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How do laws
and regulations affect
competitiveness: The role
for regulatory impact
assessment

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Liedekerke**

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OECD REGULATORY POLICY WORKING PAPERS

How do Laws and Regulations Affect Competitiveness: The Role for Regulatory Impact Assessment

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How do Laws and Regulations Affect Competitiveness: The Role for Regulatory Impact Assessment

Paul Davidson*, Céline Kauffmann*, and Marie-Gabrielle de Liedekerke*

ABSTRACT

The impacts of laws and regulations on competitiveness have strong implications for OECD economies, as they can lead to unforeseen negative externalities and considerable regulatory costs for businesses and citizens. Nevertheless, the use of regulatory policy to assess the impacts of regulations on competitiveness has seldom been examined. This paper fills this gap by reviewing OECD members' regulatory appraisal practices for competitiveness undertaken as part of their regulatory impact assessment (RIA) frameworks. This paper finds that most OECD members already assess the impacts of regulations on some components of competitiveness; however, they fail to present a holistic and comprehensive analysis that examines the full impacts of regulations. The report categorises regulatory impacts on competitiveness into three strongly interrelated components: cost competitiveness, innovation, and international competitiveness. Given these interlinkages, there is scope to develop a more complete framework for policy makers to define and assess the competitiveness impacts of regulation as part of their RIA processes.

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Acronyms and abbreviations

CBA	Cost-benefit analysis
EC	European Commission
EU	European Union
FDI	Foreign direct investment
GVC	Global value chain
IMD	International Institute for Management Development
IPR	Intellectual property right
IRC	International regulatory co-operation
iREG	Indicators of Regulatory Policy and Governance
MFP	Multifactor productivity
MRA	Mutual recognition agreement
RIA	Regulatory impact assessment
R&D	Research and development
SME	Small and medium enterprise
SPS	Sanitary and Phytosanitary Standards Agreement
TBT	Technical Barrier to Trade Agreement
WEF	World Economic Forum
WTO	World Trade Organization

Introduction

Laws and regulations are government levers that support well-being and economic growth. They affect all areas of life, impacting citizens, business, and the environment, and as such, their design is instrumental. When not designed appropriately, however, laws and regulations may not achieve their objectives. Not only does this render them potentially impotent or detrimental to society, it also raises concerns about trust in governments to help manage societal problems. The OECD *Recommendation of the Council on Regulatory Policy and Governance* (2012^[1]) provides governments with an overarching framework to help ensure that regulation¹ meet public policy objectives and at the same time improve societal well-being. Regulatory policy² is a critical dimension of an enabling environment for investment and thus for economic growth and innovation (2012^[1]).

A central facet of regulatory policy is to consider the broad impacts on those affected by rule-making. Greater quality of government interventions can be ensured through the use of regulatory impact assessment (RIA). RIA is a flexible analytical approach defined in the *Regulatory Policy Outlook* (2018^[2]) as a:

“Systematic process of identification and quantification of benefits and costs likely to flow from regulatory and non-regulatory options for a policy under consideration” (OECD, 2018, p. 250^[2]).

RIA provides crucial information to decision makers on whether and how to regulate to achieve public policy goals. By examining the impacts and consequences of a range of policy options, RIA is both a tool and an aid to the decision-making process, to help policy makers identify and select proposals that maximise societal wellbeing (OECD, 2012^[1]). Improving the evidence base for regulation through RIA is one of the most important regulatory tools available to governments (OECD, 2012^[1]). The *Regulatory Policy Outlook* (2018^[2]) indicates that RIA practices across OECD members have slowly improved over time, although opportunities for amelioration remain (OECD, 2018^[2]). The *Recommendation* (2012^[1]) highlights that governments need to consider the impacts of regulations on competitiveness as part of their commitment to government-wide policies on regulatory quality:

“To achieve results, governments should: [...] Consider the impacts of regulation on competitiveness and economic growth” (OECD, 2012, p. 10^[1]).

Comprehensively assessing impacts of regulation have never been so important in an ever-increasingly interconnected global environment. The COVID-19 pandemic has demonstrated the speed at which shocks – economic and sanitary – spread across the world. Although the full impacts are still yet to be realised, the regulatory responses of various governments have already had a tremendous impact on

¹ Regulation is understood following the *Regulatory Policy Outlook* (2018^[2]) as “the diverse set of instruments by which governments set requirements on enterprises and citizens. Regulation include all laws, formal and informal orders, subordinate rules, administrative formalities and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers” (OECD, 2018, p. 250^[2]).

² Regulatory policy is “the set of rules, procedures and institutions introduced by government for the express purpose of developing, administering and reviewing regulation” (OECD, 2018, p. 250^[2]).

everyday activities. Forced business closures, state support, and restrictions on individual mobility will affect the competitiveness of the entire economy over the months and years ahead. We can look forward with hope that at some point the current crisis will dissipate. What governments do at that point however will shape their economies for decades to come. In an increasingly constrained fiscal environment—made even more so due to recent events—governments may well look to improve the competitiveness of their economies. Domestically, this means adopting resilient, sustainable, and inclusive policies that stimulate economic activity. Internationally, this means investing resources to remove unnecessary tariff and non-tariff barriers, facilitate trade, and improving the rules of globalisation.

In a way, the current sanitary and political crisis presents an opportunity to rethink the work of policy makers and regulators. Firstly, it may help consider a more holistic approach to impact assessments around key concepts that bundle fragmented impacts together. Secondly, the lens of competitiveness may help to build awareness on the dynamics of contemporary economies, in particular the fast pace of technological changes and the intrinsic interconnectedness of jurisdictions related to digitalisation and other technologies that transcend borders and enable the multiplication of trans-boundary flows.

Within this context, the Government of Canada has partnered with the OECD to help identify the critical factors needed to operationalise competitiveness assessments. The project aims to provide a framework for countries to better understand and ultimately integrate competitiveness impacts of regulation into regulatory impacts assessment tools and processes. The report contributes to this objective by reviewing the existing literature on competitiveness and providing insights for both policy makers and regulators in their assessment of a range of impacts. It draws on a range of sources in academia, international organisations (including previous work of the OECD), and by countries themselves. The report identifies the salient factors affecting competitiveness, and devises a framework to embed competitiveness impacts in RIAs.

The first part of the report provides a literature review of competitiveness as well as the existing practices in appraising the regulatory impacts on competitiveness in selected OECD members. It demonstrates that “competitiveness” is an inherently nebulous concept without an agreed definition. Its origins were based on microeconomic notions, but is nowadays more often used synonymously with productivity or economic growth. The *Outlook* (2018^[2]) indicates that OECD members currently require an assessment of some aspects of competitiveness impacts as part of their RIA requirements, such as those on competition and on small businesses. However, the regulatory effects on competitiveness per se are not systematically nor directly examined in a holistic manner, as countries have tended to focus on elements of cost competitiveness because of historical developments in their regulatory policy framework (e.g. more focus on administrative burdens and/or compliance costs than other types of regulatory costs). More fundamentally, the reason for the relative paucity of competitiveness impacts stems from the definitional challenges surrounding competitiveness at a conceptual level. Despite the apparent importance of competitiveness and its potential for widespread economic impacts, the second chapter of the report finds that competitiveness has thus far received relatively little attention from OECD members when designing regulatory proposals, with the European Commission (EC) a notable exception.

Part II of the report provides an in-depth examination of the components of competitiveness. Building on the EC methodology, it provides a framework for policy makers to define and assess the competitiveness impacts of regulation as part of their RIA processes. Each chapter reviews cost competitiveness, innovation, and international competitiveness in turn – i.e. the pillars identified by the EC – as key building blocks of competitiveness and extends the analysis by drawing on contemporary OECD work. Guidance to policy makers has usually been more comprehensive in relation to cost competitiveness, an area that draws upon well-understood concepts and methodologies such as the Standard Cost Model. The second pillar concerns innovation, an area that OECD countries are starting to consider more systematically due to the modern economic realities of the Fourth Industrial Revolution. From a competitiveness perspective, regulations can nurture or neuter innovation, so careful consideration is required. The final pillar is global: At a time of international crisis, it is imperative that various jurisdictions work together, utilising global supply

chains and international logistics to deliver for citizens. Competitiveness assessments call on policy makers to better engage and identify international impacts when creating regulations. The final chapter of the report identifies the elements that countries should adopt to fully embed competitiveness impacts in their RIA processes, and illustrates the importance for OECD members of adopting a holistic approach to analysing regulatory impacts on competitiveness.

Part I: Reviewing the literature and country practices

Part I of the report reviews the existing literature on the various definitions of competitiveness and the extent to which selected OECD members consider competitiveness as part of their regulatory design processes.

1 Defining competitiveness as a multi-dimensional concept

The term “competitiveness” is a multi-dimensional and somewhat nebulous concept. There is no single means to define competitiveness and it can include a wide array of context-specific factors. Part of the difficulty stems from the fact that competitiveness was originally a microeconomic concept used to discuss the relative position costs of a firm (particularly when challenged by competitors with lower costs) that was transferred “with some awkwardness” to macroeconomic actors and to national economies (OECD, 1992^[3]). Historically, measures of competitiveness have focused on cost and price analysis, reflecting the economic thinking at the time and the ability to quantify those aspects. More recent research [such as Aiginger et al. (2013^[4])] attempts to go beyond this and to explore the possibility of including other factors – such as social and environmental dimensions – as components of competitiveness.

Whilst competitiveness is often understood as a synonym of productivity, this approach is limitative and of little practical value for regulators as it excludes other components crucial to regulatory appraisal, such as international competitiveness. In fact, the impacts of laws and regulations on competitiveness have seldom been considered in academia, except when discussing the impacts of environmental policies. Such policies often affect the relative economic position of businesses, which makes them a fitting ground to discuss the impacts of regulations on competitiveness. Other than environmental policies, there is a lack of research linking competitiveness to regulations, and even less that connects it to regulatory policy.

This chapter provides an overview of the existing literature on the concept of competitiveness. It describes the challenges of finding a common definition and brings together the various academic approaches taken. It also discusses the differences between competitiveness and competition, which are two related yet often mislabelled concepts. Finally, the chapter highlights the existing literature relating regulation to competitiveness, which mostly focuses on environmental regulations.

Prevalent understanding of competitiveness

Several factors make it difficult to reach a common definition of competitiveness. Firstly, despite its common inclusion in publications an explicit and formal definition is rarely provided. It is recognised as an elusive concept that is not well defined yet remains consistently used by academics, policy makers and the media (Aiginger, Bärenthaler-Sieber and Vogel, 2013^[4]). Secondly, there are a variety of ways in which the term is understood. Although it is used less often in economic analysis, competitiveness is frequently included in literature relating to trade, profitability, employment, and welfare (Carbone and Rivers, 2017^[5]). It has been used synonymously with ‘productivity’, ‘competition’, ‘comparative advantage’, and surprisingly, ‘exchange rate’. These are all different concepts and, as a result, competitiveness is a very broad notion.

Porter (1990^[6]) and Krugman (1994^[7]) have influenced the way that competitiveness is understood today. On the one hand, Porter (1990^[6]) affirms that productivity (commonly defined as a ratio of a volume

measure of output to a volume measure of input use³) is the key to a country's long-term economic growth. On the other hand, Krugman (1994^[7]) cautions against a “dangerous obsession” of focussing on cost competitiveness at the national level. Taken together, their most enduring impact remains the close association of competitiveness to productivity in the literature. More recent approaches advocate that competitiveness should be sustainable over time, which involves a consideration of social and ecological factors (such as impacts on social transfers, unemployment rates or energy intensity) in addition to more traditional cost elements (Aiginger, Bärenthaler-Sieber and Vogel, 2013^[4]). The definition of competitiveness should reflect the current experience as societies become more global, technological and energy-conscious and indicators used to measure competitiveness should adapt to these new trends (Aiginger, Bärenthaler-Sieber and Vogel, 2013^[4]).

A further complication is that competitiveness is used to refer to different economic actors, depending on the context. For instance, competitiveness could be in relation to firms, sectors, regions, or nations. The meaning of competitiveness changes depending on the entity discussed, thereby broadening it as a concept. To illustrate, a firm and a country may have different goals: a firm's aim might be to firstly survive and to eventually thrive in international markets; whilst a country's aim might be to improve the living standards and welfare of its citizens. Yet in both case their goal is to improve competitiveness, demonstrating that the term can be a multi-faceted “catchall” label referring to a wide array of entities. Moreover, apparent inconsistencies can arise depending on the specific perspective taken. For example, a firm's decision to strive to be ever more cost competitive may affect the viability (and hence competitiveness) of other firms in an industry. In turn, this may have an impact on the relative competitiveness of upstream or downstream markets. At the macroeconomic level, the sum of these impacts may affect the country's international competitiveness.

Lastly, the literature's use of competitiveness to refer to both its determinants and its outcomes without clear distinction adds to the ambiguity. Whilst the determinants of competitiveness are the enabling elements (such as factor endowments, institutional quality or technological capacity), competitiveness outcomes are the equilibria resulting from them (Carbone and Rivers, 2017^[5]). The literature does not often explicitly differentiate between the two aspects, creating further confusion.

All of the above factors make it difficult to reach a precise definition of competitiveness. Despite a continuous academic debate on the difficulty of defining the term, no single definition currently exists. Competitiveness remains a multi-dimensional catchall term that refers to a range of concepts.

Selected definitions of competitiveness

A wide variety of definitions of competitiveness currently exists, reflecting the context-specific nature of competitiveness (Box 1.1). A number of definitions have been suggested by the OECD in the course of various publications.

Even where wider definitions are used and include other components in the measures of competitiveness, the term often remains understood as ‘productivity’. Proponents of the productivity approach to competitiveness often acknowledge that the concept includes aspects other than cost and price competitiveness (Durand and Giorno, 1987^[8]; Durand, Simon and Webb, 1992^[9]; Durand, Madaschi and Terribile, 1998^[10]). Most authors however choose to focus on factors that are more easily quantifiable such as price differentials. As a result, the services sector is often ignored because statistics are less readily available and difficult to compare across countries. The food and energy sectors are omitted because they are heavily regulated and deemed little competitive. Measures of competitiveness in the literature are generally limited to the manufacturing sector, which has over time become less representative of the whole

³ While there is no disagreement on this general notion, the productivity literature and its various applications reveals that there is neither a unique purpose for nor a single measure. Definition extracted from the *OECD Glossary of Statistical Terms* (2001^[83]), available at: <https://stats.oecd.org/glossary/detail.asp?ID=2167>.

economy in a number of countries. The dearth of analysis of factors that are less easily quantifiable may explain why the definition of competitiveness is often limited to productivity and does not encompass non-cost or non-price factors.

Box 1.1. Sample⁴ of definitions of “competitiveness”

Scott & Lodge (1985^[11]): A country's ability to create, produce, distribute and/or service products in international trade while earning rising returns on its resources.

OECD (1992^[3]): The degree to which, under open market conditions, a country can produce goods and services that meet the test of foreign competition while simultaneously maintaining and expanding domestic real income.

Hatzichronoglou (1996^[12]): The ability of companies, industries, regions, nations or supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels on a sustainable basis.

Department of the Taoiseach (2009^[13]): The ability to achieve success in international markets leading to better standards of living for all. It stems from a number of factors, notably firm level strategies and a business environment that supports innovation and investment, which combined lead to strong productivity growth, real income gains and sustainable development.

European Commission (2012^[14]): A measure of an economy's ability to provide its population with high and rising standards of living and high rates of employment on a sustainable basis.

Aiginger, Bärenthaler and Vogel (2013^[4]): The ability of a country (region, location) to deliver beyond-GDP goals for its citizens today and tomorrow.

Handbuch Wirkungsorientierte Folgenabschätzung - Arbeitsunterlage (2013^[15]): Economies' potential to assert themselves in global markets.

Agence pour la Simplification Administrative (2014^[16]): The capacity of a firm, an industry, or a territory to provide one or several goods/services under competitive market conditions in the long term.

OECD (2014^[17]): A measure of a country's advantage or disadvantage in selling its products in international markets.

World Economic Forum (2017^[18]): The set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be reached by an economy.

Irish National Competitiveness Council (n.d.^[19]): Competitiveness refers to the ability of firms to compete in markets.

To the authors' knowledge, there is very limited literature dedicated to competitiveness and regulatory policy both in academic peer-reviewed papers and in institutional publications. Whilst many academics have written on the topic of regulatory and other economic assessment tools (such as social or environmental analysis), very few have applied these to competitiveness. In term of practical instruments, only the EC's *Better Regulation Guidelines* (2017^[20]) and the accompanying *Tool #20* (2017^[21]) connects

⁴ This sample provides a list of definitions of “competitiveness” that exhibit a wider interpretation of the term and that do not focus exclusively on productivity or on costs.

competitiveness and regulatory policy. The EC established a framework to analyse the impacts of regulatory proposals on competitiveness (Chapter 2).

National competitiveness is a well-measured concept, with yearly publications from organisations such as the World Economic Forum (WEF), the World Bank, or the International Institute for Management Development (IMD). These organisations create competitiveness indices in order to compare countries and tend to associate competitiveness to productivity, in line with Krugman (1994^[7]) and most of the literature. The organisations rank countries in terms of levels of prosperity, economic growth and human development (World Economic Forum, 2019^[22]) so they consider a wide range of indices in their analysis, such as mean years of schooling, broadband subscriptions, freedom of the press, and life expectancy. The list of indices used in the WEF's *Global Competitiveness Report* (2018^[23]) is provided in Annex A. The indicators they collect reflect countries' ability to attract economic activity over the long term rather than measures of competitiveness per se (Dechezleprêtre and Sato, 2017^[24]) and as such they may not always fit the analysis of a particular regulatory proposal on competitiveness. They are nonetheless a resource that member countries could draw on, if they created their own measure of competitiveness.

Competition vs competitiveness: similar yet contrasting concepts

The term “competitiveness” is often conflated with the term “competition” as the two are distinct but related concepts. It is worth recapping the similarities and differences between competition and competitiveness as this helps to illustrate the extent to which countries' current impact assessment processes take the latter into account. The various definitions of competitiveness (Box 1.1) share the following common factors:

1. an “entity” element, usually a firm although it can also refer to a sector, industry, or a nation;
2. a “growth” element e.g. productivity or GDP;
3. a “geographical dimension” e.g. a region, a country, and/or internationally; and
4. a timeframe.

Viewed in this way, competitiveness captures an entity's behaviour to achieve growth broadly defined, in a particular location, over a set time period. Competition on the other hand can be defined as “a situation in a market in which firms or sellers independently strive for the patronage of buyers in order to achieve a particular business objective, e.g., profits, sales and/or market share” (OECD, 2013^[25]).

The lines between competitiveness and competition are blurred. For instance, competitiveness includes the notion of international competition, which is the sum of international competitors. Competitiveness refers to the *relevant position* (i.e. the strength or weakness) of a firm vis-à-vis other firms in a market; whereas competition refers to the *state of the market*, i.e. the level of competition. Likewise, when describing markets, academics and public sector officials often refer to them as “workably competitive”.

Competition economists consider that domestic competition strengthens firms and contributes to their ability to be more competitive, thereby arguing that an entity cannot be competitive on the global market if it is not subject to domestic competition pressures at first. Policy makers are concerned with both competitiveness and competition, although there tends to be a greater focus on the former as they believe that any policy aimed at improving competitiveness must also consider enhancing competition within their jurisdiction. That is why most countries' competition policies focus on restricting competitive acts that are not in the public interest (i.e. they are anti-competitive), rather than defining what the state of the market ought to be. In improving competition, regulators can rely on the traditional enforcement approach of ensuring that firms compete on merit and do not infringe competition rules, with the help of national competition authorities.

Regulators can also enhance competitiveness by ensuring that their regulatory proposals do not disturb competition within the relevant markets. The negative externalities of regulations on competition are well-known to the competition community and include the creation of barriers to market entry or exit, tilting the

playing-field in favour of existing firms, limiting consumer choice or information, and facilitating collusion. Regulations can strongly limit competition when they are not properly designed and when regulators fail to consider more efficient alternatives to achieve regulatory objectives.

As a result of the potential detrimental impact of regulations on competition, the OECD developed the *Competition Toolkit* (2019^[26]) to provide guidance for assessing the impacts of regulations on competition as part of *ex ante* RIA. Such guidance ought to be considered by all regulators, both within line ministries and central governmental institutions, rather than be the sole responsibility of competition authorities. Some of the linkages between competitiveness and competition are reflected in the OECD Competition Assessment Checklist (Box 1.2), which is a useful first indicator of whether a policy may affect competition, although the Checklist does not exhaustively consider all competitiveness factors.

Box 1.2. The OECD Competition Assessment Checklist

Government action is designed to promote and protect important public policy goals and there are usually multiple ways to achieve these goals. When considering options, it is beneficial to assess the effects on competition because consumers are typically better off when there is more, rather than less, competition. Such assessments are best performed early in the process of developing policies, but there are also significant benefits in conducting *ex post* assessments of existing regulation. The OECD Competition Assessment Toolkit shows policy makers and regulators how to make that assessment. It provides a practical method to identify important competitive restrictions and, if possible, how to avoid them. In 2009, the OECD Council adopted a Recommendation on Competition Assessment.

As a first step, the method employs a “Competition Checklist”, a set of threshold questions that indicate when a proposed law or regulation may have significant potential to harm competition. While the majority of regulations do not present a risk of significant harm to competition, the competition assessment process, of which the Checklist is the initial stage, provides an analytical framework for policy makers and regulators to mitigate, or avoid, potential competition problems. It does so by helping to identify possible alternatives that may reduce, or eliminate, potential harm to competition while continuing to achieve the desired policy objective. Policy makers can use this framework when designing new regulations or can launch reviews of existing regulations to remove barriers to competition, for instance in the context of broader reforms to promote productivity and growth.

A competition assessment should be conducted if a legal provision has any of the following effects:

- A. Limits the number or range of suppliers – This is likely to be the case if the provision:
 - A1. Grants exclusive rights for a supplier to provide goods or services;
 - A2. Establishes a license, permit, or authorisation process as a requirement of operation;
 - A3. Limits the ability of some suppliers to provide goods or services;
 - A4. Significantly raise cost of entry or exit by a supplier.
 - A5. Creates a geographical barrier for companies to supply goods, services or labour, or invest capital
- B. Limits the ability of suppliers to compete – This is likely to be the case if the provision:
 - B1. Limits sellers’ ability to set prices for goods or services;
 - B2. Limits freedom of suppliers to advertise or market their goods or services;
 - B3. Sets standards for product quality that provide an advantage to some suppliers over others, or are above the level that some well-informed customers would choose;

- B4. Significantly raises costs of production for some suppliers relative to others (especially by treating incumbents differently from new entrants).
- C. Reduce the incentives of suppliers to compete – This may be the case if the provision:
 - C1. Creates a self-regulatory or co-regulatory regime;
 - C2. Requires or encourages information on supplier outputs, prices, sales or costs to be published;
 - C3. Exempts the activity of a particular industry or group of suppliers from the operation of general competition law.
- D. Limits the choices and information available to customers – This may be the case if the provision:
 - D1. Limits the ability of consumers to decide from whom they purchase;
 - D2. Reduces mobility of customers between suppliers of goods or services by increasing the explicit or implicit costs of changing suppliers;
 - D3. Fundamentally changes information required by buyers to shop effectively.

Source: OECD (2019^[26]), *Competition Assessment Toolkit: Volume 1. Principles*, OECD Publishing, <http://www.oecd.org/competition/toolkit>.

Environmental policy impacts on competitiveness

The literature reviewing the impact of regulations on competitiveness focuses mostly on environmental policy and on whether the effects vary depending on the different types of policies employed. In particular, the extent to which hard legislations harm competitiveness when compared with market-based instruments (such as taxation) has been prominently discussed in the literature (SQW, 2006^[27]). However, although much work exists to relate environmental policy to competitiveness, little work has been identified as evaluating the impacts of other types of regulations on the concept.

The impact of environmental policies is a difficult question for policy makers as they fulfil a clear policy objective but may unsettle the level playing field. For example, environmental regulations that aim to fight climate change often remain a concern for both the public and regulators, as they can harm domestic businesses and disadvantage them vis-à-vis their competitors. It is not surprising that the competitiveness debate has taken environmental regulation as its arena, given that Michael E. Porter formulated a hypothesis that “by stimulating innovation, strict environmental regulations can actually enhance competitiveness” (Porter and van der Linde, 1995, p. 98^[28]). By stating this, Porter and van der Linde have opened the door to a wide array of studies that attempt to affirm or contradict the theorem. Many academics, when studying competitiveness, have tested this at a sectoral level using a variety of factors and models, albeit without a consensus.

One of the key issues behind the uncertainty surrounding competitiveness is that it is not an easy term to define or to measure. In virtually all of the identified literature, academics attempting to measure competitiveness commenced their analysis by recognising that there is no single and unambiguous measure of the competitiveness. Instead, a range of approaches continue to be used as proxies, which is mainly limited to manufacturing firms at the sectoral level as these are easiest to model. The most commonly used proxies in these studies are exports, imports, employment, output or productivity. Productivity is common throughout the literature, along with comparative advantage. Finally, it is important to note that such studies have attempted to model the *ex post* effects of environmental policies on competitiveness, that is, assess what the effects of an environmental policy has been on competitiveness after its implementation. Although there is an extensive range of empirical research on the *ex post* impact of environmental policies on competitiveness, little has been done to measure such impacts *ex ante*, i.e. to estimate what would be the effect of policy proposal on competitiveness.

2 Regulatory impact assessment (RIA) and competitiveness: In theory and in practice

Regulatory impact assessment (RIA) is a “systematic process of identification and quantification of benefits and costs likely to flow from regulatory and non-regulatory options for a policy under consideration” (OECD, 2018, p. 250^[2]). By examining the impacts and consequences of a range of policy options, RIA is both a tool and an aid to the decision-making process, to help policy makers identify and select proposals that maximise societal wellbeing (OECD, 2012^[1]).

As discussed in the previous chapter, competitiveness is a multi-dimensional concept that can incorporate a wide range of factors, depending on the entity or the sector under study. As a consequence, measuring competitiveness impacts is a difficult task. A flexible mix of qualitative and quantitative approaches is needed, for which a RIA is well suited. It also involves deepening the understanding of the distributional effects of regulation across sectors and across a wide variety of firms. Any guidance prepared by policy makers must be flexible and not overly prescriptive if it is to apply to all regulators.

Overall, very few countries have a regulatory competitiveness assessment process or even attempt to link regulatory policy and competitiveness. Although many countries require an assessment of the economic impacts of regulations (such as impacts on competition, on small and medium enterprises (SMEs) etc.), – as illustrated by Figure 2.1 – only a few OECD members provide a definition of competitiveness. From the methodologies reviewed, the EC *Better Regulation Tool #20* (2017^[21]) is the most comprehensive framework used to analyse the impacts of regulations on competitiveness.

The majority of the reviewed RIA guidelines strongly approach competitiveness from a productivity perspective. By contrast, the EC suggests that competitiveness impact analysis should move away from the traditional focuses on quantifiable cost and price indices only, and introduces three pillars to analyse it: cost/price competitiveness, capacity to innovate, and international competitiveness. The EC’s approach is further reinforced by a requirement to assess direct and indirect, positive and negative, as well as upstream and downstream impacts of a regulation on competitiveness.

This chapter reviews the existing academic work and OECD members’ approaches in analysing the impacts of regulations on competitiveness using regulatory impact assessments (RIA). It begins by exploring how, in theory, RIA can be used as a framework for competitiveness assessments and the challenges that may arise. The chapter then explores the practices of selected OECD members that have established various methods to measure and track regulatory impacts on competitiveness, namely Australia, Austria, Belgium, Czech Republic, France, Ireland, Mexico, New Zealand, the United Kingdom, the United States, and the EC. Their RIA guidelines are analysed against three features:

- The definition of competitiveness;
- The methodology to analyse the impacts of a regulatory proposal on competitiveness; and
- The indices to measure the impact of the regulatory proposal on competitiveness.

The final section of the chapter provides a general summary of the EC's *Better Regulation Tool #20 on sectoral competitiveness* (2017^[21]) and of the procedure that the guidance proposes in order to appraise regulatory impacts on competitiveness.

RIA in theory: a suitable framework for competitiveness assessments

RIA is a process of critically examining the expected consequences of a range of alternative options to address various public policy issues. It provides crucial information to decision makers on whether and how to regulate in order to achieve policy goals (OECD, 2012^[1]). RIA is one tool used as part of a country's regulatory management system: additional areas include stakeholder engagement, regulatory delivery, and *ex post* evaluation. These instruments together ensure that policies are designed, enforced, and evaluated in a systematic manner, thereby safeguarding regulatory effectiveness. Integrating RIA into the policy cycle is one of the ways in which countries can create a comprehensive assessment of policies to ensure regulations achieve social, environmental, and economic goals (OECD, 2012^[1]).

The *OECD Recommendation* (2012^[1]) notes that RIA acts as both a tool and a process to inform decision makers on how to achieve various policy objectives. On the one hand, RIA is a tool that systematically ensures the identification and analysis of potential impacts by estimating the cost and benefits of a measure, by linking it to the policy objectives and by ensuring there is no better alternative approach (Deighton-Smith, Erbacci and Kauffmann, 2016^[29]). RIA also integrates other regulatory policy components, and particularly stakeholder engagement, in its decision-making process to ensure that the likely impact of the regulatory options are understood and communicated by policy makers (Deighton-Smith, Erbacci and Kauffmann, 2016^[29]; OECD, 2017^[30]; OECD, 2020^[31]).

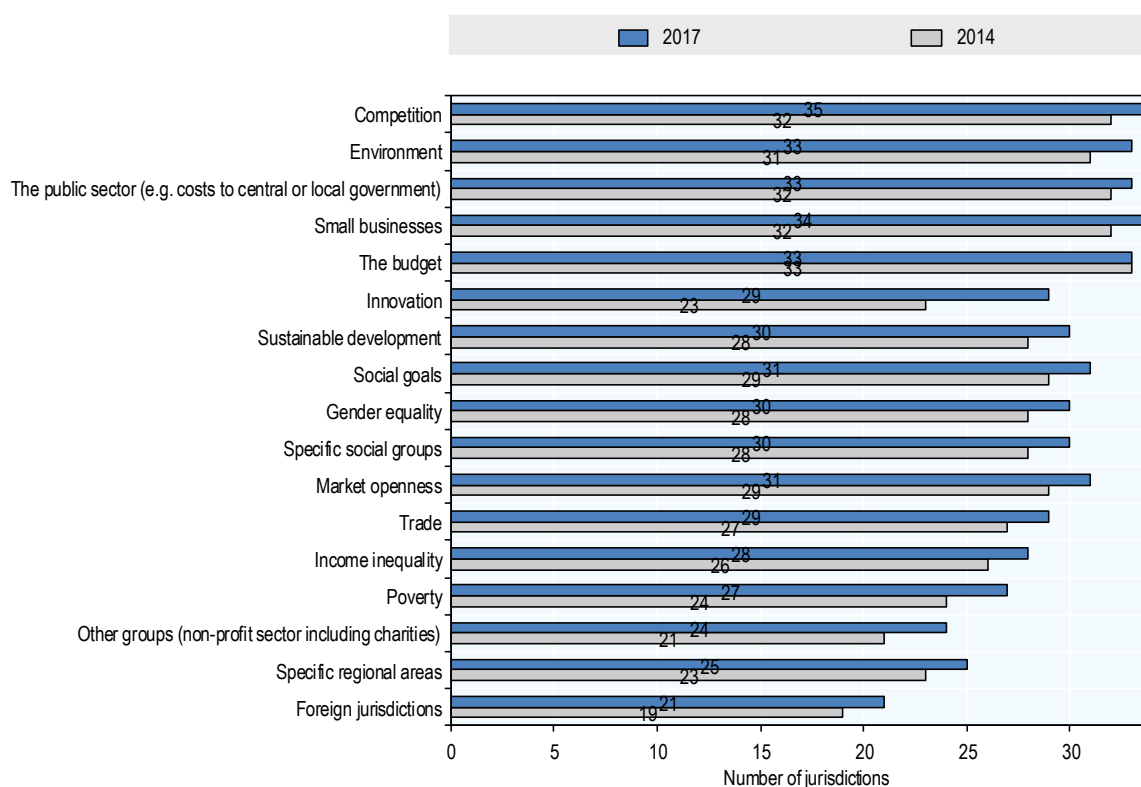
The RIA process is highly flexible and can adapt to the significance of impacts of the policy being examined or to topics of national interest. Most countries that have invested in regulatory policy require policy makers to analyse a range of impacts, including, for example, the environment, businesses, sustainable development, or various social impacts. If a government has identified a particular area of national focus, the analysis in RIAs can be used to review this specific interest in more details. Given how ambiguous the notion of competitiveness is, RIA is an appropriate tool that can adapt to the different facets of concept being explored. Given the breadth of the competitiveness concept, the multi-criteria approach provided by RIA presents obvious merits. RIA can be used to calculate regulatory costs for businesses and to enhance economic competitiveness (Achtnicht, Rennings and Hertin, 2009^[32]).

Only few RIA in practice include an assessment of the regulatory impacts on competitiveness. The lack of regulatory competitiveness assessments is reflected in the academic literature, with many scholars having reviewed and evaluated RIA practices, especially across the European Union (EU), but few papers discussing the use or impact of regulatory policy on competitiveness. As described above, the academic literature mostly relates to evaluating the impacts that existing environmental regulations have had on competitiveness. There is also a range of scholarly articles discussing the role of environmental impact assessments or social impact assessments, however, no work has been identified as associating the use of RIA and the concept of competitiveness specifically.

Whilst evidence shows that countries may not assess the competitiveness impacts of regulation per se through RIA, a study of countries' RIA guidelines demonstrates that policy makers already, to some extent, review the impact of a regulation against some of its facets. Indeed, the *Regulatory Policy Outlook* (2018^[2]) highlights that OECD members require an assessment of economic impacts as part of their RIA requirements, including the impacts on competition, on innovation, and on trade (Figure 2.1). All three form the main pillars of competitiveness as identified by the EC's *Tool #20* (2017^[21]). Having a requirement to review these impacts as part of the RIA framework, national administrations usually provide more in-depth guidelines to policy makers on how to undertake this analysis. The *Outlook* (2018^[2]) shows that there has been a significant increase in countries assessing the impacts of new regulations on innovation, compared

to previous versions of the *Regulatory Policy Outlook* (2015^[33]), as a result of the changing technological environment.

Figure 2.1. Types of impacts assessed in RIA



Note: Data is based on 34 OECD members countries and the EU.

Source: Indicators of Regulatory Policy and Governance Surveys 2014 and 2017, <http://oe.cd/ireg>.

Challenges and limitations of including competitiveness impacts in RIA

As aforementioned, little of the existing literature discusses the connection between regulatory policy and competitiveness and so there is limited information available on the use of competitiveness impact assessment. There is however some literature that discusses potential issues with assessing regulatory impacts on certain other economic factors, which are also applicable in the context of competitiveness. For instance, Williams (2019^[34]) discusses some of the limitations in using economic impact assessments – such as inappropriate aggregation or omission of opportunity costs – which are applicable to the analysis of competitiveness.

Williams (2019^[34]) is particularly cautious with aggregation of results from performing RIAs at the national level, which can in some cases balance out some of the negative impacts at regional levels. This potential challenge is even more important when assessing the impacts of regulations on international competitiveness. Whilst some measures of international competitiveness (such as relative trade balance) can reflect the ability of a sector to remain competitive or the development of an industry's comparative (dis)advantage, aggregation must be interpreted with care, as also stated by the EC:

“From the aggregate point of view, the loss of competitiveness in an individual industry may well reflect the outstanding export performance of other domestic industries” (European Commission, 2012, p. 28^[14]).

A positive regulatory impact on national competitiveness may hide a strongly damaging impact on competitiveness in a particular sector, which may be balanced out at an aggregate level by other well-performing industries. Similarly, attribution may be problematic, i.e. competitiveness may be affected by other factors that are not related to regulation. For example, an appreciation of the domestic currency may hamper the competitiveness of a particular sector but may also reflect the growth in other industries in which strong exports increase the demand for the currency (European Commission, 2012^[14]).

Competitiveness being such a large and multi-faceted notion, some level of aggregation is unavoidable to any analytical framework. The RIA must however review the regulatory impacts across the different concepts that altogether form competitiveness and not focus on one specific area. If not, this may result in an incomplete analysis and in the omission of important impacts, with potential detrimental effects on the quality of the policy and of the regulatory decision-making process as a whole.

Finally, a challenge stems from the fact that the numerous elements that make up competitiveness need to be brought under one single analytical framework. Whilst RIA is a flexible tool, its potential can be hampered by the lack of integration that can sometimes occur between different analytical work streams (Williams, 2019^[34]). When reviewing the impact of a regulatory proposal on competitiveness, particular awareness about integrating the different elements that make up the concept will be needed. Ensuring that these different factors come together under one single analytical review – instead of being separated into different sections spread throughout the impact assessment – is also key to limiting a possible lack of integration, which would hinder the potential of high quality RIAs promoting the most efficient policy.

In practice: Examples from selected national administrations

OECD members generally do not assess the impacts of a regulation on competitiveness, with only few jurisdictions having a requirement to analyse these effects. This includes mainly the OECD members listed in Table 2.1, namely Austria, Belgium, Czech Republic, Ireland, Mexico and the European Union. Where members do provide guidelines for assessing regulatory impacts on competitiveness, they mostly provide a definition but not necessarily a full methodology. Most members have a partial approach to competitiveness, by focusing on some of its components such as competition, innovation or trade as identified by Figure 2.1. This section focuses on the appraisal requirements of selected examples, identified as relevant by the Secretariat based on the results of the *Regulatory Policy Outlook* (2018^[2]) and on research of publically available RIA guidelines. The Secretariat invites OECD members to share their methodologies and guidelines for analysing regulatory impacts on competitiveness.

Although selected OECD members do not review competitiveness in full, the fact that they mandate analysis of some of its components demonstrates that they have a partial approach or at least foresee⁵ the estimation of these impacts to a certain extent. Competition RIA is particularly relevant, as it is the most commonly analysed economic impact. The selected OECD members' competition assessments often refer to competitiveness but do not provide further details or methodology to analyse the impacts of a regulation. This is consistent with the existing literature outlined in Chapter 1, as their RIA systems often consider competitiveness as a synonym for competition or a catchall term, rather than a concept of its own.

What do the RIA guidelines provide?

Summary results of the methodologies used by selected OECD members to assess competitiveness impacts of regulation are presented in Table 2.1.

⁵ As mentioned in the *Regulatory Policy Outlook* (2018^[2]), there remains a gap between RIA requirements and practices throughout OECD members.

Table 2.1. Overview of competitiveness assessment from selected OECD members' RIA guidelines

	Guidelines define competitiveness	Guidelines provide an assessment methodology	Guidelines provide indicators of competitiveness
Austria	✓		✓
Belgium	✓		✓
Czech Republic	✓	✓	✓
Ireland	✓		✓
Mexico	✓		✓
European Union	✓	✓	✓

Note: Jurisdictions reviewed: Australia, Austria, Belgium, Czech Republic, France, Ireland, Mexico, Netherlands, New Zealand, Switzerland, United Kingdom, United States, and European Union.

Source: OECD Secretariat assessment.

OECD members do not generally provide policy makers with much guidance about competitiveness assessments. Based on Secretariat desk research, Austria, Belgium, Czech Republic, Ireland, Mexico, and the EC provide a formal definition of competitiveness and suggest indicators to examine, but only the EC and the Czech Republic present a methodology to analyse the potential impact of a regulatory proposal on competitiveness. The different approach undertaken by the members echo the existing literature: some members consider competitiveness as a synonym for productivity or competition and therefore do not analyse it in detail; whilst others consider competitiveness as a concept that goes beyond these elements and provide more in-depth guidance for policy makers (e.g. Austria, Czech Republic, and the EC). Some countries – such as Switzerland, France, and the United States – mention the term competitiveness as one of the economic impacts that RIAs should discuss but do not go into further details. These different approaches echo the existing literature and a more detailed summary of the analysis of the OECD members' guidelines is included in Annex B.

The indicators included in the OECD members' guidance materials are qualitative, broad, and not prescriptive: they are elements to consider rather than a specific methodology or practice to follow. For example, the guidelines developed by the Government of Austria mandate the analysis of regulatory impacts on competitiveness and explain in detail how competitiveness relates to other economic impacts and how regulations affect it. The *Handbuch Wirkungsorientierte Folgenabschätzung* (2013^[15]) (Box 2.1) however does not provide a methodology to appraise the regulatory impacts on competitiveness, instead requiring policy makers to describe, explain, and argue the expected regulatory impacts on competitiveness. Similarly, the RIA guidelines in Ireland state that all regulations must be examined to establish whether they affect competitiveness by impacting the business environment, economic or technological infrastructure, education and skills, entrepreneurship and enterprise development, or innovation and creativity (Department of the Taoiseach, 2009^[13]). The Irish guidelines do not however provide further indices on what particular data should be collected to examine the above impacts on competitiveness. Limiting the guidelines to qualitative indicators is a common trend amongst the OECD members examined. The only exceptions identified are the EC and the Czech Republic (Box 2.2), although it must be noted that the methodology developed by the latter heavily builds on the one developed by the EC. The framework developed by the EC is analysed in more depth in the following section.

Box 2.1. Austria's requirements for assessing regulatory impacts on competitiveness in RIA

The Austrian *Handbuch Wirkungsorientierte Folgenabschätzung - Arbeitsunterlage* (2013_[15]) defines competitiveness as “economies' potential to assert themselves in global markets” (Bundesministerin für Frauen und Öffentlichen Dienst, 2013, p. 181_[15]). The Government of Austria analyses the impacts of regulations on both competitiveness and business location, two concepts that the *Handbuch* (2013_[15]) combines into the notion of “attractiveness of location”. Business location represents the overall framework conditions that determine company activities in an economy (in particular the establishment of new companies), which relies on existing infrastructure, open access to internal markets and/or the attractiveness of the taxation system. In contrast, competitiveness is broader in scope and represents the economies' position in the international marketplace. Competitiveness is therefore linked to the business location and its attractiveness but is influenced by measures that boost productivity and innovation as well as by changes in the currency.

When discussing the impact of regulations on competitiveness, the *Handbuch* (2013_[15]) distinguishes between the price and non-price components of the term. The former captures a country's ability to gain an economic advantage by offering goods and services of the same quality but at a cheaper price; whilst non-price components are more difficult to measure and involve elements such as innovation and technology, quality, reputation, as well as reliability.

Methodology used to assess regulatory impacts on competitiveness:

If a regulatory proposal is deemed to have a significant impact on the economy, an in-depth appraisal of regulatory impacts that includes an assessment of competitiveness is required as a mandatory step in RIA.

Competitiveness is considered in the *Handbuch* (2013_[15]) as a supply-side⁶ economic effect (i.e. leading to changes in the production of available goods and services), along with labour, capital, productivity, and business location. A central component of competitiveness is the capacity to innovate, which should be enhanced and not harmed by regulations (Bundesministerin für Frauen und Öffentlichen Dienst, 2013_[15]). Overall, the *Handbuch* (2013_[15]) considers that regulations can affect competitiveness and attractiveness of business location through direct mechanisms (such as changes in tax, multilateral agreements, recognition of training certificates, and changes in wage costs) or through indirect ones (such as legal harmonisation, infrastructure measures, changes in patent law).

Whilst the *Handbuch* (2013_[15]) defines the term competitiveness and explains how it can be influenced by regulations, it does not provide a detailed methodology to appraise regulatory impacts on competitiveness - or any of the supply-side effects. Whilst the *Handbuch* (2013_[15]) calls for demand-side economic effects (such as investment, consumer spending, and exports) to be appraised through input-output analysis, the methodology to analyse competitiveness effects is simply to describe, explain, and argue the expected regulatory impacts. The method to assess impacts of regulations on competitiveness therefore remains qualitative and explanatory, as is the case for other OECD members.

Source: Bundesministerin für Frauen und Öffentlichen Dienst (2013_[15]), *Handbuch Wirkungsorientierte Folgenabschätzung - Arbeitsunterlage*, https://www.oeffentlicherdienst.gv.at/wirkungsorientierte_verwaltung/berichte_service/Handbuch_Wirkungsorientierte_Folgenabschaetzung.pdf?6wd87y.

⁶ The *Handbuch Wirkungsorientierte Folgenabschätzung - Arbeitsunterlage* (2013_[15]) distinguishes between regulatory proposals that have demand-side versus supply-side effects on the economy. Demand-side effects refer to changes in aggregate economic demand whilst supply-side effects are defined as the entire production of available goods and services. Both effects are to be analysed separately with different methodologies.

Box 2.2. The required analysis of regulatory impacts on competitiveness in Czech Republic

The Czech Republic follows an almost identical approach to analysing regulatory impacts on competitiveness as the European Commission (EC). Using the EC's "*Competitiveness Proofing*" Toolkit (2012^[14]), the Czech Government has developed the *Metodika Hodnocení Dopadů Regulace Na Konkurenceschopnost* (i.e. the *Competitiveness Impact Assessment Methodology*) (2015^[35]), a guidance document dedicated to regulatory impacts on competitiveness, which regulators can follow when competitiveness is expected to change as a result of new regulations.

The *Metodika* (2015^[35]) focuses on the impacts of regulations on the Czech Republic's competitive position amongst global economies. It recognises that competitiveness is sourced from individual companies, which do not operate homogeneously given that they face different legal, social, political, and economic constraints, which can affect their ability to be competitive. Whilst the methodology followed is highly aligned with the EC's Toolkit (2012^[14]), the *Metodika* (2015^[35]) provides interesting insights on the concept of competitiveness and how it ought to be appraised as part of RIA. It alludes to a more holistic interpretation of competitiveness, iterating that problems of low competitiveness as such cannot be resolved by regulation: it is rather the issues associated with competitiveness' various components that need to be addressed. Such components can be grouped into either "price" or "non-price" competitiveness. The *Metodika* (2015^[35]) clearly states that indicators, such as market shares and comparative advantage, are consequences but not causes of competitiveness and can be influenced by non-market factors. Given the subtle nature of the concept, the Czech guidance calls for cautious appraisals of competitiveness in RIA, as improvements in consequences of competitiveness do not necessarily translate in improvements of competitiveness per se.

Methodology to assess competitiveness impacts:

The guideline developed by the Czech Republic follows the methodology outlined in the EC's *Better Regulation Toolbox*. A noticeable difference is that the *Metodika* (2015^[35]) includes a section on applying the EU-wide guidelines to the appraisal of competitiveness of an EU Member State. Especially when developing RIAs for a European Directive, regulators should consider whether the regulation will affect a sector homogeneously across the EU or will have different impacts across the Member States. The *Metodika* (2015^[35]) also calls for regulators to consider the impacts of a regulatory proposal on competitiveness vis-à-vis non-EU countries, given that the Czech economy is often a link in the middle of global value chains. The guidance suggests using gross value added or employment to calculate the direct effect of a regulation on Czech industrial sectors and transaction multipliers (such as the Leontief Inverse matrix in input-output analysis) to capture indirect effects. Other than the section focusing on the application of the EC guidelines to member states, the same 12-step methodology as in the "*Competitiveness Proofing*" Toolkit (2012^[14]) is promoted in the Czech *Metodika* (2015^[35]), along with a mix of qualitative and quantitative approaches to appraising the regulatory impacts on competitiveness.

Note: The Czech Competitiveness guidelines were published before the EC's "Competitiveness Proofing" Toolkit (2012^[14]) was updated in 2017. They therefore refer to an older albeit still valid version of the EC's guidelines.

Source: Vláda České republiky (2015^[35]), *Metodika Hodnocení Dopadů Regulace Na Konkurenceschopnost*, <https://ria.vlada.cz/wp-content/uploads/Metodika-hodnoceni-dopadu-na-konkurenceschopnost-UV-2015.pdf>.

The EC's guidelines for appraising regulatory impacts on competitiveness

The EC's (EC) *Better Regulation Guidelines* (2017_[20]) provide the guidance to its services on how to effectively implement standards for better regulation in the law-making process. The *Guidelines* (2017_[20]) mandate that a clear description of the impacts on competitiveness be included in the final RIA report. To help EC services with this requirement, the *Guidelines* (2017_[20]) are complemented by the *Better Regulation Tool #20 on sectoral competitiveness* (2017_[21]), which provides specific operational support for the assessment of impacts on sectoral competitiveness when undertaking a RIA. *Tool #20* (2017_[21]) is the most comprehensive existing document for assessing regulatory impacts on competitiveness. It provides additional guidance to help EC services gather evidence of impacts on firms in order to better inform policy decisions and (if necessary) to introduce mitigation measures to minimise the impact on the competitiveness of EU industries. *Tool #20* (2017_[21]) is a simplified and shortened version of the "*Competitiveness Proofing*" Toolkit (2012_[14]),⁷ accessible to all policy officers. EC services requiring more thorough methodological and economic guidelines are encouraged to refer back to the "*Competitiveness Proofing*" Toolkit (2012_[14]) which more extensively details the theory as well as the procedure for undertaking appraisals of regulatory impacts on competitiveness.

Tool #20 (2017_[21]) outlines 12 steps through a two-fold approach: The first two steps assess whether a regulation is expected to have an impact on competitiveness and whether a detailed competitiveness assessment is necessary. The remaining steps provide qualitative and quantitative ways to assess the extent of any impact. The steps are outlined in Box 2.3.

Box 2.3. List of all steps included in the EC's *Tool #20 on sectoral competitiveness*

The EC's *Better Regulation Tool #20 on sectoral competitiveness* (2017_[21]) is organised through the following steps that EC services should follow in order to enable policy-makers to better scrutinise the impacts of the regulatory proposal on business competitiveness:

Section I – Introduction:

Section II – Are impacts on sectoral competitiveness potentially significant?

Step 1. Does your IA require detailed analysis of impacts on sectoral competitiveness?

Step 2. How deep should we go?

Step 3. Which sectors are affected?

Step 4. What is the effect on SME competitiveness?

Step 5. What is the effect on cost and price competitiveness?

Step 6. What is the effect on the enterprises' capacity to innovate?

Step 7. What might be the effect on the sector's international competitiveness?

Section III – Quantifying the impacts

Step 8: Provide evidence on the structure and performance of the directly affected sector(s)

⁷ The full name of the EC's (2012_[14]) publication is the *Operational Guidance for Assessing Impacts on Sectoral Competitiveness within the Commission Impact Assessment System: A "Competitiveness Proofing" Toolkit for use in Impact Assessments*. It is shortened to the "*Competitiveness Proofing*" Toolkit (2012_[14]) or the *Toolkit* (2012_[14]) for the remainder of this document.

Step 9: Provide data evidence on indirectly affected sectors

Step 10: Quantify additional compliance and/or operational costs related to the assessed option

Step 11: Quantify the expected impacts on the capacity of affected enterprises to innovate

Step 12: Quantify the expected impacts on affected sectors' international competitiveness

Section IV – How to minimise any negative impacts on sectoral competitiveness

Source: European Commission (2017^[21]), *Better Regulation Tool #20. Sectoral Competitiveness*, https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-20_en_0.pdf.

Assessing whether a detailed analysis of impacts on sectoral competitiveness is necessary

Tool #20 (2017^[21]) requires an assessment of whether an in-depth analysis of the impacts of the regulatory proposal on sectoral competitiveness is necessary, in line with the principle of proportionate analysis. Whilst all EC RIAs should include a description of the likely regulatory impacts on sectoral competitiveness (or lack thereof), a thorough competitiveness analysis may not be appropriate for all policy proposals and only those with significant effects on industry should include this form of appraisal. Regulations have an impact on competitiveness when they affect at least one of the following:

- a) A sector's capacity to produce products at a lower cost and/or offer them at a more competitive price;
- b) The quality or originality of a sector's supply of goods or services (where technological development and innovation are key);
- c) Effective market competition and undistorted access to external markets; and
- d) The sector's market shares on the international market.

The EC provides a simple checklist (see Annex C) to assist services in deciding whether the impacts of the regulation are significant enough to require an in-depth analysis of impacts on competitiveness. The depth of the analysis depends on the magnitude of the expected impacts, their political importance, as well as the type of policy intervention (European Commission, 2012^[14]).

The EC calls for the identification of how a regulatory proposal would affect different sectors and whether specific ones would be particularly impacted, to determine whether the policy has disproportionate effects. It is crucial to assess, where relevant, the upstream and downstream markets and the direct and indirect effects – both of which could be either positive or negative – to ensure that spill over effects are captured in the analysis, as these could have crucial impacts on the sectors. The EC also calls for a rigorous assessment of the effects of the regulation on SMEs as these firms are more vulnerable to impacts on cost competitiveness than larger ones (European Commission, 2012^[14]). In this regard, the competitiveness analysis reinforces the application of the SME test by applying the concepts of cost, innovation, and international competitiveness to small and medium entities in the affected sectors (European Commission, 2017^[21]).

The three pillars of competitiveness

The detailed analysis of impacts on sectoral competitiveness comprises three pillars:

1. **The cost and price competitiveness** (including consumer choice): a regulation could impact the costs of inputs or other factors of production as well as the capacity of a sector to produce at a lower cost and/or offer products at a more competitive price;

2. **The capacity to innovate:** the quality or originality of a sector's supply of goods or services (including technological development and innovation which highly affect the cost of inputs and value of outputs) could be affected by a regulation;
3. **International competitiveness:** the impact of a regulation on a sector's international market shares should be considered and comparative advantage taken into account. The analysis of impacts on costs and capacity to innovate should also be addressed in an international comparative perspective

Whilst the three pillars and the methodology to assess regulatory impacts on competitiveness remain the same in the *Toolkit* (2012_[14]) and in *Tool #20* (2017_[21]), the former provides more detailed explanation on the various ways in which regulations can affect competitiveness.

The first two pillars are the main drivers of competitiveness, echoing the existing productivity-centric approaches. Both the *Toolkit* (2012_[14]) and *Tool #20* (2017_[21]) highlight the need to analyse the cost and non-cost determinants of competitiveness, by looking at the impact on indirect products (such as the price of energy) or the changes in attractiveness and market shares of a product (due to changes in quality, design or technical functions). There are some strong intricacies between the cost or quality competitiveness of a product and innovation or technology development so the two form the main pillars of competitiveness assessments. Productivity gains and losses resulting from a policy can be identified through impacts on business costs (cost competitiveness) and on the capacity to innovate (innovative competitiveness).

The third pillar puts the first two in an international perspective, to ensure the impact on the global market is considered. If a policy increases any of the costs associated with the first pillar, affected firms may be at a disadvantage compared with their international competitors who may not face the same regulatory burdens. RIAs should therefore consider how to minimise negative effects on competitiveness by taking into account the potential differential impact of the proposal on domestic and foreign firms. This includes impacts on the competitive position of domestic firms vis-à-vis international competitors, trade and trade barriers, cross-border flows (including relocation of economic activity in another country), and whether it concerns an area in which international standards, common regulatory approaches or international regulatory dialogues exist. Care must be taken when analysing international competitiveness as the effects may not be straightforward: the loss of competitiveness in a particular industry may not necessarily weaken the aggregate economic position, as it may be balanced out by improved performances in other domestic industries (European Commission, 2012_[14]).

Tool #20 on sectoral competitiveness (2017_[21]) provides some qualitative and quantitative factors to consider when preparing the analysis of the three pillars (listed in Annex B). Suggested methodologies note that the factors to consider in the appraisal are dependent on the policy proposal and the sector being analysed. Such an approach aims to maintain the flexibility necessary for the analysis of competitiveness and to enable policy makers to choose what procedure is best adapted to a regulatory proposal.

Other aspects of the Better Regulation Tool #20 (2017_[21])

A mix of qualitative and quantitative approaches are necessary to undertake a regulatory impact competitiveness assessment. The choice to apply mainly qualitative analysis or to quantify the expected impacts will depend on the regulatory proposal and on the extent of its impact. Furthermore, there may not always be the necessary quantitative data to assess the effects of a regulatory proposal on a particular sector or the data source may not be of sufficient quality or may simply be incomparable across sectors. *Tool #20* (2017_[21]) however does state that the mandatory input into the impact assessment from the qualitative screening would ideally include a short analysis of the following elements along with the economic reasoning (where appropriate):

1. Affected sectors;

2. Identified impacts on these sectors of policy options;
3. Qualitative estimate of the nature and magnitude of impacts;
 - a. How big is the expected impact?
 - b. Is it a direct or indirect result of the intervention?
 - c. When is it expected to occur?
 - d. Is the impact transitory or permanent (duration of the impact)?
4. The probability that the impact will take place
 - a. How likely is the impact?;
 - b. Does it depend on critical assumptions?

The competitiveness assessment should include analysis of both direct and indirect (positive and negative) effects and distinguish between the short and long-term. In practice, this requires scrutinising the impact of the regulation in the upstream and downstream markets as well as for substitutable and complementary products, in order to capture any potential spill over effects. This is an important consideration as the spill over effects of a regulation on competitiveness may be larger than the direct impact of the regulation itself or may disproportionately affect particular sectors.

In practice, competitiveness impact analysis forms part of the annexes of the EC's RIAs. The EC has published some examples of RIAs with a description of the impacts of the regulatory proposal on sectoral competitiveness on its website.⁸ The depth of the competitiveness assessment varies across publications, as some are more comprehensive and detailed than others. In all examples, the analysis is mostly structured around the three pillars of competitiveness established by the EC, often with analysis of the specific regulatory impacts on SME competitiveness. The majority of RIAs tended to focus their analysis on the preferred policy option, though some of the published examples also discussed the impact of other alternative policies on competitiveness. In some instances, the potential negative effects on competitiveness were mentioned and mitigating strategies were put forward.

⁸ Available at https://ec.europa.eu/growth/about-us/competitiveness-proofing_en.

Part II: Unbundling the competitiveness impacts of regulation

Part II of this report builds on OECD contemporary research in various areas to propose a regulatory approach to competitiveness, expanding on existing methodologies, including the one developed by the European Commission and described in its *Better Regulation Tool #20 on sectoral competitiveness* (2017^[21]). It decomposes competitiveness into three critical components that it explores in turn: cost competitiveness (Chapter 3), innovation (Chapter 4), and international competitiveness (Chapter 5). The final chapter identifies various elements necessary to successfully embed competitiveness impacts in RIA practices.

3

Component 1: Cost competitiveness

From a conceptual perspective, impacts on cost competitiveness of regulation may seem somewhat intuitive. For example, if a regulation imposes additional reporting obligations on firms, then there is a cost associated with meeting those obligations. Those costs increase the cost of doing business and can adversely affect competitiveness in a number of ways, by for instance, reducing profit margins and potentially forcing incumbent firms to leave the market, thereby concentrating the existing market. However, the cost competitiveness impacts of regulation do not end with these initial impacts. These impacts create further effects in the same or in different markets, leading to potentially different levels of competitiveness in those markets, and so on. Viewed in this way, regulations impact cost competitiveness in a cascading way and an adequate assessment of these impacts cannot simply stop at considering additional regulatory costs. Rather, the starting point is to consider the direct impact that regulatory costs have on competitiveness, and then trace how those impacts affect various other aspects such as entrepreneurship, investment, and production in other markets.

In the face of the potentially complex first and second order effects, the EC's *Better Regulation Tool #20* (2017^[21]) recommends looking at a range of elements that collectively comprise the regulatory impacts on cost competitiveness. The first is compliance costs incurred on businesses. *Tool #20* (2017^[21]) then goes on to consider the impacts on factors of production, specifically the costs of labour and capital, and of intermediate consumption. *Tool #20* (2017^[21]) then considers broader areas including the impact on SMEs and the restructuring of firms. This chapter builds and expands upon the EC's *Better Regulation Tool #20* (2017^[21]) and outlines the critical elements to take into account when considering the regulatory impacts on cost competitiveness.

Regulatory costs and cost competitiveness

There is a direct link between regulatory costs and their impact on cost competitiveness (OECD, 2012^[36]). If for instance a regulation imposes new reporting requirements on certain businesses, those new requirements impose additional costs on those firms. Those additional costs are borne by the businesses, increasing the cost of doing business and thereby negatively impacting their cost competitiveness. The additional firm costs affect productive efficiency and potentially profitability, both of which may result in firms leaving the market due to their worsening cost competitiveness. Alternately or additionally, the increased costs raise firms' indebtedness, potentially impacting their access to finance, which could result in lost opportunities in terms of future investment or expansion into other markets. As a result, any analysis of expected impacts of regulation on competitiveness needs to consider regulatory costs.

Regulatory costs encapsulate all of the costs attributable to the adoption of a regulatory requirement, whether direct or indirect in nature and irrespective of who bears the burden (e.g. business, consumers, government, or other groups). OECD (2014^[37]) offers a taxonomy of regulatory costs that can usefully inform the assessment of the competitiveness impacts of regulation (Box 3.1), with the main ones being compliance costs. Compliance costs tend to comprise the largest component of regulatory costs borne by businesses, but that is not to say that other regulatory costs are not relevant. Financial costs of regulation are considered below in the discussion on the cost of capital, and opportunity costs are highlighted in terms

of foregone investment. Indirect and macroeconomic costs of regulatory impacts are part of the spill over effects of regulation that affect all economic actors, and should be included in a complete assessment, whilst acknowledging inherent measurement difficulties in estimating the impact on these factors.

Costs to government, specifically those relating to administration, compliance, and enforcement also ought to be included, and tend to be countries' weakest area of regulatory policy (OECD, 2018^[2]). More generally, costs of government co-ordination, for instance, those that relate to shared regulatory responsibilities between national and subnational levels of government ought to be included.

In its *Better Regulation Tool #20* (2017^[21]), the EC calls for an analysis of the compliance cost impacts of regulations on competitiveness. The EC calls for an assessment of how new regulations affect information obligations on businesses, the use of new equipment, staff time spent on complying, and the use of external business services (European Commission, 2012^[14]; European Commission, 2017^[21]). The OECD has extensive experience in providing methodologies to support countries identify relevant compliance costs e.g. (OECD, 2010^[38]; OECD, 2014^[37]). The OECD defines compliance costs as “the 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 enforcement” (OECD, 2014, p. 12^[37]). Compliance costs are an important component of the regulatory impacts of competitiveness as they are often a necessary consequence of a regulation. They represent not only the purchases made to comply with new regulations, but also account for the time devoted by businesses to process, understand and adapt their behaviour in order to comply to the particular law. Compliance costs can be one-off expenditures as regulatory actors adjust and adapt to the new rules, but they can also be sustained on a regular basis if a regulation imposes specific periodic behaviour. As a result, compliance costs represent the main component of regulatory costs in most circumstances (OECD, 2015^[39]).

Box 3.1. A taxonomy of regulatory costs

Regulatory costs comprise compliance costs, financial costs, indirect costs, opportunity costs, and macroeconomic costs, noting an inherent degree of overlap exists between them. Compliance costs can be further separated into administrative burdens, substantive compliance costs, and administration and enforcement costs.

Administrative burdens:

Administrative burdens are the costs of complying with information obligations stemming from government regulation. Information obligations are obligations to provide information and data to the public sector or to third parties. An information obligation does not necessarily mean that information has to be transferred to the public authority or private persons, but may include a duty to have information available for inspection or supply on request. A regulation may contain many information obligations.

Substantive compliance costs:

These are the incremental costs to the target group of complying with a regulation, other than administrative costs. They include only the direct costs borne by those upon whom the regulation imposes compliance obligations.

Administration and enforcement costs:

These are the costs incurred by government in administering and enforcing regulatory requirements. They are part of compliance costs since they are directly related to the achievement of the underlying regulatory objective and are an unavoidable part of the cost of regulation. They are however borne by

government entities rather than by the target entities of any regulatory requirement and so they are distinct from the category of “substantive compliance costs”.

Note: The European Commission provides similar guidance on the typology of costs and benefits in its Better Regulation Tool #58 (2017^[40]). Source: OECD (2014^[37]), *OECD Regulatory Compliance Cost Assessment Guidance*, OECD Publishing, <http://dx.doi.org/10.1787/9789264209657>.

Factors of production and cost competitiveness

Regulations can affect factors of production (i.e. land, labour, capital, and entrepreneurship) in a variety of ways. For instance, regulations that affect the hiring of employees may entail compliance costs (which directly affect cost competitiveness), but they also affect the price of labour. As labour becomes more expensive, this adversely affects firms’ ability to produce goods and services, and consequently their cost competitiveness. Regulation can also affect factors of production directly, e.g. through minimum wage laws that increase the price of labour, pushing up firm costs and thereby affecting competitiveness. For these reasons, it is important to consider the impacts of regulations on the factors of production, in particular on the costs of land, labour, capital, entrepreneurship and intermediate consumption as delineated below, as part of any assessment of a regulation’s impact on cost competitiveness.

Cost of land

Regulations can affect the cost of land directly e.g. through taxation measures, or indirectly through planning and zoning requirements for instance. As land is an input required for most economic activity, any changes to its costs can have widespread effects on the economy. Regulatory costs that flow through to changes in the cost of land increase its relative price paid by users. The increase in the price of land affects competitiveness as it becomes more expensive to undertake economic activity. At an extreme, the additional costs of land may force incumbent firms to leave the market and/or create a substantive barrier to prospective market entrants, both of which affect competitiveness. It is important that policy makers appropriately consider the cost of land as part of regulatory costs when undertaking competitiveness assessments.

Cost of labour

The EC considers that regulations may affect competitiveness through a change in the costs of labour borne by employers (European Commission, 2017^[21]). In the *Toolkit* (2012^[14]) such costs are defined as wages, benefits and taxes on labour and the EC considers three different ways in which regulations may affect the three costs of labour. Firstly, regulatory proposals may directly affect labour costs if they alter retirement age, minimum wage, or social insurance contributions (or other taxes on labour) (European Commission, 2012^[14]). Secondly, policies might indirectly impact labour costs by, for example, affecting labour mobility, employment protection legislation, labour market rigidities/flexibilities, labour demand, or labour costs savings (European Commission, 2012^[14]). Finally, policies may impose additional compliance costs related to employment, such as higher health and safety standards and additional reporting requirements (European Commission, 2012^[14]).

Regulatory costs affect labour costs either directly through, for instance, a change to compulsory entitlements, or indirectly, for example, via additional reporting obligations from new labour laws. Changes to labour costs increase firm costs and this in turn affects firm competitiveness, by, for example, forcing firms to reduce output, or at an extreme, to close. As such, impacts on the various forms of cost of labour ought to be considered as part of a complete and detailed methodology for assessing regulatory impacts on competitiveness.

Cost of capital

The EC calls for an assessment of regulatory impact on the cost of capital, which includes the prices of capital goods as well as the availability and cost of financing it (European Commission, 2017^[21]). In the *Toolkit* (2012^[14]), the EC calls for (when relevant) an examination of the factors that affect the availability and cost of financing, including the financial market conditions, bank capital requirements, and protection of shareholders' rights amongst others (European Commission, 2012^[14]). This is consistent with the OECD definition of financial costs, which represent the cost of capital deployed in meeting regulatory compliance. These costs can include the investments necessary to comply with the regulation (for example, by purchasing new equipment or new software) as well as the cost of financing the purchases (whether from debt or equity) (OECD, 2014^[37]).

Regulation can impact the cost of capital and consequently affect competitiveness. For example, laws can regulate finance terms with the effect of increasing associated costs, and thereby affect firms' competitiveness. Increased financial costs may also lead to a reduction in investment, research and development and/or innovation for some firms, with the effect that they become less competitive vis-à-vis competitors. As such, a thorough assessment of regulatory impacts on competitiveness ought to include the cost of capital.

Costs of intermediate consumption

Intermediate consumption refers to the value of all goods and services consumed (i.e. either transformed or used up) as inputs in the production process (OECD, 2001^[41]). The EC's *Better Regulation Tool #20* (2017^[21]) provides that impacts on the cost of intermediate consumption can ensue from regulations that affect prices or availability of natural resources and that restrict or ban the use of some materials. The *Toolkit* (2012^[14]) recognises that such changes in cost can also result from regulations affecting upstream markets and that of substitute or complementary products (European Commission, 2012^[14]). The EC further considers that impacts on the cost of energy can originate from regulations affecting the dependence on limited sources of various fossil fuels, the switching of energy provision modes, and billing (European Commission, 2012^[14]; European Commission, 2017^[21]). A further example of intermediate input which is not discussed in the EC's guidelines is the cost of transport services and logistics, which are particularly relevant given how firm's competitiveness often depend on global value chains (GVC) spread throughout the world.

Regulations can alter the price or availability of intermediate consumables. Most often, these impacts occur through restrictions on the production or use of material utilised in production processes or through similar effects spilling over from related markets. The impacts of a regulation on the costs of intermediate consumption should be analysed as part of the impacts on competitiveness because any increase in the costs of intermediate consumption would increase firms' expenses. Businesses might react by decreasing their production or by increasing their retail prices, which would worsen their competitive position vis-à-vis their competitors.

Distributional and dynamic impacts and cost competitiveness

Beyond regulatory costs and the direct impacts on factor costs that regulation may generate, regulatory frameworks have potentially strong market restructuring effects that may impact on the competitiveness of the economy. Typically, regulation may impede the dynamism of SMEs, which constitute some 95% of the business population, 50-60% of valued added and the bulk of labour and have leading innovation and/or competitiveness roles in certain economic sectors (OECD, 2019^[42]). Regulation may also affect the incentives and cost structures underpinning sectoral organisation.

Impact on SMEs

While being a vibrant part of the economy of all countries, SMEs are heavily impacted by framework conditions set by public policy at various levels (international, national or sub-national), but have less of a voice in shaping these conditions than large firms. In particular, regulatory conditions are among the most important factors affecting the ability of SMEs to operate and develop.

Well-designed regulation should benefit to smaller players – by remedying market failures and information asymmetries and levelling the playing field – or generate the required business behaviour changes to achieve its policy objective (e.g. reduce carbon emissions or other). However, the literature shows that regulation creates considerable costs for SMEs due to administrative burdens and compliance costs, which may hamper their development and performance and affect the overall competitiveness potential of a country.⁹

The *OECD 2012 Recommendation of the Council on Regulatory Policy and Governance* (2012_[11]) recognises that the proportion of resources used by SMEs for administrative tasks is greater than for larger firms. SMEs may have less capacity to screen the regulatory landscape and adapt to policies, which not only causes regulations to be more burdensome, but also to have a disproportionate impact on them given the fixed cost nature of compliance (OECD, 2018_[43]). An onerous regulatory environment may only be a small inconvenience to larger firms but incapacitate SMEs further diminishing their already limited resources, so that at an extreme they may no longer be able to operate (OECD, 2018_[44]). SMEs are likely to be disproportionately affected by burdensome regulations because of the following factors (OECD, 2018_[44]):

- Their size, which limits their ability to access economies of scale;
- Higher barriers to interpreting the legal landscape when compared with larger firms that may allocate more resources to addressing legal and regulatory requirements (e.g. by having an in-house legal service).

It is nevertheless worth pointing that SMEs are highly diverse. For example, SMEs participating in GVCs see their compliance costs multiplied by the number of jurisdictions they engage with compared to SMEs that only engage with the domestic markets (see Component 3: The impacts of regulation on international competitiveness). This diversity of the SME population – depending on a range of features related to the sector of activity, business owner, location, trade patterns etc. – needs to be taken into account to understand the competitiveness impacts of regulation.

Restructuring of firms

Regulations that do not directly affect the cost of inputs may nevertheless result in restructuring of firms' activities. Costs associated with any restructuring constitute adjustment costs for firms. These costs are indirect and often more challenging to estimate, but are also important as they can be significant for firms (European Commission, 2012_[14]). The EC's *Better Regulation Tool #20* (2017_[21]) calls on policy makers to consider whether any sector or industry would face major restructuring, including the closure of production lines, of enterprises, or the substitution of skills or technology. Where that is the case, the EC requires an assessment of the regulation's impact on SMEs, and whether they could absorb the likely adjustment costs (European Commission, 2017_[21]).

Major restructuring costs are generally more difficult to estimate than changes to the cost of inputs. That said, alterations in production methods for instance are capable of estimation. The costs associated with such alterations affect firms' competitiveness whereby production is now less efficient than previously. It

⁹ See CFE/SME(2020)8/ANN2, *An OECD Strategy for SMEs: Synthesis analysis on SMEs and the Institutional and Regulatory Framework*.

is for these reasons that policy makers ought to adequately consider regulations' impacts on the restructuring of firms as part of an overall assessment of regulatory costs' impacts on cost competitiveness.

Cost of entrepreneurship

Regulations can affect entrepreneurship through tax and transfer changes. Entrepreneurship can lead to the development of new ideas, products, innovations etc. and is an important source of competitive pressures on incumbent firms. The relationship between regulatory impacts and innovation more broadly is considered in Chapter 4. Regulatory costs imposed do however change the behaviour and incentives of entrepreneurs (and can affect prospective entrepreneurs entering the market) and can therefore affect competitiveness. As such, regulatory costs that impact on the cost of entrepreneurship should be considered as part of the impacts on competitiveness.

Cost competitiveness and impacts on consumers

The EC considers that analysis of regulatory impacts on cost competitiveness should be complemented by analysing the effects on consumers' choices and prices (European Commission, 2017^[21]). In the *Toolkit* (2012^[14]), the EC provides that regulations could impact consumers by affecting the availability, prices, quality, and marketing of goods and services as well as the transparency and comparability of information about products (European Commission, 2012^[14]). As a result, the EC calls for analysing the presence and extent of transfer of production costs to the consumers.

Consumers that are not under the direct scope of the regulation may suffer a reduction in welfare transmitted from regulated industries. Changes in prices, quality or availability of products can ripple through the economy, causing changes in other sectors and affecting the welfare of consumers (OECD, 2015^[39]). Impacts on consumers can occur as a result of indirect compliance costs, substitution costs, transaction costs, and negative impacts on market functioning such as reduced competition, innovation, investment or market access (OECD, 2015^[39]). In other words, regulators should review the regulatory impacts on businesses but must also understand how businesses' reactions to these costs will affect retail prices, quality and availability of products for consumers.

As discussed in Chapter 1, some of the existing literature attempts to define competitiveness as the ability to create welfare (Aiginger, Bärenthaler-Sieber and Vogel, 2013^[4]), thereby linking the concept to consumer welfare. Businesses may have the ability to pass an amount of additional regulatory costs to consumers, adversely affecting their welfare. It may induce some consumers to switch to a substitute product and/or decrease their overall consumption. In turn, this feeds back into the affected businesses, changing their relative competitiveness vis-à-vis their competitors. It is important to assess how regulations affect consumers as competitiveness may be ultimately affected.

4 Component 2: The multiplicity of regulatory effects on innovation, a key vector of competitiveness

In its *Better Regulation Tool #20* (2017^[21]), the EC recognises the role of innovation in enabling firms to gain a competitive advantage over their competitors. The EC also acknowledges that regulations can have a range of effects on innovation, which must be assessed as part of regulatory appraisal. Building on the EC's approach, regulators whose proposal is expected to significantly affect enterprises' capacity to innovate may examine the following potential impacts (European Commission, 2017^[21]):

- Supply of skills needed for R&D and the efficiency of protection of intellectual property rights (IPR), which would both affect firms' capacity to carry out R&D and to appropriate the returns from their investment in innovation activities;
- Capacity to market new or improved products, which depends on technical and management skills and the adoption of new technologies;
- Capacity for process innovation (i.e. in the distribution, marketing, and after-sales services), which depends on the supply of a wide range of skills, including management and organisational skills;
- Ability to access risk capital;
- Creative destruction and the possibility to try, innovate and fail for firms, including e.g. bankruptcy law, etc.

The sections on innovation in *Tool #20* (2017^[21]) and in the *Toolkit* (2012^[14]) are relatively short and limited to the above list of elements that officials should analyse, without explaining in details how regulations and innovation interact. *Tool #20* (2017^[21]) however refers EC services to *Better Regulation Tool #21* (2017^[45]) on research and innovation. Whilst *Tool #21* (2017^[45]) does not refer to competitiveness, it does provide useful guidance for EC services to assess whether the regulatory proposal impacts innovation and provides a list of regulatory instruments to mitigate potential externalities and to make the proposal innovation friendly (European Commission, 2017^[45]). The EC also calls for officials to attempt to quantify the impacts of the regulation on the capacity of the affected EU enterprises to innovate by extracting input and output indicators on sector innovation from the "Industrial R&D Investment Scoreboard", from its "Community Innovation Survey" database, or from the sectors' relevant industrial chambers (European Commission, 2017^[21]).

The relationship between regulation and innovation is not unidirectional as the same regulatory framework can either promote or hinder innovation, depending on industry- or sector-specific conditions. As a result, there is no linear approach that may guide regulators in developing an innovation-friendly policy and regulatory impacts on innovation must be assessed on a case-by-case basis.

This chapter briefly reviews how innovation contributes to competitiveness by allowing firms to gain competitive advantage and to improve their economic performance. It then explores how regulatory stringency, prescriptive regulations, and the certainty/predictability of the regulatory environment may enhance or restrict innovation. Given the experience with adopting an innovation principle in a number of (mostly EU) jurisdictions, the chapter finally discusses some of the general lessons learnt building on a recent evaluation.

Innovation may enable firms to gain competitive advantage but may have collateral effects

Through innovation, firms can improve their goods and services in order to gain competitive advantages, to make them more competitive compared to their competitors. This advantage can take the form of reduced cost, increased quality, or improved availability of the product or service, which can enable firms to gain market shares and increase their profits (OECD, 2005^[46]). An incentive driving innovation strategies is often the prospect of rent due to a reduction of production costs increasing competitiveness or a temporary monopoly position (Tirole, 1988^[47]).

Beyond firm level, innovation is a key factor of a country's overall competitiveness and economic growth. Since the seminal paper written by Robert Solow (1956^[48]) and the works on endogenous growth pioneered by Lucas (1988^[49]) and Romer (1990^[50]), it is widely recognised that innovation is a key driver of economic growth. Innovation creates and diffuses new knowledge through the economy, expanding firms' potential to develop new or improved products, production, marketing, or organisational methods (OECD, 2005^[46]). Innovation and technological progress contribute to increase multifactor productivity (MFP), and make firms able to maximise the efficiency of inputs consumption for a given level of outputs.¹⁰ Innovation however goes beyond improvements in technology and covers a wide array of characteristics – such as improvements in product design, advertisement, relationships, and practices amongst others – which can also contribute to increased MFP.

If the market structure and regulatory environment enables them, such productivity gains can spread to other industries and sectors, leading to aggregate economic growth (OECD, 2007^[51]). Increase in MFP can also trickle down through the production chain to affect the returns to human, physical, and knowledge-based capital, which in turn increases aggregate incomes with positive impacts on living standards (OECD, 2015^[52]). Increased globalisation has accelerated the pursuit of competitiveness, as OECD members experience increased pressure to move up the value chain and engage in a continuous process of innovation (OECD, 2007^[51]) to gain competitive advantage on their international competitors.

As innovation may lead to creative destruction¹¹ in the economy, regulators should consider the potential harmful distributional impacts of innovation and carefully analyse alternative options to make innovation more inclusive or to use redistributive policies to mitigate against it (OECD, 2015^[52]). The impact of regulations on innovation and how this affects the economy is therefore a key element that regulators should appraise in RIA.

¹⁰ I.e. firms can produce more outputs without increasing the level of input or, alternatively, deliver the same level of outputs with fewer inputs.

¹¹ As suggested by Schumpeter (1942^[84]), innovation is accompanied by a dynamic process of “creative destruction” whereby new firms enter the market, grow by increasing their market share, and replace firms with low productivity that are in decline or that will eventually shut down.

Elements to consider when developing a regulatory framework that promotes innovation and competitiveness

At the onset of any appraisal of regulatory impacts on innovation, it is crucial to understand that the relationship is a double-edged blade: if a regulation affects innovation, it can either hinder or promote innovation depending on the way a policy is developed (SQW, 2006^[27]; Blind, 2012^[53]; Pelkmans and Renda, 2014^[54]; European Commission, 2016^[55]; Ramanathana et al., 2017^[56]). The effects on innovation depend on a range of firm-, industry-, and country-specific characteristics (OECD, 2015^[52]). Many factors that may hamper innovation can under certain conditions drive innovation so that no specific “magic formula” exists to guide regulators in developing an innovation-friendly policy and regulatory impacts on innovation must be assessed on a case-by-case basis. This highlights the importance of regulatory management tools, such as RIA, in gathering relevant evidence, appraising regulatory impacts and comparing effects.

Firms’ decision to engage with innovation is conditioned by a number of factors, which can all be impacted by regulations. Pelkmans and Renda (2014^[54]) list the following four as critical:

- **The availability of funding:** Whether sources of financing are required and available to develop the innovation and market it;
- **The ease of appropriation:** The ability to secure protection for an innovation and the cost of doing so;
- **The size of the potential market** for the innovative product or service; and
- **The risks associated with the innovation:** Including the consequences of and attitude towards failure of the innovation.

There are three aspects that regulators should consider when appraising regulatory impacts on innovation: regulatory stringency, prescriptive regulations and the certainty of the regulatory environment. All three have been found to be critical in explaining entrepreneurs’ innovation decision and the way these regulatory aspects either promote or hinder innovation is reviewed in the following sections. To further illustrate the ambiguous link between regulations and innovation, a list of specific regulatory examples extracted from the work of Pelkmans and Renda (2014^[54]) is provided in Box 4.1.

Regulatory stringency

The stringency of regulation influences technological innovation due to the compliance costs and change in behaviour that it imposes on businesses (Blind, 2012^[53]; Pelkmans and Renda, 2014^[54]). A positive relationship between regulation, innovation and competitiveness has been widely discussed in academia since the development of the “Porter Hypothesis”¹² (Porter, 1990^[6]; Porter and van der Linde, 1995^[28]). It is recognised that regulation may motivate firms to innovate and develop more efficient and more competitive products, in order to bypass the stringent law. Some level of stringency may set challenging targets for firms and hence induce innovation and modernisation in the longer term, provided that the regulatory outcome allows for experimentation of various innovative solutions (Pelkmans and Renda, 2014^[54]; European Commission, 2016^[57]).

Overly stringent and burdensome regulations can however impose considerable regulatory requirements and require a large amount of time and resources for firms to comply.¹³ This diverts time and resources away from productive R&D activities towards compliance test, thereby increasing the opportunity costs of

¹² According to Porter and van der Linde (1995^[28]), the efficiency and cost gains achieved from innovation can outweigh both the compliance costs and the R&D costs and can also improve the competitiveness of the firm.

¹³ The effects of compliance costs on firms’ competitiveness are explored in more details in Chapter 3.

innovation and favouring existing technologies (Blind, 2012^[53]). Furthermore, complex and costly regulations discourage existing firms from undertaking innovative activities and can constitute barriers to entry for new players, which is particularly significant in industries where innovative procedures are developed by SMEs with limited financial resources (European Commission, 2016^[57]). In extreme cases, overly stringent regulations can push firms out of business, reducing the pool of innovative entrepreneurs.

Prescriptive regulations

Regulations that are overly prescriptive and inflexible are known to hamper innovation by limiting the firms' room for innovative manoeuvres. Prescriptive regulations, i.e. those that stipulate the target but also the ways of meeting the target's solutions (European Commission, 2016^[57]), impose specific constraints within which firms have to operate, thereby limiting entrepreneurs' capacity to experiment with alternatives (Ramanathana et al., 2017^[56]). Consequently, prescriptive regulations reduce the potential for innovative products, which is a key factor affecting entrepreneurs' choice of engaging with innovation. In other words, inflexible regulations reduce the attractiveness of R&D and discourages firms from improving their products and services (Ramanathana et al., 2017^[56]).

Furthermore, the regulatory environment can sometimes stifle innovation when it is not agile enough to adapt to new technologies and therefore 'lags behind' the innovation cycle (European Commission, 2016^[57]; OECD, 2019^[58]). Given the ever-changing, novel, and unknown nature of innovation, it is particularly important for regulators to integrate some degree of regulatory flexibility and of foresight in order to create innovation-friendly frameworks that also work in the future (Borrás and Edquist, 2014^[59]; Renda and Simonelli, 2019^[60]). Regulators should ensure that their regulations are outcome-based (instead of purely rule-based) where appropriate and adaptable to future technological evolutions in order to avoid locking industries in sub-optimal or outdated technologies, which would hamper their pursuit of competitive advantage. Regulations that address issues related to digital transformation ought to be particularly flexible, as digital transformation is not only the result of innovation but also changes the future of innovation in itself. This provides a challenge to regulators, who ought to carefully consider how technology-related regulatory proposals perform and how they impact both existing and future innovative environment.

Nevertheless, regulations imposing and protecting technological standards, which convey technological information in a transparent and consistent way, have in some cases proved innovation-enhancing (Pelkmans and Renda, 2014^[54]). Technological standards enable more open competition by levelling the playing field between firms of different size, by facilitating entry into the market, and by laying out 'building-blocks' on which SMEs can improve their productivity (Pelkmans and Renda, 2014^[54]; European Commission, 2016^[57]). By having access to regulated standards that set technological ground, entrepreneurs can scale-up their R&D to pursue more competitive outcomes (European Commission, 2016^[57]). The regulation of technological standards must however be balanced and updated regularly in order to maximise innovation as inappropriate standards can hold-up innovation by locking the industry in sub-optimal technologies, as aforementioned. Regulators must therefore balance policies to ensure they are sufficiently flexible and forward looking to anticipate changes whilst also setting building blocks to level the playing field and facilitate market entry, which will promote competitiveness in the long-run.

Certainty and predictability of the regulatory framework

Regulations set out some level of certainty and predictability that are key enablers of innovation. If firms are not confident about the stability of their regulatory environment, they are unlikely to engage in costly and risky innovative activities (Pelkmans and Renda, 2014^[54]). The existence of a rule of law and of fundamental rights are key conditions that safeguard the entrepreneurs' innovation choices. For example, regulations relating to financing conditions and bankruptcy legislation can promote innovation by establishing stable conditions under which businesses can operate – and therefore innovate – with

certainty (European Commission, 2016^[57]). Regulations also set protection regarding externalities (as well as the possibility of failure inherent to innovation) that enable firms to conduct their activities on safe legal grounds, that define the terms and conditions for liabilities in case of damage, and that provide orientations to both producers and consumers (European Commission, 2016^[55]). By providing businesses with some level of certainty, regulations therefore protect the entrepreneurs in their search for more competitive products or production methods. This is particularly important given the uncertain nature of innovation and the high level of risks associated with it. Regulators should therefore ensure that they safeguard certainty in the critical business environment, otherwise firms will hesitate to implement significant changes and can have trouble obtaining funding for their innovation project (OECD, 2005^[46])

Nevertheless, some level of regulatory uncertainty is not only unavoidable but can also motivate innovation, particularly if the future of the product currently marketed is uncertain. Ashford et al (1985^[61]) use the market for asbestos as an interesting example: with increased and vocal governmental concern regarding the safety of asbestos as an insulator, firms in that industry became aware that regulators might regulate the product in the future and began researching for substitute insulating products. By the time the use of asbestos was banned in law, relevant firms had adapted their production process accordingly and had found new products that were better and safer insulator (Ashford, Ayers and Stone, 1985^[61]). A similar innovation-enhancing pre-emptive behaviour in response to potential future regulation was also observed by Ramanathana et al (2017^[56]).

Intellectual property rights (IPRs) provide an interesting example of how a specific set of regulations can both limit and promote innovation. Intellectual protection policies (patents, copyright, trade secret, trademark, etc.) safeguard innovation by ensuring that the entrepreneur can reap the benefits of its novel product or service for a certain time span and that competitors will not be able to free ride on the innovative gains generated during that period (OECD, 1996^[62]). In other words, such regulations ensure that the innovator will gain a competitive advantage if its innovation succeeds and can appropriate the results of the innovation efforts, thereby motivating entrepreneurs to engage with innovation in the first place. At the same time, IPRs create potential impediments to innovation as they may inhibit the use of new technological knowledge to develop further innovative research. Intellectual protection may also limit the diffusion of the innovation as, by nature, it increases the cost of using the technology (which may lead to deadweight loss costs to consumers). As highlighted by recent theoretical and empirical works on the topic, the net effects depend very much, amongst others, on the nature of the innovation and the market structure. The traditional regulatory policy tools provide important opportunities to highlight this dilemma, to engage with stakeholders on them and to identify the policy actions suited to a specific country context.

Box 4.1. Examples of ways in which regulations enable or constrain innovation

- Rules that make it easier and less burdensome for young entrepreneurs to secure funding from institutions in the form of equity or debt facilitate the entrepreneurship and innovation.
- Rules on technology transfer from university to industry, e.g. the Baye-Dole Act in the United States, can facilitate the implementation of innovative ideas through patenting, acquisition and transfers of innovative ideas from the university to the private sector.
- A simplification of the rules for access to credit guarantee schemes or other sources of funding for SMEs at the EU level can facilitate entrepreneurship.
- Pre-commercial procurement can signal the existence of a large market for a future innovative solution, and as such stimulate innovation in specific fields. Similarly, regulations that impose “competitive dialogue” in public procurement can stimulate innovation by forcing companies to provide solutions to a pre-specified problem.

- Competition rules that weaken property rights by introducing cases of compulsory licensing or mandatory access can, under certain conditions, weaken innovation incentives by reducing the reward from innovation of companies that become dominant in a given relevant market.
- At the same time, very strong property rights might encourage disruptive, pioneer innovation, but might increase costs for follow-on inventors. To the contrary, regulation introducing compulsory licensing of infringed patents to the benefit of follow-on inventions at FRAND (Fair, Reasonable and Non-Discriminatory) conditions might weaken the incentive to invest in R&D in the first place, while at the same time improving the business case for incremental innovation. The most appropriate way to act will depend on the specific features of the market at hand, its degree of disruptive innovation versus path-dependency.
- Rules on bankruptcy allowing a “second chance” to entrepreneurs that have failed can, if coupled with adequate measures aimed at changing the perception of a failing entrepreneur among its peers, be conducive to more entrepreneurship.
- Finally, rules that increase the level of legal certainty as regards the outlook for investment plans facilitate industrial innovation, as they make R&D easier to design and implement.

Source: Pelkmans, J. and A. Renda (2014^[54]), *Does EU regulation hinder or stimulate innovation?*, Centre for European Policy Studies (CEPS), <https://www.ceps.eu/download/publication/?id=8700&pdf=No%2096%20EU%20Legislation%20and%20Innovation.pdf>.

Some lessons learnt from the early implementation of the European Commission’s Innovation Principle

In 2016, the EC introduced the “innovation principle” in order to ensure that impacts on innovation are assessed during the policy development. The innovation principle consists of three main components: Foresight and Horizon Scanning, the Research and Innovation Tool¹⁴ (i.e. tool #21 in the Better Regulation Toolbox), and the innovation deals (Renda and Simonelli, 2019^[60]). It was developed in response to evidence confirming the role of research and innovation in increasing economic growth and to the realisation that Europe is, according to several innovation indicators, lagging behind compared to the rest of the world (European Commission, 2016^[55]).

Renda and Simonelli (2019^[60]) have undertaken an early-stage evaluation of the innovation principle to review whether it still meets the original objectives and whether changes are needed to maximise its capacities. Overall, the authors argue that the innovation principle has the potential to improve the quality of EU policy but that improvements are necessary to do so, particularly in response to the lack of a clear legal basis, of acknowledged definition, of awareness, and of innovation-specific skills and expertise for better regulation (Renda and Simonelli, 2019^[60]). This section focuses on the authors’ evaluation of the Research and Innovation Tool, for which Renda and Simonelli (2019^[60]) provide general recommendations applicable to all OECD regulators.

The authors argue that the innovation principle must be applied when the RIA is in its inception stage and before the alternative policy options have been identified, otherwise its usefulness become limited (Renda and Simonelli, 2019^[60]). Applying the Research and Innovation Tool at the incorrect time can result in the RIA becoming a ‘box-ticking’ exercise or to regulatory impacts on innovation being appraised even when it is unlikely to be affected by the regulatory proposal, both of which are inefficient RIA outcomes (Renda and Simonelli, 2019^[60]). Furthermore, the innovation principle should also be applied in *ex post* evaluations

¹⁴ Tool #21 (i.e. the Research and Innovation Tool) in the EU’s Better Regulation Toolbox is available at https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-21_en_0.pdf.

as this would increase regulators' ability to identify instances where innovation is being hampered by regulations. The authors argue that additional guidance and training on the innovation principle should be provided across EC services. The authors' assessments and these suggestions are in line with the OECD *Recommendation of the Council on Regulatory Policy and Governance* (2012^[1]) and with the findings from the *2015* and *2018 Regulatory Policy Outlook* (2015^[33]; 2018^[2]).

Renda and Simonelli (2019^[60]) also note that the scope of the assessment of regulatory impacts on innovation "is not fully in line with the evolving data-driven nature of innovation" (Renda and Simonelli, 2019, p. 46^[60]). The authors argue that the existing guidance documents do not provide indications on how to develop policies that are flexible to adapt to the fast-changing technologies. Given the ever-changing nature of innovation and the negative consequences of prescriptive regulations, it is crucial for the regulatory environment to be sufficiently flexible to encourage innovation. For example, there is room in regulatory development to consider more systematically the opportunity of establishing regulatory sandboxes (i.e. experimental regulations). They are particularly important in areas relating to new technologies, as they enable emerging businesses (who do not always comply with existing regulatory frameworks) to demonstrate the capacities and safety of their products (Renda and Simonelli, 2019^[60]). The role of innovation is therefore intricately linked with the development of regulatory sandboxes and policy makers should consider both when developing innovation-friendly regulations.

5

Component 3: The impacts of regulation on international competitiveness

The definitions of competitiveness identified in Box 1.1 in Chapter 1 highlight the importance of the international context. Competitiveness goes beyond the purely domestic productivity angle to incorporate considerations associated with the positioning of a country within the broader international environment. This is the case for example of the definition provided in the *OECD Glossary of Statistical Terms* (2014^[17]) that defines international competitiveness as “a measure of a country's advantage or disadvantage in selling its products in international markets” (OECD, 2014^[17]). Regulations are known to affect not only domestic cost competitiveness but also firms' propensity to export, their capacity to gain entry to new markets, as well as the playing field throughout the globe. Yet despite the importance of the international environment for regulatory development, this area is probably the least developed in OECD members' regulatory impact assessments.

Whilst the EC's appraisal of regulatory impacts on international competitiveness is less elaborated than its assessment of cost competitiveness, the *Better Regulation Tool #20* (2017^[21]) still calls for the examination of several factors that affect the ability of firms to be competitive. The EC recognises that if the production process or the costs of EU producers are affected by a regulatory proposal, European manufacturers might be at a competitive disadvantage vis-à-vis firms located outside of the EU (European Commission, 2017^[21]). An assessment of the impacts on productivity and on competitiveness would therefore not be complete without taking into account the potential differential impact of the regulatory proposal on domestic and foreign firms (European Commission, 2017^[21]).

The EC therefore acknowledges the importance of assessing the potential collateral impacts of EU initiatives on international competitiveness, focusing in particular on the following elements (European Commission, 2017^[21]):

- The impacts on the competitive position of EU firms with respect to non-EU competitors;
- The impacts on trade and trade barriers;
- Whether international standards, common regulatory approaches or international regulatory dialogues exist in the concerned area (as a potential way to mitigate the impacts listed above); and
- The impacts on cross-border investment flows.

The EC also lists a number of indicators that reflect the international position of an economy and its firms that can be used to quantify the regulatory impacts on sectors' international competitiveness. This includes the ratio of inward or outward FDI stock to value added, export market shares, revealed comparative advantage (RCA), relative trade balance (RTB), as well as relative unit labour costs (RULC) (see Annex B) (European Commission, 2017^[21]).

The OECD [as well as the World Trade Organisation (WTO)] recognises both the critical importance of regulations to achieve public policy objectives as well as their potential impacts on cross-border flows (goods, services, people data etc.). For example, the Technical Barrier to Trade (TBT) and Sanitary and Phytosanitary Standards (SPS) Agreements of the WTO underline the importance of quality regulations. They enshrine the right of members to regulate for legitimate policy objectives, provided that it does not restrict trade in an unnecessary or unjustified manner. At the same time they recognise the potential costs of badly designed and enforced regulations. They establish obligations on WTO members for the preparation, adoption and application of technical regulations, conformity assessment procedures and standards, as well as SPS measures, in order to facilitate the conduct of international trade in goods (OECD/WTO, 2019^[63]). Similarly, in the services area, the OECD Services Trade Restrictiveness Index shows that impediments to global services trade remain pervasive as national trade and regulatory policies in individual services sectors are often made with limited regard for economy-wide impacts (OECD, 2017^[64]).

The OECD also recognises the importance of the interoperability of regulatory frameworks in an increasingly internationalised context. Principle 12 of the *OECD Recommendation of the Council on Regulatory Policy and Governance* (2012^[1]) encourages regulators to:

“In developing regulatory measures, give consideration to all relevant international standards and frameworks for co-operation in the same field and, where appropriate, their likely effects on parties outside the jurisdiction”
(OECD, 2012, p. 8^[1]).

Through its extensive work on international regulatory co-operation, the OECD has gathered evidence and developed methods to enable domestic policy makers to better understand and take into consideration the international impacts of their regulations. This work can help further expand the approach taken by the EC in its *Better Regulation Tool #20* (2017^[21]).

Building on this work, this chapter reviews international trade as an essential component of competitiveness, and examines how it is impacted by regulations. Trade can be directly affected by regulatory burden, as well as by the misalignments that may exist between the regulatory frameworks of trading partners (this is called regulatory divergence). The chapter also considers how these impacts may be mitigated by the more systematic consideration of international regulatory co-operation (IRC) by policy makers in their rulemaking processes. Finally, the impact of regulations on foreign direct investment (FDI) is examined.

The impact of regulations on the competitive position of firms internationally and on trade

Most OECD members are exporters that rely on international trade to optimise their production process and enhance their competitive position vis-à-vis foreign competitors. International trade is a major driving force behind economic wealth, with exports from OECD members representing 61.0% of the shares in world exports and imports representing 61.9% of the shares in world imports in 2018¹⁵ (OECD, 2019^[65]). Given that most OECD economies sit downstream of the global value chains (GVCs), their competitiveness also crucially depends on imports of intermediary goods and services that are then used in the domestic production process and then further exported (Basedow and Kauffmann, 2016^[66]). The competitiveness of companies based in OECD economies therefore hinges on reliable, affordable, and high quality inputs from foreign suppliers, showcasing the importance of trade as a crucial component of OECD members' competitiveness. In this context, RIA and other regulatory management tools can help ensure that the

¹⁵ Data extracted from Annex Table 56 (Shares in world exports and imports) of the *OECD Economic Outlook* (2019), Volume 2019 Issue 2, No. 106, available at: <http://www.oecd.org/economy/outlook/statistical-annex/>.

regulatory proposal does not result in avoidable increases in trade costs, which would damage the international competitiveness of domestic firms.

Regulations may be burdensome on trade because they add extra costs that are generally borne by the exporting firms. Businesses may face a reduction in the profitability of sales in the foreign market and may react by reducing export supply or by avoiding shipment altogether, thus reducing their share of markets (OECD, 2017^[67]). In other words, if costs are too high, firms might respond by avoiding trade with the target country, thereby reducing the markets in which they are active and losing further new market potential, which hampers their competitiveness. The negative effects of burdensome regulations on trade accumulate and intensify as products cross international borders and spill through the production process to affect consumers in the importing country, who are likely to face reduced choices and higher prices (OECD, 2017^[67]). Furthermore, burdensome domestic regulations may in some cases prompt firms to relocate to areas where the regulatory environment is less stringent, thereby contributing to a reduction in the international competitiveness of the domestic country.

Even when not particularly burdensome in themselves and justified by public policy objectives, regulations may create costs for traders if they differ significantly between trade partners. Regulatory divergences may be justified by specific country conditions and national preferences. However, it is often the case that they arise from regulators working in isolation and not considering the interoperability of regulatory frameworks in their rulemaking decisions (OECD, 2017^[67]).

Regulatory divergences and costs may arise from different sources. They can result from regulators' differing public policy and democratic objectives translating in different regulatory approaches. They can also occur when regulators have the same objectives but adopt different regulatory approaches to reach them. Finally they can occur across jurisdictions with similar policy objectives and approaches but with different enforcement and administrative processes (Basedow and Kauffmann, 2016^[66]). Regulatory divergence usually manifests in different compliance requirements reflecting regulatory path dependence, complex regulatory governance involving multiple layers of government, or a lack of co-ordination and awareness among regulators for the international regulatory environment (OECD, 2017^[67]).

The OECD identifies three costs for traders arising from regulatory divergence (OECD, 2017^[67]). Further information on the taxonomy of the trade costs of regulatory divergence is provided in Box 5.1.

- i) *Information costs*: Cost of gathering information on regulatory requirements in target markets;
- ii) *Specification costs*: Cost of adjusting the specification of goods and services to comply with different regulatory requirements; and
- iii) *Conformity assessment costs*: Cost of undertaking various conformity assessment procedures to demonstrate compliance.

Regulatory divergence is likely to impede trade – and by extension competitiveness – more than trade tariffs and other tax-related costs. Whilst tariffs have fallen significantly in developed economies thanks to decades of unilateral liberalisation efforts and international trade negotiations, regulatory trade barriers and regulatory divergence remain important causes of frictions (Basedow and Kauffmann, 2016^[66]). For example, studies by Sunesen et al (2016^[68]) suggest, even though tariffs on pharmaceutical products have overall been eliminated between the EU and the USA, divergence in the pharmaceutical regulation impose additional costs to pharmaceutical traders equivalent to 19% of tariffs.

Regulatory divergence will impact the GVCs more strongly because of the importance of timeliness and quality as well as the sensitivity of value chain operations to trade costs (OECD, 2017^[67]). Indeed, firms and consumers in GVCs are concerned with the information and the traceability of products, resulting in the inclusion of a number of quality and safety standards that the products in the GVCs have to pass (OECD, 2014^[37]). Furthermore, such products are likely to cross several borders along the supply chain, which means that the required tests and the various trade costs will accumulate (OECD, 2017^[67]; OECD,

2018^[69]). Regulatory divergence in a context of GVCs will hamper firms in both the exporting and importing countries, with repercussions on their competitiveness.

The services sector is likely to be more impacted by regulatory divergence because they are more heavily regulated and continue to be increasingly regulated (OECD, 2020^[70]). Regulatory divergence imposes particularly high trade costs between countries that have generally low barriers to trade in services (OECD, 2017^[67]). For example, in the financial sectors, regulatory divergences are estimated to cost financial institutions 5-10% of their annual global turnover, with the financial performance of smaller firms the hardest hit (OECD, 2018^[71]).

SMEs are likely to be disproportionately impacted by unnecessary regulatory divergence as they use a larger portion of their resources than larger firms to fund the trade costs and to adapt to the international regulatory landscape (see Chapter 3 on Component 1: Cost competitiveness). For example, information costs to understand the regulatory requirements in target markets typically imposes a fixed cost on traders, which can be an obstacle to market entry for SMEs (OECD, 2017^[67]). The impact of regulatory divergence is becoming even more concerning as new technologies enable SMEs to become increasingly involved in GVCs. A Future of Business Survey in 2017 found that 38% of responding SMEs with a digital presence cited regulatory divergence as the main barrier to trade and to exports (OECD, 2018^[43]).

Box 5.1. The taxonomy of the trade costs of regulatory divergence

While different sectors and countries may experience a variety of costs, ultimately, three main categories of divergence-related and behind-the-border trade costs can be distinguished: information costs, specification costs and conformity assessment costs. It is worth noting that this typology is equally applicable for trade in goods and in services. It is however expected that the relative importance of different types of trade costs will vary between the two.

Information costs:

Information costs accrue to firms for identifying, gathering and processing information on the regulatory requirements for offering products on the destination market that are different from or additional to those applying on the home market. The magnitude of information costs depends on the transparency and heterogeneity of countries' regulatory regimes. The more opaque and different the regulatory regimes are, the higher are the information costs incurred by traders.

Specification costs:

Specification costs accrue to firms selling on a regulated market for specifying their product, production process or labelling to comply with regulation different from that prevailing in the home market ("product rules"). Such costs are directly linked to the process of production or supply of service in accordance with the requirements of a given market. Costs may include additional production costs (i.e. labour and input costs such as related to separate production lines and equipment) to meet the requirements of a specific market, or costs arising from diminished economies of scale. They may also take the form of equity restrictions, management restrictions or the necessity to maintain a permanent establishment in the regulated market ("firm rules"). It is expected that specification costs increase as product rules in the importing country diverge more significantly from those in the exporting country. Regulations may differ across jurisdictions vertically and horizontally. Vertical heterogeneity refers to regulation of different stringency. Maximum residue level (MRL) for a specific pesticide may for instance differ across countries. Horizontal heterogeneity refers to different compliance requirements without such a stringency connotation, such as diverging technical standards in a given domain.

Conformity assessment costs:

Conformity assessment costs accrue to firms for verifying and demonstrating to the authorities in the destination country that their products, production processes or services actually comply not only with home market regulations but also with the regulations of the destination market in the importing country. Conformity assessment costs may stem from diverging assessment methods such as diverging laboratory testing, certification, inspection or audit procedures, resulting in their unnecessary duplication causing additional time delays as well as the need for staff, capital, inputs or fees. Conformity assessment may also stem from the importing country's conformity assessment system which may restrict the exporters' choice on where and by whom testing and certification are to be undertaken. Restrictive conformity assessment systems can add costs for producers and traders as tests and certificates established at home may need to be duplicated in the destination market irrespective of substantial differences in the specification of products or assessment methods.

Conformity assessment costs can be related to two broad elements in conformity assessment requirements. First, where countries apply different methods (i.e. the "what" in conformity assessment procedures, such as laboratory testing methods, sampling or inspections), avoidable costs may arise as firms need to have products tested for a second time using the importing country's method, when these products have already been tested based on the exporter's method, even if these tests are to provide evidence on the same product characteristics. Second, rigidities related to the 'who' in conformity assessment procedures may require firms to produce test results and certificates established by conformity assessment bodies within the importing country. In this case, costs arise as certificates established in the firms' home country do not give access to the destination market and tests and certificates need to be duplicated. In addition, testing a product in the destination market requires shipping samples to the importing country for doing so, involving costs in terms of expenses and time-to-market delays.

Other trade costs

In addition to the three broad categories detailed above, other trade costs matter particularly in the context of border clearance. Such at-the-border costs include multiple forms to be filled out and other administrative procedures before clearing customs, fees and charges along with indirect costs such as waiting time at the border due to procedural delays, storage and inventory costs. These costs can be reduced through trade facilitation, including the harmonisation and streamlining of border procedures and the gradual development of single-window projects. The WTO Trade Facilitation Agreement adopted in 2013 expressly aims to expedite the movement, release and clearance of goods across borders and reduce the costs of clearing customs. The work of the World Customs Organisation and other initiatives at bilateral or plurilateral level provide additional momentum in this endeavour.

Source: OECD (2017^[67]), *International Regulatory Co-operation and Trade: Understanding the Trade Costs of Regulatory Divergence and the Remedies*, OECD Publishing, <http://dx.doi.org/10.1787/9789264275942-en> and OECD (2017), *Trade Facilitation and the Global Economy*, OECD Publishing, <https://doi.org/10.1787/9789264277571-en>.

Systematic consideration of IRC within regulations can benefit international competitiveness

In its *Better Regulation Tool #20* (2017^[21]), the EC calls for regulators to consider whether international standards, common regulatory approaches, and international regulatory dialogues exist in the concerned policy area. These are some of the mechanisms of IRC that the OECD recognises as aiding countries to

achieve better interoperability of regulatory frameworks and limiting the costs for traders while maintaining public policy objectives.

The OECD defines IRC as “any step taken by countries (or jurisdictions), formal or informal, unilaterally, bilaterally or multilaterally, to promote some form of co-ordination / coherence in the design, monitoring, enforcement or ex post management of regulation” (OECD, 2018, p. 125^[21]). IRC can help regulators overcome the domestic nature of the development and application of regulations in a context of increasing internationalisation of flows of goods and services and growing interdependency between countries in their production processes (OECD, 2018^[72]). IRC is particularly important in the context of competitiveness because of its intricate relationship with trade and GVCs. The various IRC mechanisms are listed in Figure 5.1 and two are particularly relevant to traders: the adoption of international standards and the mutual recognition of conformity assessment.

Figure 5.1. The OECD typology of IRC mechanisms



Source: OECD (2018), *International Regulatory Co-operation: Adapting rulemaking for an interconnected world*, Policy Brief, www.oecd.org/gov/regulatory-policy/international-regulatory-cooperation-policy-brief-2018.pdf.

Typically, the recognition and incorporation of international norms and standards in national legislation promotes the interoperability of regulatory frameworks by supporting the harmonisation of product specification and conformity assessment methods across the international partners (OECD, 2017^[67]). When done systematically and consistently across partners, this results in decreases in specification costs and conformity assessment costs throughout the value chain, which therefore enhances the efficiency, productivity and profits of businesses, thereby improving their competitiveness. Due to World Trade Organisation (WTO) obligations, many countries have embedded domestic requirements and procedures to consider the adoption of international standards when developing or revising a technical regulation (OECD, 2018^[71]). There is nevertheless still limited evidence and evaluation in *ex ante* impact assessment of the savings and gains from their adoption and of the potential costs of diverging from them when domestic conditions justify it. Indeed, OECD monitoring of RIA practices shows limited availability of

guidance and methodologies supporting regulators in this area, and therefore limited assessment of trade impacts or of the impacts of diverging from international standards (OECD, 2018^[2]).

When regulatory approaches differ across jurisdictions but countries trust in their respective rules or capacity to assess compliance with the other system, mutual recognition may help palliate the costs of diverging regulatory frameworks. Typically, the mutual recognition of conformity assessment procedures involves the recognition by countries of the capability of the trading partners' conformity assessment bodies to test and certify against the rules and procedures of another country (OECD, 2018^[71]). MRAs facilitate market access by eliminating duplicative testing and certification or inspection, reducing the uncertainty about a possible rejection and shortening 'time-to-market' (OECD, 2018^[71]). MRAs have proved effective at cutting trade costs in a number of sectors with complex GVCs (OECD, 2017^[67]). As identified above, proving compliance to a range of regulators and enforcement agents across jurisdictions may prove costly to businesses. The consideration in *ex ante* impact assessment of the quality of the conformity assessment infrastructure related to the development of new technical regulations and of the costs to comply remains rare and could help better anticipate on the trade impacts of new measures.

Finally, engaging external partners in regulatory processes strengthens RIA by raising awareness for regulatory approaches in other jurisdictions and providing information about unintended impacts for third parties of maintaining the same or different regulatory approaches. Member countries can use a range of communication tools to involve foreign stakeholders in the regulatory procedure, including amongst others open-access internet platforms accessible to all, specific communication through business platforms or chambers of commerce, as well as compulsory notification of draft regulations to international fora such as those provided by WTO to notify regarding technical regulations (OECD, forthcoming^[73]). Given their ability to provide information about the costs and benefits of the regulation on several of the components of competitiveness explored above, consultation with foreign stakeholders may contribute to identifying and dealing with the impact of regulatory proposal on competitiveness.

Burdensome regulations also impede international investment

The investment climate contributes to a country's international competitiveness. Investment components feature explicitly in some of the leading indicators of countries' competitiveness, such as the International Institute for Management Development (IMD)'s *World Competitiveness Rankings* (2019^[74]). These suggest that levels of inward and outward investment flows impact innovation and country competitiveness, which are both necessary for a country to thrive. At the same time, regulatory frameworks for investment underpinning government and institutional efficiency also fall within the accepted notion of competitiveness (IMD, 2019^[74]). Providing conceptual contexts for analysing the links between competitiveness, regulation and the investment climate is however a complex undertaking.

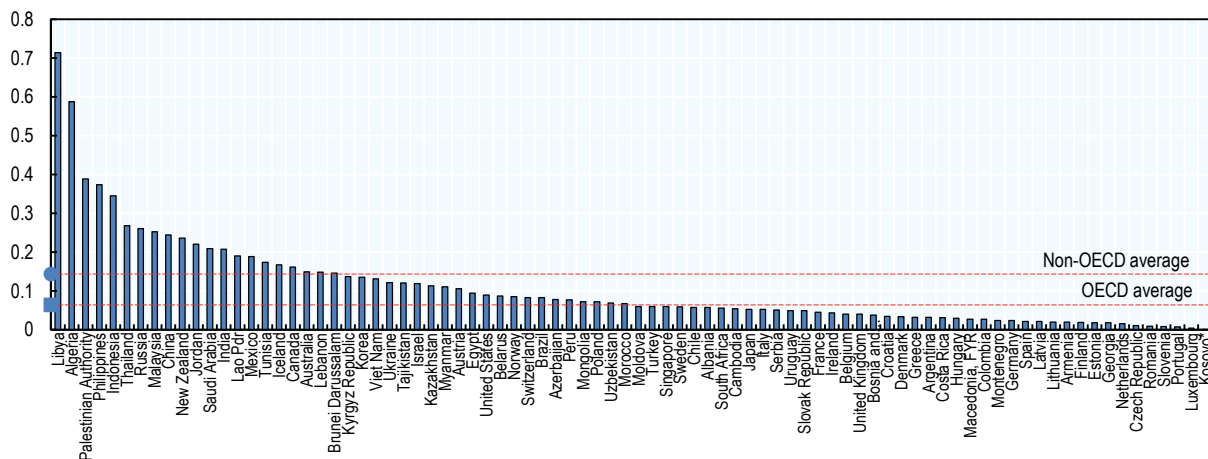
The quality of regulation significantly influences the investment climate. Poorly designed or weakly applied regulations can slow business responsiveness, divert resources away from productive investments, hamper entry into markets, reduce job creation and generally discourage entrepreneurship. Investors can be either market seeking, export and efficiency seeking, or resource seeking, or a combination of these (OECD, 2001^[75]). The type of regulation that applies to each category varies and so does its impact. And while all countries aim to promote investment and improve competitiveness, they restrict foreign investment to a certain extent (Figure 5.2). They do so, more or less transparently, for a variety of reasons, including national security and protection of indigenous industries. When discriminatory policies are necessary, OECD recommends that they should be proportional – not greater than needed to address broader concerns – and set against measurable objectives and regularly assessed against those objectives. Regular evaluations can be encouraged by requiring periodic renewal of the discriminatory restrictions (OECD, 2019^[76]).

OECD studies indicate that even partial restrictions can have a strong impact on investment. It is estimated that the introduction of reforms leading to a 10% reduction in level of FDI restrictiveness as measured by the *OECD FDI Regulatory Restrictiveness Index* (2019^[77]) could increase bilateral FDI inward stocks by around 2.1% on average (Mistura and Roulet, 2019^[78]). Regulatory restrictions also bear economic costs. By hindering competition in services sectors, for instance, these type of restrictions can contribute to raising services input costs, such as financing and logistics, for other economic sectors. Access to inputs in the form of world-class services through FDI has been illustrated to be critical for boosting growth and jobs in the services sector and moving manufacturing up the value chain (OECD, 2018^[79]).

Some countries have attempted to by-pass cutting down statutory restrictions by opting for alternative models of attracting investment, such as through establishing special economic zones, which can offer a series of exemptions to national regulations. This strategy however brings significant challenges, including forgone government revenue through the lavish use of fiscal incentives and other benefits to lure in investors in what is otherwise a highly restrictive economy. Much of the policy debate is about removing unnecessary impediments to domestic investment. Arguably, poor regulatory environments that affect domestic businesses (see Chapter 3) will similarly impact international investors.

Figure 5.2. The OECD FDI Regulatory Restrictiveness Index

2019 (open=0; closed=1)



Notes: The OECD FDI Regulatory Restrictiveness Index covers only statutory measures discriminating against foreign investors (e.g. foreign equity limits, screening & approval procedures, restriction on key foreign personnel, and other operational measures). Other important aspects of an investment climate (e.g. the implementation of regulations and state monopolies, preferential treatment for export-oriented investors and SEZ regimes among other) are not considered. Data reflect regulatory restrictions as of end-December. Please refer to Kalinova et al. (2010) for further information on the methodology.

*This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244/99 and the Advisory Opinion of the International Court of Justice on Kosovo's declaration of independence.

Source: OECD (2019), OECD FDI Regulatory Restrictiveness Index database, www.oecd.org/investment/fdiindex.htm.

Investment for competitiveness goes beyond the levels of FDI, and includes the quality and impact of FDI, both inward and outward. Policy makers may worry that FDI flow into sectors which do not provide sufficient productive or social benefits or which cause environmental degradation. Ensuring inclusive and sustainable development sometimes means channelling investment into particular sectors or activities. This might involve regulatory reform that removes sector-specific impediments, whether policy-induced or specific to the market structure of each sector. This requires that policies and regulations pay particular attention to the returns to investors or the business environment in those sectors to entice them to invest.

International co-operation can complement and even reinforce domestic efforts to improve the investment climate. The more standards are harmonised or mutually recognised across countries, the more easily will firms be able to invest and trade internationally. Regulatory divergences at the individual country-level might deter the regional market attractiveness. The OECD has found that divergence of product market regulation can have significant negative effects on FDI. Studies suggest that reforms that would reduce heterogeneity by one fifth could increase FDI by about 15% (Fournier, 2015^[80]).¹⁶

¹⁶ Such convergence has been observed between 2008 and 2013 for pairs of countries such as Austria and the Slovak Republic, with both of them reducing country specific regulations.

6 Governance and practical elements

The previous chapters have unpacked and explored the individual components of competitiveness that regulations can impact, with the ultimate practical objective of reviewing them as part of regulatory impact assessments (RIA). Building on this analysis, this chapter highlights a number of crosscutting messages for consideration by policy makers when developing and embedding competitiveness appraisals in their rulemaking processes.

In particular, this chapter reviews the value of a holistic approach to analysing regulatory impacts on competitiveness, the relevance of using qualitative methodologies, and the need to develop outward-oriented RIA and regulatory frameworks. These three elements are particularly relevant due to the multi-dimensional characteristics of competitiveness. Given the linkages between the various components of competitiveness (cost, innovation, and international), a holistic and comprehensive approach can ensure a consistent appraisal procedure and help identify the relevant impacts that may arise. Since competitiveness is a varied and complex concept regulators might have to use qualitative methodologies to fill gaps when data are too limited for quantitative cost-benefit analysis. Finally, the interconnectedness of economies and the international flows of products and factors of production policy makers support the integration of international considerations in domestic rulemaking.

The final section identifies the underpinning conditions and some useful practices to implement the adoption of a competitiveness impact in the RIA process, building on the unique experience of the EC in this area.

Key considerations to embedding competitiveness impacts in regulatory assessments

The importance of a holistic approach to competitiveness

Competitiveness is a multi-dimensional concept that includes a wide array of context-specific factors (see Chapter 1). Addressing its impacts in rulemaking necessarily implies disentangling various effects that may reinforce or contradict each other. RIA presents an important opportunity to identify, highlight and analyse these effects. Building and expanding on previous work by the EC, this report unpacked the regulatory impacts on competitiveness along three main components: namely cost competitiveness (Chapter 3), innovation (Chapter 4), and international competitiveness (Chapter 5).

Some of these components are existing requirements for OECD members. As highlighted in the *Regulatory Policy Outlook* (2018^[2]) and by Figure 2.1, many require the quantification of compliance costs and to review the impacts of regulations on innovation, on small businesses, on trade, and on competition. This suggests that OECD members already have experience of appraising these individual impacts and some have an established analytical procedure with specific guidance.

With some additional investment, it should be possible to expand on existing experiences and on the already assessed impacts to take a more holistic approach necessary to the analysis of competitiveness. The various elements are indeed linked and, as highlighted in this report, contribute together to determine the competitiveness of a sector / an economy. For example, as discussed in Chapter 4, stringent

regulations that impose high compliance costs increase firms' expenditures. This can additionally deter innovation by diverting time and resources away from productive R&D activities towards compliance, thereby focusing on existing technologies. Whilst policy makers might not intend for regulatory proposals to affect innovation, the relationship between cost competitiveness, innovation, and international competitiveness means that an effect on one component is likely to spill over to other ones. As a result, there is scope to build on the traditional impacts assessed in RIA to construct a more holistic picture of the effects of regulatory measures on a sector's competitiveness.

Additionally, such a comprehensive approach may help identify second order effects and link up the impacts that policy makers assess sometimes disjointedly (by calling on external contributions from other services or external experts). Individual and disjointed analysis of the different components of competitiveness may indeed provide only a partial assessment of the regulatory impacts and can fail to thoroughly appraise all the costs and benefits resulting from regulatory proposals. For example, the regulatory impacts on SMEs are commonly required to be assessed in OECD members' RIA procedures, however this often entails assessing the direct increased costs on SMEs resulting from the proposed legislation. Other factors affecting SMEs competitiveness, such as their ability to access financing or their difficulty in entering international markets are often neglected from the SME test for RIAs. Policy makers therefore only appraise part of the regulatory costs that SMEs face and their analysis fails to capture the complete costs of regulatory impacts on small and medium firms. This is not limited to SMEs as an incomprehensive analysis of competitiveness produces inaccurate cost-benefit analysis that underestimate the costs of regulatory intervention. As a result, this would artificially improve the results of the appraisal analysis and provide policy makers with inaccurate information.

There is scope for OECD members to integrate the current fragmented analysis of the individual components of competitiveness into a more comprehensive and holistic assessment. One option is to ensure that policy makers recognise that competitiveness goes beyond the concept of productivity and that they consider the other components of the concept as well. As a result, policy makers should attempt to assess how policy proposals affect the cost of the relevant factor (e.g. compliance, R&D, trade) as they currently do, but also how it affects the ability to attract economic activity as well as the capacity of a firm to capture any competitive advantages vis-à-vis its current and potential competitors.

Using qualitative methodology in RIA

An important conclusion from this report is that competitiveness is not an easily quantifiable concept. Given the complexity and variety of components to appraise, there may not always be the necessary quantitative data to assess the effects of a regulatory proposal on a particular sector, and/or data quality might not be sufficient to do so. A mix of both qualitative and quantitative methodologies are therefore likely to be necessary. This is the approach adopted by the EC in the *Better Regulation Tool #20* (2017^[21]).

The importance of qualitative analysis is recognised by the OECD in its *Best Practice Principles on Regulatory Impact Assessments* (2020^[31]), which considers that quantitative cost-benefit analysis (CBA) in RIA is not always feasible given the amount of expertise and resources it requires. Whilst the goal of administrations responsible for RIA should lie in making CBA integral to RIA, various methodologies can be used to compare positive and negative impacts of regulations, including qualitative analysis (OECD, 2020^[31]). The *Best Practice Principles* (2020^[31]) also reiterate that the essential role of RIA is the identification of all possible direct and indirect impacts of alternative options that can in-principle address and solve the identified policy problem, rather than to quantify them. The multidimensional nature of competitiveness demonstrated in this report suggests that undertaking a purely quantitative appraisal or attempting to calculate a regulation's net present value as the final output is not always suitable and qualitative evidence may be required to fill the gaps. The analytical framework for appraising regulatory impacts on competitiveness should be flexible enough to adapt to the requirements of the policy, to its impacts, and to the data available to policy makers.

Outward- and internationally-oriented RIAs and regulatory frameworks

Given the strong integration of OECD economies' in GVCs and their interconnectedness with other jurisdictions for the routine flows of goods, services, finance, data, and professionals, understanding competitiveness solely from a domestic perspective would be flawed. Chapter 5 has demonstrated the importance of embedding international considerations in domestic rulemaking and of focusing on the interaction of regulatory frameworks to support a country's capacity to operate seamlessly in a global environment. Given this, it is surprising that rulemaking and the related regulatory management tools (including RIA, stakeholder engagement and *ex post* evaluation) remains focused on domestic considerations in most countries. In particular, OECD evidence suggests that the scope of policy makers' regulatory analysis remains entirely dedicated to national (first order) effects (Figure 2.1), except in a couple of jurisdictions where the consideration of market openness and trade impacts goes beyond a tick the box exercise and are thoroughly contemplated as part of RIA.¹⁷

There is a need for greater consideration of the international environment in the rulemaking process and relevant practices building on OECD work on international regulatory co-operation (IRC). Chapter 5, in particular, highlights the relevance of referring to international standards and of conformity assessment processes aligned with international practice. Bringing the IRC work together, the *Best Practice Principles on International Regulatory Co-operation* (OECD, forthcoming^[73]) further details the steps that policy makers and regulators can take within the RIA process to ensure that their rulemaking takes into account the potential impacts on parties beyond national boundaries.

- One important area of consideration for policy makers relates to the regulatory impacts on the GVCs, in particular the effects on imports and exports, recognising that both are important to a country's competitiveness and should be analysed in RIAs.
- A second relates to the importance of systematically assessing the value of departing from recognised international norms and standards that support a consistent regulatory approach to supply chain.
- An outward-oriented regulatory framework should also involve opening stakeholder consultations to foreign stakeholders, thereby ensuring the contribution of all affected parties in the development of regulations, and the active participation in international notification processes (such as established by the WTO and others).

Implementing the competitiveness impact assessment: lessons learnt from the European Commission's *Better Regulation Tool #20* (2017^[21])

In addition to the *Better Regulation Guidelines* (2017^[20]) and to *Tool #20* (2017^[21]) (both of which were discussed in Chapter 2), the EC has established a number of practical services to support its officials in developing competitiveness assessments. Specifically, the EC has established a dedicated "helpline" in DG GROW, i.e. the Directorate-General responsible for EU policies on the internal market, industry, entrepreneurship, and SMEs. Through this helpline, services drafting impact assessments can contact a DG GROW official when they have specific questions on the appraisal of competitiveness impacts or on its methodology.

The EC recognises that officials identify a wide range of regulatory impacts when drafting RIAs and therefore should only assess competitiveness impacts when they are significant. Although all RIAs must provide a description of the regulatory impacts on competitiveness, the EC acknowledges that *Tool #20* (2017^[21]) acts only as guidance and it is not mandatory for officials to follow it systematically in every single

¹⁷ Mexico provides an interesting example where trade contributes to filtering the RIA proposals and the RIA process is strongly connected with the WTO notification process.

RIA. In practice, the analysis of competitiveness impacts is not systematic. The annual report of the Regulatory Scrutiny Board (2018^[81]) reported that under 40% of the RIAs reviewed by the Board contained an appraisal of competitiveness impacts.¹⁸ The EC acknowledges that the key value from carrying out the competitiveness assessment can be found in the assessment of the distributional impact of a new regulatory measure in terms of sectors, an area that would otherwise be largely overlooked in such analysis. In addition, it seems that the “*Competitiveness Proofing*” Toolkit (2012^[14]) helped to revive the analysis of regulatory impacts on innovation and on SMEs, which tended to be overlooked by services up to 2012, whilst the *Better Regulation Guidelines* (2017^[20]) made it mandatory to provide some description of the regulatory impacts on competitiveness in final RIA reports

The experience from the EC shows that when carrying out the competitiveness impact assessment, most services focus primarily on cost competitiveness and less so on international competitiveness. This may reflect the fact that the cost competitiveness component is by far the most developed of the three components of competitiveness in *Tool #20 on sectoral competitiveness* (2017^[21]) and the most straightforward to analyse and quantify. It may also be driven by the fact that many elements of cost competitiveness have already been calculated as part of the standard RIA procedure outlined in the *Better Regulation Guidelines* and data are more readily available (2017^[20]).

A final noteworthy element to consider is the organisation of analytical support for the appraisal of competitiveness impacts. This is particularly relevant in the context of competitiveness, given its multiple dimensions and the need to have a holistic view of all these different impacts. The analytical support and development of the competitiveness impacts is relatively fragmented in the EC, with DG GROW responsible for the support of competitiveness impacts while other services are responsible for some of its components (innovation for example). Even in jurisdictions organised differently from the EU, this example shows that centralised responsibility is key to the development of a competitiveness assessment process. This would support the development of a more holistic view of the different components and would ensure that competitiveness is appropriately and comprehensively appraised by policy makers.

¹⁸ Data extracted from Figure 13 (Frequency of impacts analysed in impact assessments and raised in the Board opinions, 2017-18) of the EC Regulatory Scrutiny Board’s *Annual Report* (2018, p. 33^[81]).

7 Conclusion

The term “competitiveness” is a multidimensional concept that is difficult to define and conceptualise. Competitiveness includes a wide array of elements depending on the specific context at hand. It is often used as a catchall term used to refer to productivity, although it is also used synonymously with economic growth. In terms of application, competitiveness is generally not part of OECD members’ regulatory policy frameworks. Very few members require or promote a regulatory competitiveness assessment process or attempt to embed the consideration of competitiveness impacts in rulemaking.

RIA is a flexible instrument that acts as both a tool and a process to inform policy makers and regulators in their rulemaking on the best way to achieve efficient regulations (see definitions in Box 7.1). It also provides a useful framework to assess the competitiveness impacts of regulation. Although they may not include an assessment of competitiveness impacts of regulation per se, most OECD members include some elements of competitiveness impacts in their RIA requirements, including impacts on competition, SMEs, and (to a lesser extent) trade. Most OECD members have the building blocks albeit not the holistic approach to assess the competitiveness impacts of regulation in RIA.

Box 7.1. Definitions of efficiency and effectiveness in a regulatory policy context

It is well established that regulations ought to be efficient and effective, but these concepts are subject to differences of interpretation. Policy makers and regulators alike should consider the following definitions when devising and implementing policies. These definitions are particularly germane to regulatory proposals with competitiveness impacts, as policy makers can assess all viable options against them as an initial screening. For regulators, the definitions provide a useful checklist to ensure that regulations remain in the public interest over time.

An *efficient regulation* is one that results in the highest net benefit to society. Indicia of its attainment are that:

- economic activity is distorted by the minimum necessary amount
- it enables affected entities to comply at the minimum necessary least cost
- is proportionate to the estimated level of risk and associated costs and benefits
- no alternative regulatory or non-regulatory design could lead to a reduction in costs or an increase in benefits
- it supports societal welfare enhancements into the future

Regulatory effectiveness is a measure of how well regulations achieve their stated objectives/desired outcomes. Indicia of its attainment are that:

- stakeholders have had adequate opportunities for consultation and feedback in the design of the regulation and its enforcement
- the regulation is clear, consistent, comprehensible, and accessible to regulated entities
- affected entities can comply with regulatory requirements with reasonable costs
- the regulation is capable of being monitored and enforced

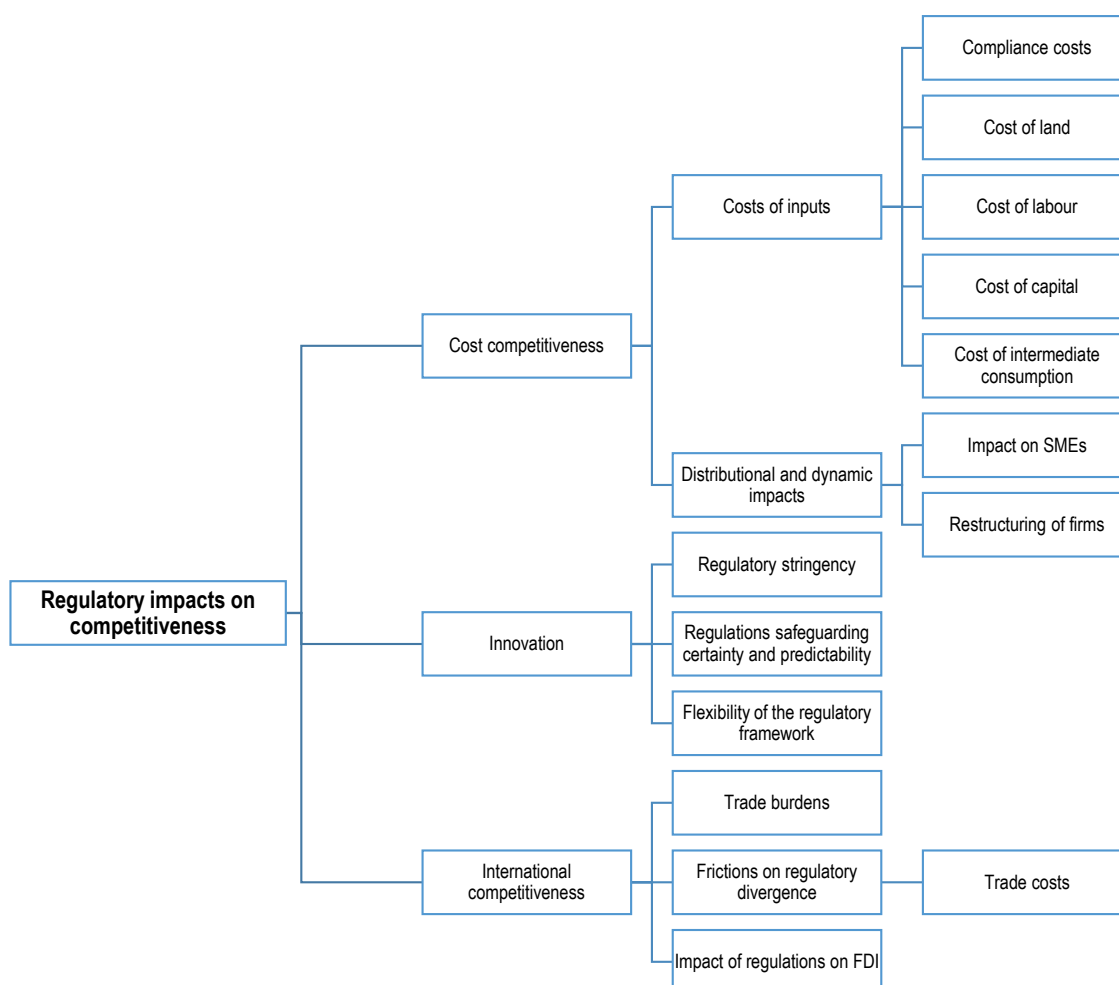
- the regulation remains justified
- the objectives/outcomes cannot be achieved through alternative means which lead to an improvement in societal welfare.

Source: Adapted in part from (Australian Productivity Commission, 2013^[82]).

The EC's "*Competitiveness Proofing*" Toolkit (2012^[14]) and *Tool #20 on sectoral competitiveness* (2017^[21]) stand out as an exception. They provide a framework to consider competitiveness impacts along three main pillars: cost and price competitiveness, the capacity to innovate, and international competitiveness. By adding the last two pillars to a more quantitative analysis of competitiveness, the EC has created a strong basis to explore additional facets of competitiveness that are of particular relevance to policy makers. This report builds and expands on the EC *Toolkit* (2012^[14]) and *Tool #20* (2017^[21]) to provide a more complete framework for policy makers to define and assess the competitiveness impacts of regulation as part of their RIA processes. It builds on the latest OECD research in various areas, including contemporary work of the Regulatory Policy Committee on international regulatory co-operation and on regulatory effectiveness in the face of new technologies.

The analytical framework is summarised in Figure 7.1 that provides the linkages of the regulatory impacts on competitiveness.

Figure 7.1. The linkages of regulatory impacts on competitiveness



Cost competitiveness

The first component explored in the second part of this report was cost competitiveness. Chapter 3 illustrated how additional obligations in the form of regulatory costs, increased costs to the factors of production, and restructuring affect the cost competitiveness of firms. Firstly, regulatory costs (and particularly compliance costs) are directly borne by businesses, thereby increasing their cost of doing business and worsening their competitiveness. Meeting policy objectives whilst ensuring compliance costs are the minimum necessary ought to be one of the important considerations for all policy makers.

Secondly, regulations affect the cost of factors of production, i.e. land, labour, capital, and intermediate consumption. These impacts can occur both directly and indirectly, in which case they may spill over to other sectors and affect the competitiveness of other industries or of the economy more generally. Given that the factors of production can act as channels through which the regulatory impacts travel to affect the competitiveness of other sectors, regulators ought to review both the direct and indirect impacts on the factors of production.

Finally, regulations can have market restructuring effects that may compromise the cost competitiveness of firms, particularly when they impede the dynamism of small and medium enterprises and entrepreneurship. Regulations affect SMEs disproportionately, thus heightening the importance of competitiveness impacts. Whether the regulations causes any major restructuring and/or disproportionately impact SMEs are key elements for regulators to examine if they want to understand the impact of their regulations on cost competitiveness.

Innovation

Innovation was the second component of competitiveness examined. It is a crucial factor of a country's overall competitiveness and enables productivity gains to spread to other industries, thereby boosting economic growth. It is a key element enabling firms to gain a competitive advantage vis-à-vis their competitors. The relationship between regulations and innovation is ambiguous: the factors impeding innovation can, under different conditions and depending on the way the policy is developed, also promote it. There is no universal formula to guide regulators when appraising policy impacts on innovation, so a case-by-case assessment is required. In reviewing the impacts of regulations on innovation, policy makers must balance regulatory stringency, prescriptive regulations and the certainty of the regulatory environment as all three are critical conditions that explain entrepreneurs' innovation decisions. In most cases, both too little and too much of any of these conditions will impede innovation, so policy makers must strike the right balance to develop innovation-friendly regulatory frameworks, depending on the sector and on the regulatory proposal being developed.

International competitiveness

The final component reviewed in this report was international competitiveness. Various definitions of competitiveness identified in this report illustrated that the concept exceeds national productivity. The international context is crucial, particularly as the competitiveness of many OECD members depends on their capacity to harness international flows of data, expertise, products and finance. The consideration of the international environment is crucial for the development of regulations, yet it is often the least developed in OECD members' RIAs. Regulations can harm international competitiveness through increased burdens and costs borne by traders and international investors, particularly when there are high levels of regulatory divergence between countries. Regulatory divergences give rise to a range of costs, which particularly affect SMEs engaged in GVCs. High trade costs may result in reduced output and barriers to entry, thereby worsening the competitive position vis-à-vis their competitors. Poorly designed regulations can slow business responsiveness and divert resources away from productive investments.

Systematic consideration of the international environment and available remedies (e.g. adoption of international standards, recognition of conformity assessment processes, exchange of information and co-operation in enforcement) can enable regulators to achieve better interaction of regulatory frameworks and limit the costs for traders while maintaining public policy objectives. Policy makers ought to pay particular attention to the impact of regulatory proposals on returns to investors, which will affect incentives to invest in particular sectors, with repercussions on those sectors' competitiveness. Better utilisation of international co-operation can improve the investment climate and firms' competitiveness.

To operationalise these various components of competitiveness, policy makers and regulators should develop a number of indicators and more qualitative information upon which to build sector-specific analysis. A range of indicators have already been identified in the ECs *Tool #20* (2017^[21]) (see Annex B). Given the complexities surrounding the concept of competitiveness, there are areas where the indicators listed in the EC's *Toolkit* (2012^[14]) and *Tool #20* (2017^[21]) could be expanded and revised. Amongst others, such indicators could provide a broader measure of competitiveness that better considers the international environment, the implications for multi-level governance, as well as non-economic and non-monetised regulatory benefits and costs. OECD work and data collection in a broad range of areas can support this endeavour. Possible approaches include a collation of existing databases and indicators (including building on the OECD's wealth of databases and indicator frameworks) to provide more specific and detailed guides for regulators.

Finally, the report showed (in line with other OECD work on RIA) the importance of the governance and methodological underpinning of the competitiveness impact assessment. A range of accompanying measures, including appropriate guidance, methodological tools, support and oversight, need to be put in place in order to help regulators successfully embed and carry out competitiveness impact analysis.

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Annex A. World Economic Forum Global Competitiveness Indicators (World Economic Forum, 2019_[1])

Pillar 1: Institutions	Pillar 2: Infrastructure	Pillar 3: ICT adoption
<ul style="list-style-type: none"> • Organised crime • Homicide rate /100 000 pop. • Terrorism incidence • Reliability of police services • Social capital • Budget transparency • Judicial independence • Efficiency of legal framework in challenging regulations • Freedom of the press • Burden of government regulation • Efficiency of legal framework in settling disputes • E-Participation • Incidence of corruption • Property rights • Intellectual property protection • Quality of land administration • Strength of auditing and reporting standards • Conflict of interest regulation • Shareholder governance • Government ensuring policy stability • Government's responsiveness to change • Legal framework's adaptability to digital business models • Government long-term vision • Energy efficiency regulation • Renewable energy regulation • Environment-related treaties in force 	<ul style="list-style-type: none"> • Road connectivity index • Quality of road infrastructure • Railroad density (km/1,000 km) • Efficiency of train services • Airport connectivity score • Efficiency of air transport services • Liner shipping connectivity • Efficiency of seaport services • Electricity access (% of population) • Electricity supply quality (% of output) • Exposure to unsafe drinking water (% of population) • Reliability of water supply 	<ul style="list-style-type: none"> • Mobile-cellular telephone subscriptions • Mobile-broadband subscriptions • Fixed-broadband Internet subscriptions • Fibre Internet subscriptions • Internet users

Pillar 4: Macroeconomic stability <ul style="list-style-type: none"> • Inflation (%) • Debt dynamics 	Pillar 5: Health <ul style="list-style-type: none"> • Healthy life expectancy years 	Pillar 6: Skills <ul style="list-style-type: none"> • Mean years of schooling • Extent of staff training • Quality of vocational training • Skillset of graduates • Digital skills among population • Ease of finding skilled employees • School life expectancy • Critical thinking in teaching • Pupil-to-teacher ratio in primary education
Pillar 7: Product market <ul style="list-style-type: none"> • Distortive effect of taxes and subsidies on competition • Extent of market dominance • Competition in services • Prevalence of non-tariff barriers • Trade tariffs • Complexity of tariffs • Border clearance efficiency 	Pillar 8: Labour market <ul style="list-style-type: none"> • Redundancy costs weeks of salary • Hiring and firing practices • Cooperation in labour-employer relations • Flexibility of wage determination • Active labour market policies • Workers' rights • Ease of hiring foreign labour • Internal labour mobility • Reliance on professional management • Pay and productivity • Ratio of wage and salaried female workers to male workers • Labour tax rate 	Pillar 9: Financial system <ul style="list-style-type: none"> • Domestic credit to private sector • Financing of SMEs • Venture capital availability • Market capitalization • Insurance premium • Soundness of banks • Non-performing loans (%) • Credit gap (%) • Banks' regulatory capital ratio
Pillar 10: Market size <ul style="list-style-type: none"> • Gross domestic product PPP • Imports of goods and services (% GDP) 	Pillar 11: Business dynamism <ul style="list-style-type: none"> • Cost of starting a business • Time to start a business • Insolvency recovery rate • Insolvency regulatory framework • Attitudes toward entrepreneurial risk • Willingness to delegate authority • Growth of innovative companies • Companies embracing disruptive ideas 	Pillar 12: Innovation capability <ul style="list-style-type: none"> • Diversity of workforce • State of cluster development • International co-inventions • Multi-stakeholder collaboration • Scientific publications • Patent applications • R&D expenditures • Research institutions prominence • Buyer sophistication • Trademark applications

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[1]

Annex B. Existing methodology to analyse competitiveness regulatory impacts in selected OECD members

Annex B provides an assessment of current RIA guidelines in selected OECD members. The Secretariat welcomes feedback from members and invites others to alert it regarding competitiveness assessments in jurisdictions' guidelines.

	Is competitiveness mentioned or defined in guidelines?	What is their approach? What is their methodology?	What indicators do they measure?
Australia	<p>The Australian Government Guide to Regulatory Impact Analysis (2020^[83]) mentions competitiveness in relation to regulatory impacts on competition and on trade but does not define or discuss it in further details. There are no methodologies or indicators suggested.</p> <p>The Australia Productivity Commission (APC) discusses competitiveness in its <i>Trade and Assistance Review</i> (Australia Productivity Commission, 2015^[84]). The APC however uses the term 'competitiveness' as a synonym of 'comparative advantage'. The APC acknowledges that recent literature has recognised the importance of institutions in determining a country's comparative advantage. Examples of important institutions are:</p> <ul style="list-style-type: none"> • Labour market institutions; • Financial system attributes; • Contract enforcement; • Intellectual property arrangements; • Foreign investments; • Business climate; • Border controls systems; • Customs procedures. <p>The last two institutions – combined with the availability of efficient transportation and the proximity of trading partners – may be even more important than resource endowments as determining factors in trade patterns.</p> <p>Furthermore, the Australian Government produced an <i>Industry, Innovation and Competitiveness Agenda</i> (2014^[85]), which seeks to improve Australia's competitiveness through four ambitions:</p> <ol style="list-style-type: none"> 1. A lower cost, business friendly environment by: <ul style="list-style-type: none"> • Reducing the burden of regulation; • Reducing the burden of taxation; and • Improving access to international markets and opening up the economy to greater domestic and international competition. 2. A more skilled labour force by: <ul style="list-style-type: none"> • Improving Australia's education and training system; • Attracting the best and brightest to Australia; • Returning their workplace relations system to the sensible centre; and • Helping parents stay in the workforce. 3. Better economic infrastructure through: <ul style="list-style-type: none"> • Increased public investment and encouraging greater private investment in infrastructure (roads, rail, ports, airports, energy, water and communications networks); • Improving infrastructure project selection, funding, financing and delivery. 4. Industry policy that fosters innovation and entrepreneurship through: <ul style="list-style-type: none"> • Not borrowing to give money to big international corporations or to struggling businesses; • Re-targeting industry policy to capitalise on Australia's strengths and accelerate the growth prospects of high-potential SMEs and most promising sectors. • Facilitate winning strategies by businesses that spend their own money and take their own risks. <p>Australia does not however define what competitiveness is in and the term seems to be a synonym for "productivity".</p>		
Austria	See Box 2.1 for an in-depth review of Austria's guidelines on reviewing regulatory impacts on competitiveness.		

Belgium	The francophone guidelines define economic competitiveness as “the capacity of a firm, an industry, or a territory to provide one or several goods/services under competitive market conditions in the long term” (Agence pour la Simplification Administrative, 2014, p. 25 ^[16]). This concept includes both quantitative and qualitative factors.	The guidelines do not indicate a specific approach or methodology to adopt. The requirement is to complete a form in which policy analysts indicate whether the regulatory project will have positive, negative or no impact on economic growth (under which competitiveness is categorised) and to add some optional comments on the impacts. No analytical methodology is suggested by the guidelines.	Quantitative factors: <ul style="list-style-type: none"> Costs of factors of production (such as inputs, labour, energy, taxes, exchange rate, productivity of capital). Qualitative factors: <ul style="list-style-type: none"> Ease of administration; Innovations; Labour productivity; Localisation; Creativity; Resilience ...
Czech Republic	See Box 2.2 for an in-depth review of Czech Republic’s guidelines on reviewing regulatory impacts on competitiveness.		
European Commission (EC)	The EC defines competitiveness as “a measure of an economy’s ability to provide its population with high and rising standards of living and high rates of employment on a sustainable basis” (European Commission, 2012, p. 4 ^[14]). Analysing the impact on competitiveness is a requirement under the EC’s guidelines for RIAs.	<p>The EC suggests a two-fold approach: First assess whether a regulation will have an impact on competitiveness and, if so, assess what that impact will be. The EC considers the following as major impacts on sectoral competitiveness and pillars upon which to build the analysis:</p> <ol style="list-style-type: none"> 1. The cost and price competitiveness (including consumer choice); <ul style="list-style-type: none"> • A sector’s capacity to produce at a lower cost and/or offer products at a more competitive price. • Cost of operations (i.e. cost of inputs or factors of production) may be directly or indirectly affected by the regulatory proposal. 2. The capacity to innovate; <ul style="list-style-type: none"> • Quality or originality of a sector’s supply of goods or services, including technological development and innovation (which highly affect cost of inputs and value of outputs). 3. International competitiveness; <ul style="list-style-type: none"> • The sector’s market shares on the international market; • The analysis of impacts on costs and capacity to innovate should also be addressed in an international comparative perspective. <p>The EC calls for analysis of both direct and indirect (positive and negative) effects and for distinguishing between the short and long-term. In effect, this requires scrutinising the impact of the regulation in the upstream and downstream markets as well as for substitutes and complementary products, in order to capture the potential spill over effects.</p> <p>The Guidance suggests different methodologies to quantify the impacts on competitiveness, listed in Annex B.</p>	The EC has provided a large list of competitiveness indicators, which are listed in Annex B.
France	The guidelines state that RIAs should disclose potential economic impacts, which includes any effect on competitiveness, trade balance, GDP and inflation as well as effects on investment and new obligations on firms. The guidelines do not however provide further details on the methodology to adopt or the indicators to measure and do not define the term “competitiveness”.		

Ireland	<p>Ireland has established an independent council, the National Competitiveness Council (NCC), which reports on key competitiveness and productivity issues and offers recommendations on policy actions.</p> <p>The RIA guidelines use the Council's definition of competitiveness as:</p> <p>"The ability to achieve success in international markets leading to better standards of living for all. It stems from a number of factors, notably firm level strategies and a business environment that supports innovation and investment, which combined lead to strong productivity growth, real income gains and sustainable development" (Department of the Taoiseach, 2009, p. 27^[13]).</p> <p>National competitiveness is therefore a broad concept that encompasses a diverse range of factors and policy inputs. The RIA guidelines cite competitiveness as one of the key factors that must be analysed as Ireland is concerned about its national competitiveness. The guidelines however do not suggest a methodology through which regulatory impacts on competitiveness could be analysed.</p>	<p>All regulations must be examined to establish whether they affect competitiveness by impacting:</p> <p>Ireland's business and work environment;</p> <ul style="list-style-type: none"> • Economic and technological infrastructure; • Education and skills; • Entrepreneurship and enterprise development; • Innovation and creativity. <p>Ireland does not provide specific indices on what particular data should be collected to examine the above impacts on competitiveness.</p>
Mexico	<p>Mexico has a competitiveness-specialised national institute (<i>Instituto Mexicano para la Competitividad</i> or IMCO) which drafts reports and analysis on the different forms of competitiveness (urban, state, and international amongst others). Its <i>State Competitiveness Index</i> (<i>Indice de Competitividad Estatal</i>) report, the Institute defines competitiveness as:</p> <p>"The ability that entities have to generate, attract, and retain talent and investment" which "depends entirely on its ability to provide its inhabitants with education, health, security, access to basic services, among other goods and services" (Instituto Mexicano para la Competitividad, 2020, pp. 18-19^[66]).</p> <p>The report also includes 97 indicators categorised into 10 categories, namely:</p> <ul style="list-style-type: none"> • Objective and trustworthy legal system; • Sustainable management of the environment; • Inclusive, prepared and healthy society; • Stable and functional political system; • Efficient and effective government; • Efficient market; • Stable economy; • World pioneering sectors; • Use of international relations; • Innovation in economic sector. 	
Netherlands	The guidelines do not mention competitiveness or provide details on how to assess the impacts a regulatory proposal may have on it.	
New Zealand	The guidelines do not mention competitiveness, even in their discussion on competition assessment of regulatory proposals.	
Switzerland	The <i>RIA Checklist</i> (2013 ^[67]) mentions competitiveness as one of the various elements that may affect the Swiss economy and that ought to be reviewed as part of RIA where relevant. The guidelines however do not define competitiveness and do not provide a methodology for appraising how it may be affected by regulatory proposals.	
United Kingdom	The guidelines do not mention competitiveness or provide any details on how to assess the impacts a regulatory proposal may have on it.	
United States	The Executive Orders that form the legal basis of regulatory governance only mention competitiveness as a value that must be protected, with no further definition or details. Additional material published since do not discuss competitiveness in detail.	

1. Definition available at: <http://www.competitiveness.ie/About-Us/Our-Work/>.

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Annex C. Checklist in the EC's Tool #20 on sectoral competitiveness (2017^[1]) to assess the need for competitiveness analysis

The EC presents the below checklist in its *Better Regulation Tool #20 on sectoral competitiveness* (2017^[1]) as a tool to assess whether a policy intervention is likely to have significant impact on business competitiveness:

Cost and price competitiveness	Positive	Negative
Cost of inputs		
Cost of capital		
Cost of labour		
Other compliance costs (e.g. reporting obligations)		
Cost of production, distribution, after-sales services		
Price of outputs (directly not through the cost, e.g. price controls)		
Capacity to innovate		
Capacity to produce and bring R&D to the market		
Capacity for product innovation		
Capacity for process innovation (including distribution, marketing, and after-sales services)		
Access to risk capital		
International competitiveness		
Market shares (single market)		
Market shares (external markets)		
Revealed comparative advantage		
Capacity to produce and bring R&D to the market		

A “yes” or “no” should be added where possible in each row. This simple exercise may be sufficient to help policy makers decide if a RIA needs a competitiveness impact assessment to look in greater depth at all or some impacts competitiveness. If there is considerable uncertainty, with many cells left blank, a more thorough analysis may be warranted. This checklist could be applied to all the policy options considered as part of the regulatory proposal.

Reference

European Commission (2017), *Better Regulation Tool #20. Sectoral Competitiveness*,
https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-20_en_0.pdf.

[1]

Annex D. Factors to consider in analysis according to the EC's “Competitiveness Proofing” Toolkit (2012^[1]) and Tool #20 on sectoral competitiveness (2017^[2])

Pillar 1: Cost and price competitiveness

According to the “Competitiveness Proofing” Toolkit (2012^[1]), factors to consider in the analysis are:

- A. Changes in cost of intermediate goods and services (including energy). This includes impacts on:
 - c. Price or availability of natural resources;
 - d. Restrictions or bans on certain materials; and
 - e. Indirect effects if the changes in cost are passed to downstream markets or alter the demand pattern.
- B. Changes in cost of factors of production (labour, capital or natural resources), such as:
 - f. Changes in the price of capital goods;
 - g. Changes in availability and cost of financing (equity, loans, and bonds);
 - h. Changes in retirement age, minimum wages, social insurance contributions, taxes on labour, accounting or reporting obligations; and
 - i. Indirect effects on the cost of labour include impacts on labour mobility, employee protection legislation, labour market rigidities/flexibilities, and changes to labour demand or labour cost savings.
- C. Constriction or liberalisation of price setting or consumer choice (i.e. impact on competition), including:
 - j. Availability of certain products on the market;
 - k. Bans or limits of marketing of certain products;
 - l. Impact on consumer price for products in affected sector;
 - m. Impact on quality of goods/services that consumers buy;
 - n. Effect on transparency and comparability of information on quality and prices of goods/services; and
 - o. The extent to which changes in production costs are transferred to the consumers.
- D. Addition or reduction of compliance cost (including administrative burden). This includes:
 - p. Monetary value of time devoted by staff and management to comply with the new policy requirement;
 - q. The money for buying the products and services required by the policy;
 - r. Whether some enterprises or sectors become at a disadvantage relative to their competitors.

- s. What the adjustment cost would be;
- t. Whether the sector would need major restructuring; and
- u. Whether it would lead to closing down of enterprises or to disadvantaging SMEs.

Tool #20 (2017^[2]) provides the same analytical framework but includes fewer details, referring instead to the *Toolkit* (2012^[1]) if EC services require more methodological guidelines.

Pillar 2: Innovation

This involves impact on:

- A. Enterprises' capacity to carry out R&D, including impact on:
 - v. Supply of skills needed by the sector;
 - w. Efficiency of protection of IP rights.
- B. Sector's capacity for product innovation (which depends on technical skills and application of new technologies);
- C. Capacity for process innovation (which depends on the supply of management and organisational skills/talents); and
- D. Ability to access risk capital and financing.

The EC does not list quantitative indicators but refers to the European Innovation Scoreboard as a starting point for the analysis. The indicators listed in the Scoreboard are the followings:

- A. **Human resources:** New doctorate graduates, population with tertiary education, and lifelong learning;
- B. **Attractive research systems:** International scientific co-publications, most cited publications, and foreign doctorate students;
- C. **Innovation-friendly environment:** Broadband penetration and opportunity-driven entrepreneurship;
- D. **Finance and support:** R&D expenditure in the public sector and venture capital expenditures;
- E. **Firm investments:** R&D expenditure in the business sector, non-R&D innovation expenditure, and enterprises providing ICT training;
- F. **Innovators:** SMEs product/process innovations, SMEs marketing/organizational innovations, and SMEs innovating in-house;
- G. **Linkages:** Innovative SMEs collaborating with others, public-private co-publications, and private co-funding of public R&D expenditure;
- H. **Intellectual assets:** PCT patent applications and trademark applications, and design applications;
- I. **Employment impacts:** Employment in knowledge-intensive activities, employment fast-growing enterprises;
- J. **Sales impacts:** Medium and high-tech product exports, knowledge-intensive services exports, and sales of new-to-market/firm innovations.

Pillar 3: International competitiveness

Some of the qualitative factors suggested by the EC include:

- A. Ratio of inward FDI stock to value added (this signals the attractiveness of the host country);
- B. Ratio of outward FSI stock to value added (indicator of corporate strength);

- C. Export market share (to show the proportion of world export covered by the export of a particular country);
- D. Revealed Comparative Advantage (RCA) and Relative Trade Balance (RTB), both of which reflect the position of individual industries in the world market; and
- E. Relative Unit Labour Costs (RULC), which reflects the ability to remain competitive.

The quantitative methodology suggested by the EC is to complete a sector profiling and cost-structure description with an overall cost breakdown for each level of the industry (from harvesting/mining/production to consumer sale). This adds to the understanding on the significance of the positive and negative impacts identified.

Methodology

Tool #20 on sectoral competitiveness (2017^[2]) suggests different methodologies to quantify the impacts on competitiveness:

- Descriptive statistics;
- Input-output analysis using national or sectoral accounts;
- Applied general equilibrium modelling;
- Computable general equilibrium modelling;
- Macro-econometric input-output models;
- Sector profiling with overall cost breakdown;
- Other econometrics exercise.

The “*Competitiveness Proofing*” *Toolkit* (2012^[1]) additionally suggests the following two methodologies:

- Partial equilibrium modelling;
- Value-chain mapping and profiling;
- Cost structure description.

Both the *Toolkit* (2012^[1]) and *Tool #20* (2017^[2]) state that the specific methodology to adopt will be dependent on the policy proposal and the sector being analysed.

References

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