure that the optimal level of output is provided. This point can be illustrated by way of an example. Suppose both the industry and a Maori group agree that both would value a base level of research which would cost $40 for a particular fishery. These fishery costs are common to both parties. The common costs could be recovered from either party or from general revenue. Now suppose the Maori group decides to purchase another $60 of research which provides benefits to it assessed at $65. The industry attributes a value of $0 to the additional research. The Maori group should fund the additional research. Suppose now that the additional research is valued by industry, providing benefits assessed by the industry at $20. The full costs of the research could either be recovered in whole from the Maori group, or the industry could possibly contribute up to $20. The Maori group would be prepared to purchase the research whether or not the industry contributed since the benefits to the group outweigh the costs. Another scenario is possible in which the research would cost $100, the Maori group values the outputs at $90 and the industry values the outputs at $20. In this scenario, both the Maori group and the industry (or government) would need to contribute to production of the output if the optimal amount is to be produced.

Where the research output generates benefits outside the fishing industry, the industry might under-provide research or lobby for less research if it was asked to fully fund that output. In these circumstances, the government (or other groups) should also contribute to the funding

of the research. The industry and the government could then coordinate their research funding, or jointly contract with the private providers of research outputs.

These points can be illustrated by way of an example. If government attempts to recover from industry research costs of, say, $100 when the industry only values the research at $40, the industry will regard the additional $60 as a discriminatory tax, and will lobby to reduce research costs to no more than $40 or less if others benefit as well as the industry. If other parties value a higher level of output, they, or government, should fund it.

The government's objective of ensuring that the quota management regime protects the fisheries resource for the various parties with an interest in its management does not require the government itself to supply research services. The government or the industry could contract for the services from the private sector on a contestable basis.

8.4.3 Enforcement and Prosecution of Offences

Enforcement services are provided by the ministry to detect commercial offences, poaching, black market offences, non-commercial offences and breaches of customary Maori fishing rights and recreational offences.

The deterrence of offending depends on the probability of being detected times the severity of any penalty. Thus there is a trade-off between the amount that must be spent on enforcement and the size of any penalty for those who are caught. The government has the fundamental role of determining penalties. Given the penalties, the optimal level of enforcement can be determined.

A fundamental role of the government is to provide for law and order. In a civil society, individuals should not be permitted to steal with impunity. A lack of enforcement of property rights in the fishing industry could undermine confidence in the security of rights throughout the economy with implications for investment and the management of resources in other industries.

Given its policy position that the fishing stock is not to be plundered, a minimum level of enforcement to support this policy is required. The minimum level of enforcement provides general public benefits by reinforcing the public's confidence that the government will protect property rights. This is a public good attribute. Within the narrower confines of the fishing industry, enforcement benefits the different groups with an interest in the fisheries regime. The government, Maori, recreational fishers, commercial fishers, environmental groups, consumers and future generations all have an interest in enforcement. If enforcement is provided to one group, or for one species of fish, it will be difficult to prevent others from benefiting from it. This is a public good characteristic.

There will therefore be common costs associated with enforcement, the extent of which may differ for different fisheries.

As with research, the common costs should be recovered from general taxation unless efficiency benefits are generated by levying particular groups. No group should be levied more than the stand-alone costs of supply. Nor should the charges exceed the benefits derived from the good.

If any group (acting collectively) demands a level of enforcement above this common level then ensuring it faces the full incremental costs may allow it to trade off the benefits versus the costs of this additional expenditure as long as it is free to decide whether or not to fund this additional expenditure. If the enforcement services at this level provide benefits to others then allocation of costs is arbitrary within the restriction that no group or individual should pay more than the full amount of the incremental cost or the amount by which they benefit.

8.4.4 Policy Advice

The Ministry of Fisheries provides policy advice to the Minister of Fisheries. It has classified this advice as 'strategic policy advice' and 'operational policy advice'. The Crown fully funds the strategic policy advice.

Operational policy advice includes a number of advisory outputs including the following activities: total allowable catches (TACs), catch limits and sustainability controls; an eel management programme; allocation of access for fishing and aquaculture; resolution of fisheries issues; customary fisheries regulations; compliance liaison and advice; and replies to ministerial correspondence.

Policy advice is generally demanded by the minister rather than by the fishing industry. The industry will not demand excessive quantities of policy advice if it is not charged for it which is the normal concern when an output is provided for free. On the contrary the advice is not necessarily provided to the industry, and in most cases the industry does not want the advice that is provided. The industry is not able to reduce the burden of the impost by reducing its demand for policy advice. In the absence of compulsory funding of policy advice, the industry would purchase the advice it required from the ministry or other advisers.

If both the industry and the government have a common demand for policy advice, they might agree to share in the cost of obtaining that advice, to the extent that costs are common. However, if the industry does not demand the advice, the efficiency standard would not support levying the industry.

Given that generally it is the minister who demands the output, and who can determine whether more or less of it is provided, then on efficiency grounds the minister (the government) should bear those costs. That gives the government the incentive to monitor the costs closely and to assess whether the advice yields benefits that outweigh the costs. If the minister or government does not face the costs (ie the advice is provided for free because the fishing industry is forced to fund it) there is a significant risk that excessive quantities would be demanded.

The case for levying the industry on the grounds that this will induce the industry to closely monitor the output of policy advice is weak at best. Industry cannot monitor the quality of the output produced (in many cases it does not even get to see the output) nor can it influence the level that is provided.

The argument that industry 'causes' the requirement for policy advice is no more than a benefit argument. The difficulties of applying a benefit principle have already been canvassed.

8.4.5 Registry Services

The question of who should pay for registry services raises the issue of whether such services are required to ensure that the fisheries management regime works. If so, the output provides public benefits and involves common costs. If the government is indifferent as to whether or not the registry service is provided, this would suggest that the outputs are more in the nature of a private good. The costs should then be recovered from those who demand the services. This may be the fishing industry if, for example, a registry system facilitates trading in quota.

There do not appear to be any particular reasons why the ministry should provide registry services to the fishing industry – registry services are privately provided for companies. Privatisation of this service would reduce costs and ensure that an acceptable charging regime was developed.

8.5 Institutional Implications

8.5.1 Role of the Ministry of Fisheries

Some of the difficulties experienced in the development of a cost recovery regime for the fishing industry appear to be generated by a lack of clear separation of a number of roles carried out by the Ministry of Fisheries. The ministry is responsible for setting standards, regulating access, purchasing outputs and providing outputs. This results in the ministry having a conflict of interest between establishing a regulatory regime that enhances efficiency and a regime that benefits itself as a provider of outputs. Resolution of this conflict involves a mixture of the following: greater internal separation of the functions; introduction of contestability; or privatisation of some services.

In general, an efficiency standard would support limiting the government's role to funding some public good outputs and regulating economic activity. Where public goods might be under-supplied by private markets, the government can pay a private organisation to produce the desired outputs. Where the government is concerned about the standard of outputs which private markets might generate, it can regulate to require that private providers produce a specified level or quality of output. Achieving the government's objectives does not generally require that the government itself produce the outputs.

Limiting the government's role to funding public good outputs and regulating economic activity removes the conflict of interest that can exist between its role in specifying what services should be provided and its role as provider of those services. Private organisations operating in a competitive or contestable market will generally produce outputs at a lower cost than a monopoly government supplier.

8.5.2 Influence of the Fishing Industry

The efficiency principle supports the ministry recovering the marginal cost of services provided to members of the industry. If the ministry mandates the level of service it provides it becomes much less likely that the optimal level of service will be provided at minimum cost.

One option for maximising the benefit from user charging would involve removing the compulsion that currently dictates the level and quality of outputs that must be purchased by industry. The industry would then be free to organise itself to purchase the outputs it desires and to arrange funding. It might organise itself into a club, or a series of clubs for the different areas and fish species. The clubs would then determine the level of service and the appropriate charges. The government could either become a member of the club or clubs or could separately fund the outputs it requires.

An alternative approach involves retaining compulsion but ensuring that the industry can influence the nature and extent of outputs that are produced. This influence is currently achieved through lobbying and the more formal consultation processes. Improvements in the institutions whereby the industry influences the ministry could yield significant efficiency benefits.

8.6 Summary

A single criterion must be adopted in developing the cost recovery regime. Only with a single criterion is it possible to develop a cost recovery approach that is consistent across sectors.

In our view, the single criterion should be efficiency, ie the regime should be concerned with maximising the value attained from scarce resources. Equity concepts are better pursued through government's social policies.

The efficiency standard supports marginal-cost based pricing in situations where the consumption and supply of services is voluntary. If services are mandated, user charges are likely to be less effective in terms of the efficiency standard. The service provider does not receive feedback from users as to whether or not the benefits of the services provided outweigh the costs. The further service provision deviates from the optimum level, the less likely it is that charges based on the marginal costs of the supplier would promote efficiency.

Where marginal-cost pricing does not cover total costs, the efficiency standard suggests that the balance of costs should be recovered in a way which minimises distortions and which provides incentives to produce the optimal amount of the good at the minimum cost.

In the case of government provision this suggests four funding options: funding out of general taxation revenue; funding from an identifiable group; replicating the funding strategies of a private club; or Ramsey pricing. The efficiency standard suggests the following for the recovery of common costs:

- the common costs recovered from any individual or group should be no more than the stand-alone costs of provision;

- the common costs recovered from the industry and individuals should not exceed the industry's or individual's valuation of the benefit from consuming that service;

- common costs (including the costs of supplying public goods) should be recovered from general taxation, unless the incentive problems of general taxation are deemed likely to lead to over-provision of the good and/or excessive production costs;

- levying an identifiable group may be justified in efficiency terms if that group has the incentive and ability to affect the level and type of output produced and the costs of production – but there are a number of reasons why the group's incentives might not lead to the promotion of efficiency; and

- a two-part tariff may be an efficient method for recovering common costs. In some circumstances a private club can arrange for the efficient provision of some public good outputs.

The avoidable cost principle as applied by the Ministry of Fisheries does not appear to be consistent with efficient pricing principles. It does not equate benefit and cost at the margin. This is the economist's typical strategy for finding an efficient pricing structure.

Appendix A: Incidence of Charges

A.1 Introduction

The incidence of a charge, tax or subsidy typically depends on how market prices and quantities respond to the imposition of the tax or subsidy. These responses are affected by market structure. Possible options are considered below.

A.2 The Case of Perfectly Competitive Producers

In this section we consider a situation in which the government provides a service which benefits the industry and has to determine whether to fund its costs from general taxation or by some form of industry tax, levy or charge. For convenience we refer to the first of these options (the provision of a service funded by general tax) as the case of a subsidised industry and the second (in which the industry is charged for the service) as a taxed industry.

There are zero excess profits at the margin in perfectly competitive industries, before and after any policy change regardless of how the government funds its expenses. This is because new firms will enter the industry to drive out any excess profits that exist. Conversely, firms will leave until market prices rise to eliminate any problems of inadequate profits. Neither uniform taxes nor subsidies on an industry affect this result.

The fact that producers find that net prices are just high enough to cover average cost before and after the policy change does not mean that the incidence of any change only falls on consumers. If the policy change alters average cost by altering the market values of some existing assets – eg the suppliers of scarce factors of production – then some of the benefits or burden of that change accrue to, or fall on, the owners of those scarce factors. The final incidence of a policy change will in general be shared between consumers and suppliers of factors of production.

Only in the case of constant returns to scale would the incidence fall entirely on consumers in the textbook case. In this case, average cost is unchanged and the net price received by producers is unchanged, leaving consumers fully exposed to any policy effects on the gross price.

For the same reasons, if the market is perfectly competitive and there are constant returns to scale, a charge levied on producers would result in prices going up by the full amount of the tax, placing all the burden on consumers. Levying the same tax directly on the consumer side

of the market has exactly the same result.[90] In this case, the benefit standard still provides no guidance as to whether that tax should be levied on producers or consumers.

If producers are no better or worse off as a result of a government action, they will be indifferent regarding that action. If they do not bear the burden of a tax or charge, or capture any of the benefit if a service is provided free or below cost, then they would be indifferent between receiving the input for free or having to pay a positive price for the input. However, if industry receives a subsidy, at the margin there would be excessive entry to the industry.

The absence of producer benefit from free or subsidised inputs does not contradict the fact that those same producers will pay a positive price for that same input (without the subsidy). If producers voluntarily purchase the input then presumably it is needed to increase the quality of the product, and give consumers the superior product that they desire. Competitive pressures force each supplier to buy the input, but suppliers as a whole do not benefit from the input purchase (neither do they lose, however, given that the higher costs imply a higher market price as well). Suppliers would be no worse off if the government prohibited all suppliers from purchasing the quality-improving input (consumers, however, would be worse off). Buying the input benefits an individual supplier if other suppliers are already using the quality-enhancing input, but changes in the general availability or price of the input do not benefit suppliers.

As already mentioned, where some factors of production are in limited supply (as is the case with non-homogeneous land), changes in industry demand may influence the returns accruing to those factors. For example, where the factor is land, the effect on land rents will be capitalised into land values. In such situations, the industry supply curve is upwards sloping and consumers will not be the only ones to experience wealth effects as a result of government actions that are major enough to affect industry supply and demand. Where the affected sector is large in the total economy, government actions, which affect its costs materially, must be expected to affect producer prices.

Where investments have a lower value in alternative uses, some firms will lose from a tax or charge that drives some producers out of business. For this reason, investor-producers may vociferously oppose the tax. So may employee groups and some other suppliers whose alternative options are less desirable. Conversely, if investments are specialised and a policy that increases demand for the products of that industry is funded from general taxation, some of the benefits from that increased demand may be captured by some suppliers. For example, a policy which increases the world demand for New Zealand meat could increase the value of farmland.

When domestic producers compete in much larger world markets the burden of user charges cannot be shifted to world consumers since the New Zealand government cannot levy the same tax on all foreign competitors. Instead, any tax, levy or charge on domestic producers forces enough of them out of the market to cause the prices to fall for some factors of

[90] Atkinson and Stiglitz, *op cit.*

production. This reduction in costs enables the survivors to earn a normal rate of profit (on the possibly depressed market value of the assets employed) once the shakeout has occurred. Conversely, a subsidy or benefit such as certification could increase producer surplus by giving producers access to world markets, allowing them to sell more products at a higher world price. Domestic consumers might lose from the higher price if they no longer have access to an uncertified product at a lower price and so have to switch to a product with a less preferred price/quality trade-off.

In summary, where a charge or levy is imposed on producers in order to fund the provision of a Crown-supplied product or service (such as the provision of a food quality certificate) which increases the demand for that product or service, the net effect may be consistent in broad terms with the benefit standard regardless of whether the charge is levied on producers or consumers. The principles on which this observation is based abstract from many real world complexities. Therefore we do not rule out the possibility that the incidence of a tax may depend somewhat on whom it is levied.

The incidence cannot be shifted to consumers who are non-residents and who can readily buy the products from alternative sources of supply in world markets. In this case, the incidence of any levy or subsidy is likely to fall entirely on residents and on domestic suppliers.

However, while levying producers or consumers as a group might be broadly consistent with their collective benefit, the charges are unlikely to be closely related to the benefit received by individual consumers or producers. The levy based on collective benefit would not necessarily tax individual consumers or factor suppliers in proportion to the benefits they each derive. Given that the government is unlikely to have enough information to identify how surpluses are distributed across diverse individuals, applying the benefit standard at the individual level is likely to be impractical.

A.3 The Case of Producers with Market Power

Market power allows suppliers to charge more than marginal cost for their products. Doing so may allow them to sustain excess profits. To the extent that suppliers hold market power, they may benefit from, for example, government certification of food quality. This is because a government service, which increases consumer demand for a product, might increase excess profits. Conversely, a levy or charge may harm producers with monopoly power.

Where market power exists, the benefit standard may also be broadly consistent with the imposition of a tax, levy or charge on producers or consumers. Certification, for example, may raise the incomes of exporting farmers and the related factors of production in farming/export industries. If corresponding taxes or user fees were imposed on those same groups, the policy would meet the equity goals specified by the benefit standard.

As already noted in the perfectly competitive case, consumers in importing countries have plenty of close substitutes to the New Zealand product. Given these facts, we infer that

overseas consumers neither reap the benefits from certification nor share in the burden of any costs levied on New Zealand producers. The benefit standard is therefore consistent with requiring industry to bear the full weight of certification charges. Most agricultural exports from New Zealand compete with similar products from other countries for entry into importing countries where they sometimes compete with subsidised domestic producers.

The implication of this argument is that domestic producers either have market power over domestic consumers, or not at all. If the product can be freely imported, their market power is limited by the transport costs of the imported product.

The above analysis does not change fundamentally when we consider different regulatory contexts. Consider, for instance, the example of a firm that dumps pollutants, but must first receive government permission before expelling the waste. If the firm and its customers or suppliers benefit from the governmental consent, the benefit principle, and incidence shifting considerations, suggest that charging either the firm or its customers for that consent would result in similar outcomes. Once again, this conclusion follows if the firm operates with market power or operates in a competitive market.

A.4 Non-producer Beneficiaries

The incidence of a tax, subsidy or output of government production which affects supply and demand does not necessarily just fall on producers and consumers of the products who are directly affected.

For example, the incomes of suppliers of factors of production, such as workers and property owners, could also be affected by changes in industry supply and demand. Thus the incidence of a tax or user fee could be borne in part by workers or landlords, particularly those that have assets and/or investments specific to the activity.

Particularly when the government action has a non-marginal effect on the economy (such as an act of certification which substantially increases realised world demand for a major export product), the macroeconomic benefits could be spread very widely through the community as a result of the effects of a general lift in demand and incomes.

However, not everyone would necessarily gain. For example, the change might lift farmland prices for some farming activity, making other activities uneconomic. Those who had recently sunk capital in investments specific to the uneconomic activities might lose capital in these respects.

If changes in activity also have unpriced third party effects, such as effects on pollution, noise or safety, third parties may also be affected positively or negatively. Similarly, if the changes affect activities that have some public good aspects, some parties may benefit or lose as a result of prices which do not fully reflect benefits. Determining who benefits and by how much is virtually impossible. Thus, in these circumstances, application of the benefit principle becomes impractical.

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