INTRODUCTION

Traditionally Cost Benefit Analysis (CBA) was used to assess activities surrounding economic infrastructure investment, like roads and power plants. However it is now increasingly being applied to decision-making outside this sphere, and is relevant to a policy such as mandatory nutrition labelling.

Assessing the costs and benefits of nutrition labelling - as with all other government regulation - is an important step in the policy development process. In the context of labelling, CBA uses information and techniques from the sciences – most notably economics and the other social sciences - to assess these costs and benefits.

The CBA surveys all parties affected, positively or negatively, in order to capture the entire spectrum of costs and benefits. This will ensure that a comprehensive comparison can be made between all available policy options. All costs and benefits are expressed, where possible, in monetary terms, so that they can be readily compared.

In a government and regulatory development context, it is difficult to consider CBA and Regulatory Impact Assessment (RIA) separately. Cost Benefit Analysis is the primary methodology used in RIA in many countries. For example the OECD countries regard CBA and RIA as a means of improving the efficiency and efficacy of regulation.

“Major tools identified by the OECD to improve the efficiency and effectiveness of regulation include the use of regulatory impact analysis (incorporating competition assessments), the systematic consideration of alternatives, wide public consultation, and improved accountability arrangements in the review of existing regulations and development of new ones.”

RIA emphasises transparency, accountability, efficiency, adaptability and coherence. CBA is a tool that contributes to all of these outcomes and these are often key elements of CBAs done outside of an RIA. CBA helps regulation achieve the government’s strategic policy objectives, as well as address community needs more generally. It is the only means of determining if a particular policy, when considered on its own merits, is socially desirable. Because where benefits of a certain measure exceed costs there is a welfare enhancing outcome.

Inappropriate or badly-designed regulation will not only fail to address such key objectives, but could also impose unnecessary additional costs on consumers, government agencies and industries, especially on those individuals and institutions that can least afford to shoulder such burdens.

This paper goes step by step through the process that needs to be followed in order to ensure that an effective CBA and RIA are carried out in support of mandatory nutrition labelling. It explains why it is necessary to identify the regulatory problem to be addressed, and how to do

it. It also elaborates on the methodology to be followed when considering different regulatory options.

It also explains how the CBA is used to prepare a RIA that policy-makers can use to assist their decision-making. The reader is also taken though the principal costs arising from mandatory labelling as well as the identifiable benefits.

Structure of Analysis

*A structured approach is necessary to ensure that the policy development process is considered, comprehensive and credible.*

The structure of the analysis is very important for nutrition labelling where the costs and benefits involved could be both complex and challenging to measure. An appropriately structured analysis will help ensure that any policy on mandatory nutrition labelling of food is preceded by an examination of all the available scientific and economic data, and has included consultation with all affected parties. The latter will make the CBA a transparent process that documents all relevant information, including referencing quoted and cited sources, as well as methods, calculations and assumptions.

A structured Cost Benefit Analysis would generally contain seven elements. They are:

- the problem that gives rise to action;
- the desired objectives;
- the options that may secure the objectives;
- the costs, benefits and risks that accompany each option considered;
- a consultation statement;
- a recommended option; and
- a strategy to implement and review the recommended action.

**Identifying the Problem**

**Identifying the problem that is being addressed will ensure that the outcome of the CBA will be appropriate and that the labelling regime implemented will be adequate and effective.**

"Identifying the nature and extent of the problem to be addressed is a threshold issue in the process of evaluating the need for government action. Unless the source, nature and scale of the problem is fully understood, the proposed policy solution is likely to be inadequate, inappropriate and inefficient."  

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The problem should be defined and put in its correct perspective. For example, where the problem is inadequate nutrition information leading to poor food choices which, in turn, result in ill-health and disease, this chain of evidence should be scientifically substantiated. The nature, extent and magnitude of the problem - namely the incidence of ill-health and disease – should be established in quantitative terms. To arrive at the best possible outcome,

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it is necessary to disaggregate the incidence of poor nutrition or health in terms of the demographics and communities involved, and the extent to which they are affected.

In such cases the problem is expressed in terms of the loss, harm or other adverse consequences that are being experienced, or are likely to be experienced by groups within the community, if action is not taken. It should identify the nature of the adverse impacts and the identity of those affected. Since the rest of the analysis will be determined by how the problem is defined, the nature and magnitude of the problem where possible should be based on empirical evidence.

Not only should there be an evidence-based approach to identifying the problem - but where possible, the scale and scope should be quantified. If this is difficult, it may be possible to express the problem in terms of a range - namely the best and worse outcomes that could occur should no change be made.

The mere existence of a problem in the form of an adverse health outcome may not in itself necessitate government regulation to make nutrition labelling mandatory. There could well be aspects of the problem that cannot be addressed by such government regulation. Or it could be argued that non-regulatory measures may be just as effective.

Suppose consumers are willing to pay a premium for foods that carry nutrition labels. This could provide the necessary incentive for producers to voluntarily introduce and extend labelling. In this example the market addressed the identified problem and has the capacity to drive and deliver nutrition labelling. Such a market-driven process may need to be supplemented with consumer education by the government in order to be fully effective. Hence, a solution may not be a single response to the problem, but a mix or range of measures, some driven by the market, some by the community and some by government.

On the other hand, the problem definition may bring out the fact that the market, left to itself, cannot address the issue.

When competitive markets operate freely and efficiently, consumers will express a preference for certain goods by their willingness to buy them, or even pay a premium price for them. In response producers will read these market signals and deliver those products that consumers prefer, at prices the latter are willing to pay.

However markets do not always act in such a free and efficient manner. For example, if consumers are ignorant of the health consequences of fast-foods and keep demanding them, even paying a premium price, then we have a situation of market failure, since ignorance prevents consumers from acting in their best interests in the market place. Similarly the science may uncover a situation where consumers are over- or under-consuming a food product due to an incorrect understanding of its nutrient contents.

These are situations where market failure is caused by information asymmetry; where one party in a commercial transaction has access to greater information than the other, giving them an unfair competitive advantage. If consumers lack the requisite information regarding nutrition to enable them to make informed purchases, and if the food industry withholds from consumers the nutrition information required to make informed purchases, then we have a situation of information asymmetry.
Where such economic distortions exist, it is necessary to establish and substantiate that market failure does exist in order to make a case for regulatory intervention.

A rigorous analytical process along the above lines is necessary to identify the regulatory problem. This should remain the focus of the analysis that follows in the CBA, because only then will there be the assurance that the policy that emerges clearly addresses the identified problem.

Having identified the problem, the CBA must then move on to the issue of what are the policies that can address this problem.

**Addressing the Problem**

*Addressing the identified problem is the objective of the CBA exercise.*

It is necessary to be clear what the objective is, and to formulate the objective in realistic terms. Where possible it can be quantified. For example the objective could be: reducing malnutrition among children under-five years of age by 10 per cent in five years.

It is important that the policy that will be adopted for this purpose must not be predetermined. It must not be pre-supposed that mandatory nutrition labelling is the solution, or the only solution available to the policy-maker. To be rigorous and transparent, the CBA must not limit itself to one possible policy solution. To enable policy makers to decide on the most effective and efficient strategy to address the identified problem, mandatory labelling should be compared with other policy options.

**Policy Options**

*A representative range of options should be considered to maintain the credibility of the CBA.*

Although it may be impractical to assess every conceivable option that addresses the identified problem, a representative range should be considered. Where some options are precluded by international conventions, national statutes or custom and convention, this should be explained.

The ‘do nothing’ or status quo option should always be stated, since it forms the benchmark against which other options can be measured. The range of possible options should include but not be limited to, the status quo at one end, mandatory labelling at the other, and a range of non-regulatory measures in between. Non-regulatory measures could include voluntary or industry-monitored labelling practices, as well as consumer education. The latter could also be a part of a mandatory labelling regime.

Self-regulation occurs when industry formulates rules and codes of conduct and is responsible for enforcement. It is particularly suitable and effective in situations where the market provides adequate incentives to encourage voluntary compliance. It works well when a cohesive and confident industry exists, with a strong independent industry association at the apex. Such an industry environment is also conducive to co-regulation, whereby government provides legislative or administrative backing for an industry administered scheme.
The main advantage of mandatory labelling is that legal sanctions provide consumers with the certainty of protection. But it has its share of practical disadvantages. Regulation can be inflexible, take time to amend, may deny redress to those without means to pursue their legal rights, impose costs on consumers and be ineffective in complex situations.

However, it may be warranted where there is a high risk - particularly affecting public health and safety - or where universal application is required or where there is a history of disputes, breaches and compliance problems. Regulation can be more effective when supplemented with other tools and instruments, such as an education campaign in support of product labelling.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>EXAMPLE</th>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo</td>
<td>Maintain current nutrition labelling practices</td>
<td>No additional costs</td>
<td>Lack of nutrition information not addressed</td>
</tr>
<tr>
<td>Non-Regulatory</td>
<td>Educating public about nutrition</td>
<td>Community participation</td>
<td>Success is uncertain</td>
</tr>
<tr>
<td></td>
<td>Industry guidelines</td>
<td>Modest costs</td>
<td>Lack of market incentives</td>
</tr>
<tr>
<td>Regulatory</td>
<td>Mandatory labelling</td>
<td>Universal Application</td>
<td>Costly</td>
</tr>
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</table>

Having identified the possible policy options it is then necessary to compare them.

**Impact Analysis**

*The impact analysis is the determination of how each policy option will affect different groups in society.*

Costs to business could include administrative costs, licence or registration fees, costs of changes in production, transportation and marketing, changes to alternative sources of supply, higher inputs and restricted access to markets. The aim of the impact analysis is to identify, in terms of costs and benefits, the impact of each feasible option. The level and depth of such analysis should be commensurate with the extent of the problem under consideration and draw on technical and scientific evidence, quantitative, qualitative and risk analysis.

A CBA organises information so as to ensure that policy decisions optimise resource allocation. They achieve this firstly by, wherever possible, expressing costs and benefits in monetary terms; and secondly by considering their impacts on the community as a whole. A CBA brings clarity and perspective to projects like mandatory nutrition labelling, which encompass wide swaths of society and hence could have broad economic consequences over the long term. It also allows comparison of costs and benefits over time through the use of discounting.
The health and other benefits that accrue from each policy option considered are set off against the costs of implementation in order to arrive at a net benefit that can be expressed in monetary terms.

Benefits could accrue in a variety of ways: improvements in the quality and access to a wider range of products and services, reduction in prices, improved health and safety, better environment, reduction in administration and compliance costs, easier access to better information. The resulting net benefits from each of the possible options are thereafter compared to determine which policy option delivers the highest benefit to the community.

Given the range of costs and benefits that are considered, they will vary in regard to how readily given they are to quantification and monetisation. Where it is difficult to quantify them directly in monetary terms or where no clear market exists for the relevant attributes, it is possible to express them in terms of ‘willingness to pay.’ For example, how much extra would a consumer pay for such nutrition information? This would indicate the utility or benefit that is derived and provide a monetary value for it.\(^3\)

Where quantitative data is lacking, the CBA can provide policy makers with qualitative data which can contribute to the assessments. This is particularly relevant to areas such as health and wellbeing, where it is easier to specify benefits than to value them. It may be possible, for example, to talk about the lives of five babies being saved, rather than trying to value their lives.

Benefits like costs need not be limited to a monetary expression of better health outcomes. It could include indirect benefits such as less absenteeism at work and higher productivity in the workplace. There could also be intangible benefits arising out of positive impacts on individual, family and community wellbeing; these are hard to isolate and identify, and even more difficult to measure.\(^4\)

Under each option considered it is necessary to identify who would be affected by its implementation, what if any costs, benefits and where applicable levels and significance of risks would apply. All such assessments should be evidence-based, with data sources and assumptions provided.

With the status quo as the benchmark, each option would spell out the incremental changes it would bring about, and at what cost. Each option would also set out the actions, obligations and circumstances of affected stakeholder groups and what would be their experience as a consequence of implementation. This includes those directly affected, as well as those indirectly affected.

The costs and benefits arising from a nutrition labelling policy, will impact on different segments of the community at different points in the implementation exercise. Generally costs are incurred at the outset. On the other hand, it takes time for benefits to emerge. In

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order to assess costs and benefits within a common time-frame, they are discounted to their present value. Comparisons are therefore made in terms of Net Present Value (NPV).\(^5\)

We will now look at the major costs and benefits affecting the principal stakeholders; industry, consumers and government.

**Industry**

*Costs to business could include administrative costs, licence or registration fees, costs of changes in production, transportation and marketing, changes to alternative sources of supply, higher inputs and restricted access to markets.*

Voluntary and mandatory nutrition labelling can be expected to have both potential costs and benefits for different segments of industry. Benefits can result from consumer willingness to pay premium prices for nutrition information, and on account of product innovation opportunities for industry. Costs could arise from re-labelling, a decline in revenue from some products and even the need to withdraw other products from the market.

*Compliance costs*

Business compliance costs are only those additional or incremental costs that arise as a consequence of the new regulation pertaining to mandatory nutrition labelling. They would not include the cost of activities that were carried out previously, even if they included some voluntary labelling information.

To arrive at a comprehensive assessment of business compliance costs it is necessary to identify the number of businesses affected by mandatory/voluntary nutrition labelling, the activities and operations that they have to perform, what are the initial or one-off costs incurred, what are the ongoing or operational costs, what are the ancillary costs – administrative, indirect labour and insurance expenses. This could include the costs industry incur on account of the time needed to familiarise themselves with new requirements.

The food industry in general is not uniform; it can range from large scale multinational industries to small family enterprises. Given this diversity, the economic opportunities, constraints and impacts experienced by different players in the food industry could be vastly different and not given to generalisations.

*Labelling costs*

Where food products currently on the market do not have the required nutrition information on labels, there will be costs involved in redesigning and reprinting labels. Such costs to the food industry could be one-off. If the imposition of mandatory nutrition labelling provides for a transition period, during which time industry can exhaust their existing stock of labels, it is possible to minimise redesigning and reprinting costs. Industry can then include the required nutrition information on future labels as part of routine redesigning/ updating of food labels, and thereby minimise the costs arising from complying with mandatory labelling.\(^6\)

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The actual costs of relabelling would vary from country to country. In Australia, a study conducted for Food Standards Australia New Zealand estimated that the cost of one-off label changes was around 1.1 per cent of product costs.\(^7\) These costs would be determined by a range of local factors including label type (direct/pre-printed), packaging type (glass, metal, plastic), printing method (flexography, lithography, gravure), number of printing plates required, proofing and the number of stock keeping units (SKU) impacted by the change.\(^8\)

\textit{Cost of information}

Where food industries already provide some nutrition information on their labels, and hence the cost of complying with mandatory labelling will be negligible or modest, consumers may not be burdened by a significant price increase in their purchases. However, where nutrition labelling is absent or poorly developed, food industries are more likely to incur additional costs on account of mandatory labelling. With some products like alcohol where changes in composition levels occur post production, labelling presents additional difficulties.

Depending on the size and structure of the industry, its ability to absorb cost increases, or spread them out judiciously, may be limited. In such situations it can be expected that consumers may have to pay more for food products as a consequence of mandatory nutrition labelling.

\textbf{Consumers}

\textit{Costs to consumers could be in the form of higher prices of goods, reduced utility or satisfaction and delay or restrictions in accessing goods; while benefits could arise from better nutritional information, healthier eating and a more nutritious range of food choices.}

\textit{Health benefits}

Though hard to measure, consumers may benefit from the information provided by nutrition labelling, since this could result in a positive change in dietary practices as well as a beneficial change in the nutritional composition of food.

Balanced information exchange is imperative if nutrition and health education campaigns conducted by government, medical or community organisations are to be successful. Mandatory nutrition labelling will enable consumers to use the knowledge acquired through such education campaigns to make purchasing decisions that are appropriate for their nutrition and health requirements. Over time, this may lead to healthier food choices and consumption patterns among consumers, resulting in a healthier community. In economic terms this will be a benefit to the community which will enjoy lower health care costs, less absences at work leading to higher outputs and net improvements in income for families.

To compute the tangible health benefit to a community, it is necessary to identify the reduction in illness and disease and the improvement in mortality rates (if any) as a

\(^7\) Centre for International Economics \textit{Nutrition, health and related claims} Canberra 2008
\(^8\) PricewaterhouseCoopers \textit{Cost schedule for food labelling changes} Melbourne 2008
consequence of the positive changes in eating and dietary practices. This requires a monetary value to illness covering medical and hospital costs, loss of work and the notional cost of family care. With regard to mortality, the Value of Statistical Life (VSL) which estimates the value society places on reducing the risk of premature death can be used. It would also require an assessment of what if any behaviour change occurs, and with respect to whom and to what degree, and how this may impact on health outcomes.

Depending on the distribution of health care costs between patients, family, community and state, the benefits too will need to be apportioned in the CBA.

**Monetising health benefits**

Health benefits if any are complex and contentious and need to be established in the CBA with care. Where nutrition information and education may result in better nutrition, less illness and a healthier population, expressing this in monetary terms remains a challenge.

If labelling contributes to better health, then its benefit would be the cost of ill-health that would be avoided through such a measure. This includes medical expenses, loss of earnings as well as pain and suffering. Health Economists have sought to express these in monetary terms by computing the value of a Quality Adjusted Life Year (QALY) - a year of perfect health - and Disability Adjusted Life Years (DALY) - a year being incapacitated. The value of QALYs and DALYs can be ascertained by finding out how much an individual is willing to pay to enjoy a year of good health. Since this willingness to pay will vary from individual to individual, in each society or country a QALY or DALY will have a different aggregate value.

**Other consumer benefits**

**New products**

Mandatory - or for that matter even voluntary nutrition labelling - could lead to a higher level of consumer discretion when purchasing food products. Consumers may increasingly look for, and look at, the nutrition information provided on labels, and be influenced by them. As a consequence, incentives will present themselves to the food industry to reformulate existing products, as well as develop new products, that deliver more nutritious foods. This would occur if consumers’ expectations and preferences for foods with healthy nutrition content increased once nutrition labels become the norm.

There may also be an incentive, long term, for industry to carry out research and to pursue innovation, in order to develop and market a range of novel food products that are nutritionally superior.

**Consumer confidence**

Research indicates that consumers may attach value and utility to nutrition information on food labels, and state they are willing to pay higher prices for products that provide such

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9 Australian Government Department of Finance and Deregulation Value of Statistical Life (2008)
10 Abelson, Dr Peter Establishing a Monetary Value for Lives Saved: Issues and Controversies Department of Finance and Deregulation Canberra 2008
information.\textsuperscript{11} They may value this information regardless of whether it causes a behavioural change.

A study conducted in Spain found that “on average, for the entire sample, the mean premium respondents would be willing to pay for a nutritional label on a box of cookies is about €0.21 or 10.6 per cent of the price of the box of cookies without a nutritional label.”\textsuperscript{12}

The premium that consumers may be willing to pay for nutrition information varies with both the products surveyed, as well as the profile of the consumer. In this study, unhealthy consumers - those for whom nutrition content would have a greater significance than average consumers – stated that they were willing to pay a higher amount, (13 per cent above the initial price of the product).

It must also be assumed that in markets where choices of food products are limited or access to alternatives are restricted, the willingness to pay a premium for nutrition information would be lower. It is therefore necessary to disaggregate these important variables when seeking to ascertain the benefit that consumers derive from nutrition labelling.

As stated above, mandatory nutrition labelling could be an incentive in some markets for the development of new and reformulated food products by industry. In such economies, this would be a benefit to consumers since it will provide them with more nutritious food product choices and may contribute to a more healthy diet and lifestyle. It could also provide them with a greater range of food choices, enabling them to tailor their diet to meet their individual needs. New and reformulated food products may be dearer than the existing product; however the utility, consumer and nutrition benefit would compensate for this.

Mandatory nutrition labelling may deliver a net benefit to consumers if the information that appears on labels results in the purchase of products that better reflect their nutrition preferences; and deliver new products that are valued higher than those previously consumed.

It is relevant, however, to note that while nutrition labelling could result in improved health and dietary habits, there is evidence that while consumers may want and attach a benefit to nutrition information on food labels, the availability of such information may not by itself result in a behavioural or dietary change. Hence their utility may be less tangible, arising from the confidence of a comprehensive regulatory system, rather than from the health benefit resulting from better nutrition.\textsuperscript{13}

\textbf{Government}

\textit{Costs to government could arise from funding education campaigns, information systems, inspection, enforcement and audit costs, collection and administering data, information and records.}

\footnotesize{\textsuperscript{11} Drichoutis, Andreas, Panagiotis Lazaridis and Rodolfo Nayga “Consumers’ use of Nutritional Labels: A review of Research Studies and Issues” Academy of Marketing Science Review Vol 2006 No 9
\textsuperscript{13} Variyam, Jayachandran “Do nutrition labels improve dietary outcomes?” 2008 Health Economics 17: 695-708}
Where health care is a government responsibility, the cost arising from illness attributed to absence of nutrition information should also be included.

**Compliance monitoring**

Mandatory nutrition labelling requires a compliance monitoring system to make it work. Governments through their health or trade regulation agencies may need to develop a mechanism that is appropriate and effective to achieve this. This could be made up of inspections, audits and laboratory tests by the regulator.

Inspection may also need to be carried out to ensure that labels conform to prescribed standards. Alternatively, this aspect of compliance could be placed on the retailers, where they would be liable should they sell food products which do not comply with labelling standards. And they could be subject to periodic inspection.

The above auditing, monitoring and inspecting functions carry a cost burden. Depending on whether the monitoring agency bears the costs associated with compliance, or whether they are recovered from the industry concerned, they will impact on the regulator or industry. But the net impact on the community remains unchanged.

**The Assessment**

*The rationale for a Cost Benefit Analysis is that it provides the decision-maker with structured information to enable them to identify the option with the greatest net benefit.*

As listed at the beginning of this paper, a structured CBA should also contain a consultation statement and an implementation and review strategy. The consultation statement will establish that all relevant individuals, institutions and stakeholders have been consulted and have contributed to the assessment process. The implementation and review section will outline what steps are recommended at implementation, and what mechanism for post-implementation review would ensure good policy outcomes.

Different methodologies and techniques can be employed by policy-makers to arrive at their decision. The CBA would suggest that of the options considered, including the status quo, the one that delivers the highest NPV should be the preferred option. There would be instances where there may not be one option with a clear NPV advantage, meaning other criteria should appropriately be applied.

The assessment must be written in simple clear language so that decision-makers, stakeholders and the community at large can easily comprehend the arguments.

The assessment should not be a mere summary or reiteration of what has gone before. Rather it should be a synthesis of the main findings and outcomes of the cost benefit exercise and their relevance and significance.

The CBA is ultimately a decision-support mechanism, not a decision-making tool. It points the decision-maker in certain directions, but it does not usurp the decision-making function and the role of policy-makers.
The CBA is a tool that policy-makers can confidently utilise to determine the economic case for mandatory nutrition labelling. But there would be situations where it may be necessary to look beyond the economic and make decisions that take into consideration issues and complexities that the CBA may be silent or neutral on.

**Conclusion**

A Cost Benefit Analysis, where it forms part of a structured process, is an effective rigorous method of identifying and monetising all the possible options that could be adopted, in order to address a regulatory problem arising from the absence of nutrition labelling. It does this by employing a common metric, namely a monetary value which captures all the relevant costs and benefits.

A CBA compares costs and benefits over time, perhaps over the duration of the nutrition labelling exercise, it reduces all such monetary figures to a single moment in time through discounting, so they can be credibly compared by the decision-makers.

Policy-makers are always confronted with resource limitation, and competing claims to those limited resources. The CBA process provides them with a common economic template that enables them to make decisions on the basis of comparable financial data. While this paper has dealt with the use of CBA in appraising a policy prior to its adoption, this process is equally valid should decision-makers need to review an ongoing policy, in order to assess its efficacy as part of an evaluation process.

In the final analysis, decision-makers must make a holistic judgement to ensure that government policy optimises the community’s health and welfare.

Whatever their final decision, by applying this methodology, regulators can have the confidence that they have examined and explored all the economic implications of labelling. They will also be able to clearly, transparently and convincingly set out the rationale for it, explaining why they recommend a particular option, and not the others that have been considered. Where mandatory nutrition labelling is the preferred option, it will be logically and scientifically substantiated by the CBA.

“The challenge for government is to deliver effective and efficient regulation – regulation that is effective in addressing an identified problem and efficient in terms of maximising the benefits to the community, taking account of the costs.”

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