



Department for  
Business, Energy  
& Industrial Strategy



# EVALUATING COSTS AND BENEFITS FOR REGULATORY PURPOSES: DIRECT AND INDIRECT IMPACTS OF REGULATION ON BUSINESS

A Working Paper prepared for the Regulatory Policy Committee  
and the Better Regulation Executive by Brian Titley Consulting Ltd



April 2015

# Contents

1. Background and Context	3
Background to the research report	3
The Role of the Regulatory Policy Committee (RPC)	3
The “One-in, Two out” (OITO) rule	4
The identification and measurement of direct and indirect impacts on business	4
2. Direct and indirect costs and benefits: definitional issues	8
Conceptualising the costs and benefits of regulation	8
UK guidance and terminology	9
US guidance and terminology	10
European Commission Guidance	11
OECD Guidance	14
Definitions from other sources	16
Concluding observations	19
3. The impacts of regulation: a basic microeconomic analysis	21
Choosing an appropriate economic framework	21
Partial equilibrium analysis (measures that will shift the market supply curve)	21
Partial equilibrium analysis (measures that may shift the market demand curve)	29
Partial equilibrium analysis (price controls)	38
The impact of regulations on imperfectly competitive markets	43
Competitive measures	49
Partial or general equilibrium analysis?	49
Some concluding observations	50
4. Assessment Criteria	52
Developing meaningful decision criteria and guidance	52
Some concluding observations	61
5. Summary and conclusions	62
Applying the OITO rule	62
Direct and indirect costs and benefits - definitional issues (Section 2)	63
Microeconomic analysis (Section 3)	64
Assessment criteria (Section 4)	65
References	67



# 1. Background and Context

## Background to the research report

In December 2014, the previous Government published its Ninth Statement of New Regulation which presented performance against the One-in, Out-out and One-in, Two-out rules that operated over the last Parliament. Overall, between 2011 and the end of 2014 there was a net reduction in the annual cost of regulation to business of £2.2bn as measured by the Equivalent Annual Net Cost to Business (EANCB) metric. In a relatively small number of regulatory changes, measuring the EANCB posed methodological challenges relating to the identification and treatment of direct impacts on business.

In early 2015, the Department for Business, Innovation and Skills (BIS) and the Regulatory Policy Committee (RPC) issued an invitation to tender for a research project to set out the different definitions of direct and indirect impacts in the literature, present a microeconomic framework for thinking about the treatment of direct impacts within the OIOO/OITO system, and develop some criteria that could be used to help officials classify direct and indirect impacts. The research was commissioned in the context of the OIOO/OITO rules that operated within the last Parliament but is also relevant to the methodology for the Business Impact Target that the Government has set for the current Parliament.

The report that follows was prepared by Brian Titley Consulting Ltd. The views and interpretations expressed are those of the consultant and do not necessarily reflect those of BIS or the RPC.

## The Role of the Regulatory Policy Committee (RPC)

The RPC was established in September 2009 as an ad-hoc advisory body and in April 2012 became an advisory Non-Departmental Public Body – sponsored by the Department for Business Innovation & Skills. It is tasked with providing independent scrutiny of evidence and analysis in support of new regulatory proposals prior to final Ministerial decisions.

The Committee also plays a key role in support of the Government's better regulation agenda notably through the validation of estimates of the direct costs to business of proposed regulatory and deregulatory measures and by helping officials across Government to understand the process and requirements of impact assessment.

### The “One-in, Two out” (OITO) rule

To reduce the burden of new regulations on businesses and civil society organisations, the Government operates a One-in, Two-out (OITO) rule. Any regulatory measure that is expected to result in a direct net cost to business must be offset by deregulatory measures providing savings to business of at least double that amount. Indirect costs and benefits to business are not within scope of the rule.

The OITO rule was introduced from January 2013 to exert greater control and discipline over the flow of new regulations affecting business. It strengthened the previous "One-in, One-out" rule, in place since January 2011 to encourage Government Departments to deregulate and look for alternative, non-regulatory measures to achieve their policy goals.

### The identification and measurement of direct and indirect impacts on business

For each new regulatory measure within scope<sup>1</sup>, the OITO rule requires the direct incremental costs and benefits to business to be identified and estimated separately from all other costs and benefits that may arise as a result from the imposition of that measure. All anticipated costs and benefits must nevertheless be presented in a full assessment of the overall net economic impact of each measure.

Estimates of the future streams of direct incremental costs and benefits falling on business are used to derive the Equivalent Annual Net Cost to Business (EANCB) of each measure (see Section 2). The EANCB is therefore an annualised value of the net direct costs to affected businesses in the regulated market before any pass-through of these incremental costs or benefits to their consumers, suppliers, employees or owners.

The RPC scrutinises and comments on the analysis supporting calculations of the EANCB. Ministers rely on this independent validation so that the overall departmental and Government performance in terms of OITO can be considered robust. Cost estimates validated by the RPC are then used to compile the OITO totals included in the Governments bi-annual Statements of New Regulation.

The identification and estimation of the direct costs and benefits to business is not, however, straightforward. There is little practical guidance for Government officials in the theoretical and applied literature on how to distinguish between the direct and indirect impacts of regulation on business. Judgement is often required and views can differ.

---

<sup>1</sup> See Section 1.9 of the "Better Regulation Framework Manual", BIS (March 2015)

A number of cases scrutinised by the RPC have proved especially complex. One of the most challenging of these cases was the proposal to standardise the packaging of tobacco products and it is useful to consider it briefly here to help illustrate the challenges both the RPC and Departments face (see Case study 1 in Box 1.1 below). Further RPC case histories illustrating a wider range of measures, impacts and issues are presented in Section 3.

### Box 1 Standardising the packaging of tobacco products

The proposal aims to reduce tobacco consumption by mandating the standardisation of tobacco packaging including colour and shape and through the removal of all branding except brand name in a common typeface.

The Department of Health's initial interpretation was that the loss of profit to retailers and manufacturers of tobacco products that would result from the measure would be an indirect consequence of the reduction in consumer demand for these products. That is, consumers would first be required to change their preferences and buying behaviour before the measure would have any impact on suppliers of tobacco products.

Instead, the Department argued manufacturers would benefit directly from savings in packaging design and printing costs. Similarly, many consumers would gain by switching to cheaper brands and from improvements in health following a net reduction in tobacco consumption.

However, the RPC considered the expected loss of profit to manufacturers and retailers to be a direct cost to these businesses and therefore within scope of the OITO rule for the following reasons:

- reducing sales of tobacco products is the primary intention of the proposal;
- it will prohibit a form of promotional activity;
- it will restrict economic activity from the use of branding; and
- if lost profits were an indirect cost, the proposal would score as net beneficial to tobacco retailers and manufacturers. This outcome would be counter-intuitive.

Three more general but overlapping questions emerge from the case study and may help to frame the problem:

- 1) *Does the distinction between direct and indirect impacts of a regulation on business depend on whether they occur prior to following a reaction in the regulated market?*

It is often easy to assume that any impact on businesses in the regulated sector that is the result of a behavioural response in that market should be considered an indirect impact of the measure.

However, to be effective, all regulations must stimulate some reaction in the sectors they seek to influence or control. This is the definitional purpose of regulation.

Usually regulations do this by imposing an increase in production costs associated with the required change of behaviour, for example, through the installation of new health and safety equipment. However, not all regulations will directly or materially affect production costs, for example, where they introduce restrictions on prices or promotional activities. In these cases, their most immediate impact is likely to be on consumer demand and sales of the regulated products.

If regulations require one or more behavioural responses to be effective then the challenge for Government departments and the RPC is therefore in deciding which impacts should be considered direct according to how and when they occur in a possible sequence of reactions on either the supply-side of the regulated market or the demand-side, or both.

For example, should a reduction in quantity supplied to a market following the imposition of a new regulation be treated differently according to whether it is the outcome of a shift to a new supply curve or a contraction along the existing one in response to a reduction in demand?

2) *Does the boundary between direct and indirect impacts depend on whether the measure involves a shift in the supply curve in the regulated market or a shift in the market demand curve?*

In economic analysis, any regulations that require firms to incur additional expenditures in order to comply with them will be reflected in a vertical upwards shift in their industry or market supply curves (see Section 3). In these cases the direct costs of the regulations on affected businesses prior to any mitigating actions they may take, should be clear and measurable.

However, measures that restrict business activities or introduce price controls may not require additional expenditures. To comply with these measures producers may nevertheless need to revise output and other operational decisions.

The proposal to standardise the packaging of tobacco products is one such example. It should not materially affect the costs of producing and selling such items, although there may be some retooling costs in an addition to a potential reduction in future printing and design costs. Instead, the proposal will restrict the ability of the industry to use point-of-sale promotions to create or maintain sales and for individual producers to differentiate their tobacco products from rival brands.

If firms are compliant, and if consumer preferences are sensitive to the marketing and branding of tobacco products, then the impact of the proposal will be to reduce demand for them at current market prices. This will be represented by an inward shift in the market

demand curve. That is, consumers will no longer be willing to buy the same quantity each period as they did before the measure was introduced.

A key issue, therefore, is whether it is appropriate to treat a loss of profit from a reduction in quantity traded differently from a loss of profit due to a rise in production costs? In both scenarios these losses will be the result of actions taken by the affected firms to comply with regulatory measures but prior to any subsequent actions they may subsequently decide to take to mitigate them.

Consider now if a restriction takes the form of a ban on the production and sale of an item. The affected firms will clearly be unable to sell the same quantity each period as they did before the ban, and to comply, all further production must cease. First, it would be counterintuitive to suggest that the savings of future production costs will be the only direct effect of the measure. Secondly, it is surely incontrovertible that their expected loss of sales and, therefore, profits will be a direct consequence of the restriction.

- 3) Should the boundary between direct and indirect impacts be defined by the intended target or scope of the measure?

The proposal does not seek to regulate consumer behaviour. Instead it aims to achieve a reduction in demand for tobacco products and an overall gain in social welfare by restricting the promotional activities of the tobacco industry. Given this, it appears difficult to dispute that the direct impact of the restriction on the industry will be a potential loss of industry profits.

Consider instead a ban on the advertising of tobacco products. Does it follow that the loss of sales and profits to the advertising industry will be the only direct costs on business of the measure while the tobacco industry will benefit indirectly from a reduction in advertising costs, other things unchanged? This again would appear counter-intuitive.

Published guidance and the application of microeconomic theory may help to provide some answers to these questions and are reviewed the following sections.



## 2. Direct and indirect costs and benefits: definitional issues

### Conceptualising the costs and benefits of regulation

The most comprehensive measure of the total impact of a regulation the net change in social welfare. This is the appropriate measure to use in an impact assessment.

The social cost of a new regulation measures the total burden it will impose on the economy. It is the sum of all opportunity costs incurred as a result of the regulation. This sum will be the value lost to society of all the goods and services that are no longer produced or consumed, both now and into the future, as a result of the impact of the regulation on resource allocation decisions.

However, as well as imposing costs, regulations can benefit other producers and consumers. The social benefit of a regulation measures the value gained by society resulting from the impact of a regulation, for example, if it redirects resources away from harmful productive activities.

The net social cost or overall welfare effect of a regulation is therefore the difference between its social cost and social benefit. By definition, the net social cost of a regulation will be equal to the sum of all the direct and indirect costs and benefits resulting from that measure.

While net social cost is derived from economic theory, the concepts of direct and indirect costs and benefits are primarily descriptive terms introduced to facilitate the analysis and estimation of regulatory impacts on different sectors or groups within society and to assist the process of decision making. There is relatively little discussion of direct and indirect concepts of costs and benefits in the theoretical literature as the terms of reference acknowledge.

A key challenge for the analyst and decision maker is therefore to identify the most appropriate definition and measure of impact for each particular application. However, despite growing international literature and guidance on applied cost-benefit analysis and impact assessment, no one taxonomy of costs and benefits has so far achieved widespread agreement and the distinction between direct and indirect impacts remains ambiguous. A number of sources are briefly reviewed and contrasted below.

## UK guidance and terminology

The Better Regulation Framework Manual (2013) is the main source of practical guidance for UK government officials. Part 1 of the manual introduces and provides practical guidance on each of the better regulation requirements. Part 2 is the Impact Assessment Toolkit, providing detailed guidance for those preparing impact assessments and submissions to the RPC. It distinguishes direct from indirect impacts of regulation at paragraphs 31 - 33 as follows:

*"A direct impact on business is defined as an impact that can be identified as resulting directly from the implementation or removal/simplification of the measure. Subsequent effects that occur as a result of the direct impacts, including behaviour change, are indirect."*

The manual advises that estimates of the direct impacts of a proposed measure should be used to derive the Equivalent Net Cost to Business (EANCB), defined as the annualised value of the present value of net costs to business, calculated with reference to an appropriate counterfactual. As such, the EANCB must take account of both transitional and annually recurring costs and benefits to business resulting directly from the proposed measure. However, no further guidance is provided in the manual on how to determine which costs and benefits are in scope.

Case histories from the RPC are an additional source of reference for UK officials. The internal document, "Impact Assessment Case Histories" (2014) states at Section 1.1.4 (Behavioural Change) that

*"Where a policy works by changing the landscape such that individuals may choose to alter their behaviour the impacts of this behavioural change on businesses should be considered indirect as it results from the actions of the individuals not directly from the regulation".*

In addition, Section 1.1.5 (Displaced Economic Activity) of the case histories document advises

*"If a policy bans, severely restricts or makes more expensive a particular economic activity then this may result in an increase in substitution towards other activities. There may therefore be some increased profits in other areas of the economy. These benefits are considered to be indirect while the lost profits from the economic activity that has been banned are considered direct".*

Despite the useful clarification provided by the RPC case histories it remains difficult to provide sufficiently clear definitions of direct and indirect impacts to ensure a consistent approach across Government to the preparation and subsequent scrutiny of regulatory impact assessments.

The core of the problem appears to be how Government departments distinguish between reactions in the regulated market that immediately follow the introduction of a new regulatory measure and those that occur subsequent or in response to them, either within the same market or in adjoining or related markets.

### US guidance and terminology

"Guidelines for Preparing Economic Analyses" (2010, updated 2014) issued by the US Environmental Protection Agency (EPA), provide a comprehensive reference manual for US government officials. Its primary concern is with environmental regulations and environmental impacts arising from other areas of legislation, although the guidelines could be more widely applied.

The EPA defines direct costs with little further elaboration as

*"...costs that fall directly on regulated entities as the result of the imposition of a regulation. These entities may include firms, households, and government agencies".*

Indirect costs are identified and explained as follows:

*"Indirect costs are incurred in related markets or experienced by consumers, government agencies or stakeholders not under the direct scope of the regulation. These costs are usually transmitted through changes in the prices of the goods or services produced in the regulated sector. Changes in these prices then ripple through the rest of the economy, causing prices in other sectors to rise or fall and ultimately affecting the incomes of consumers... In some cases, the indirect costs of a regulation may be considerably greater than the direct costs".*

The direct costs of regulation that fall on business appear to be distinguished from indirect costs according to whether they are incurred or experienced by firms in the regulated market or those in other, related sectors. This appears to suggest that firms in the regulated market can be directly impacted by behavioural responses, for example, a reduction in consumer demand that may occur following the imposition of a regulatory measure. Only subsequent reactions within the regulated market, for example, if the affected firms increase their marketing efforts, or those which occur outside of the regulated sector in related markets, will result in indirect costs.

US guidelines also introduce the following alternative but overlapping cost concepts. However, the boundaries between them are unclear.

- **Compliance costs** are the costs firms incur to... comply with a regulation. Direct compliance costs are considered the most conservative estimate of private costs and include operating costs... as well as any capital costs. Direct compliance costs do not include implicit costs.

- **Implicit costs** do not represent direct outlays. They include such elements as production lost during installation, training of operators and the education of users...
- **Industry Costs** are the costs of a regulation to an industry, including the effects of actual or expected market reactions. They often differ from compliance costs because compliance costs do not normally account for market reactions. Market reactions may include plant closures, reduced industry output, or the passing on of some costs directly to consumers.
- **Transactions Costs** are those costs that are incurred in making an economic exchange beyond the cost of production of a good or service. They may include the costs of searching out a buyer or seller, bargaining, and enforcing contracts. Transactions costs may be important when setting up a new market, such as those markets designed to be used for market-based regulations.

In contrast to costs, the EPA guidelines do not define direct and indirect benefits. This is despite an extensive discussion on how to identify and estimate different types of benefit within the context of a number of real case studies.

The bias towards costs is not uncommon in the literature and also tends to extend to impact assessments. This is because, for most regulations, costs are more immediate and measurable compared to benefits which are often more widespread and long-term and therefore less easy to measure. Many benefits will also be 'avoided costs' or will reflect compensating transfers between different groups or sectors in society.

## European Commission Guidance

In 2013, the European Commission commissioned a study to review different methods for estimating costs and benefits within its integrated approach to impact assessment. The resulting study, "Assessing the Costs and Benefits of Regulation" (2013) was prepared by the Centre for European Policy Studies and Economisti Associati. It provides a classification and description of costs and benefits based on existing literature and guidance documents, adapted to the EU context (see Figure 1).

The definition of the direct costs of a regulation used in the study appears to be more limited in scope than the US guidance. It is restricted to the direct compliance costs and the "hassle" or "irritation" costs of regulation, where direct compliance costs include:

- **Regulatory charges**, which include fees, levies, taxes, etc.
- **Substantive compliance costs**, which encompass those investments (including financing costs) and expenses that are faced by businesses and citizens in order to comply with substantive obligations or requirements contained in a legal rule; and

- **Administrative burdens** which are those costs borne by businesses, citizens, civil society organizations and public authorities as a result of administrative activities performed to comply with information obligations included in legal rules.

Hassle or irritation costs appear similar to the concept of "implicit costs" defined in the US guidance. In the European study they result from overlapping requirements on specific entities and can include costs arising from administrative delays (when not directly attributable to an information obligation) and the opportunity cost of waiting time when dealing with administrative or litigation procedures.

However, the European definition of indirect costs repeats, almost exactly, the definition in the US guidance.

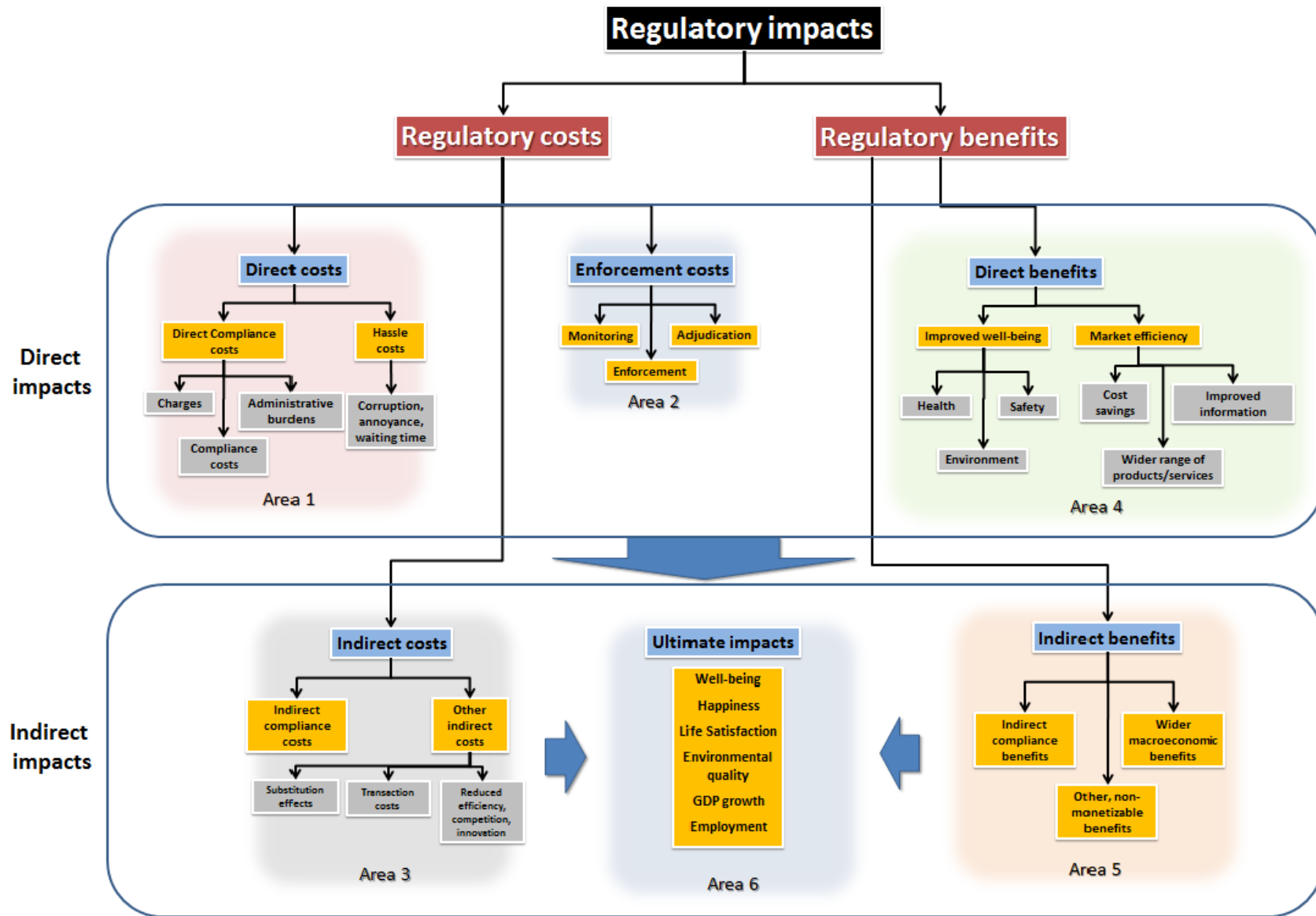
*"Indirect regulatory costs... refer to costs incurred in related markets or experienced by consumers, government agencies or other stakeholders that are not under the direct scope of the regulation. These costs are usually transmitted through changes in the prices and/or availability and /or quality of the goods or services produced in the regulated sector. Changes in these prices then ripple through the rest of the economy, causing prices in other sectors to rise or fall and ultimately affecting the welfare of consumers".*

The classification of indirect costs in the EC study includes

*"...indirect compliance costs (i.e. costs related to the fact that other stakeholders have to comply with legislation) and costs related to substitution (e.g. reliance on alternative sources of supply), transaction costs and negative impacts on market functioning such as reduced competition or market access, or reduced innovation or investment".*

In contrast to both the UK and US guidance, the study provides definitions of direct and indirect benefits. However, unlike the discussion of costs, no explicit references are made to related markets and subsequent market changes within and beyond the regulated sector to distinguish those benefits to firms that arise indirectly as the result of regulatory measures from direct benefits.

Figure 1: A map of regulatory costs and benefits



Source: *Assessing the Costs and Benefits of Regulation*, CEPS (2013)

Direct benefits include

- Improvements in market efficiency, which include, notably, cost savings but also information availability and enhanced product and service variety for end consumers.

Indirect regulatory benefits encompass

- Spillover effects related to third-party compliance with legal rules (with so called “indirect compliance benefits”)
- Wider macroeconomic benefits, including GDP improvements, productivity enhancements, greater employment rates, etc.; and
- Other non-monetisable benefits, such as the protection of fundamental rights, international and national stability, etc.

## OECD Guidance

In 2014 the OECD published its "Regulatory Compliance Cost Assessment Guidance" for member governments to adapt to support their individual policy requirements. It was developed with the assistance of an expert project group with members drawn from Austria, Czech Republic, Germany, Mexico, the Netherlands, Norway, the UK and the European Commission. This suggests there is already a high degree of international consensus on its main findings and recommendations.

Figure 2 below reproduces the OECD taxonomy of regulatory costs. It is described as covering all of the costs attributable to the adoption of a regulatory requirement, whether direct or indirect in nature and whether borne by business, consumers, government and its respective authorities (i.e. taxpayers) or other groups.

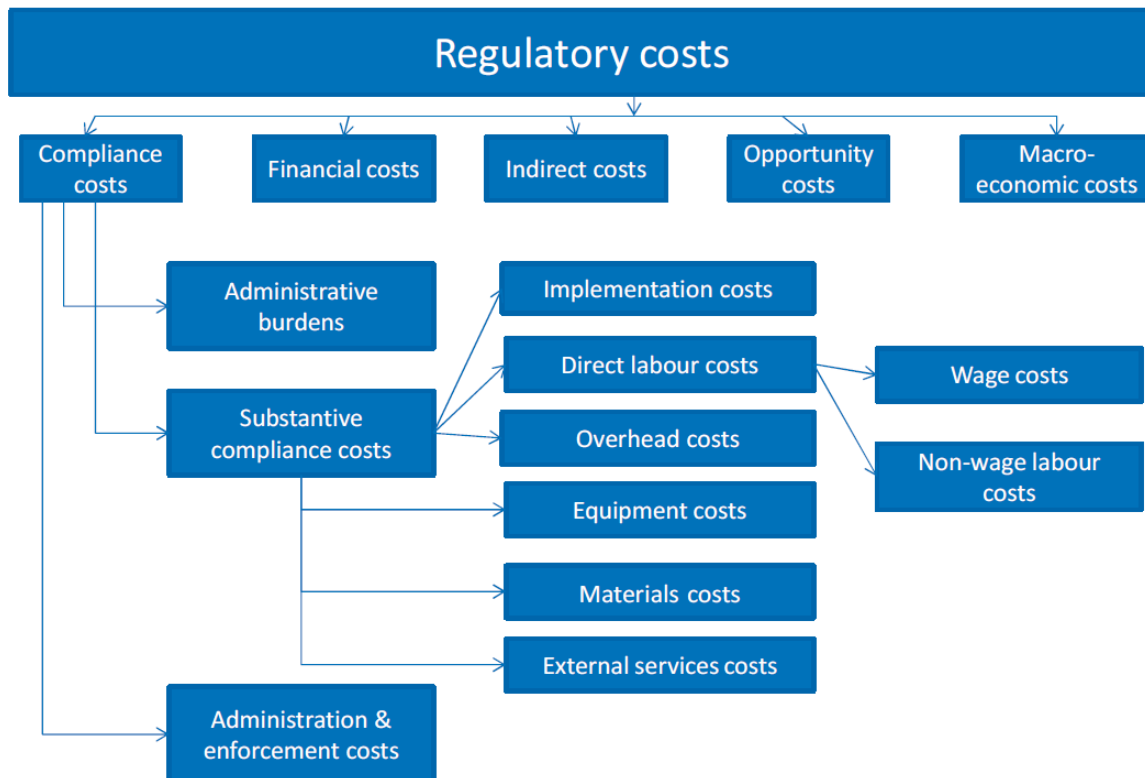
Within the taxonomy, the indirect costs of regulation are defined as

*“second round costs...incidental to the main purpose of the regulations and often only affecting third parties. They are likely to arise as a result of behavioural changes prompted by the first round impacts of the regulations”*

The OECD definitions introduce the concept of "second round" impacts to distinguish the indirect costs of a regulation from its direct costs. However, it is difficult to infer from this that direct costs may therefore include losses experienced by regulated entities as a result of more immediate, first round effects or market reactions especially when they are explicitly excluded from the taxonomy. Direct costs therein are restricted to incremental

expenditures incurred by organisations as they seek to comply with or enforce a regulation, including any associated capital financing costs<sup>2</sup>.

Figure 2: OECD taxonomy of regulatory costs



Source: OECD Regulatory Compliance Cost Assessment Guidance, 2014

Nevertheless, the guidance accepts that in circumstances where producer and consumer behaviour is appreciably affected, models based solely on compliance costs will not provide estimates of changes in industry prices and output resulting from the imposition of a regulation. Compliance costs also generally only arise from measures that require additional expenditures by firms and therefore have their immediate effect on the supply side of markets. Regulations that impose restrictions on prices, marketing activities and sales may, nevertheless, have a very direct impact on the firms they affect.

Within its taxonomy, the OECD describes the direct compliance costs of regulation as

*"...costs that are incurred by businesses or other parties at whom regulation may be targeted in undertaking actions necessary to comply with the regulatory requirements, as well as the costs to government of regulatory administration and*

<sup>2</sup> Similarly, the "Canadian Cost-Benefit Analysis Guide - Regulatory Proposals" (2007) advises "There are generally two types of direct costs: one is the compliance costs incurred by the private sector and the other is the administrative costs incurred by government".



*enforcement. They can be further divided into administrative burdens, substantive compliance costs and administration and enforcement costs".*

Precise terminology differs but the broad categories and definitions of different sources of compliance costs map closely onto those used in the US and EC texts. There are however some notable differences. They are:

- Costs incurred by government monitoring and enforcing the regulatory requirements and the private costs related to litigation. In the US guidelines and EC study, these costs are considered sufficiently different and therefore separate from those costs incurred by entities responding to the imposition of a new regulatory measure. In the US guidelines, they are incurred only by firms active in the regulated market.
- The financing costs of equipment purchased or cost of capital deployed to meet regulatory compliance obligations. These are identified separately in the OECD taxonomy. In contrast, financial costs are included within the US and EC classifications of direct compliance costs.

## Definitions from other sources

Based on a limited search of the literature, it is possible to identify a large number of applied studies of the welfare effects of regulations. However, relatively few appear to have focused on measuring their direct and indirect impacts and with particular reference to businesses, and most notably those published prior to the adoption of more stringent requirements for impact assessments in many developed economies.

One of the earliest studies that attempted to formalise and apply a model of regulatory costs as either direct or indirect, appears to be that of Bartel and Thomas (1985) in their assessment of the effects of the US Occupational Safety and Health Act (OSHA) and Administration. They identify the direct effects of the OSHA as "the isolated partial equilibrium impacts on single firms or individuals", including improvements in safety for workers and increases in manufacturing costs that decrease profits and wages. In contrast, indirect "general equilibrium" effects were competitive advantages arising from asymmetrical impacts of regulation among different groups of firms and workers.

Noting a lack of international consensus and guidance on regulatory costs, SQW (2005) attempt to develop an evaluation framework and suggest the definitions reproduced in full below:

- **Regulatory burden** – the total direct and indirect costs of a regulation – it is equal to policy costs plus any indirect costs including unintended effects.
- **Policy costs** – the total direct costs attributable to the policy intervention through the proposed regulation - it includes direct costs of compliance related to the regulation.

- **Implementation costs** – direct costs attributable to the implementation of the regulation including costs associated with administrative, familiarisation and compliance with enforcement and sanctions – they are sometimes known as the red tape burden of regulation.
- **Compliance costs** – the direct costs of complying with the regulation - they can be recurring or fixed and are a component of policy costs.
- **Administrative costs** – the costs associated with the paperwork burdens on the administrative structures of business as a result of regulation - they are a component of implementation costs.
- **Red tape burden** – see implementation costs
- **Financial analysis** – assessment based on the financial flows associated with a regulation – usually confined to its implementation costs – financial analysis does not take account of non-monetary benefits, indirect effects and the impact of regulation on society as a whole.
- **Direct costs** – costs that occur at the same time and place and include the effects on sectors and markets immediately addressed by the regulation.
- **Indirect costs** – those costs that are later in time or farther removed in distance but are still reasonably foreseeable - indirect costs can include second round effects on consumers, environment and other aspects of society as well as unforeseen or unintended effects.
- **Interactive costs** – the effects on costs that arise from the interaction of a proposed regulation with prevailing regulations - for example, a proposed regulation to reduce car-related pollution may interact with an existing regulation to promote car safety in ways that may make its additional costs higher than if the interactive effects had been ignored (because the combined incentive on producers would be to build cars that were both smaller and sturdier and more expensive than one or the other).

Many of the cost categories suggested by SQW appear overlapping while references to time and place in the definitions of direct and indirect costs are not entirely clear or helpful by adding further boundary complications. Also unclear is whether SQW intended "interactive costs" to be regarded as another direct cost of compliance?

Marneefe and Vereeck (2011) provide another typology of regulatory costs, their main innovation being to split direct costs between those incurred preparing for a new measure and those arising from its implementation.

Table 1: A typology of direct costs of regulation to businesses

Preparation Phase	Implementation phase (Compliance costs)
<p><b>Rent seeking costs:</b> resources invested in lobbying for, influencing or mitigating specific regulatory outcomes.</p> <p><b>Information costs:</b> finding out which regulations apply and how; reading and interpreting new regulations.</p> <p><b>Planning costs:</b> resources used up in planning the development of an organisational tool, system or department to help implement the regulation.</p>	<p><b>Administrative burdens:</b> meeting information obligations.</p> <p><b>Start-up costs:</b> one-off costs, including changing price lists, purchase of new equipment.</p> <p><b>Operational costs:</b> recurrent expenditures</p> <p><b>Delay costs:</b> waiting for a regulatory decision.</p> <p><b>Enforcement costs:</b> internal monitoring costs.</p>

Compiled from Marneefe and Vereeck (2011)

The direct costs of a regulation in the above typology are, therefore, limited to those that increase the costs of production and shift market supply curves. They will, in turn, raise market prices resulting in indirect regulatory costs: the additional welfare losses associated with shrinking markets ("efficiency loss") and any increases in transaction costs due to poorly designed regulations.

**Box 2 Direct, indirect and induced impacts in tourism studies**

**Direct effects** are production changes associated with the immediate effects of changes in tourism expenditures. For example, an increase in the number of tourists staying overnight in hotels would directly yield increased sales in the hotel sector.

**Indirect effects** are the production changes resulting from various rounds of re-spending of the hotel industry's receipts in other backward-linked industries (i.e. industries supplying products and services to hotels). Changes in sales, jobs, and income in catering and linen suppliers, for example, are the indirect effects of changes in hotel sales.

### Box 2 Direct, indirect and induced impacts in tourism studies

**Induced effects** are the changes in economic activity resulting from household spending of incomes earned directly or indirectly as a result of tourism spending. For example, as employees and owners of enterprises in the hotel, catering and linen supply sectors spend their increased incomes on other goods and services.

Adapted from Stynes (1997)

There is, in addition, a rich theoretical literature on cost-benefit analysis and welfare economics as well as many applied studies and practical guidance on assessing the impacts of non-regulatory measures. A number of these may provide some useful parallels, for example, studies of the net economic impacts of public events and marketing interventions designed to attract significant numbers of international tourists. There is significant degree of international consensus in these studies on the definitions and causes of direct and indirect effects (see Box 2 above).

## Concluding observations

The international literature introduces some useful terminology and categories of costs that may assist the development of practical guidance for impact assessments. However, no single or clear definition of the direct impacts of regulation emerges from them or a clear set of factors to determine the boundary between direct and indirect impacts on business.

The almost exclusive focus in the international guidance is on the direct costs of compliance, whether narrowly defined or more broadly described including administrative burdens and delays, enforcement costs, legal fees and other charges. This restricts their analysis to regulatory measures that incrementally affect production costs and industry supply decisions.

However, compliance costs are unlikely to provide the most appropriate measure of the costs to firms of regulations that impose price controls or restrictions on certain business activities or an outright ban on further production. The direct effect of such measures on sales and, therefore, profits may nevertheless be significant but these impacts received no attention in the literature reviewed here.

In contrast to direct costs, definitions of indirect costs (and benefits) in the international guidance appear to be a little more closely aligned. Many of these refer to indirect impacts only in related markets and the wider economy and outside of the regulated market.

It would be a relatively simple 'fix' to distinguish between direct impacts as those observed in the regulated market and indirect impacts as those that may subsequently occur,

perhaps "later in time" to quote SQW (2005), in related markets. However, it seems clear that a regulation could have both direct and indirect effects on producers within the regulated market. The more appropriate distinction is therefore between effects that should be considered the more immediate, "first round" consequences of a new measure and those that are subsequent, "second round" responses. The OECD guidance and the definitions of direct and indirect effects from tourism studies reviewed above are the most closely aligned with this.

However, while the precise boundary between first and second round effects in the regulated market remains elusive, it does at least provide for a clearer definition of indirect impacts as those experienced by

- businesses or consumers in the regulated market that are the result of their subsequent or "second round" market reactions, for example, if the regulated businesses respond to a drop in their sales by increasing their marketing expenditures; and
- businesses and other stakeholders in related markets and the wider economy affected by "spillovers" from the regulated market, such as losses or gains in orders and profits in the supply chain to the regulated market.

## 3. The impacts of regulation: a basic microeconomic analysis

### Choosing an appropriate economic framework

A key part of the project requirement is to demonstrate, using simple demand and supply analysis, how regulatory changes may impact business and civil society organisations.

The difficulty of conceptualising the costs of regulation is compounded by the challenge of choosing an appropriate economic framework. The EC (2013) study reproduces the analytical framework originally presented in the guidance issued by the US Environmental Protection Agency (EPA) in 2010 to demonstrate the impacts of an environmental regulation on a perfectly competitive market (see Section 2). This is used to identify the direct costs of compliance resulting from a regulation and its overall social cost or welfare impact.

This section therefore seeks to generalise, clarify and, thereafter, extend the EPA analysis to a richer variety of regulatory actions, impacts and market structures. However, to do so it must be abstracted and stylised in order to illustrate and contrast both financial and economic welfare approaches to the assessment of regulatory impacts. The application of simple analytical frameworks to complex real world cases is, therefore, problematic and needs to be supported by a pragmatic principles based approach to assessment.

### Partial equilibrium analysis (measures that will shift the market supply curve)

To assess the impacts of a regulation, either a partial or general equilibrium framework is employed. Partial equilibrium analysis is usually appropriate when the overall impact of the regulation is expected to be small relative to the total economy and limited to a single market or a small number of very closely related markets or market segments. In contrast, general equilibrium analysis of the full economic effect will be more appropriate if the impact in the regulated is sufficient to result in non-trivial price and/or quantity effects in other, interdependent markets. In many instances, however, partial equilibrium analysis is a practical choice given data limitations and the complexity of developing robust general equilibrium models.

For ease of exposition, the analysis in this section adopts a simple partial equilibrium framework. Doing so assumes

- i. the scope of the regulation and the market(s) it regulates can be clearly identified and defined;
- ii. that the effects of the regulation on all other (related and unrelated) markets will be minimal and can either be ignored or easily estimated without the need to employ a model of the entire economy.

Figure 3 below shows a competitive market before the introduction of a new regulation that directly increases industry production costs. Consumers and producers in the market are price sensitive. This is reflected in the downward slope of the market demand curve ( $D_0$ ) and upward slope of the industry or market supply curve ( $S_0$ ). Where these curves intersect determines the equilibrium price ( $P_0$ ) and quantity of the product supplied and traded in the market each period ( $Q_0$ ).

The area shaded blue and bounded by the market demand curve and the equilibrium price is consumer surplus. The area shaded yellow between the market supply curve and the equilibrium price, is producer surplus. In the absence of any externalities the sum of these two areas defines the total welfare arising in this market - or the net social benefit – from producing and consuming the product.

**Figure 3: A competitive market before regulation**

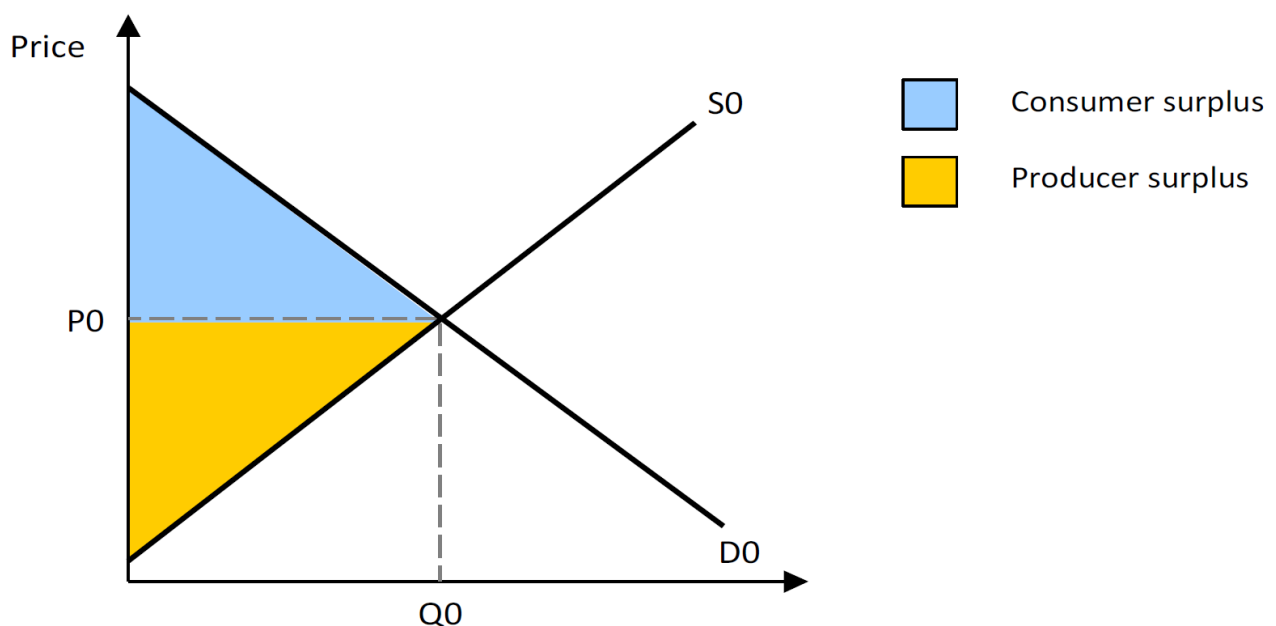
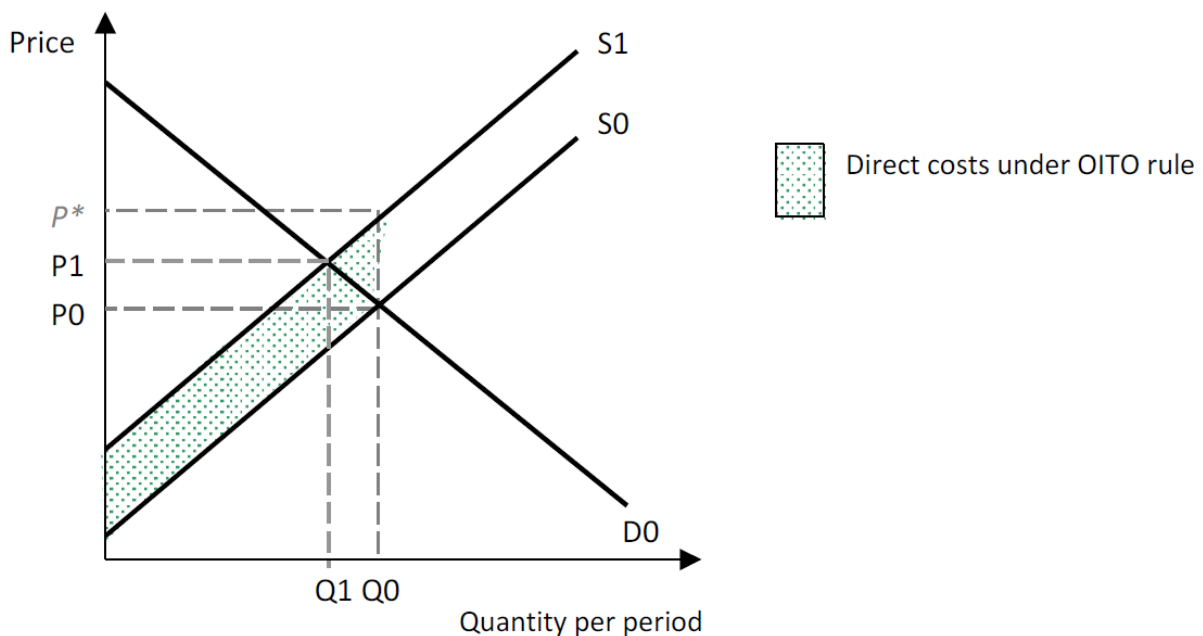


Figure 4 shows the same competitive market following the introduction of a new regulation. It has the effect of increasing the total production costs of all the producers who supply this market such that each unit of output is now more expensive to produce than before by an amount equal to  $P^* - P_0$ . This increase in production costs are the direct costs producers incur complying with the regulation. These "compliance costs" could, for example, be the result of more stringent product quality or packaging requirements imposed on the industry.

The immediate impact of the new regulation on the industry is therefore to shift the market supply curve upwards from  $S_0$  to  $S_1$  by the amount  $P^* - P_0$ . This outcome is based on the following assumptions.

- I. all producers supplying the market comply fully with the new regulation;
- II. all of the additional economic costs they incur complying with the new regulation are represented in full by the shift in the market supply curve<sup>3</sup>;
- III. the direct cost per unit of output ( $P^* - P_0$ ) remains unchanged at every possible level of total output above zero and is therefore equal to the distance between the old and new market supply curves ( $S_0$  and  $S_1$ )<sup>4</sup>.

Figure 4: A competitive market after regulation



Given the above, the total direct costs of industry compliance will be equal to the area between the old and new market supply curves bounded by the vertical axis at zero output

<sup>3</sup> This includes fixed compliance costs which are abstracted in the US and EC analysis. The fixed costs of acquiring new capital equipment required to ensure compliance are assumed incurred as the assets are used up in production per unit of output over their useful lives. This is consistent with standard accounting principles. Fixed costs will reduce accounting profit but will otherwise have no effect on short-run supply decisions of firms in perfectly competitive markets.

<sup>4</sup> Regulations that impose high fixed costs will impose a higher cost per unit on smaller firms than on larger firms. Where economies of scale are significant they should be reflected in estimates of compliance costs.

Using the same cost per unit of production for all firms and at all levels of output will understate impacts on small enterprises.



and the original equilibrium quantity supplied and traded ( $Q_0$ ), i.e. the green shaded area in Figure 4. This is exactly equivalent to

$$[1] (P^* - P_0) \times Q_0 = \text{'ex - ante' direct costs}$$

'Ex-ante' is used here to refer to the sum prior to any subsequent movement along the market supply curve to the new market equilibrium and also, therefore, prior to any passing through of these costs to consumers. Strictly, it is an estimate of [1] that is required for the purpose of applying the OITO rule. The rule requires the subsequent adjustment in market conditions to the new equilibrium position ( $P_1, Q_1$ ) to be treated as a second round or indirect effect.

However, if consumers are price sensitive and no account of this characteristic is taken into account in the analysis then [1] will overstate direct costs in an analysis of the welfare effects of the regulation (i.e. a full impact assessment) by an amount equal to

$$[2] (P^* - P_0) \times (Q_0 - Q_1)$$

The estimate of 'ex-post' direct costs after the regulated market has 'moved' to the new equilibrium price and quantity traded ( $P_1, Q_1$ ) will therefore be equal to

$$[3] (P^* - P_0) \times Q_1 = \text{'ex - post' direct costs after a contradiction in quantity supplied}$$

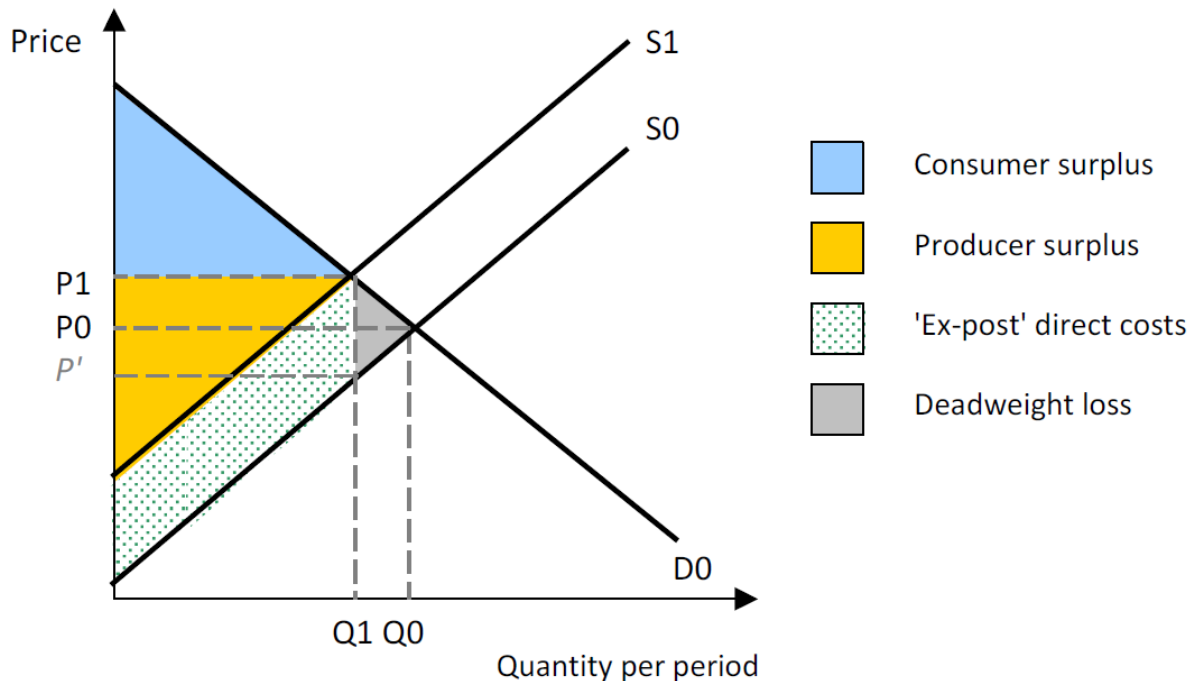
The calculation of [3] is more demanding than [2] as it requires knowledge of the price elasticities of both market demand and supply.

Because of the price sensitivity of consumers, producers will be unable to pass-through [3] in full (see Figure 5). The 'ex-post' direct costs of compliance therefore result in a loss of surplus for both consumers and producers at  $Q_1$  equal to:

$$[4] (P' - P_1) \times Q_1 = \text{loss of consumer surplus on } Q_1 \text{ units purchased and consumed ,}$$

$$[5] (P_1 - P_0) \times Q_1 = \text{loss of producer surplus on } Q_1 \text{ units purchased and consumed.}$$

Figure 5: A competitive market after regulation and adjustment to a new equilibrium



However, the ex-post direct costs are clearly only part of the total cost of the regulation required in an impact assessment. The reduction in quantity supplied and traded ( $Q_0 - Q_1$ ) is an additional real cost of the regulation to both producers and consumers. This additional loss is the grey shaded area in Figure 5 and represents the 'deadweight loss' to society from the reduction in the quantity of the product sold and consumed each period. Under the assumption that impacts outside of this market are not significant, the overall social cost or welfare effect of the regulation will therefore be equal to the sum of ex-post direct compliance costs in [3] plus the deadweight loss.

It follows that a deregulatory measure that reduces production costs will immediately shift the market supply curve vertically downwards (from  $S_1$  to  $S_0$  in Figure 4) by the incremental saving per unit ( $P^* - P_0$ ). The total direct benefit of the measure to producers in the regulated market of relevance to the OITO rule will therefore equal

$$[6] (P^* - P_0) \times Q_1 = \text{'ex - ante' saving in direct costs.}$$

The sum of [6] is calculated prior to the subsequent (second round) expansion of supply and passing-through of these savings in part to consumers through the reduction in the equilibrium market price (from  $P_1$  to  $P_0$ ). [6] will therefore tend to understate the eventual gain in producer surplus from the measure.<sup>5</sup>

<sup>5</sup> Ex-ante, the direct benefit of removing a regulation will also be less than the ex-ante direct cost incurred from its introduction. This is not a perverse result as the impact of the deregulation should be assessed on

The above analysis is summarised in Boxes 3 and 4 below. Each one presents

- I. A simple demand and supply diagram of the regulated market showing the application of the OITO rule as follows:
  - a. the immediate impact of the new measure on production costs and therefore on the market supply curve; and
  - b. the 'ex-ante' direct costs or benefits to producers of the measure at the original equilibrium quantity supplied.
- II. A second demand and supply diagram showing the overall welfare impact of the measure (i.e. a welfare assessment) in the same regulated market and therefore
  - a. all first round effects required to establish the new equilibrium price and quantity traded, including the immediate shift in market supply curve and contraction or expansion of market supply and/or demand; plus
  - b. the 'ex-post' losses or gains in producer and consumer surplus.
- III. A short RPC case history on a proposal similar to the broad type of measure under consideration to help illustrate the analysis.

The analytical framework in the US EPA guidelines focuses exclusively on deriving the ex-post costs of compliance of a regulatory measure. It is therefore useful to briefly consider how the analysis would account for the impact of a measure that would raise production costs so significantly that all existing producers would exit the market and to contrast this with the requirements of the OITO rule.

In this extreme scenario, direct costs after-market adjustment will be zero. No incremental expenditures will have been incurred by producers except perhaps for some one-off costs associated with winding down their operations. This also assumes that no new entrants will subsequently enter the market.

In contrast, strict application of the OITO rule will require direct costs to be estimated 'ex-ante' and therefore prior to decisions to cease production and exit the market. It would otherwise be perverse to suggest that the measure will have no direct impact on business. Its effect will be to shift the market supply curve vertically upwards by the implied incremental cost per unit but to a point where it no longer intersects with the market demand curve. It should, therefore, still be possible to estimate the total implied direct costs of compliance to producers in the market using equation [1].

---

'current market conditions'. All other things unchanged, the introduction of the measure will have resulted in a contraction in supply and demand to the new equilibrium at  $(P1, Q1)$ . In addition, the number of firms affected by the removal of the regulation and their cost structures could be very different from those originally assessed at the former market equilibrium  $(P0, Q0)$ .

**Box 3 Measures that will shift the market supply curve (1)**

**Description**

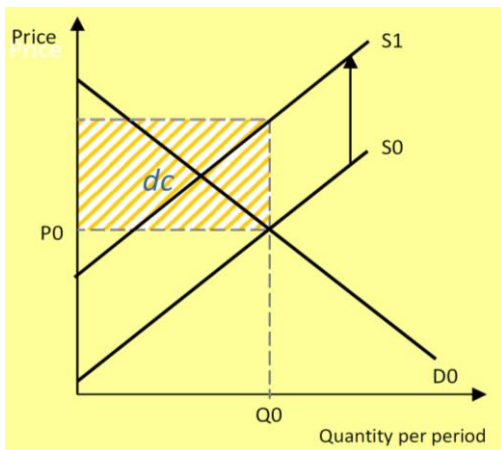
A measure that increases industry production costs, for example, through new tougher product standards, environmental laws and health and safety regulations

**Impact on producers in regulated market**

**First round:** increase in production costs causes market supply curve to shift upwards (from  $S_0$  to  $S_1$ ); quantity supplied and demanded contract until a new market equilibrium is established at  $(P_1, Q_1)$ .

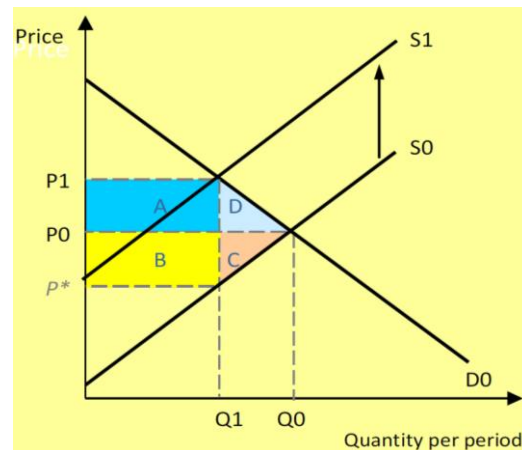
**Second round:** all subsequent shifts in or movements along the market demand and supply curves

**Strict application of OITO rule:**



Direct effect of shift  $S_0$  to  $S_1$  only:  
 Ex-ante direct costs =  $dc$   
 Therefore,  
 Direct (financial) cost to business =  $dc$

**Welfare assessment:**



Overall welfare effect =  $-(A + B + C + D)$   
 where  
 Loss of consumer surplus =  $(A + D)$   
 Loss of producer surplus =  $(B + C)$

**Case study 2 : Amendment to the Energy Act 2008 Powers to Implement and Direct the Rollout of Smart Meters**

The purpose of the policy was to ensure the roll out of smart gas and electricity meters. They provide energy customers with information about their energy use and the suppliers with information that will allow them to improve the targeting of different tariffs.

The cost to the energy suppliers of supplying and fitting smart meters was considered to be a direct cost to these businesses, prior to any pass-through of these costs to their customers, i.e. the equivalent of assuming price and quantity supplied were fixed at  $P_0$ ,

**Box 3 Measures that will shift the market supply curve (1)**

$Q_0$  above.

However, business customers will benefit if smart meters allow them to make more efficient use of energy. These benefits were treated as indirect because they will occur only if business customers choose to act on metered information to change their behaviour, rather than as a direct result of them having a smart meter.

**Box 4 Measures that will shift the market supply curve (2)**

**Description**

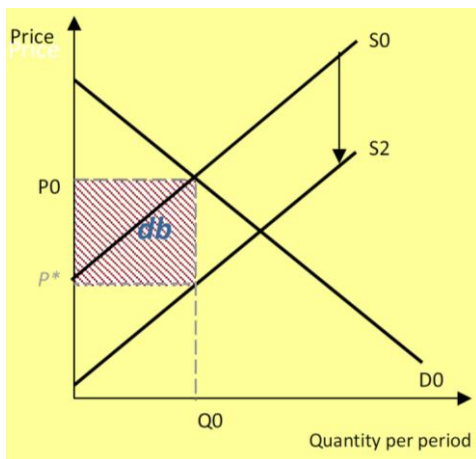
A deregulatory measure that reduces costs of compliance / administration, etc.

**Impact on producers in regulated market**

**First round:** fall in production costs causes market supply curve to shift downwards (from  $S_0$  to  $S_2$ ); quantity supplied and demanded expand until a new market equilibrium is established at  $(P_2, Q_2)$ .

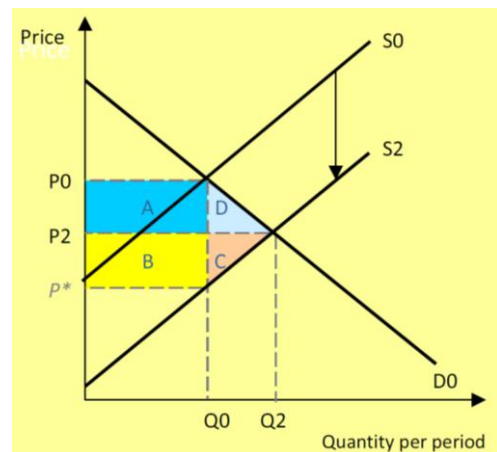
**Second round:** all subsequent shifts in or movements along the market demand and supply curves

**Strict application of OITO rule:**



Direct effect of shift  $S_0$  to  $S_2$  only:  
 Ex-ante direct costs =  $db$   
 Therefore,  
 Direct (financial) cost to business =  $db = (A + B)$

**Welfare assessment:**



Overall welfare effect =  $(A + B + C + D)$   
 where  
 Increase in consumer surplus =  $(A + D)$   
 Increase in producer surplus =  $(B + C)$

**Case study 3 : Revocation of Construction Head Protection (CHP) Regulations 1989**

#### Box 4 Measures that will shift the market supply curve (2)

The measure simplified regulations regarding the provision and use of personal protection equipment on construction sites. The Impact Assessment estimated that businesses would incur an initial, one-off direct cost of £370,000 arising from the need to familiarise themselves with the revocation and understand its implications.

This was balanced over a 10 year period by annual savings of £40,000 to new businesses entering the construction industry because here would be no need for entrants to familiarise themselves with the CHP Regulations. However, due to a lack of data on new entry these savings were considered to be an underestimate. On balance, therefore, it was agreed that the measure would result in a net reduction in industry costs over time – the equivalent of assuming a vertical shift downwards in the industry supply curve shift from  $S_0$  to  $S_2$  in the diagrams above.

### Partial equilibrium analysis (measures that may shift the market demand curve)

The application of the OITO rule is relatively straightforward for regulatory and deregulatory measures that shift market supply curves through their direct impact on production costs: the rule must be applied prior to any subsequent contraction in supply and pass-through of incremental costs or savings to consumers. However, less clear is how the rule should be applied to measures which do not materially impact production costs but instead restrict the ability of businesses to sell, promote or differentiate their products in some way. In these cases, Government departments appear to have adopted a number of different approaches. This is because the measures will only impact the regulated businesses to the extent that they affect how consumers allocate their household budgets.

The most immediate and initially unavoidable impact of industry compliance with measures such as a ban on advertising or a relaxation of controls on trading hours will be on consumer demand and sales. This will be reflected in a shift to the left in the market demand curve in the regulated market. However, a number of practical issues arise:

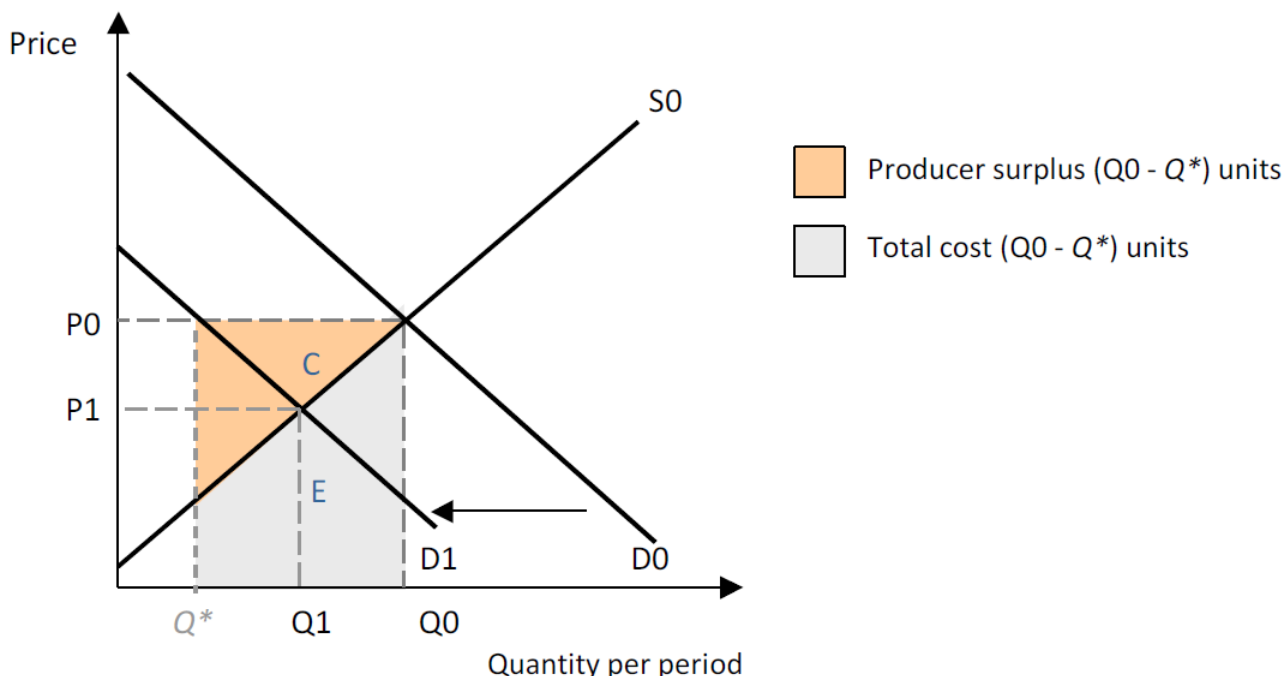
- I. The chain of logic or transmission mechanism from the regulatory measure to the impact on demand in the relevant market may not always be clear and may involve a number of interrelated steps, for example, through a chain of activities linking the manufacturer of a product to the retailer and ultimately to the final consumer;
- II. Regulatory impacts on consumer demand and sales tend to be less predictable and therefore more difficult to measure than incremental impacts on production costs; and
- III. It is possible that some of these measures may also require significant new expenditures, for example, to retool packaging production lines. If so, the market supply curve will shift vertically upwards in addition to the shift in the demand curve.

Equally because some of the measures restrict certain business activities they may reduce production costs and shift the regulated market supply curve vertically downwards.

These practical issues which increase complexity are therefore overlooked in the simple, stylised analysis that follows.

Figure 6 depicts a competitive market following industry compliance with a new restriction on advertising. Other things unchanged, consumer demand for the affected product falls from  $Q_0$  units each period to  $Q^*$  units at the prevailing market price,  $P_0$ . This is reflected in the inward shift of the market demand curve (from  $D_0$  to  $D_1$ ) at  $P_0$ .

**Figure 6: A competitive market following a restriction on advertising**



There appears to be a number of different ways the direct costs of this measure on producers may be measured by Government departments. The first approach is symmetrical to the treatment of measures that shift the market supply curve, except that losses at the prevailing market price will occur as the result of a quantity effect rather than a cost effect. The horizontal shift in the market demand curve from  $D_0$  to  $D_1$  at the existing price level  $P_0$  and prior to any contraction in supply will, other things unchanged, reduce quantity demanded from  $Q_0$  to  $Q^*$ . The loss of revenue each period associated with this reduction in quantity demanded will be

$$[7] P_0 \times (Q_0 - Q^*) = \text{ex - ante loss of total revenue.}$$

This is exactly equal to the sum of the areas marked E and C in Figure 6, where

E = total (economic) cost of producing  $(Q_0 - Q^*)$  units

C = producer surplus from  $(Q_0 - Q^*)$  units

From economic theory, the most appropriate measure of the ex-ante direct costs of the measure on producers in the regulated market will therefore be the area C in Figure 6. With all other variables held constant, the ex-ante loss of total revenue in [7] will reduce economic profit, accounting profit and producer surplus by the same amount. However, while the change in economic profit equals the change in producer surplus, it is important to recall that economic profit and producer surplus are not the same. The two differ by the amount of fixed costs while economic profit will be lower than accounting profit because the latter will take account of the opportunity costs of the resources used up in the production of the  $(Q_0 - Q^*)$  units.

In the absence of data on opportunity costs to support the calculation of losses in producer surplus, the change in accounting profit may provide a more practical alternative measure of the direct impact of a regulation on producers in the regulated market. The RPC Secretariat has confirmed that the Committee has been willing to accept estimates either of the loss of producer surplus or accounting profit in assessments of the impact of regulatory measures that are likely to affect consumer demand. The vast majority of proposals submitted by Government departments have, however, been assessed on their projected impact on accounting profits.

Economic profit is of course only a short-term phenomenon in a perfectly competitive market is very quickly 'competed away' if all firms are assumed to have perfect knowledge and there is no capital or other barriers to expansion or new entry (or exit). However, while it is possible to show the area of short-run economic profit at the level of the firm as the difference between its total revenue and economic costs at a given level of output, it is not possible to use demand and supply diagrams to show industry profits - economic or accounting. To continue using a simple competitive model to examine and contrast different approaches to the assessment of direct costs or benefits to producers in regulated markets therefore requires many of the limiting assumptions of perfect competition to be suspended. It also requires the analysis and depiction of movements in and along market demand and supply curves to be abstracted and stylised<sup>6</sup>.

The loss of accounting profit resulting from the regulatory measure may be estimated in one of two ways while holding market price constant. The first requires knowledge of the

---

<sup>6</sup> Firstly, because individual firms in a perfectly competitive market would have no incentive to engage in persuasive advertising. Secondly, because real world firms with varying degrees of market power do not have supply curves comparable to that of an idealistic perfectly competitive firm. This recognition is a major stumbling block in the explanation and use of the law of supply in market analysis and derivation of regulatory impacts.



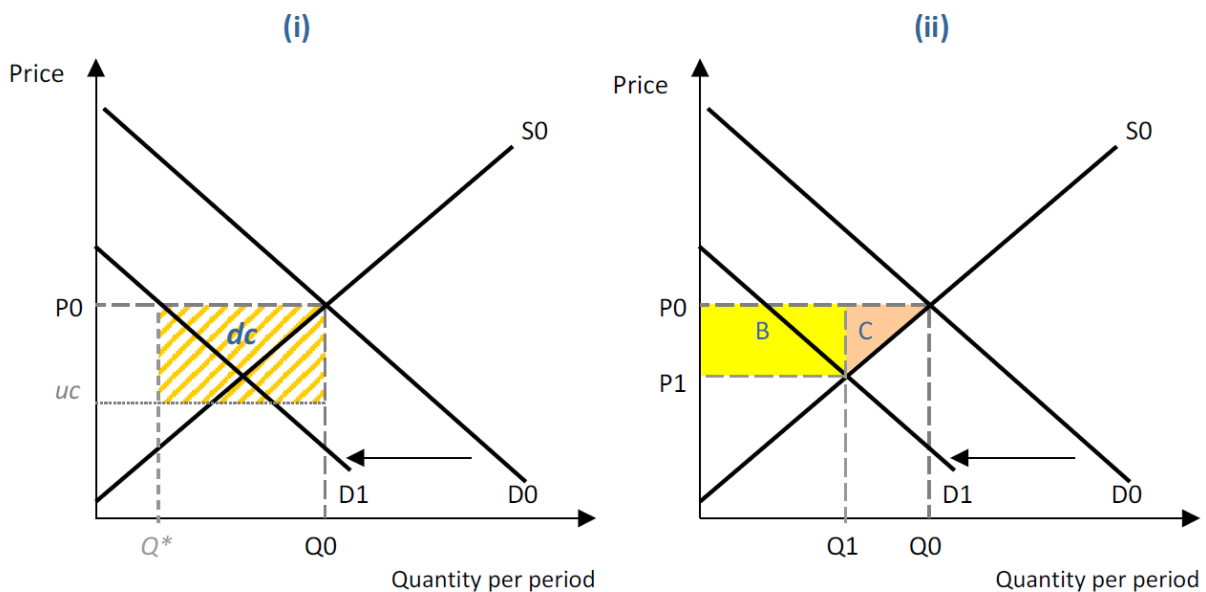
average or unit cost ( $uc$ ) of producing  $(Q_0 - Q^*)$  units. Alternatively, it may be derived from the average profit margin observed in the regulated industry:

[8] *Ex – ante loss of accounting profit* =  $(P_0 - uc) \times (Q_0 - Q^*)$ , or

[9] *Ex – ante loss of accounting profit* =  $(Q_0 - Q^*) \times$  *average profit margin*.

These approaches are depicted in the abstracted diagram in Figure 7 (i) below where the area marked  $dc$  is intended to illustrate the ex-ante lost accounting profit<sup>7</sup>.

**Figure 7: Possible alternative approaches to the measurement of direct costs**



A key issue, however, is whether it is appropriate to hold market price constant and assess only the immediate effect of the movement in the demand curve on producers or to assess the direct impact of the measure after the market has adjusted to the new equilibrium at  $(P_1, Q_1)$ . The latter approach is more demanding as it requires knowledge of supply and demand price elasticities but it appears the more appropriate for regulatory measures that will shift the market demand curve because:

- I. it will take account of all first round effects in the regulated market; and
- II. it recognises that the effects on both quantity and price are the initially unavoidable consequences of the measure, i.e. faced with a reduction in demand for their product and the price received, the industry must contract output to avoid the

<sup>7</sup> Market price will otherwise be equal to average cost in a perfectly competitive market in long-run equilibrium.

accumulation of excess inventory. The contraction in output is represented by the movement along the market supply curve  $S_0$  from  $Q_0$  to  $Q_1$ .

Other things unchanged therefore, the first round effects of the measure on producers will be to

- I. reduce total quantity traded each period from  $Q_0$  to  $Q_1$ ; and
- II. reduce the margin for profit in sales of  $Q_1$  units by  $P_0 - P_1$ .

The loss of producer surplus associated with these effects are the areas C and B respectively in Figure 7 (ii) above.

Alternatively, the loss of accounting profit may be derived from the loss of revenue at the new equilibrium in much the same way as either Equation [8] or [9] above where ex-post the lost revenue will be equal to

$$[10] [P_0 \times (Q_0 - Q_1)] + [(P_0 - P_1) \times Q_1] = \text{ex - post loss of revenue}$$

where  $[(P_0 - P_1) \times Q_1]$  is exactly equal to area B, the loss of producer surplus on  $Q_1$  units traded.

The above analysis is summarised in Box 5 while Box 6 'reverses' it to consider a deregulatory measure that lifts or reduces a previous restriction. In addition, and to complete the analysis, Box 7 illustrates the impact of a total ban on the production and sale of an item. In this limiting case, subsequent lifting of the ban should, all other variables unchanged, restore the market to its former equilibrium such that the ex-ante direct benefit of its removal to producers will be exactly equal to the ex-ante direct cost initially imposed by its introduction (see footnote 5).

Each box follows the same format and presents

- I. Two simple, stylised demand and supply diagrams of the regulated market contrasting

- A 'symmetrical' application of the OITO rule ('financial assessment'):

The direct ex-ante impact on producers of a new regulatory measure is on quantity traded and is measured by the horizontal distance between the old and new market demand curve, i.e. prior to any movement along the market supply curve and holding price or profit margins constant.

- The impact assessment of welfare effects (welfare assessment):

Direct costs and benefits to producers are measured 'ex-post' as the net loss or gain in producer surplus following full market adjustment to the new

equilibrium price and quantity traded, i.e. after all first round effects of the regulatory measure.

- II. A short RPC case history on a proposal similar to the broad type of measure under consideration to help illustrate the analysis, although it was not possible to achieve an exact mapping in each case.

**Box 5 Measures that may shift the market demand curve (1)**

**Description**

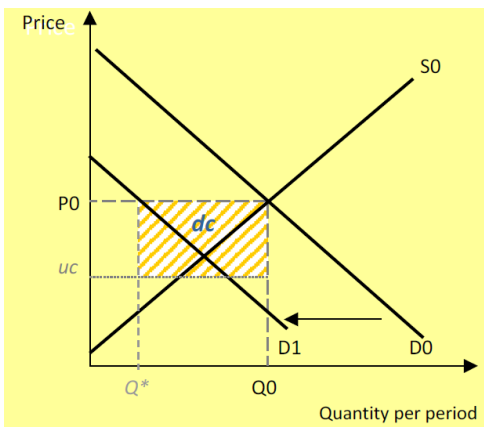
The introduction of a restriction on business activities, for example, restrictions on advertising and trading hours

**Impact on producers in regulated market**

**First round:** market demand curve shifts inwards (from  $D_0$  to  $D_1$ ); quantity supplied contracts (from  $P_0, Q_0$ ) and quantity demanded expands (from  $P_0, Q^*$ ) until new equilibrium is established at  $(P_1, Q_1)$ .

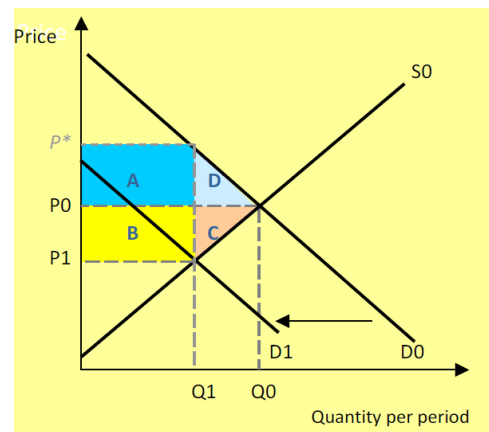
**Second round:** all subsequent shifts in or movements along the market demand and supply curves.

**Symmetrical OITO financial assessment:**



Direct effect of shift  $D_0$  to  $D_1$  only:  
 Margin for profit in lost revenue from sale of  $(Q_0 - Q^*)$  units =  $(P_0 - uc) \times (Q_0 - Q^*) = dc$   
 Therefore,  
 Direct (financial) cost to business =  $dc$

**Welfare assessment:**



Overall welfare effect =  $-(A + B + C + D)$   
 where  
 Loss of consumer surplus =  $(A + D)$   
 Loss of producer surplus =  $(B + C)$

**Box 5 Measures that may shift the market demand curve (1)**

**Case study 4 : Gaming Machine (Circumstances of Use) Regulations 2014**

This proposal introduced a new requirement on betting shops which stipulated that customers using gaming machines either had to 'load' cash via staff members or use account-based play for stakes exceeding £50.

The intended effect of the policy was to increase customer awareness of amounts in excess of £50 they were gambling on game machines and therefore to reduce the number and average value of gambling stakes over £50, i.e. shift the market demand curve to the left as illustrated in the diagrams above.

The RPC decided the loss of profit to gambling companies was a direct cost to these companies because it was the intention of the policy to reduce total gambling and therefore a direct consequence of that policy.

**Box 6 Measures that shift the market demand curve (2)**

**Description**

A deregulatory measure that removes or reduces a previous restriction, for example, on trading hours and promotional activities.

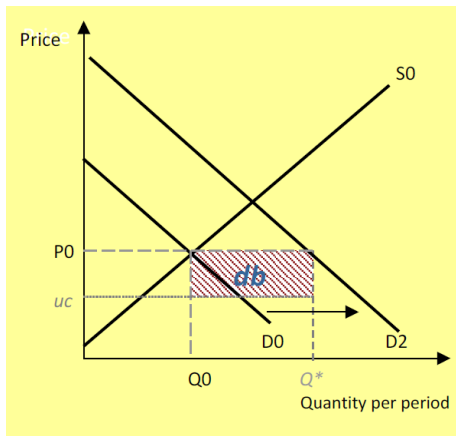
**Impact on producers in regulated market**

**First round:** market demand curve shifts outwards (from  $D_0$  to  $D_2$ ); quantity supplied expands (from  $P_0, Q_0$ ) and quantity demanded contracts (from  $P_0, Q^*$ ) until new equilibrium is established at  $(P_2, Q_2)$ .

**Second round:** all subsequent shifts in or movements along the market demand and supply curves.

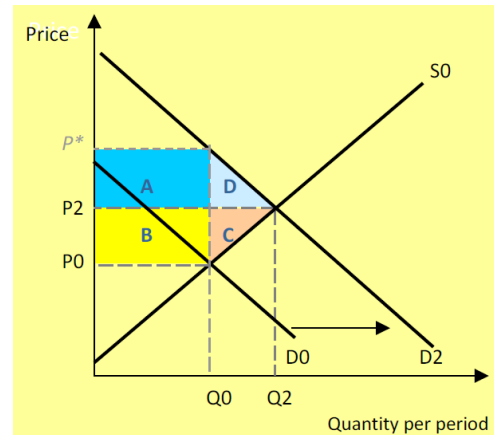
**Box 6 Measures that shift the market demand curve (2)**

**Symmetrical OITO financial assessment:**



Direct effect of shift  $D_0$  to  $D_2$  only:  
 Margin for profit in lost revenue from sale of  $(Q^* - Q_0)$  units =  $(P_0 - uc) \times (Q^* - Q_0) = db$   
 Therefore,  
 Direct (financial) benefit to business =  $dc$

**Welfare assessment:**



Overall welfare effect =  $(A + B + C + D)$   
 where  
 Increase in consumer surplus =  $(A + D)$   
 Increase in producer surplus =  $(B + C)$

**Case study 4 : Gambling Act 2005: Triennial Review of Stakes and Prize Limits**

There is a limit on the maximum value of stakes and prizes used in gaming machines. The current restriction therefore limits the amount of profit gaming companies could make from each machine to the extent that the measure suppresses players desires to place higher value stakes.

The policy was to raise the current limits. Additional profits would therefore be realised by gaming companies but only if demand for game play and the average value of stakes increased, i.e. if the demand curve in the relevant gambling market shifted to the right from  $D_0$  to  $D_2$  as illustrated in the diagrams above.

The potential gain in profit was therefore considered to be a direct consequence of the policy rather than an indirect benefit subsequent to the reaction of gamblers.

**Box 7 Measures that shift the market demand curve (3)**

**Description**

An interim or permanent ban (including import embargo) on the production and sale of a particular product. The banned item may be a finished good or service or a raw material, component or ingredient.

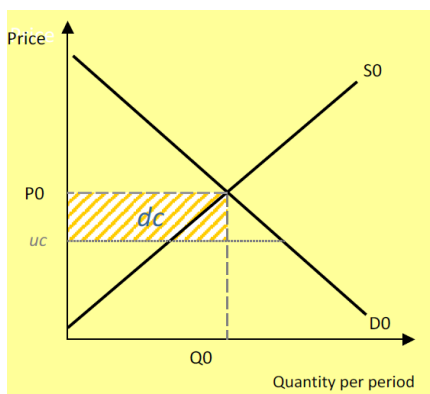
The definition of the regulated market will, in all cases, be the market supplying or importing the banned product. In the case of semi- or unfinished products that are used up in the production and supply of other products, any subsequent or 'second round' impacts in the related markets for such other items will be indirect.

**Impact on producers in regulated market**

**First round:** quantity supplied and traded of the products falls to zero

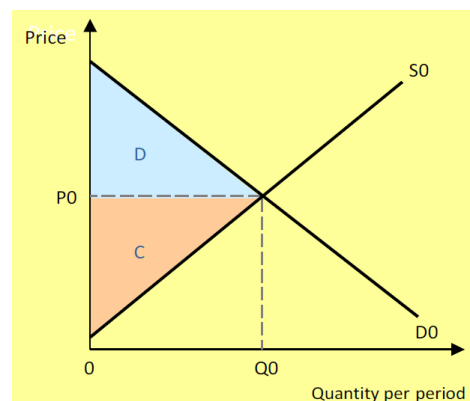
**Second round:** no further changes in regulated market

**Symmetrical OITO `financial assessment:**



Loss of sales =  $Q_0$  units  
 Margin for profit in revenue from sale of  $Q_0$  units =  $(P_0 - uc) \times Q_0 = dc$   
 Therefore,  
 Direct (financial) cost to business =  $dc$

**Welfare assessment:**



Overall welfare effect =  $-(C + D)$   
 where  
 Loss of consumer surplus =  $D$   
 Loss of producer surplus =  $C$

## Box 7 Measures that shift the market demand curve (3)

### Case study 4 : Prohibition on the sale of tobacco from vending machines

This policy banned the sale of tobacco products from vending machines, primarily to restrict access to cigarettes by underage smokers. The result will be a loss of profits from the lost sales. This cost was considered the immediate and unavoidable consequence of the policy.

Some consumers unable to purchase tobacco products from vending machines may switch their purchases to other vendors or to other products. Any additional profits from either of these activities were considered indirect. In doing so, the RPC appear to have determined that the tobacco retail market is highly segmented (by place and method of sale) and any substitution between these segments should be considered an indirect, general equilibrium effect. The segmentation of the tobacco retail market in this case is open to some question and appears inconsistent with decisions taken on other cases

## Partial equilibrium analysis (price controls)

It should now be a relatively simple matter to extend the preceding analysis to price controls. The following "meaningful" scenarios are relevant:

- I. A minimum price is imposed above the market equilibrium price,  $P_0$  (see Box 8);
- II. A price ceiling is imposed below the market equilibrium price,  $P_0$  (see Box 9).

By design, each measure will have an immediate and direct effect on price in the markets they regulate. It is, therefore, necessary to take account of both the price effect and quantity effect of a new price control in the calculation of its net direct cost or benefit to producers for the purpose of applying the OITO rule: it would very clearly be conceptually wrong to classify either the movement along the market demand or supply curve in these cases as indirect consequences and out of scope.

As before, there are nevertheless two possible approaches to the measurement of the direct costs and benefits of price controls on producers. One is based on estimating the net impact on accounting profit (financial assessment) and the other, the overall welfare effect on producers measured by the net change in their producer surplus (welfare assessment).

In scenario (i) in Box 8, the setting of a minimum price ( $P_{min}$ ) above the market equilibrium price  $P_0$  has the effect of 'shifting' the market supply curve from  $S_0$  to  $S^*$ . The new supply curve will be perfectly elastic at  $P_{min}$  over the output range 0 to  $Q^*$ . This is because each producer will never receive less than  $P_{min}$  for each unit sold within this range of output. The segment of the original market supply curve  $S_0$  to the right of  $Q^*$  is

unaffected by the measure. The new market curve therefore appears 'kinked' at  $(P_{min}, Q^*)$ .

The direct, first round effects of the minimum price are therefore:

- I. the 'shift' in the market supply curve to  $S^*$  and contraction of demand (i.e. the movement along the market demand curve,  $D_0$ ). These responses reduce quantity traded each period from  $Q_0$  to  $Q_1$ . At the equilibrium price prior to the imposition of the minimum price, producers will lose revenue and accounting profit equal to

$$[11] (Q_0 - Q_1) \times P_0 = \text{loss of revenue}$$

$$[12] (Q_0 - Q_1) \times \text{average profit margin} = \text{loss of accounting profit (dc)}$$

- II. to increase the margin for profit in sales of  $Q_1$  units by

$$[13] (P_{min} - P_0) \times Q_1 = \text{gain in accounting profit (db)}$$

where [13] will be the same as the increase in producer surplus on  $Q_1$  units (the yellow shaded area B in Box 8), all other variables unchanged.

The expected net direct financial cost or benefit of the price control to producers in the regulated market measured by the net change in total industry accounting profit will therefore be equal to

$$[14] \text{net direct financial cost or benefit} = [13] - [12] = db - dc$$

Using a welfare measure rather than a financial measure, the net change in producer surplus will be equal to the area marked B less the area C in Box 8, where

- I. B is the gain associated with the higher price (and therefore gained at the expense of consumers); and
- II. C is the deadweight loss to producers of foregone sales of  $(Q_0 - Q_1)$  units per period.

Producers will therefore enjoy a net direct gain in surplus only if B exceeds C.

In scenario (ii) in Box 9, the setting of a maximum price ( $P_{max}$ ) below the market equilibrium  $P_0$  has the effect of 'shifting' the market demand curve from  $D_0$  to  $D^*$ . The new demand curve will be perfectly elastic at  $P_{max}$  over the range 0 to  $Q^*$ . This is because consumers will never pay more than  $P_{max}$  per unit for purchases of output in this range. The segment of the original market demand curve  $D_0$  to the right of  $Q^*$  is unaffected. The new market demand curve is therefore 'kinked' at  $P_{max}, Q^*$

The direct, first round effects of the minimum price are therefore:



- I. the 'shift' in the market demand curve to  $D^*$  and contraction of supply (i.e. the movement along the market supply curve,  $S_0$ ). These responses reduce quantity traded each period from  $Q_0$  to  $Q_2$ . At the equilibrium price prior to the imposition of the minimum price, producers will lose revenue and accounting profit equal to

$$[15] P_0 \times (Q_0 - Q_2) = \text{loss of revenue}$$

$$[16] (Q_0 - Q_2) \times \text{average profit margin} = \text{loss of accounting profit}$$

- II. to reduce the profit margin in sales of  $Q_2$  units by

$$[17] (P_0 - P_{max}) \times Q_2 = \text{loss of accounting profit}$$

where [17] will be equal to the lost producer surplus on  $Q_2$  units all other variables unchanged (the yellow shaded area B which is gained by consumers).

The expected net direct financial cost of the maximum price control on producers in the market will therefore be

$$[18] \text{net direct financial cost} = [16] + [17]$$

For simplicity and ease of presentation this sum is illustrated by the area  $dc$  in Box 9.

The direct cost of the measure on producers measured by the loss of their producer surplus will be equal to the area marked B (which consumers gain at their expense) plus the deadweight loss C resulting from the reduction in output from  $Q_0$  to  $Q_2$ .

### Box 8 Price control (1)

#### Description

Price floors, such as minimum alcohol prices.

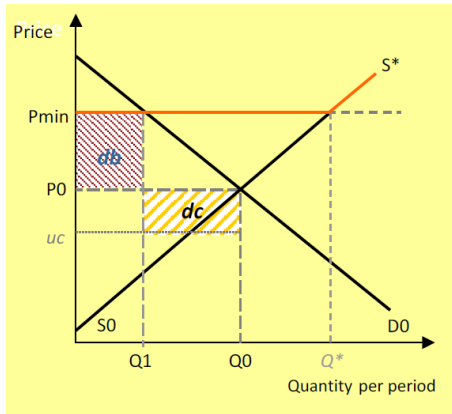
#### Impact on producers in regulated market

**First round:** minimum price ( $P_{min}$ ) is set above market clearing price  $P_0$ ; quantity traded contracts to  $Q_1$

**Second round:** any subsequent shifts in or movements along market demand and supply curves

**Box 8 Price control (1)**

**Symmetrical OTO `financial assessment:**



Increase in profits on sales of  $Q1$  units =  $db$

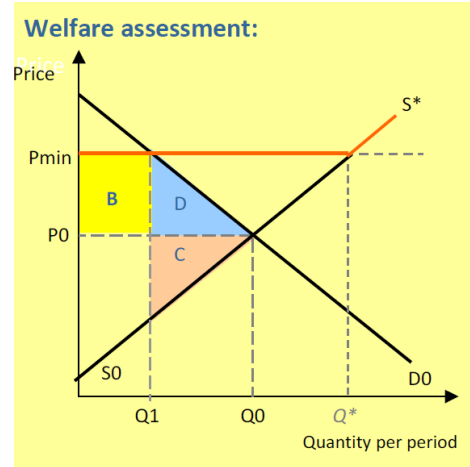
Expected loss of sales =  $(Q0 - Q1)$  units

Lost margin  $(P0 - uc)$  in revenue from sale of  $(Q0 - Q1)$  units =  $dc$

Therefore,

Net direct (financial) cost to business  
=  $db - dc$

**Welfare assessment:**



Overall welfare effect =  $-(C + D)$   
where

Loss of consumer surplus =  $(B + D)$

Loss of producer surplus =  $(B - C)$

**Case study 7 : Ban on sale of low cost alcohol**

The proposal was to ban the sale of alcohol at prices below their cost of production. The intended effect was to reduce alcohol consumption below levels considered excessive or harmful.

The expected impact on the grocery retail market was a loss of profits from reduced sales of other alcoholic beverages and products to customers attracted to stores by the promotion of low cost alcohol.

The RPC opinion stated that the measure would restrict the ability of retailers to use price to promote a product and the loss of profits would therefore be a direct consequence.

**Box 9 Price control (2)**

**Description**

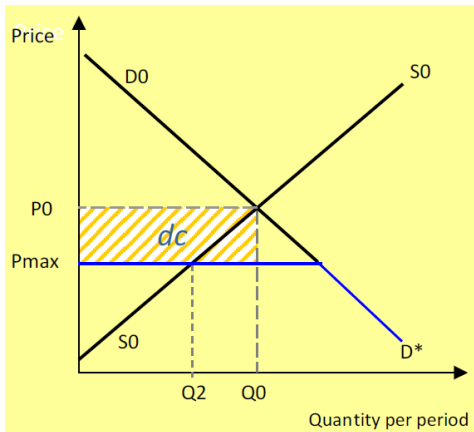
Price ceiling or cap, for example, on energy prices and rent controls.

**Impact on producers in regulated market**

**First round:** maximum price ( $P_{max}$ ) is set above market clearing price  $P_0$ ; quantity traded contracts to  $Q_2$

**Second round:** any subsequent shifts in or movements along market demand and supply curves

**Symmetrical OITO `financial assessment:**



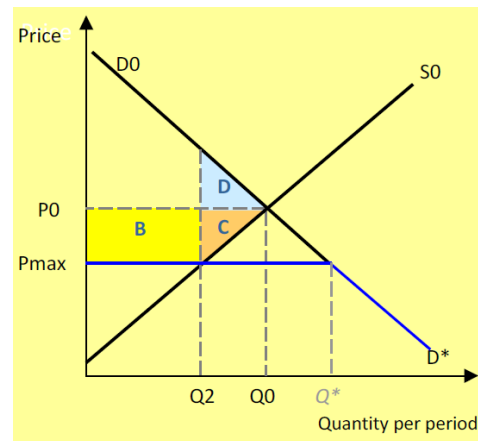
direct (financial) cost to business =  $dc$

Lost margin in revenue from sale of  $(Q_0 - Q_2)$  units =  $(P_0 - P_{max}) \times Q_2$

Plus

Loss of profit on sales of  $Q_2$  units

**Welfare assessment:**



Overall welfare effect =  $-(C + D)$

where

Change in consumer surplus =  $(B - D)$

Loss of producer surplus =  $(B + C)$

## Box 9 Price control (2)

### **Case study 8 : Amendment to the Financial Services (Banking Reform) Act – restricting charges for high-cost short-term credit**

The proposal was for a cap on the total cost of so called 'payday loans' to protect borrowers. The cap would ensure fairer pricing structures; remove the incentive for firms to lend to people who cannot afford such loans and to make disproportionate profits from them.

The net direct cost of the measure to business was estimated to be £91.3 million per year and derives predominantly from lost profits to pay day lending firms.

## The impact of regulations on imperfectly competitive markets

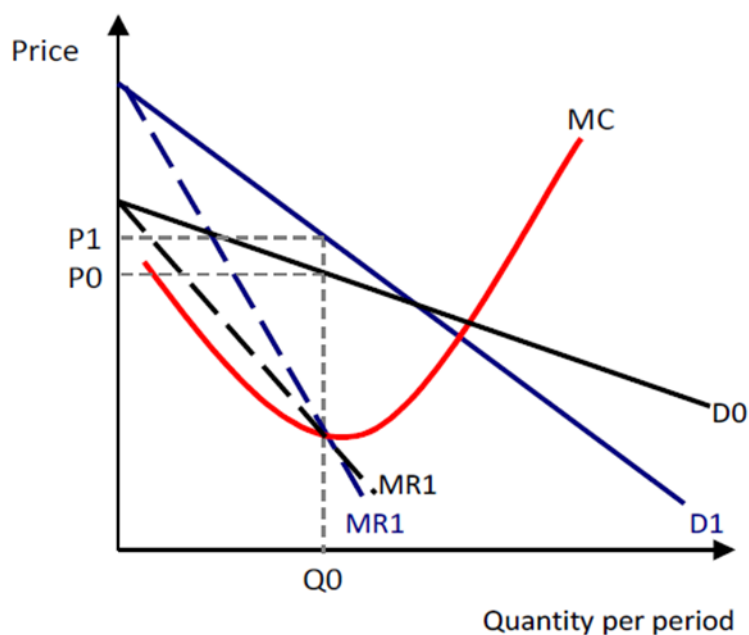
The preceding discussion describes the use of partial equilibrium analysis when the regulated market is competitive, although it was necessary to abstract the underlying model from its limiting perfectly competitive form. In many cases, however, some form of imperfect competition, such as monopolistic competition, oligopoly, or monopoly, will better characterize the regulated market.

If the regulated market is imperfectly competitive, the market structure should be reflected in the analysis. This is because firms in imperfectly competitive markets may react differently to the imposition of a new regulation.

However, the analysis of an imperfectly competitive market is potentially more complex because of the problems of specifying the industry supply curve. In a perfectly competitive market, all producers are price takers but when competition is imperfect, each producer has some degree of control over the price they charge. It is therefore marginal revenue and not price that will determine the output of the individual producer. As a result, there will be no unique price-quantity relationship in the market.

Derivation of a short-run market supply curve in an imperfectly competitive market will therefore depend on how the demand curves for the product of individual producers shift when there are changes in incomes, preferences and other non-price factors. As a result, a shift in demand may lead to either a change in price with the same output being produced and supplied or a change in output at the same price.

Figure 8: Impact of a shift in demand on a monopoly (1)



To illustrate, Figure 8 above depicts stylised market conditions faced by a pure monopoly<sup>8</sup>. The original demand curve for the product of the monopolist is  $D_0$  and the corresponding marginal revenue curve is  $MR_0$ . Given the marginal cost curve  $MC$ , the monopolist will supply  $Q_0$  at a price of  $P_0$  in order to maximise its profit. In response to the shift in the demand curve to  $D_1$  (and corresponding marginal revenue curve to  $MR_1$ ) the monopolist increases price to  $P_1$  but leaves quantity unchanged.

Now contrast Figure 8 with Figure 9. In this diagram the shift in the demand curve from  $D_0$  to  $D_2$  causes the monopolist to increase quantity from  $Q_0$  to  $Q_1$  but to leave price unchanged at  $P_0$ . Although theoretically possible, the shift in the demand curve shown is nevertheless highly unusual and unlikely to be the result of regulation.

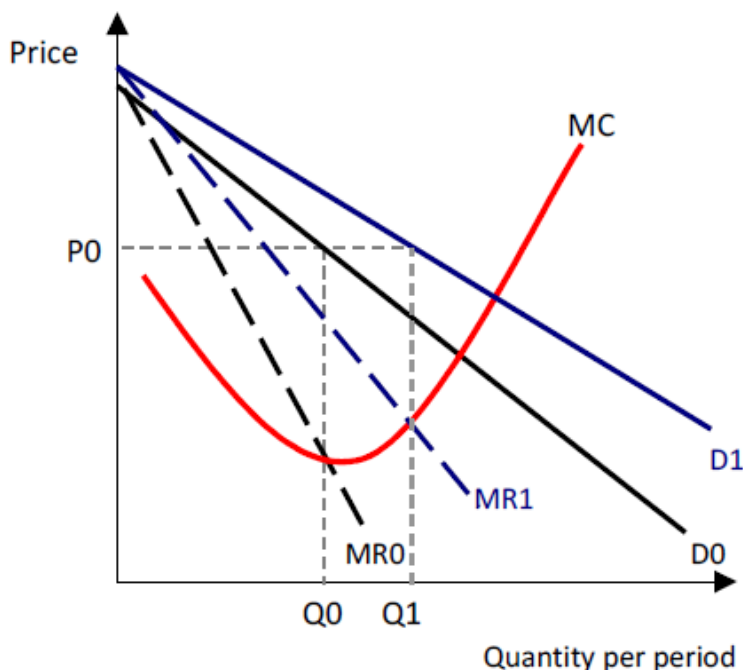
Under conditions of monopoly, a shift in demand may therefore result in the same quantity being supplied at two different prices, or different quantities being supplied at the same price.

Usually a shift in demand will lead to changes in both quantity and price. By how much they will change will not only depend on the marginal cost curve but also on the price elasticity of demand.

---

<sup>8</sup> The analysis can, however, be extended to individual firms in a monopolistic but otherwise highly competitive market supplying differentiated versions of the same basic product.

Figure 9: Impact of a shift in demand on a monopoly (2)



The same will hold for firms in oligopolistic markets<sup>9</sup>. Oligopoly is by far the more dominant form of market structure observed in many modern economies. However, small numbers competition on price and/or non-price factors can nevertheless be fierce. Alternatively, tacit collusion may occur between the firms, for example, through the adoption of price leader-follower strategies such that market outcomes may appear similar to those of pure monopoly.

What then are the implications for impact assessment and application of the OITO rule? The answer is no effect in the case of measures that will increase or decrease production costs. This is because only the incremental impact on unit production costs (i.e. marginal cost) at the existing quantity traded in the market will be required to meet the OITO rule (see Box 10).

However, for measures that shift the market demand curve, the implications are less clear. While it should remain possible to develop reasonably robust estimates of direct financial

---

<sup>9</sup> There is however a potential complication that is beyond the scope of this paper. Some economists have suggested that an oligopolistic market may display a downward sloping demand curve that is 'kinked' part way along. The result is a discontinuity in the underlying marginal revenue curve. Because of this discontinuity, it is possible that both price and quantity are unchanged following changes in marginal costs. The concept of a kinked demand curve has, however, been challenged. It is also conceptually different from a 'kinked' demand curve resulting from the introduction of a price cap in the market.

impacts from anticipated changes in sales, revenues and, therefore, accounting profits based on prevailing industry profit margins, the analysis of welfare impacts on producers is likely to be more complex because:

- price and quantity adjustments in imperfectly competitive markets will be more difficult to predict;
- the opportunity costs of any resulting loss of output will tend to be less for a monopoly than a competitive industry, even if they face the same market demand curve. This is because the monopolist will operate on the more price elastic portion of the demand curve. As a result, it will have lower profits if it tries to increase price (and lower output) by as much as the competitive industry.

### Box 10 Measures that increase the marginal costs of a monopoly (1)

#### Description

Supply-side measure increases costs of production

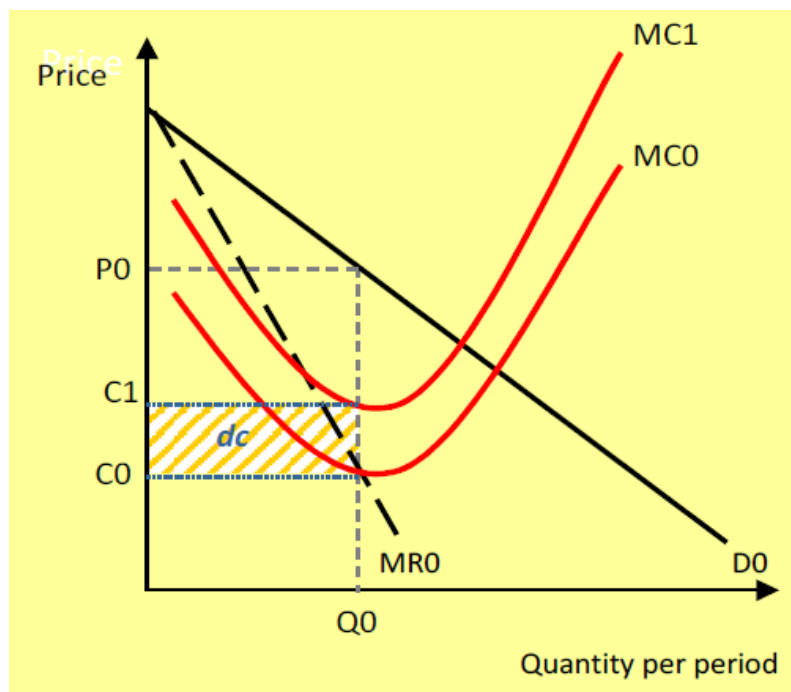
#### Impact on producers in regulated market

**First round:** marginal cost curve of monopolist shifts vertically upwards at  $Q_0$  by  $(C_1 - C_0)$  from  $MC_0$  to  $MC_1$ ; monopolist is likely to respond by raising price and contracting quantity supplied depending on demand conditions

**Second round:** all subsequent price and quantity adjustments

**Box 10 Measures that increase the marginal costs of a monopoly (1)**

**Application of OITO rule:**



$$\text{Direct compliance costs} = (C1 - C0) \times Q0 = dc$$

Therefore,

$$\text{Direct cost to business} = dc$$

As firms in imperfectly competitive markets have various degrees of (short-term) control over market price and quantity traded, the distinction between direct or first round effects and indirect, second round effects is less clear. In a competitive market, producers are price takers and, individually, will have no control over where the market settles in terms of price and quantity traded following the introduction of a regulatory measure that disturbs the prevailing equilibrium. In contrast, firms in markets that are highly concentrated and also have low contestability will be able to determine market outcomes that will limit their losses from regulatory measures or ensure they fully appropriate any gains. As such there is a strong case for measuring direct impacts 'ex-ante', i.e. prior to the movement to a new equilibrium, in these cases.

To illustrate the above discussion, the analysis of regulatory impact under monopoly conditions presented in Box 11 is limited to a stylised, symmetrical assessment of the ex-ante direct financial impact. It does not depict all possible first round effects or potential



welfare gains and losses. Further, average cost is implied and illustrative rather than derived from the relevant average cost curve.

**Box 11 Measures that shift the demand curve for the monopolist (2)**

**Description**

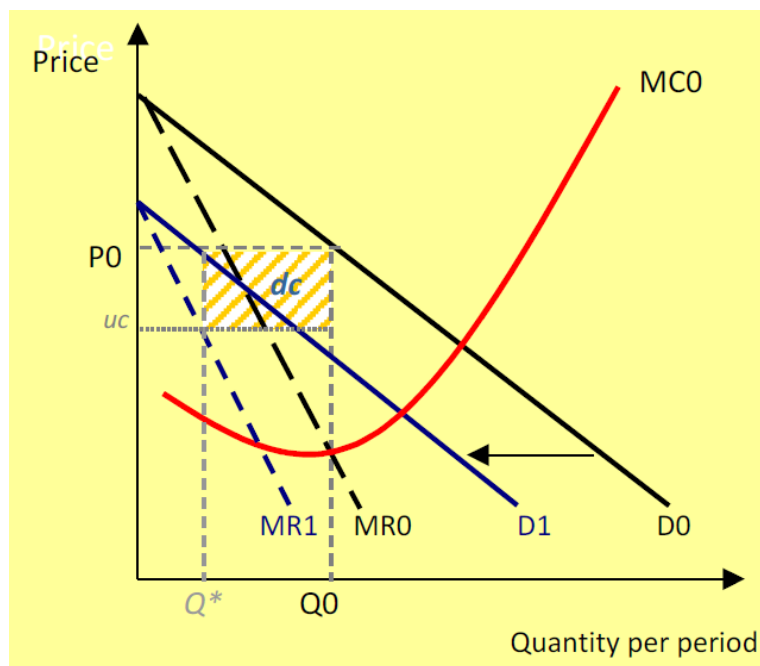
New restriction on promotional activity

**Impact on producers in regulated market**

**First round:** market demand curve shifts inwards (from  $D_0$  to  $D_1$ ) at  $P_0$ ; monopolist is likely contract quantity supplied and/or lower price in response

**Second round:** all subsequent price and quantity adjustments

**Application of OITO rule:**



Expected loss of sales at  $P_0$  is  $(Q_0 - Q^*)$  units

If average cost ( $uc$ ) of producing  $(Q_0 - Q^*)$  units is known or can be estimated then the margin for profit in revenue from sale of  $(Q_0 - Q^*)$  units is  $(P_0 - uc) \times (Q_0 - Q^*) = dc$

Therefore,

Direct cost to business =  $dc$

Financial and welfare assessments of the direct impact of price controls may also become more complex under conditions of imperfect competition and notably where there is the potential for multiple equilibria. For example, the diagrams in Box 12 contrast two monopolies following the imposition of a price maximum below the existing market price.

In each case, the meaningful price maximum replaces that segment of the original demand curve ( $D_0$ ) for quantities between 0 and  $Q_1$  because consumers can never pay more than  $P_{max}$  for the product. The new kinked demand curve ( $D_0^*$ ) is therefore perfectly elastic at  $P_{max}$  at all quantities between 0 and  $Q_1$  and remains downward sloping beyond  $Q_1$ .

Marginal revenue will now be identical to average revenue over the perfectly elastic segment of the new demand curve. Because the monopolist is no longer able to determine price, it must expand quantity from  $Q_0$  to  $Q_1$  in order to maximise its profits at the legislated price  $P_{max}$ , i.e. where  $MR_1 = MC$ . The monopolist will therefore lose profits on  $Q_0$  sales (by  $P_0 - P_{max}$  per unit) but gain profit from the additional ( $Q_1 - Q_0$ ) sales with the margin on those sales equal to ( $P_{max} - \text{average cost per unit}$ ).

## Competitive measures

Competition measures are clearly relevant to the consideration of imperfect competition but their full discussion is beyond the scope of this project. However, it seems apparent that a regulatory costs approach that only takes account of the financial loss or loss of producer surplus of incumbents from measures designed to increase competition will clearly be perverse. Potential gains to new entrants should be considered a direct consequence of such measures. RPC members have confirmed this is the case.

## Partial or general equilibrium analysis?

The analysis has so far focused on the assessment of the direct and indirect impacts of a regulation on a single market. However, in certain cases it is possible to use a partial equilibrium framework to assess the direct impacts of regulations that affect multiple markets, notably where the measure regulates an activity, function or input that is likely to have the same or very similar directional impacts on producers across a wide range of different product markets. For example, these may include environmental protections, employment and consumer laws, wage legislation and health and safety regulations. It may then be possible to scale up the effects of the measure on a representative sample of producers and product markets to the total population of businesses and markets within the intended scope of the measure.

It is also possible to extend partial equilibrium analysis to the assessment of the overall welfare effect of a regulation that indirectly affects a limited number of closely related markets beyond the regulated sector including those for perfect substitutes or complements. Both vertically and/or horizontally related markets will be affected by

changes in the equilibrium price and quantity traded in the regulated market. As a consequence, they will experience second-round equilibrium adjustments that may be analysed in much the same way.

However, where a regulation will materially affect one or more closely related markets or will have diverse and far reaching effects across the economy, a general equilibrium framework will be required to assess these impacts. However, the complexity and data requirements of general equilibrium models often limit their use in practice.

### Some concluding observations

A number of thoughts emerge from the analysis and discussion in this section. Firstly, that the application of microeconomic theory to the problem of identifying the direct and indirect impacts of regulations on business is useful but cannot provide a clear answer in all cases. The concepts are essentially descriptive terms developed to assist impact assessment and policy decision-making. They are not derived from theory. Nevertheless, the application and abstraction of theory and the contrasting use of simple, stylised diagrams could provide valuable additional guidance and tools to help illustrate the requirements of the better regulation framework.

Secondly, application of the OITO rule is not symmetrical across relevant regulatory measures within its scope. Direct impacts are defined and measured differently depending on whether the regulatory measure has a clear financial impact on production costs or if it affects industry sales through its impact on consumer demand.

The rule is very clear on the measurement of the incremental financial costs businesses may incur (or save) complying with a new regulation. In simple economic terms they are measured as the vertical distance between the old and new market supply (or marginal cost) curve at the prevailing quantity supplied or traded. That is, the impact on production costs is to be assessed before any subsequent reaction by producers and their passing through to consumers or other stakeholders, i.e. the equivalent of assuming demand is perfectly inelastic at the pre-regulation level of output. As a result, ex-ante estimates of direct costs will tend to overstate ex-post welfare losses to businesses while welfare gains to businesses from measures that reduce costs will tend to be understated by ex-ante estimates.

Less clear is how the rule should be applied to regulatory measures that do not have an immediate and measurable impact on production costs. From a theoretical perspective, the most appropriate measure of the net direct costs to businesses is their welfare loss or gain after all first round effects in the regulated market have been taken into account. However, from a practical perspective estimates of financial losses or gains (i.e. changes in accounting profits) should be easier to derive from the anticipated impact on revenues and, in some cases, may provide a reasonable approximation of the anticipated loss or gain in producer surplus assuming all economic costs are otherwise unchanged. This is

the approach that appears to have been adopted by the RPC for regulatory measures that will shift the market demand curve.

Thirdly, and given the above, guidance could be improved if these different approaches were set out in far greater detail, using a consistent terminology and underpinned by a clear set of principles that Government departments could use to help them better identify regulatory proposals by their scope and most-likely impacts (for example, supply-side or demand-side); the boundaries of the market or markets they will regulate; the dividing line between impacts that should be considered direct and those that should be considered indirect; and the approach to assessment they should therefore adopt. Possible decision criteria are reviewed in the next section.

Lastly, there may be some attractions in adopting a more symmetrical approach to the assessment of the direct costs and benefits to business of regulatory measures, most notably,

- a more definitive set of rules or guidelines on the boundary between direct and indirect impacts in the regulated market; and
- potentially fewer areas of contention in application and scrutiny decisions.

From a theoretical perspective, a symmetrical approach to the assessment of direct impacts on businesses would require a welfare analysis that takes account of all first round effects in the regulated market. However,

- I. it would require a policy change in the OITO rule as applied to measures that affect production costs and therefore shift market supply curves vertically;
- II. ex-post losses will not provide an appropriate measure of the direct costs of a regulation in imperfectly competitive markets where firms have sufficient market power to determine outcomes that will minimise their losses;
- III. welfare measures may be less meaningful to a business audience than financial measures of changes in accounting profits; and
- IV. the calculation of losses from all first round effects in the regulated market will, in most cases, be far more demanding than financial assessments of changes in accounting profits, for example, using observed industry profit margins applied to anticipated impacts on sales volumes.

## 4. Assessment Criteria

### Developing meaningful decision criteria and guidance

The review of literature and the analysis in the preceding sections indicate that it will be difficult to produce a universally accepted and uncontroversial definition of the direct and indirect costs and benefits to business of regulations. As previously discussed, the concepts are not derived from economic theory but are primarily descriptive terms formulated to assist the development and assessment of Government policies. As such, the boundary between direct and indirect impacts may in part reflect policy and the incentives of those stakeholders proposing new regulatory measures and those opposing them.

Under the OITO rule the direct costs or benefits of a regulatory measure on affected businesses will be the incremental increase or decrease in their costs of production measured by changes in their capital and/or operating costs prior to pass-through. How to apply the rule to regulations that may have no material impact on production costs yet restricts firm's activities and their ability to create sales and/or set prices is, however, less clear and the boundary between direct and indirect impacts less precise.

Having struggled to find clear and accepted definitions of direct and indirect impacts, another objective of this project was to develop a set of decision criteria to assist the identification of regulatory impacts and application of the OITO rule. An initial list of criteria has been proposed through conversations with the RPC economics member, Ken Warwick and other academics as well as drawing from RPC case histories and first principles set out in the analysis in the preceding section.

The proposed criteria are structured as a set of questions. In developing the criteria, a number of factors have been considered to ensure they add value and have practical application. These are:

- I. They need to be supported by a clear and unequivocal statement about the relationship between behavioural responses to regulations and their impacts on businesses, i.e. that all regulations will require some reaction on the supply-side and/or demand-side of the markets they seek to regulate in order for them to have any impact, direct and/or indirect.

The key issue that emerges from the analysis in Section 3 is whether responses by firms in the regulated market(s) are

- the immediate and unavoidable 'first round' consequences of the regulation example, as firms adjust to a fall in demand or the imposition of a price control, or

- `second round` reactions designated to mitigate or reduce the severity of first round effects, for example, by passing through an increase in costs to consumers or developing new products or promotions to restore consumer demand and sales.

A further complication may arise if a regulated product has a perfect substitute or complement. If, for some reason, the same regulation does not extend to these products there would be strong case for ruling any associated effects in these related markets as direct. However, doing so may inevitably result in pressures to deduct offsetting gains to producers of close substitutes from estimates of direct costs to businesses in the regulated market (and/or to include any gains to producers of close complements in estimates of direct benefits).

Inevitably, the degree of 'closeness' or independence of products to determine whether consumer budget reallocation decisions involve first round or second round reactions will become an additional parameter of contention in the application of the OITO rule. In the vast majority of cases, they will clearly be second round responses and therefore outside of OITO even if ultimately consumers reallocate spending from the regulated market such that the overall net impact on total business revenue is zero. However, looking only at the change in overall consumer spending will ignore potentially significant differences in the scale of impacts on the output, average costs and profitability of firms in the regulated market compared to those in other markets.

- II. The criteria should adopt a consistent terminology to distinguish between first round (direct) effects in the regulated market and second round (indirect) effects in the regulated market, related markets and wider economy;
- III. Developing and deploying a typology of different types of regulatory measures for use with the criteria could provide useful comparators for those proposing and assessing new regulatory measures. Broad types of measures could, for example, be distinguished by their most likely scope and first round effects, and supported illustrative examples. The analysis within Section 3 may provide the beginnings of a potentially useful classification that distinguishes between shifts in and movements along market supply and demand curves and the impacts these will have on quantity traded and price.
- IV. The list of criteria may benefit from some re-working and consolidation. The following structure may be of value. Further, it may provide a suitable basis from which to develop an accessible decision tree map or diagram in future guidance.
  - Identifying the broad type and scope of regulatory measures to help determine the boundaries of the regulated market(s) and the most likely market reactions and outcomes;

**What impacts (i.e. incremental costs and/or benefits) on business are anticipated? Are the anticipated impacts consistent with the type of measure being proposed?**

**Will the impacts fall on those businesses subject to the regulation and accountable for compliance? If yes, impacts are more likely to be direct.**

- Distinguishing between first round (direct) and second round (indirect) impacts in the regulated market(s) and those in related markets;

**What are the most likely immediate and unavoidable (first round) implications of the measure in the affected market(s)?**

**Does the impact require responses or reactions in the regulated market beyond the immediate implications of the measure? If yes, then the impact will be indirect.**

**Would economists consider the impact to be a partial equilibrium or general equilibrium effect?**

- Using relevant economic theory and supporting evidence on firm and consumer behaviour under different market conditions to justify judgements made in the application of the criteria in the two categories above and on the direction and scale of anticipated effects.

**Is the (net) direct impact on business counter-intuitive?**

The proposed structure and criteria are set out in detail in Table 2. The table also highlights their connections to the three general questions posed at the end of Section 1 to frame the issue and key elements of the microeconomic analysis in Section 3.

The proposed criteria and questions in Table 2 have been tested against the decisions of the RPC in respect of the eight case studies highlighted in Sections 2 and 3. In each case, one specific impact on business is examined rather than the entirety of the regulatory costs and benefits that identified by Government departments for each proposal. The assessment is provided in Table 3 below.

Despite the limited information available in the RPC case histories from which the short case studies were derived, the decisions taken by the Committee in each one appear to be consistent with the proposed criteria. This not only suggests the criteria are appropriate but also that the RPC decisions were robust. However, additional and more detailed testing with Government departments and the RPC should be undertaken to confirm both.

Table 2: Proposed assessment criteria and questions by broad decision category

Decision category	Criteria / questions	Framing questions in Section 1	Key conclusions drawn from Section 3
<p><b>Type and scope of regulation?</b></p>	<p><b>What impacts (i.e. incremental costs and/or benefits) on business are anticipated?</b></p> <ul style="list-style-type: none"> <li>Are the anticipated impacts consistent with the type of measure being proposed? e.g. does the measure ban, restrict or increase the cost of a particular economic activity?; does the measure displace or restrict specific business activities designed to maintain or create sales, for example, product differentiation and promotional activities?</li> </ul> <p><b>(4) Will the impacts fall on those businesses subject to the regulation and accountable for compliance? If yes, impacts are more likely to be direct.</b></p> <p>For example;</p> <ul style="list-style-type: none"> <li>Which market segment(s) or market is the target of the regulatory measure?</li> </ul> <p>Which group of firms, industry or industries are most likely to be affected by the measure?</p>	<p>Should the boundary between direct and indirect impacts be defined by the intended target or scope of the measure?</p>	<p>Direct impacts on business occur only in the regulated market.</p>
<p><b>First or second round impact(s)</b></p>	<p><b>What are the most likely immediate and unavoidable (first round) implications of the measure in the</b></p>	<p>Does the boundary between direct and</p>	<p>All regulations require some reaction in the markets they</p>



Decision category	Criteria / questions	Framing questions in Section 1	Key conclusions drawn from Section 3
<p><b>in regulated or related markets?</b></p>	<p><b>affected market(s)?</b></p> <ul style="list-style-type: none"> <li>For example, a shift in the market supply curve due to an increase or decrease in production costs; a reduction in quantity traded due to a shift in the market demand curve and/or a change in price?</li> </ul> <p><b>Does the impact require responses or reactions in the regulated market beyond the immediate implications of the measure?</b> If yes, then the impact will be indirect. For example, the impact should be considered indirect and out of scope of OITO if</p> <ul style="list-style-type: none"> <li>it represents the pass-through of a change in production costs resulting from the measure (i.e. the OITO rule);</li> <li>it requires second round responses in the regulated market to occur, for example, a significant reallocation of resources, product and/or process innovation, the creation of new firms/institutions, new promotional activities; productivity gains due to changes in business models and/or working practices, etc.;</li> <li>it is the result of subsequent (second round) price and/or quantity effects in related markets or in the wider economy?</li> </ul> <p><b>Would economists consider the impact to be a</b></p>	<p>indirect impacts depend on whether the measure involves a shift in the supply curve in the regulated market or a shift in the market demand curve?</p> <p>Does the distinction between the direct and indirect impacts of a regulation on business depend on whether they occur prior to or following a reaction in the regulated market?</p>	<p>seek to regulate to have an effect. Key issue is whether reactions in the regulated market are first round or second round responses following the introduction of a new measure.</p> <p>A regulatory measure may shift the market supply curve and/or demand curve. Both will have a direct impact on businesses in the regulated market. For measures that affect production costs and vertically shift the market supply curve, the OITO rule requires that the direct cost (or cost saving) must be assessed prior to pass through and therefore prior to any contraction or expansion in quantity supplied and the adjustment in the regulated market to a new equilibrium.</p>

Decision category	Criteria / questions	Framing questions in Section 1	Key conclusions drawn from Section 3
	<p><b>partial equilibrium or general equilibrium effect?</b></p> <ul style="list-style-type: none"> <li>• If the impact occurs in the regulated market, it is more likely to be direct;</li> <li>• Cost, price and/or quantity effects that occur in related markets or the wider economy as a result of changes in the regulated market are second round, general equilibrium effects and therefore indirect and out of scope of OITO.</li> </ul>		<p>For measures that shift the market demand curve, the direct impact on businesses in the regulated market will usually involve both a price and quantity effect. The same holds for price controls.</p> <p>Second round impacts in the regulated market occur subsequent to the adjustment to a new equilibrium immediately following the imposition of the measure.</p>
<p><b>Use of theory and evidence?</b></p>	<p>Is the (net) direct impact on business counter-intuitive?</p> <ul style="list-style-type: none"> <li>• For example, can it be supported by relevant market data and/or a defensible "theory of change"<sup>10</sup> specifying the causal links (or 'steps')</li> </ul>		

<sup>10</sup> Theory of Change (ToC) is an evaluation methodology used in sectors seeking to promote social change but its principles have wider applicability. Weiss (1995) defines a ToC as a theory of how and why an initiative works. Building on her work, Connell and Kubisch (1998) define a ToC as a systematic and cumulative study of the links between activities, outcomes and contexts of an initiative.

Decision category	Criteria / questions	Framing questions in Section 1	Key conclusions drawn from Section 3
	between the regulatory measure and the anticipated impacts?		

Table 3: Application of revised draft assessment criteria and questions to case studies

Regulatory measure	Case study 1: Standardised tobacco packaging	Case study 2: Rollout of Smart meters	Case study 3: Construction Head Protection	Case study 4: Gaming machine regulations
Objective of measure?	Reduce tobacco consumption	Reduce energy consumption	Reduce administrative burden	Reduce problem gambling
Anticipated impact on business?	Lost profit to tobacco companies and retailers	Impact on business energy use	Benefits to new entrants from simplified regulations	Reduced profits from imposing £50 limit
Cost or benefit to business?	Cost	Benefit	Benefit	Cost
Departmental view	Indirect	Direct	Direct	Indirect
RPC decision	Direct	Indirect	Direct	Direct
<b>Type and scope of regulation?</b>				
Is the impact consistent with a ban, restriction on or increase cost of an activity?	No	Yes	Yes (decrease in cost)	Yes

## Assessment Criteria

Does the measure displace or restrict specific business activities to maintain/create sales?	Yes	No	No	No
Anticipated impact on those subject to regulation?	Yes	No	Yes	Yes
Target market segments(s) or market(s)?	Tobacco Retailing	Energy Supply	Construction	Gambling
Firms/industry most likely affected?	Tobacco manufacturers and retailers	Energy Suppliers	Construction	Arcades, betting shops, casinos, etc.
<b>First or second round impact?</b>				
Most likely immediate and unavoidable (first round) implication(s) in the affected market?	Reduction in demand and sales	Increase in costs of suppliers/ shift in market supply	Reduction in admin costs / shift in market supply	Reduction in demand and receipts
Does the anticipated impact... - require reactions in the regulated market beyond the immediate implications?	No	Yes	No	No
- represent pass-through?	No	No	No	No
- require a significant reallocation of resources, innovation, new firms, etc. to occur?	No	No	No	No
- involve changes in prices and/or quantities in related markets and/or the wider economy?	No	No	No	No

## Assessment Criteria

---

Is it a partial or general equilibrium effect?	Partial	Partial	Partial	Partial
<b>Use of theory and evidence?</b>				
Is departmental view of impact counter intuitive?	Yes	Yes	No	Yes
Relatively large number of links or steps in 'logic chain' to impact?	No	Yes	No	No

## Some concluding observations

There is an accepted need for meaningful decision criteria to support impact assessments and to help both Government departments and the RPC to determine and distinguish the direct impacts of regulatory measures from their indirect impacts in an open and consistent way.

However, given the complexity of many cases the boundaries between direct and indirect effects and their relative scale will no doubt continue to be debated. Nevertheless, a clear and agreed set of decision criteria or principles could help to improve consistency and to speed up the scrutiny and decision process.

The set of criteria developed here for classifying direct and indirect impacts is unlikely to be exhaustive and further testing will be required to refine and extend it as is necessary to secure agreement across Government and to assist the development of future guidance. However, it would appear to test well against a number of cases RPC have scrutinised.

Through the same process of engagement and testing, a broad typology of regulations illustrated with diagrams and examples similar to the stylised analysis in Section 3, could usefully be developed to support the use and application of the criteria. Regulatory measures could be categorised and distinguished by their scope and most likely, immediate and unavoidable implications. New proposals may then be compared and contrasted against them to inform and test judgements about their potential impacts.

# 5. Summary and conclusions

## Applying the OITO rule

In an effort to limit the burden of new regulations on businesses and civil society organisations, the Government operates a 'One-in, Two-out' (OITO) rule. Any regulatory measure expected to directly increase the cost of business activity must be offset by deregulatory measures providing savings to business of at least double that amount. Indirect costs and benefits to business are not within scope of the rule.

The OITO rule is therefore designed to encourage policy makers to 'design out' costs to business from new regulations or to look for non-regulatory options to achieve their objectives, and to simplify or remove old, inefficient or obsolete ones.

However, the identification and estimation of the direct costs and benefits to business is not straightforward. A number of proposals submitted by Government departments and scrutinised by the Regulatory Policy Committee (RPC) have been particularly difficult to assess.

The following reasons may in part account for this.

I. A lack of accessible guidance.

There is little practical guidance for Government officials in the theoretical and applied literature on how to distinguish between the direct and indirect impacts of regulation on business. Judgement is required and views differ.

II. The purpose and application of the OITO rule may be imperfectly understood.

Some disquiet expressed over OITO appears based on a view that other, indirect impacts of regulations on businesses, consumers and other stakeholders are equally or more important and should be taken into account in the rule. However, a full impact assessment of the overall welfare losses or gains arising from new regulatory measures is, of course, still required to help inform ministerial decisions. The narrower regulatory costs approach of OITO is not designed to supplant this.

III. Incentives may be misaligned.

The concepts of direct and indirect impacts are not derived from economic theory but are primarily descriptive terms formulated to assist the development and assessment of Government policies. It will therefore be difficult to produce a universally accepted and uncontroversial definition of the boundary between direct and indirect impacts to business of regulations.

The relationship between behavioural change and regulatory impacts has been one of the main areas of concern and contention. The guidance provided by the Better Regulation Framework Manual (2015) advises that "Subsequent effects that occur as a result of the direct impacts, including behaviour change, are indirect." Future guidance could be improved to clarify the treatment of behavioural change by firms or consumers that is a necessary condition for any policy measure to have an impact in the market or markets they seek to regulate. It should not be interpreted as determining the boundary between a direct and indirect regulatory impact on business.

### Direct and indirect costs and benefits - definitional issues (Section 2)

No single or clear definition of the direct impacts of regulations emerges from the literature reviewed within this paper. Also missing is a clear set of factors that could be used to determine the boundary between direct and indirect impacts.

Analysis of costs and benefits of regulations as direct and indirect is largely absent from the theoretical literature but more extensive discussion appears in practical guidance and applied literature on cost-benefit analysis.

Definitions of direct regulatory costs in the international guidance are primarily focused on compliance expenditures in the regulated firms while indirect costs and benefits fall on firms and other stakeholders outside of the regulated market, possibly later in time. Terminology varies but common compliance costs include planning and implementation costs, administrative burdens, regulatory fees and charges, financing costs, direct labour costs; internal enforcement costs and "irritation" costs.

However, compliance costs are unlikely to provide the most appropriate measure of the direct costs to firms of regulations that impose price controls or restrictions on certain business activities or even an outright ban on further production. These measures may have no immediate and appreciable impact on costs of production. Their most likely, immediate and unavoidable impacts will be on sales and, therefore, profits but they received no attention in the literature reviewed.

Perhaps the most meaningful for analysis and, therefore, useful definitions revealed by the review were provided by the OECD (2011) and in a typology of impacts widely used in tourism impact studies.

The OECD distinguishes between the "first round" effects of regulations and the subsequent, "second round" reactions and effects arising from them. First round effects are therefore the direct impacts of regulations while second round effects are indirect.



Similarly, in tourism impact studies, the direct effects of initiatives to increase tourism are defined as "production changes associated with the immediate effects of changes in tourism expenditures". Indirect effects are defined as subsequent "production changes resulting from various rounds of re-spending of tourism receipts"... in related industries.

### Microeconomic analysis (Section 3)

From a theoretical perspective, the most appropriate measure of the net direct costs to businesses of a regulatory measure is their welfare loss or gain, including deadweight, after all first round effects on prices and quantities in the regulated market have been taken into account following the initial shift in the market demand and or market supply curve. This requires the use of partial equilibrium analysis.

However, from a practical perspective estimates of financial losses or gains (i.e. changes in accounting profits) should be easier to derive from anticipated impacts on costs and/or revenues and, at least in some cases, may provide a reasonable approximation of the overall loss or gain in producer surplus. For example, a change in revenue will be common to producer surplus, economic profit and accounting profit and will therefore have an equal effect on each measure assuming all other factors are unchanged.

Welfare and financial approaches to the measurement of direct losses and gains to business from regulations can be illustrated using demand and supply diagrams. However, as cases become more complex so the two diverge reflecting the limitations of applying the perfectly competitive model that underpins simple demand and supply analysis. Nevertheless, the application and abstraction of theory and the contrasting use of simple, stylised diagrams could provide valuable additional guidance and tools to help illustrate the requirements of the better regulation framework.

Measuring losses to business after all first round effects will be problematic for regulations that have a material impact on production costs and especially when firms have sufficient market power to pass-through any losses they incur to their consumers, suppliers, employees or owners. The OITO rule is therefore explicit that net direct costs to businesses must be assessed prior to their pass-through.

In a microeconomic analysis of the rule, such measures will shift the supply curve in the affected industry or market vertically upwards or downwards by the incremental cost or cost saving per unit of output. The direct cost or benefit to businesses supplying the market is therefore measured at the original equilibrium quantity and before any subsequent contraction or expansion in quantity supplied in the market that could affect both the price and quantity traded of the product.

In contrast, for regulatory measures that restrict activities designed to maintain or create sales, the immediate and initially unavoidable first round consequence on firms in the regulated markets is likely to be a reduction in consumer demand for their products. That

is, the market demand curve will shift in to the left. Other things unchanged, excess inventories will accumulate and the industry will be forced to reduce output. Losses are therefore likely to be overstated if no change in quantity supplied is assumed.

For measures that impact sales, the RPC rightly appears to have adopted an approach to the assessment of direct impacts on business that takes account of both the initial shift in the market demand curve and the subsequent contraction in quantity supplied. The combined impact of these changes will be to exert downward pressure on prices and profit margins and a reduction in quantity traded.

The same approach should apply to price controls. By design, they will have an immediate and direct effect on prices and margins in the markets they regulate. It is, therefore, necessary to take account of both the price effect and quantity effect of price controls in the calculation of the net direct costs or benefits to firms for the purpose of applying the OITO rule.

Application of the OITO rule is, therefore, not symmetrical across relevant regulatory measures within its scope. Direct impacts are defined and measured differently depending on whether the regulatory measure has a clear financial impact on production costs or if it affects industry sales through its impact on consumer demand and prices. There appears good cause for this given the stated focus of the OITO rule. However, it underlines the need for a set of clear and pragmatic guidelines or principles that can be consistently applied by officials preparing impact assessments and those required to scrutinise them.

### Assessment criteria (Section 4)

A set of criteria to help identify direct impacts are proposed which may provide a suitable basis from which to build an accessible decision tree diagram for future guidance. To further this, a revised structure and terminology is suggested and appears to test well against a number of case histories where application of the OITO methodology proved challenging. Key questions have been grouped and re-formulated to:

- identify the broad type and scope of regulatory measures and determine whether anticipated impacts are consistent with the type of measure being proposed;
- identify the most likely immediate and unavoidable (first round) implications of the measure in the regulated market(s) and to distinguish them from subsequent, second round responses and effects;
- test whether the (net) direct impact on business is intuitive and supported by theory and evidence.

The development of a broad typology of regulatory measures differentiated by their most likely initial market implications and illustrated with case examples and stylised diagrams could usefully support application and use of the criteria. However, the revised list of

questions is unlikely to be exhaustive and some further testing will be required before it can be finalised and agreed across Government.

# References

Author	Title	Details
Bartel, A.P & Thomas, L.G	Direct and Indirect Effects of Regulation: A New Look at OSHA's Impact	Journal of Law and Economics, Vol. 28, 1 (1985)
Centre for Economic Policy Studies (CEPS) & Economisti Associati	Assessing the Costs and Benefits of Regulation	European Commission (2013)
Connell, J.P & Kubisch, A.C	Applying a Theory of Change Approach to the Evaluation of Comprehensive Community Initiatives: Progress, Prospects, and Problems	Aspen Institute (1998)
Dept. for Business, Innovation & Skills	Better Regulation Framework Manual	BIS (2013, Revised 2015)
Environmental Protection Agency	Guidelines for Preparing Economic Analyses	U.S National Centre for Environmental Economics Office of Policy (2010, Updated May 2014)
HMG / Dept. for Business, Innovation & Skills	One-In, One Out: Statement of New Regulation	BIS (2011)
International SCM Network	International Standard Cost Model Manual	SCM Network (Undated)
Joskow, P.L & Rose, N.L	The Effects of Economic Regulation	Handbook of International Organization, Vol. 11, 1989

## References

Author	Title	Details
Marneefe, W. & Vereeck, L.	The meaning of Regulatory Costs	European Journal of Law and Economics, 32 (2011)
OECD	Regulatory Compliance Cost Assessment Guidance	OECD (2014)
OECD	Regulatory Impact Analysis – Best Practices in OECD Countries	OECD (1997)
OECD	Introductory Handbook for Undertaking Regulatory Impact Analysis (RIA)	OECD (2008)
OXERA Consulting Ltd	A Framework for Assessing the Benefits of Financial Regulation	OXERA, Report prepared for the FSA (2006)
Parker, D. & Kirkpatrick, C.	The Economic Impact of Regulatory Policy - A Literature Review of Quantitative Evidence	OECD Expert Paper 3 (2012)
Regulatory Policy Committee	Impact Assessment Case Histories	BIS Internal Paper (2014)
RPC Secretariat	An Assessment of the Direct and Indirect Impacts of Regulation	BIS Internal Paper (2014)
SQW	Evaluating the Impact of Regulation: Developing a Methodology	SQW, Final Report to the DTI (2005)
Stynes, D.J	Economic Impacts of Tourism, A Handbook for Tourism Professionals	Illinois Bureau of Tourism, Illinois Department of Commerce and Community Affairs (1997)
Weiss, C.H	Nothing as Practical as Good Theory: Exploring Theory-based Evaluation for Comprehensive Community Initiatives for Children and Families.	In “New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Concepts”, ed. James Connell et al., Aspen Institute (1995)

