

CHAPTER 3. APPROACHES TO THE PROTECTION OF TRADE SECRETS

This chapter takes stock of the protection of trade secrets in a sample of economies, taking into account the legal framework in each, including the scope, coverage and remedies available. To facilitate the stocktaking, the chapter develops an indicator of the stringency of trade secrets protection. The chapter therefore provides information and tools that are necessary to set up the following chapter, which uses the indicator to assess the economic performance implications of variations in the stringency of protection, with both qualitative and quantitative methods.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

It should be noted that statistical data on Israeli patents and trademarks are supplied by the patent and trademark offices of the relevant countries.

ABSTRACT

This chapter takes stock of the available legal protection for trade secrets (undisclosed information) in a broad initial sample of countries. Drawing on national and international material, the chapter develops and presents an indicator of the stringency of protection of trade secrets (the Trade Secrets Protection Index) and provides an assessment of variation in the available protection. The result is a finding that while the sample countries have some similarities, notably with respect to definition and scope of trade secrets, they have many more substantial dissimilarities with respect to implementation of protection for trade secrets. For example, differences are particularly pronounced in evidence gathering and discovery, protection of trade secrets during litigation, technology transfer requirements and the effectiveness of legal systems with respect to enforcement. This diversity is reflected in the wide range of scores in the Trade Secrets Protection Index. Such variation in the stringency of protection for trade secrets may influence firm-level decision-making and may have implications for some aspects of economic performance (in particular, in relation to innovation).

EXECUTIVE SUMMARY

This background chapter takes stock of the available legal protection for trade secrets (undisclosed information) and presents a method for the assessment of the stringency of available protection. The objective is to better understand the nature of the protection and how it might vary across a broad initial sample of countries. This information will provide an essential input for the second phase of the project that considers the relationship of the stringency of trade secrets protection to relevant aspects of economic performance (Chapter 4).

The chapter prepares the foundation for the work by defining trade secrets and presenting the international framework. Trade secrets are defined, essentially, as concerning information that is secret, that has commercial value because of its status as secret, and that is the subject of reasonable efforts to protect the secrecy. This definition is in line with the approach presented in the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights, the first multilateral agreement to require protection for trade secrets. The chapter then moves to consider the current economic and legal literature, which is fairly substantial in terms of legal scholarship but less complete with respect to economic analysis.

Using a structured comparative approach, the chapter examines national legal regimes for a diverse sample of countries (including the BRICS, five other partner countries and 11 OECD countries). Drawing on national and international material, the chapter develops and presents an indicator of the stringency of protection of trade secrets (the Trade Secrets Protection Index). The chapter provides a taxonomy of elements of protection for trade secrets, text tables describing the main characteristics of the regimes in the sample countries, and detailed narrative overviews for the trade secrets legal regimes in the BRICS and OECD countries in the sample.

The result of this assessment is a finding that while the sample countries have some similarities, notably with respect to definition and scope of trade secrets, they have many more substantial dissimilarities with respect to implementation of protection for trade secrets. For example, differences are particularly pronounced in evidence gathering and discovery, protection of trade secrets during litigation, technology transfer requirements and the effectiveness of legal systems with respect to enforcement, among other differences. This diversity is reflected in the wide range of scores in the preliminary Trade Secrets Protection Index. Such variation in the stringency of protection for trade secrets may influence firm-level decision-making and may have implications for some aspects of economic performance (in particular, in relation to innovation).

The next chapter expands the sample and focuses on economic analysis. It is based on dual approaches: a qualitative assessment and a quantitative assessment. Its objective is to examine empirically the relationship between the stringency of protection for trade secrets and performance concerning the types of economic indicators that may be hypothesised to be responsive to variation in protection of trade secrets. Such an assessment may help policy-makers in the identification of policy options for improved economic performance with respect to trade secrets.

Introduction

This background chapter takes stock of the available legal protection for trade secrets and presents a method for the assessment of the stringency of available protection. The objective is to better understand the nature of the protection and how it might vary across a broad initial sample of countries. This information will provide an essential input for the second phase of the project that will consider the relationship of the stringency of trade secrets protection to relevant aspects of economic performance.

The present chapter is structured around an introduction, five substantive sections, and a conclusion. In section 2, the chapter prepares the foundation for the work by defining trade secrets and presenting the international framework. It then moves to consider the current legal and economic literature. The following section presents an overview of the method employed in the analysis. Using a comparative approach, the fifth section of the chapter examines national legal regimes for the initial sample of countries. Drawing on the national and international material, the chapter proposes a set of elements for inclusion in an indicator of the stringency of protection of trade secrets. The subsequent section presents an implementation of this method for the sample countries. The conclusions provide some observations on the results and next steps⁸⁵.

The work has employed a sampling approach in order to gauge the variation in available trade secret protection. The sample of countries is structured to capture diversity in terms of: (1) approaches to protection of trade secrets (i.e. in terms of civil, criminal and common law), (2) geography (e.g. country location, size and endowments), (3) income level (upper middle and high income countries) and (4) country grouping (i.e. OECD or partner status). A further constraint was availability of data needed to conduct the research. The resulting sample covers the BRICS and five other partner countries plus a sample of 11 OECD countries, including: Australia, Brazil, Bulgaria, the People's Republic of China, Colombia, France, Germany, India, Israel, Italy, Japan, Korea, Malaysia, New Zealand, Peru, Russian Federation, Singapore, South Africa, Sweden, United Kingdom and United States. The chapter focuses on the situation in these countries for the most recent period available, generally 2010.

The International Framework and the Definition of Trade Secrets

The countries in the sample are all members of the World Trade Organization (WTO) and are subject to the provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The TRIPS Agreement was the first international agreement to protect trade secrets expressly (Box 3.1.). The approach laid out in the TRIPS Agreement is based on the notion that protection against unfair competition should include protection for undisclosed information. In presenting this approach, the TRIPS Agreement makes reference to the prior-existing protection against unfair competition as presented in the Paris Convention for the Protection of Industrial Property (Box 3.2.), a convention that is administered by the World Intellectual Property Organization.

Although trade secrets are confidential, they are also commercial. For a trade secret to have any practical value, the owner usually must share it in order to collaborate with a limited group of employees and business partners. Laws thus expect and account for a certain amount of protected disclosure, within a constrained circle. Nevertheless, even if trade secrets are not “secret” in the strictest sense of the term, they must in fact remain non-public and known only to a limited number of people. The definition of trade secrets thus is broadly similar among countries, addressing their dual nature as confidential but commercial.

Box 3.1. The TRIPS Agreement on Undisclosed Information

Protection of undisclosed information is addressed in Article 39 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO). This agreement entered into force on 1 January 1995 and established an international standard requiring WTO Members to protect undisclosed information including agricultural and pharmaceutical test data.

Section 7: Protection of Undisclosed Information, Article 39

1. In the course of ensuring effective protection against unfair competition as provided in Article 10bis of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 and data submitted to governments or governmental agencies in accordance with paragraph 3⁸⁶.

2. Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices⁸⁷ so long as such information:

- (a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
- (b) has commercial value because it is secret; and
- (c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

3. Members, when requiring, as a condition of approving the marketing of pharmaceutical or of agricultural chemical products which utilise new chemical entities, the submission of undisclosed test or other data, the origination of which involves a considerable effort, shall protect such data against unfair commercial use. In addition, Members shall protect such data against disclosure, except where necessary to protect the public, or unless steps are taken to ensure that the data are protected against unfair commercial use.

Source: Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), WTO.

The similarities among countries in defining trade secrets correspond well with the three requirements of Article 39 of TRIPS. In fact, on this matter, TRIPS reflected then-current practice in many countries and it has shaped subsequent law-making. In practice, the TRIPS requirements for trade secrets are now generally applied in law as follows:

- *Secrecy.* The information protected must actually be secret. Secrecy need not be absolute. The trade secret owner may share the information with employees and business partners. Secrecy requires instead that the information must not be readily publically accessible and that it is revealed to others only under conditions that maintain secrecy with respect to the broader public⁸⁸.
- *Commercial Value.* The information must have economic value as a result of its being secret. Trade secret law most typically protects commercial information; that information must derive some utility from being kept secret.
- *Reasonable Efforts to Maintain Secrecy.* The information must be the subject of reasonable efforts on the part of the rights holder to maintain its secrecy. By its nature, a trade secret claim arises when measures to protect the secret have failed. Thus, the law does not require one who claims a trade secret to be entirely successful at protecting it. However, the law does require the owner to make some efforts to maintain secrecy. In national laws, the necessary effort is often

broadly described as “reasonable,” in keeping with Article 39 of TRIPS. However, some countries impose more specific, additional obligations, which might be characterised as a particular implementation of the broad reasonableness requirement. For example, some common law countries require that the defendant have a contractual or implied obligation to keep the information secret. Other countries require written agreements with recipients and confidentiality notices.

These three conditions define trade secrets in a manner covering a potentially very large scope of economic activity⁸⁹. Still, the resulting definition has potentially important practical implications as pointed out by Maskus (2000), who notes that trade secrets “are not protected against learning by fair means, such as independent creation, reverse engineering or reading public documents.” In other words, trade secrecy does not provide an exclusive right to use of the information, so long as a second party obtains the information fairly or it enters the public domain by fair means. Thus, unlike patented inventions or copyright protected content, trade secrets are not protected for a statutory time limit and they can run out in the regular course of competition. The range of subject matter covered by trade secrets may be open-ended, though often trade secrets fall into one of two broad categories: technical information (e.g. technical plans and formulae) and confidential business information (e.g. customer lists and marketing strategies) (Almeling et al., 2010).

The TRIPS Agreement requires that WTO members put in place national systems to protect trade secrets against acts of unfair competition (Sandeem, 2011). WTO members comply with this obligation in a variety of ways. The fact that TRIPS Article 39 does not set forth a detailed regime for protection is associated with substantial variation between countries in the means employed to provide the TRIPS - mandated protection. In some instances, countries have implemented express legislation. In others, the obligation is met by laws that include misappropriation via such means as breach of contract, inducement of others to breach contracts and acquisition by third parties of information known to be disclosed dishonestly (or where it was negligent not to know). This variation can affect the ways businesses and workers conduct their affairs and thus there are reasons to believe that the legal protection of trade secrets may have important economic effects.

Box 3.2. Paris Convention for the Protection of Industrial Property, Articles 1 and 10bis, 1967⁹⁰

In protecting Trade Secrets, the TRIPS Agreement references the protection provided in the Paris Convention against unfair competition. Article 10bis of the Paris Convention highlights the nature of protection against unfair competition. Article 1 of the Paris Convention is included here to provide context concerning what is meant by “union” (see article 1.1). Article 1 also defines the scope of industrial property originally covered, which the TRIPS Agreement extends by explicitly providing for protection of undisclosed information.

Selected articles of the Paris Convention

Article 1: Establishment of the Union; Scope of Industrial Property

(1) The countries to which this Convention applies constitute a Union for the protection of industrial property.

(2) The protection of industrial property has as its object patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition.

(3) Industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour.

(4) Patents shall include the various kinds of industrial patents recognised by the laws of the countries of the Union, such as patents of importation, patents of improvement, patents and certificates of addition, etc.

Article 10bis: Unfair Competition

(1) The countries of the Union are bound to assure to nationals of such countries effective protection against unfair competition.

(2) Any act of competition contrary to honest practices in industrial or commercial matters constitutes an act of unfair competition.

(3) The following in particular shall be prohibited:

(i) all acts of such a nature as to create confusion by any means whatever with the establishment, the goods, or the industrial or commercial activities, of a competitor;

(ii) false allegations in the course of trade of such a nature as to discredit the establishment, the goods, or the industrial or commercial activities, of a competitor;

(iii) indications or allegations the use of which in the course of trade is liable to mislead the public as to the nature, the manufacturing process, the characteristics, the suitability for their purpose, or the quantity, of the goods.

Source: World Intellectual Property Organization.

Literature Review

The legal and economic literature on trade secrets is relatively limited in quantity and scope compared to the literature regarding other forms of intellectual property. The portions most relevant to this chapter fall into two categories: *i*) conceptual theories of trade secret law and *ii*) economic assessments regarding the effects of trade secret law.

The Conceptual Debate Regarding Trade Secret Law

There is a robust debate in the legal literature as to whether trade secret law is based on relational obligations (for example, contract, employment status, or fiduciary duty); property rights; fairness and equity; or unfair competition law tort or delict. A fifth position offered by Bone (1998) and characterised by Claeys (2011) as “trade secrecy nihilism” contends that trade secret law lacks any unified theory, but is rather a collection of approaches and norms regarding the protection of business information. Claeys (2011) and Risch (2007) survey this debate in the context of current US law, Richardson et al., (2012) examine the historical evolution and debate among various conceptions in the law of the England and other common law jurisdictions, while Knobel (2000) provides an example of the debate in the context of South African law, where trade secret protection is based on the ancient Roman *Lex Aquilia*. Views of the basis for trade secret protection vary both within and between countries. For example, Claeys (2011), in contrast to Bone (1998), contends that the proprietary account does the best job of explaining the structure of trade secret protection in the United States, including rights and remedies. By contrast, Gurry (2012) explains that under English law trade secrets are protected by an action for breach of confidence under a relationship-based view of trade secrecy.

The differing conceptions of trade secret law result from different normative and conceptual premises. The US Supreme Court observed, citing John Locke and Blackstone, that the “perception of trade secrets as property is consonant with a notion of ‘property’ that extends beyond land and tangible goods and includes the products of an individual’s ‘labour and invention.’”⁹¹ The Court further observed that “[t]rade secrets have many of the characteristics of more tangible forms of property”⁹²; in particular, the Court noted that they are alienable in various ways, which is a hallmark of property rights. Some scholars contend that trade secrets cannot be property because they do not provide exclusive rights against the world (Bone, 1998). However, Claeys describes trade secrets as simply a different form of property right, like water rights rather than rights in land (Claeys, 2013). In this conception, they are usufructory rights, which confer rights to use a resource and to be free from interference with use, but which do not confer the right to exclude those who derive benefits from the resource by their *independent* efforts. By contrast, some jurisdictions ground trade secret rights in duties between the parties. Thus, for example, UK trade secrecy law sanctions breaches of confidence where the information was imparted in confidence, thus giving rise to a duty (Gurry, 2012).

The answer to this debate regarding the conceptual basis for trade secret law can be consequential. For example, the US Supreme Court’s conclusion that trade secrets are protected as property had the implication that the US Government’s forcing of disclosure of such information may require compensation under the US Constitution. Whereas, most European countries do not conceive of trade secrets as property and, therefore, they are not subject to the EU Enforcement Directive, which is also significant. The Enforcement Directive provides for certain procedures and remedies that facilitate the investigation and pursuit of intellectual property claims, for example.

Economics and Trade Secret Law

Incentives

The economic literature describes the economic justification for trade secret law in terms of the incentives it provides. It describes three types of incentives. First, it provides incentives to invent and to invest in the development of valuable business information. Second, it relieves businesses of the need to invest in some costly measures to prevent breach of security. Third, it encourages businesses to engage in wider (albeit limited) dissemination of information than they otherwise would, thus increasing the likelihood of knowledge spillovers. Given the importance of trade secrets in many economies (Box 3.3.), the potential impacts of such incentives would appear to be significant.

A number of studies indicate that protection of trade secrets can encourage the development of inventions and valuable information by helping to secure the return on the investment in creating such innovations. Kitch (1980) characterises the incentive in terms of risk reduction: trade secrets are particularly at risk from theft because they have a low rate of depreciation. Friedman et al. (1991) similarly view the incentive effect as increasing the return to research and development by lowering the cost of protection. Others see the incentive function as similar to patents, where trade secrets essentially serve as a substitute for patents where the latter are unavailable or too expensive. Maskus (2000) and Friedman et al. (1991) argue that trade secrets can substitute for patents and provide incentives to innovate, where: 1) an invention is unpatentable, but hard to imitate, such that there is value in keeping the information confidential (e.g. a customer list), 2) a firm may prefer to avoid the public disclosure required by a patent, and 3) where a firm may wish to avoid the cost of obtaining a patent. Still others see the incentive-to-invest arising from competitive effects. Lemley (2011) observes that protection of trade secrets can help innovators to maintain a competitive advantage such as might be obtained via a unique process of production or product; this can contribute to profitability and thereby provides incentives for further investment in innovation.

Some scholars critique the incentive-to-invest account. Risch (2007 and 2011) points out that trade secrets can only protect information that firms already can, and do, keep secret. They thus create no new ability to keep information secret. He argues that firms already have an incentive to invest in creating secret information. In this view, trade secret protection has a relatively small marginal effect on investment in research and development. They serve to assure firms that they may be able to secure an injunction to “rescue” a secret that is threatened, stolen, or disclosed, or to secure damages. Bone (1998) also critiques the incentive-to-invest theory as overestimating benefits and underestimating the cost of keeping secrets.

Other studies point to a second justification for trade secrets, noting that the provision of adequate legal protection reduces the need to invest in inefficient and costly protection for trade secrets beyond the requirements of the law. As Friedman et al. (1991) observe, the availability of trade secret protection discourages use of less efficient alternative approaches to protection (e.g. hiring only family members or paying wage premia to prevent employee movement) and also inefficient activity by competitors to discover trade secrets (e.g. bribery or espionage). As Risch (2007) points out, both trade secret owners and competitors are channelled into more efficient behaviour. The owner optimises, rather than maximises, security. The competitor spends less money in attempting to appropriate the secret.

A third justification for trade secrets found in the literature relates, somewhat ironically, to their effects in encouraging knowledge dissemination, at least as compared to absolute secrecy. As Lemley (2011) argues, trade secret protection enlarges the circle of people to whom it is safe to reveal information. Thus employees who may eventually depart are more likely to have the opportunity to learn from the trade secret. Even if they do not misappropriate the original secret, they may benefit from their enhanced stock of knowledge, as may future employers. Risch (2007) also contends that the incentives to rely on legal rather than physical means to guard secrets encourage owners to employ lesser levels of protection, thus increasing the likelihood of “leakage,” and subsequently knowledge dissemination. In a further study, Png (2012a) found that some US states enacting increased trade secret protection may have experienced relatively modest declines in the mobility of postgraduate engineers and scientists (e.g. due to enforcement of contractual requirements concerning non-competition); this in turn might slow the pace spillover effects. However, this effect might be mitigated depending on presumptions states make related to possible disclosures (e.g. depending on whether they apply a doctrine of “inevitable disclosure”). Moreover, the possible costs to innovation due to any reduction in spillovers from reduced mobility of these most-qualified personnel may be off-set to some extent by the benefits to innovation from increased incentives to invest in R&D.

Box 3.3. References to the Economic Importance of Trade Secrets

While the secrecy requirements make it difficult to estimate the economic value of trade secrets, some indications are available from the literature⁹³. Some estimates for the United States in the past decade, for example, put the annual cost of trade secret theft to US firms as high as USD 300 billion (Almeling et al., 2010). In a further example, interviews with members of the European Chemical Industry Council revealed that misappropriation of a trade secret or confidential business information could often entail a loss of revenue for a firm of up to 30% and sometimes much more (CEFIC, 2012). Clearly, businesses suffer when trade secrets are compromised. They risk potential losses to reputation, image, goodwill, competitive advantage, core technology and profitability (ASIS, 2007; Hogan Lovells, 2010; USTR, 2012).

This point is underscored in a recent EC-sponsored survey of 537 businesses in Europe (EC, 2013). Among survey respondents, 75% ranked trade secrets as “strategically important to their company’s growth, competitiveness and innovative performance.” This reliance on trade secrets applied to firms of all sizes including small and medium size enterprises. The main reason cited by business (52%) for use of trade secrets over other forms of intellectual property protection was to avoid public disclosure of valuable information. In many countries, the relative ease of use and lack of registration requirements for trade secrets have led innovative small and medium size enterprises to rely on trade secrets as the default mode of intellectual property protection (Brant and Lohse, 2013). Moreover, unlike copyright or patent protection, trade secret law is not a particularly technical body of law.

The growing importance of trade secrets is underscored by recent government initiatives to improve protection. For example, in 2012, the European Commission released an indicative roadmap for an initiative to improve protection of trade secrets and confidential business information from misappropriation and misuse by third parties⁹⁴. In 2013, the United States released the “Administration Strategy on Mitigating the Theft of US Trade Secrets”, which included a set of action items for improved protection domestically and internationally⁹⁵.

Patent Versus Trade Secrets Protection

There is an extensive body of literature on the trade-offs between patents and trade secrets at both the institutional and firm level. Pooley (1997, 2012 update, pp. 32-40), for example, offers advice to firms wishing to protect their intellectual assets in which he highlights differences in protection between patents and trade secrets. He notes that often the nature of the asset provides a clear indication of the appropriate protection. Patents generally offer protection for specific technological inventions that are useful, novel and non-obvious. The patent process can be time consuming and expensive, requiring public disclosure of the idea. But, within the bounds of strictly defined claims, once a patent is issued, it offers the prospect of market exclusivity for a specific period. Trade secret protection is generally available for a broad range of commercial information that is useful and not widely known, but need not be novel. The broad scope covers subject matter that may not be patentable such as know-how. Provided appropriate efforts are made to ensure secrecy, trade secrets offer the possibility of protection without a limitation on duration, though not against independent discovery by a competitor or inadvertent disclosure by the owner⁹⁶. Nonetheless, in many instances the innovators seeking protection for an idea face a choice in the type of protection they will seek.

The choice of protection can have social welfare implications. On the one hand, as Friedman et al. (1991) point out, patents offer the social welfare advantage of encouraging disclosure with all the positive spillover effects that may result. On the other hand, Cugno and Ottoz (2006) offer a model where trade secrecy is more socially optimal, because of the independent invention defence, which exists at all times with respect to a trade secret, but is either limited or non-existent in patent law⁹⁷. As a result, trade secret owners may have fewer opportunities to charge supra-competitive prices.

The empirical literature shows that firms tend to rely heavily on trade secrets. Arundel (2001) found that European firms tended to prefer trade secrets to patents, with the preference more pronounced among smaller firms. Cohen et al. (2000) found similar results in a survey of US firms. An econometric study by

Png (2012b) exploited variation among the laws of the US states and included construction of a simple index of trade secret protection. He found that between 1976 and 2006 US states that enacted trade secrets laws tended to experience increases in research and development expenditure (R&D) by high-tech and large manufacturing firms. At the same time, there was a tendency among such firms to reduce their reliance on patenting. Maskus (2012, p. 237) points out that trade secrets, in principle, can play an important role in developing countries where they offer a readily available form of protection for incremental innovation for which patents may not be available, financially viable or profit maximising.

Method

In order to pursue the economic analysis in the next phase of the present project, an indicator for the stringency of trade secrets protection is needed. The availability of such an indicator will permit comparisons of the stringency of trade secrets protection against relevant aspects of economic performance while controlling for other conditions. The strategy employed here is to take stock of the broad range of elements of legal protection for trade secrets, to consolidate this inventory into a list of elements that captures the key features of protection and that can generally be determined empirically, and then to compile an index based on these elements grouped into distinct components each representing a key aspect of protection. Rather than developing multiple indicators, a single index can offer the opportunity for various levels of analysis. The combined index score can be considered when an indicator of overall protection is appropriate or the index can be disaggregated into the key components for consideration of specific aspects of protection of trade secrets.

The analysis considers two sets of “elements” in order to gauge the variation in the available trade secrets protection and develop an index as a tool for use in the subsequent economic analysis. First, in order to determine the basic legal framework, the authors examined laws on the books and key cases that directly or indirectly relate to trade secret protection. This was done using the original laws, standard legal references and related expert commentary. Secondly, the functioning of the legal system was considered in relation to enforcement of trade secret protection in practice and in relation to alternative protection strategies. This was done via consideration of existing international indicators (e.g. available from World Economic Forum or Fraser Institute, among others), the academic literature, standard legal references and related expert commentary⁹⁸.

The research design for this project presented a preliminary list of candidates for each of the two sets of elements. The elements were chosen for three reasons: (1) the presence or absence of these elements could allow one to make meaningful statements about the stringency of rights with respect to trade secrets; (2) they could represent significant differences among the laws of various countries; and (3) they may plausibly have marginal effects on the costs faced by firms (e.g. with respect to necessary secrecy measures) or their innovation-related decisions (e.g. regarding foreign direct investment (FDI) or resources devoted to research). Certain of these elements are referenced in the TRIPS Agreement, such as the protection of undisclosed pharmaceutical or agricultural chemical test data submitted in relation to marketing approval (Article 39.3)⁹⁹. However, it is not within the scope of this chapter to draw any specific assessment with respect to the TRIPS Agreement.

In implementing the research design, the preliminary list of elements was refined through an interactive process taking account of findings from our examination of the sample countries. The priority objective in this was to ensure coverage of key elements of the system of protection of trade secrets. Some new elements were added in this regard (e.g. with respect to availability of injunctions to eliminate wrongful head starts) and others were refined (e.g. the element for availability of emergency search to preserve and obtain proof was refined to take into account whether *ex parte* searches are available and who does them). Once coverage of key elements was ensured, a further consolidation of the elements was undertaken to avoid redundancy in the final set, to give particular focus to dimensions where there is

variability between countries, and to ensure that internationally comparable information on the selected elements could be obtained via reasonable research efforts.

The research design takes the various legal means for protecting trade secrets and abstracts and generalises them into a set of common, comparable elements. The resulting elements are still recognisable, meaningful and useful descriptions of legal provisions, but they are no longer bound to the context of a particular legal system. When the researchers examined a country's laws, they identified and isolated these elements regardless of labels – any law that directly¹⁰⁰ addresses trade secrets is covered, regardless of whether it explicitly mentions “trade secrets” or undisclosed information and whether it exclusively addresses trade secrets (in many cases, labour laws, tort laws, unfair competition laws, criminal codes, and procedural codes were all relevant). The research also identified these elements without regard to where they were found – it examined all legal methods for protecting trade secrets, such as statutory law, common law, administrative remedies, and laws of general application. The key consideration was identifying an objective indication of whether the element existed in a country's laws and how it was implemented.

The methodology employed here allows for effective cross-country comparisons despite considerable differences among legal systems. As a long-standing tradition of comparative law scholarship recognises, it is possible to readily and clearly identify common points of law between countries despite very different legal systems^{101,102}. The next section of this chapter surveys the situation for each country in the sample on the basis of the refined list of elements and considers similarities and points of divergence across the sample.

Survey of Legal Provisions and Practices

The results of the survey of legal provisions and practices are documented in *Annex 1: Country Charts and Preliminary Index Scoring* (Schultz & Lippoldt, 2014). The Annex presents results with respect to: source of law, definition and scope; covered acts; definition of duties and misappropriation; restrictions on liability; remedies; enforcement, investigation and discovery, and related regulations; and expert characterisation of the operation of the system in practice.

The survey of legal provisions confirms that there is great variation among approaches to trade secret protection. The laws of various countries are harmonised at a high level of generality only. The following discussion briefly surveys similarities and differences among the trade secret laws of various countries.

Similarities among Countries

As discussed in the Introduction, countries have similar definitions of trade secrecy due to the nature of trade secrets and the requirements of TRIPS. Beyond the similarities to the broad, three-part definition set forth in Article 39 of TRIPS, however, there are several other points of similarity among the trade secret laws of the countries surveyed in this chapter.

- *Scope.* The scope of trade secret protection, while not the same in every country, follows certain well-defined categories. These categories are (1) technical information; (2) confidential business information; and (3) know-how. Technical information typically includes industrial processes, blueprints, formulae, and similar information regarding technology. Confidential business information typically includes customer lists (at least to the extent they include truly non-public information), financial information, business plans and similar information regarding the operation of a business. Know-how includes information about methods, steps and processes for achieving efficient results. Most countries recognise the first two categories (although they often treat them the same).

Know-how is a term commonly used both in discussion of proprietary information and in agreements, but enjoys less formal recognition as a separate, defined category of trade secrets.

- *Defences.* Independent creation of a trade secret, where the defendant created a trade secret without access or reference to the plaintiff's trade secret, is explicitly or implicitly a universally recognised defence. Reverse engineering is also widely explicitly recognised as permissible and likely to be permissible in almost all cases.
- *Third Party Liability.* A third party that receives trade secrets with knowledge or reason to know that they were provided in violation of trade secret law is typically liable. Third parties that innocently and unknowingly receive trade secrets are less commonly liable, but they are still subject to injunctions in some jurisdictions.
- *Remedies.* Very broadly speaking, trade secret protection provides for civil remedies of injunctions and damages. However, this category is as much a source of variation as similarity and is thus discussed below. While the laws on the books provide for these remedies, they vary widely in specifics and practical availability.

Key Points of Divergence

As foreshadowed above, the lack of a comprehensive international standard results in substantial variation among the legal systems with respect to trade secrets. The points of divergence are more numerous than the points of similarity. The following are key points of divergence among the laws of the countries studied:

- *Civil vs. Criminal.* A basic point of variation is whether a country protects trade secrets primarily through civil law, criminal law, or both – or, in some cases, administrative law.
- *Scope.* The most commonly protected category of trade secret is technical information. Most countries also protect confidential business information, and typically do not distinguish it from technical information. This equal treatment of technical information and confidential business information, however, does not necessarily prevail in every country¹⁰³.
- *Duty.* Systems vary in how duties are imposed. In some instances, trade secret protection applies only where a defendant breaches a contractual or implied duty of confidentiality. In other instances, in addition to cases of breach of duty, trade secret law also applies where the secret was wrongfully obtained. In other instances, trade secrets are protected as intellectual property rights (IPRs). In those cases, the owner simply has exclusive rights to use them, without being required to show breach of duty or misappropriation, subject to the rights of others to independently develop or reverse engineer them.
- *Remedies.* Remedies vary widely in details and practical availability. One reason for the variance is that trade secret remedies tend to reflect national practice more than other intellectual property remedies, which have often been harmonised because of various international or transnational obligations, such as the European Union's Enforcement Directive. Thus, the types of damages available tend to depend largely on how the law of a particular country defines and awards damages. The availability of injunctive relief is partly a matter of national practice, but also a matter of the amount of proof required. Remedies such as seizure and return of materials are also typically matters of national law practice.

- *Evidence Gathering and Discovery.* Obtaining proof in trade secret cases is challenging. By their very nature, trade secrets constitute information that is not readily ascertainable and that can be hidden. Thus, evidence that a defendant has wrongfully obtained a trade secret may be similarly non-public and hidden. Moreover, a defendant may wish to keep trade secrets confidential for reasons other than legal liability – it too may wish to gain a commercial advantage against all competitors other than the original owner.

For these reasons, proof of trade secret theft is often solely or largely in the possession of the defendant and closely guarded. There is some danger that the defendant can effectively destroy such evidence if it becomes aware of a lawsuit. It also may be necessary to conduct an in-depth investigation to determine what was taken, how it was taken, by whom, and what has been done with it. These issues may not be readily apparent from easily accessible sources. It thus may be difficult to build a case without assembling documents, physical evidence, and conducting interviews.

Various references in the literature indicate that the ability to gather evidence in a trade secret case is crucial. Yet, the approaches vary widely among countries. This variation is largely a matter of national procedural law and practice in civil cases generally. On one end of the spectrum of discovery laws and practice is the United States, with its very broad disclosure rules and practice. These rules and practices make it easier to prove a case, but are often criticised as greatly increasing the expense and duration of litigation. Toward the other end of the spectrum are many civil law countries, where pre-trial discovery is limited, typically confined to documentary evidence, and done under the direct supervision of the court. At the furthest end of the spectrum may be China, which has extremely limited discovery, but where, according to experts, courts prefer original, documentary evidence to prove a case, which is very difficult to obtain without extensive discovery.

Another point of variation in evidence gathering rules and practices is the availability of a preliminary, emergency action to preserve proof. Many, but not all, countries have emergency, pre-trial procedures to preserve evidence. In their broadest forms, these procedures (often called “Anton Piller” orders after the English case from which many common law countries take their procedure) allow a party to obtain ex parte approval to conduct a search of a prospective (i.e. before a case begins) defendant’s premises and to seize relevant evidence.

Under the broadest form of this procedure, available in a limited number of countries, a plaintiff may obtain a search on an ex parte basis and send a representative to direct the search. Plaintiffs in trade secret cases value these features, as the lack of advance warning prevents a prospective defendant from concealing evidence. Also, the presence of plaintiff’s representative at the search makes it much more likely that the search finds relevant evidence because of the plaintiff’s expertise and detailed knowledge of the trade secret. However, these features are not available in most countries surveyed. In fact, several countries have no preliminary search procedure at all.

While the interest of a plaintiff in securing evidence may be key to many trade secret cases, several jurisdictions have moved to balance plaintiffs’ needs against defendants’ rights. The experience of the United Kingdom and other jurisdictions has raised concerns that a plaintiff may, ironically, use preliminary procedures to misappropriate a defendant’s secrets or interfere with its business (Andrews, 1987). Thus, authorities have clarified that courts should not grant such orders routinely. For example, the Chief Justice of the Australian Federal Court issued “Federal Court Practice Note No. 24—Search Orders (also known as “Anton Piller Orders”)” (5 May 2006) to curb perceived abuses of such orders.

- *Duty of Employees.* Employees are typically, but not everywhere, under an implied duty of confidentiality during the term of employment. Express agreements to keep information confidential are enforceable during the term of employment. There is wide variation as to what an employee’s duties are after termination of employment. Some jurisdictions will continue to

impose an implied duty after the end of employment, but many will not. Many restrict enforcement of express contracts for confidentiality after employment as well. A typical restriction on both express and implied duties is that they do not apply to general skills and knowledge and cannot interfere with the employee's ability to make a living.

- *Non-Compete Agreements.* The enforceability of post-employment non-competition agreements varies widely¹⁰⁴. Such is also the case with non-competition agreements between commercial entities. Most typically, they are enforceable only if reasonable with respect to duration and geographic scope. However, stricter regulation of enforceability, length, and scope is also the rule in some countries. Non-compete agreements between commercial entities are also subject to competition law. This chapter does not address competition regulation, as it does not appear to affect trade secret protection uniquely, but rather applies to commercial agreements generally.
- *Protection of Secrets during Litigation.* Trade secret litigation may expose the plaintiff's confidential information to security risks. First, the plaintiff needs to prove the existence of a trade secret. The evidence submitted may expose the secret. Second, proving that the defendant possesses the trade secret may require putting evidence on the record that further exposes the secret. Finally, the court may need to discuss aspects of the secret in its orders and opinions.

Laws and procedures can mitigate these risks from litigation. A court may hold hearings “in camera”—closed hearings open only to the parties, typically. The court may seal the record, thus blocking public access to it. The court might also physically secure evidence, such as by locking it in a safe. It may also restrict the access of the defendant and its personnel and agents to trade secrets (e.g., access might be limited to the lawyers on the case). Finally, a court may redact portions of its published opinions or choose not to publish the opinion at all.

From the commentary in the literature, it appears that the availability of these measures greatly affects the risk in bringing a trade secret action. Without sufficient protection, a lawsuit could leave a plaintiff worse off. A defendant may actually guard a trade secret, as it may confer an advantage over the defendant's and plaintiff's mutual competitors. Thus, the prospect of a trade secret lawsuit in a country with insecure court procedures could require a choice between not filing a suit and allowing a single competitor to exploit one's secret, and filing a suit and exposing the secret to all competitors.

Although litigation security measures appear important to effective trade secret protection, there is wide variation in the availability and effectiveness of such measures among countries. Some countries routinely provide in camera hearings, while others do not. There is also variation with respect to whether defendant and all of its agents have full access to the record.

- *Data Exclusivity.* Data exclusivity is a form of protection related to trade secret law. Data exclusivity provisions govern the use of data submitted for regulatory approval of chemicals – particularly pharmaceuticals and agricultural chemicals. There is a wide variance among countries in how they implement these regimes. Most countries reviewed in this chapter protect test data for new chemical entities from disclosure or from use by competitors seeking regulatory approval for their own products for a term of years after regulatory approval¹⁰⁵. Some countries also protect data submitted to obtain approval for new uses (as opposed to entirely new products), but many do not.
- *Technology Transfer Regulations.* In the 1960s and 1970s, many countries adopted technology transfer laws regulating inbound technology licenses¹⁰⁶. These laws were intended to ensure that foreign investors transferred know how to local enterprises and workers. They typically required registration of agreements and often gave regulatory agencies the power to disapprove

substantive terms that interfered with technology transfer. Such provisions often affected trade secrets. For example, some provisions prohibited indefinite length confidentiality provisions. Others prohibited provisions that restricted the use of trade secrets after the expiration of the agreement or that required return of materials containing trade secrets.

This review highlights a number of fields of law as they relate to trade secrets protection. From this, it appears that *general legal system quality* may be particularly relevant in the case of trade secret protection across the countries surveyed. Although the quality of the legal systems varies widely between countries, it is a characteristic that plays an important role in trade secret protection. First, protection of trade secrets is often put into practice through generally applicable causes of action such as contract enforcement, labour law or tort actions. Reliable enforcement of contracts and property rights and the impartiality of the courts are thus important to a trade secret regime. Second, trade secret owners are particularly dependent on recourse to courts in the event of an appropriation because of the great vulnerability of trade secrets. Once widely disclosed, they are extinguished. Thus, a prospective developer or owner of a trade secret must be cognizant of how swift, reliable and predictable the courts are in case its own attempts to maintain secrecy are breached.

A Deeper Look at Countries in the Survey

The foregoing comparison based on the Annex 1 charts highlights the substantial diversity among the survey countries. In order to consider the origins of this diversity and its impact on the operations of the legal systems for protection of trade secrets, a more detailed examination is carried out for the BRICS and OECD countries. This is presented in Annex 2: *Detailed Overviews for the BRICS and a Sample of OECD Countries* (Schultz & Lippoldt, 2014). The narrative discussions in Annex 2 serve to give a rich and full sense of the issues that trade secret protection addresses and the common and diverse ways in which countries address them.

Based on the international comparisons in Annex 2, a hierarchy of trade secret challenges emerges which might be characterised as follows:

- *“Ordinary” Trade Secret Appropriation.* These problems result from departing employees or business partners taking information or from opportunistic competitors seizing an opportunity to illicitly obtain information.
- *Corporate Espionage.* These problems result from more systematic schemes by competitors to infiltrate a competitor’s operations through such actions as planting employees, bribery or extensive infiltration of computer systems or electronic eavesdropping.
- *State Sponsored Corporate Espionage.* Increasingly, some governments are expressing grave concerns regarding government-sponsored systematic schemes to appropriate trade secrets.

Ordinary trade secret appropriation is typically addressed through civil enforcement. Evidence of the wrong is often in the possession of the trade secret owner or relatively easy to obtain. The laws of the countries surveyed all address the problem of departing employees and other parties who appropriate trade secrets by breaching contracts or other duties. This issue is typically addressed through a variety of means – trade secret law, breach of contract, and/or labour law. There is greater divergence in addressing the opportunistic behaviour of parties who do not have a prior relationship with the trade secret owner. Most typically, the law addresses such actions as misappropriation. Not all countries recognise an action for misappropriation. For example, common law jurisdictions take a relationship-based view of trade secrecy, and thus some, for example New Zealand and India, do not recognise a civil action for misappropriation.

The challenge of corporate espionage highlights the importance of criminal law for addressing difficult problems of gathering evidence. A much smaller number of countries in the sample offer criminal remedies. As the narratives show, where available, criminal law offers useful investigative tools against systematic espionage such as “sting” operations and large-scale, long-term operations that are beyond the means and authority of individual trade secret owners. In some jurisdictions, such as Germany, criminal remedies play an important role in supplementing the limited discovery available in civil cases.

Another point that emerges from the narratives in Annex 2 is that the stringency of trade secret protection in countries with relatively well-developed statutory protections can be undermined by specific requirements and implementation factors. For example, China and Russia have fairly well-defined legal protections, but the stringency of those protections is partly offset by weaknesses in implementation and additional, unusual evidentiary requirements. In other countries, including Brazil, stringency of the laws on the books is sometimes inconsistent with the approaches used in specific areas such as technology transfer or data exclusivity.

Trade Secret Protection Index

From the foregoing discussion, it is clear that there is significant variation in the available protection for trade secrets across this initial sample of countries. The next phase of this work, presented in Chapter 4, expands the sample and considers the relevance of such variation for certain aspects of economic performance, particularly those related to innovation. As noted above, in order to conduct a quantitative assessment of the relationship, it is useful to have an indicator for the stringency of available trade secrets protection. This section presents a preliminary version of an indicator developed for this purpose: the Trade Secrets Protection Index (TSPI).

The development of the TSPI proceeded based on several considerations. First, five components were designated as representing key aspects of protection of trade secrets that also emphasise features where there is some variation across countries that may influence the stringency of protection. Second, the relevant entries from the refined list of elements (i.e. from Annex 1) were grouped under the appropriate component heading. The elements were phrased to enable scoring based primarily on objective criteria, supplemented in some cases by qualitative information as necessary (e.g. in certain areas related to system operation). Third, in order to ensure coherence across the components, the authors opted for an integrated index approach rather than multiple indicators. (The TSPI can be disaggregated into its components if a focus on certain aspects is helpful for a particular discussion.) Fourth, the index was designed to emphasise transparency with scores supported by a text chart for each country and verifiable references. Fifth, the index is designed to provide an indication of the stringency of available protection; it aims to be neutral in this assessment. In other words, a higher or low score reflects the strength of protection and not an assessment of the appropriate level of protection.

It bears emphasis that the index’s function is descriptive, not normative, and the scores it produces are thus neither grades nor ratings. Rather, the score is strictly a measure of stringency of protection. As a measurement tool, the TSPI simply measures. Additional empirical work or subjective assessment will determine whether a particular measurement is associated with particular outcomes or should be assigned a particular adjective¹⁰⁷.

The initial implementation of the TSPI is for a single time period for the sample countries¹⁰⁸. Econometrically, this will permit cross-sectional analysis. However, in future, subject to available resources, the index could be deepened to include multiple time periods and additional countries. This would permit use of more powerful econometric techniques for dynamic assessments based on panel data for a broader set of countries. Moreover, the dynamics of the protection for trade secrets could be

compared with those for protection of other types of intellectual property (e.g. patents) in order to gain a more integrated view of their effects.

The development of this index is a pioneering effort in the analysis of protection of trade secrets. However, it should be noted that a variety of similar indices exist in the literature covering various types of intellectual property. For example, Ginarte and Park (1997) and Park (2008) employed laws-on-the-books approaches to examine protection of patents, trademarks and copyright. Also, the Fraser Institute (2012) and World Economic Forum (2012), among others, have developed substantial sets of relevant systemic indicators for use in economic analyses. Such indicators have been utilised in a number of studies conducted by the Working Party of the Trade Committee and other parts of OECD¹⁰⁹.

Index Composition

Chart 3.1. presents the detailed composition of the index and its scoring. The index is structured around five main components:

1. Definitions and coverage
2. Specific duties and misappropriation
3. Remedies and restrictions on liability
4. Enforcement, investigation & discovery; data exclusivity
5. System functioning and related regulation

The approach to scoring provides up to one point for each of the five main components of the index and a maximum total score for the index of five points. However, as can be seen in the Chart, the number of elements covered by each of the main components of the index varies widely. For example, the definition and coverage of trade secrets protection comprises 12 elements, whereas the system functioning and related regulation comprises 4 elements. In order to maintain balance across the five components of the index, the scoring for the various elements under each of the five main components was normalised to ensure equal weighting. In other words, the elements for each main component add up to a maximum score of one¹¹⁰.

TSPI - Index Results

Table 3.1. presents – for the initial sample – the total scores by country according to various weighting schemes. The three weighting schemes are:

1. Equal weights across the components (20% each x 5);
2. 40% for Enforcement, investigation & discovery; data exclusivity and 60% split evenly among the other components; and
3. 40% Remedies and restrictions on liability and 60% split evenly among the other components.

Interestingly, the three weighting schemes yield similar country rankings as shown by the high scores for the Spearman rank correlation coefficients in the table. In other words, according to this indicator, the use of alternative weighting schemes does not substantially change the country rankings. Thus, in the absence of a compelling rationale for unequal weights, the authors have opted to employ equal weights¹¹¹.

Under the equal weights approach, the scores range from a low of 2.47 (Russia) to a high of 4.49 (United States). Figure 3.1. provides an overview of the scores across the countries covered in the sample for each of the TSPI components and for the TSPI as a whole. The OECD countries tend to have relatively

high total scores, though partner countries such as Singapore and Malaysia have scores, respectively, falling within or just below the OECD range. Other developing countries, including Brazil, Colombia, South Africa and Peru, deliver total scores above 3.0. Four countries in the initial sample have total scores below 3.0: Bulgaria, China, Russian Federation and India.

A review of the scores for the individual components of the index (Figure 3.1) reveals different country rankings for each component, reflecting the variation in the manner countries construct and operate their trade secrets regimes. In particular, the component for “System functioning and related regulation” reveals a different mix of countries near the top of the rankings than for the total. For example, Sweden emerges as having the highest score among the European nations, whereas for some other components its relative score is lower. For certain other individual components of the index, countries such as Brazil, Bulgaria, Colombia and Singapore appear among the top 5 or 6 countries in the rankings. With the exception of Singapore, however, the total scores for these countries fall outside of the range for OECD country scores. This reflects weakness in their scores for certain other components of the TSPI.

The breakdown by component reflects the particularly low scores for the Russian Federation, Brazil and India with respect to system functioning and related regulation. This highlights implementation challenges faced by these countries. A number of OECD countries, as well as Singapore and South Africa, delivered relatively stringent protections in the handling of duties and misappropriation related to trade secrets. The United States’ high score was reinforced in part by relative strengths in the components referring to remedies and enforcement and related provisions¹¹².

The variation in the component scores highlights the different combinations of legal provisions and practices that countries exhibit to arrive at a given TSPI total score. The Spearman rank correlation is relatively high (0.828) between the scores for overall system functioning and the TSPI total scores. The Spearman rank correlation is also relatively high (0.719) between the scores for the component “specific duties and misappropriation” and the TSPI total scores. That is, country rankings are relatively consistent in the scores for these two components and the TSPI total scores. However, the country rankings vary significantly with respect to the other three components relative to their total scores. For example, a country without criminal statutes addressing trade secrets may have a low score in remedies, but strong scores for “specific duties and misappropriation” and “enforcement, investigation and coverage” and a relatively high TSPI total score. Another country, may have a similar TSPI total score, but arrive at that level via a higher score in “remedies and restrictions on liability” due in part to having criminal statutes addressing trade secrets.

Conclusions

Anchored by a review of a broad sample of countries, this international comparative examination of protection of trade secrets highlights the role played by the TRIPS Agreement Article 39 in orienting WTO Member countries in the basic definition and scope of trade secrets. At the same time it underscores the wide range of approaches employed by the sample countries in the implementation of their TRIPS obligations with respect to protection of trade secrets. This conclusion is supported by a structured empirical assessment of the legal regimes in the sample countries. One important contribution of this chapter is the presentation of the underlying information drawn from the Annexes of the underlying background paper and the taxonomy of trade secrets these materials embody. The charts and taxonomy provide a clear, objective point-by-point basis for making comparisons among countries.

From the review of the sample countries, some specific areas of divergence can be identified. For example, differences exist with respect to gathering of evidence, protection of trade secrets during litigation, technology transfer and effectiveness of enforcement via the legal systems. With respect to the procedures available for gathering evidence, some jurisdictions provide for emergency actions to preserve

proof, but many do not. Furthermore, no two systems of discovery are quite the same, and many are quite weak. The ability to protect secrets during litigation also varies substantially between countries. Some developing countries, including several BRICS, have laws intended to facilitate technology transfer, which in some cases may cut across certain aspects of the ability to protect trade secrets. Moreover, across the sample of countries, variation in the effectiveness of the legal systems is likely to have significant effects on enforcement. Such diversity in protection of trade secrets can be reasonably expected to influence firm-level decision-making.

In anticipation of subsequent analysis in Chapter 4, this chapter presents results for a preliminary sample using a new indicator for assessing the stringency of available protection: The Trade Secrets Protection Index (TSPI). The diversity of approaches to protection in trade secrets across the sample countries is reflected in the scores for the TSPI, indicating that the stringency of protection for trade secrets also varies. This variation may matter materially for the operation of firms and, hence, may influence certain aspects of economic performance (in particular, in relation to innovation), topics that will be considered in the coming economic analysis.

Chart 3.1. Trade Secrets Protection Index

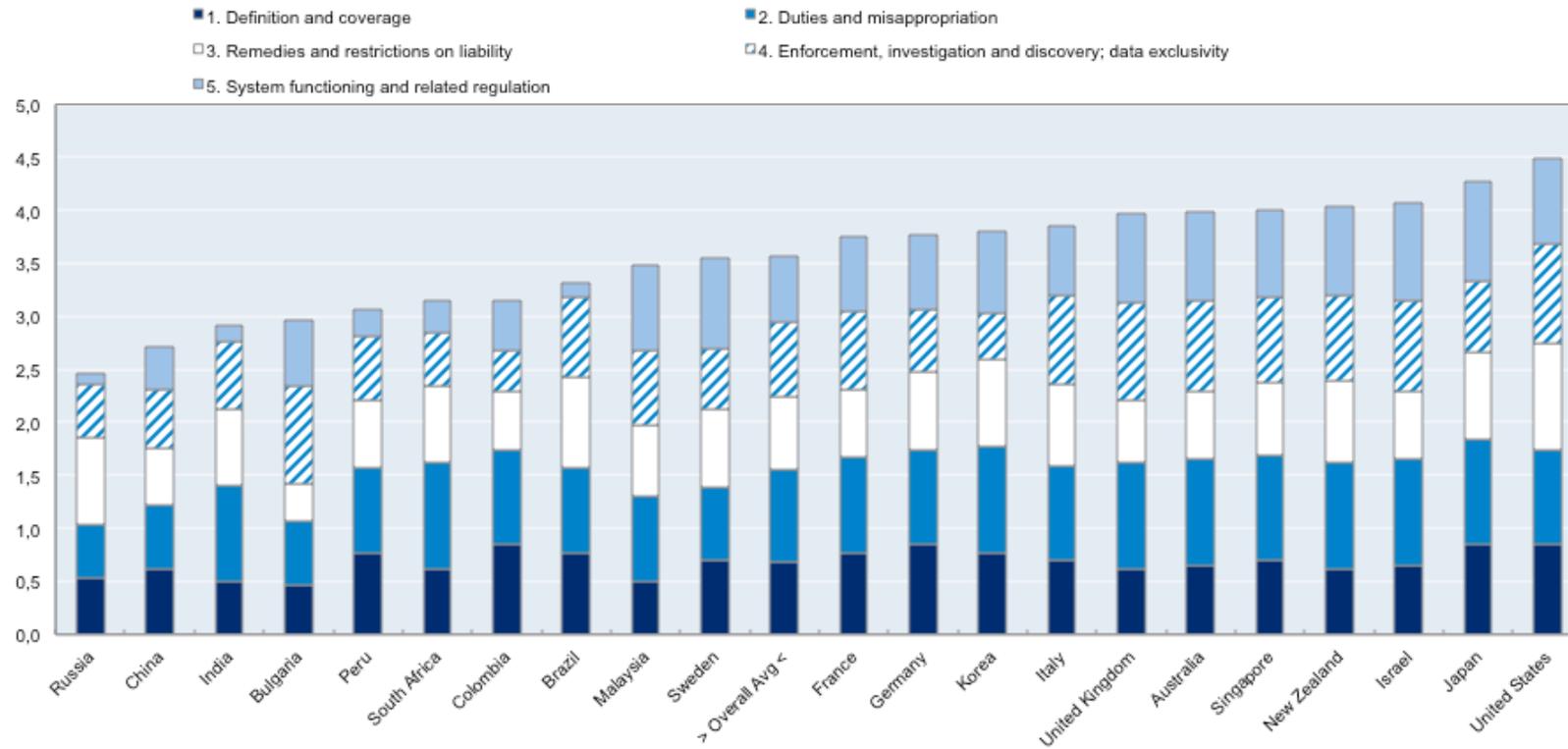
Components and scoring	Score range	Normalised score
1. Definition and Coverage	0-13	0-1
a) Scope		
<ul style="list-style-type: none"> If scope covers all confidential business information, subject to: 1) deriving value from secrecy and 2) the owner's reasonable efforts to maintain secrecy, score = 1; If scope also subject to requirement that information is imparted to the recipient in confidence, score = ½ 	0,1	
b) Additional Elements of Definition		
<ul style="list-style-type: none"> Inventory of trade secrets required (requirement=0; no requirement=1) 	0,1	
<ul style="list-style-type: none"> Must be reduced to writing (requirement=0; no requirement=1) 	0,1	
<ul style="list-style-type: none"> Must be identified as a trade secret to recipient (requirement=0; no requirement=1) 	0,1	
<ul style="list-style-type: none"> Written notice to recipient required (requirement=0; no requirement=1) 	0,1	
c) Acts covered as <u>civil</u> infringement:		
<ul style="list-style-type: none"> Breach of duty (not covered=0, partially covered=½¹¹³, covered=1) 	0,1	
<ul style="list-style-type: none"> Wrongful acquisition or misappropriation (not covered=0, covered=1) 	0,1	
<ul style="list-style-type: none"> Third party liability for acquisition with knowledge or reason to know (not available=0, available=1) 	0,1	
<ul style="list-style-type: none"> Third party liability for acquisition without knowledge - enjoin "innocent parties" (not available=0, available=1) 	0,1	
d) Acts covered by <u>criminal</u> law		
<ul style="list-style-type: none"> Breach of duty (not covered=0, partially covered=½, covered=1) 	0,1	
<ul style="list-style-type: none"> Wrongful acquisition or misappropriation (not covered=0, covered=1) 	0,1	
<ul style="list-style-type: none"> Third party liability for acquisition with knowledge or reason to know (not available=0, available=1) 	0,1	
<ul style="list-style-type: none"> Third party liability for acquisition without knowledge, enjoin "innocent parties" (not available=0, available=1) 	0,1	

Chart 3.1. Trade Secrets Protection Index (continued)

Components and scoring	Score range	Normalised score
2. Specific duties and misappropriation¹¹⁴	0-5	0-1
<ul style="list-style-type: none"> Commercial relationship (covered if arising from: express agreement $\frac{1}{2}$ + implied duty $\frac{1}{2}$) Current employment relationship (covered if arising from: express agreement $\frac{1}{2}$ + implied duty $\frac{1}{2}$) Past employment relationship (covered if arising from: express agreement $\frac{1}{2}$ + implied duty $\frac{1}{2}$) Restrictions on post-relationship duty of confidentiality (if any restrictions on matters beyond general skills and knowledge, by relationship: commercial $\frac{1}{2}$ + employment $\frac{1}{2}$) Validity of contractual restrictions on competition (if unenforceable=0, significant limitations=$\frac{1}{2}$ (e.g., limited by time or place for either commercial or post-employment situations), generally enforceable=1) 	0,1 0,1 0,1 0,1 0,1	
3. Remedies and Restrictions on liability	0-11	0-1
a) Restrictions on liability		
<ul style="list-style-type: none"> Additional elements of proof in infringement claims (if none: civil=$\frac{1}{2}$ + criminal=$\frac{1}{2}$, criminal $\frac{1}{2}$ point; score 1 if there no criminal law and civil score is $\frac{1}{2}$) 	0,1	
b) Civil remedies		
<ul style="list-style-type: none"> Preliminary injunction (if available = 1, if not = 0) Ex parte action available under preliminary injunction (if available = 1, if not = 0) Permanent injunction (if available = 1, if not = 0) Injunction to eliminate wrongful head start (if available = 1, if not = 0) Delivery or destruction of infringing materials (if available = 1, if not = 0) Compensatory damages (direct or out of pocket damages or consideration of profits or other damages= 1) Yielding of defendant's profits (if available = 1, if not = 0) Availability of punitive or statutory damages (if available = 1, if not = 0) 	0,1 0,1 0,1 0,1 0,1 0,1 0,1	
c) Criminal remedies		
<ul style="list-style-type: none"> Fines, damages or loss of assets (if not available = 0, if minimal per expert opinion= $\frac{1}{2}$, if substantial = 1) Jail sentence (if available = 1, if not = 0) 	0,1 0,1	

Chart 3.1. Trade Secrets Protection Index (continued)

Components and scoring	Score range	Normalised score
4. Enforcement, investigation and discovery; data exclusivity	0-6	0-1
a) Enforcement, investigation and discovery		
• Emergency search to preserve and obtain proof (unavailable=0, available but with significant restrictions= ½ (e.g., conducted solely by an official or 3rd party expert), readily available=1)	0,1	
• Ex parte emergency search availability (unavailable=0, available but with significant restrictions=½, readily available=1)	0,1	
• Pre-trial discovery (unavailable=0, documentary only or strict limitations = ½, ready availability of documentary and interrogatories = 1)	0,1	
• Protection of confidentiality of trade secrets in litigation (none=0, partial= ½, fully available=1)	0,1	
b) Data exclusivity		
• Drugs (years: 0=0; 0.1-3=1/3; 3.1-7.9=2/3; >8=1)	0,1	
• Agricultural chemicals (years: 0=0, 0.1-4.9=1/3, 5-8=2/3; > 8=1)	0,1	
5. System functioning and related regulation	0-4	0-1
• Technology transfer: registration requirement (none=1; one or more = 0)	0,1	
• Technology transfer: substantive review or regulation (none=1; one or more = 0)	0,1	
• Fraser Institute score for <i>Legal System and Security of Property Rights</i> (score ranging from 0 to 10, divided by 10) ¹¹⁵	0,1	
• Expert characterisation of the operation of the protection in practice (NB, based on internationally recognised or peer-reviewed sources; see country charts for details) (Negative = 0; none = ½; positive = 1)	0,1	
Index Total		=====
		0-5

Figure 3.1. Trade Secrets Protection Index, by component and country, 2010

Note: The data for this figure reflect updates prepared for Chapter 4 and therefore differ slightly from the results presented in the original background paper (Schultz and Lippoldt, 2014).

Table 3.1. Trade Secret Protection Index, Statistics and Total Scores, Alternate Weights, 2010

Country	Total Scores, by weighting scheme		
	Equal weights; 20% for each component	40% Enforcement, investigation & discovery; exclusivity; divided equally among the components	for & data 60% liability; 60% divided equally among the components
Australia	3,99	4,07	3,79
Brazil	3,31	3,42	3,56
Bulgaria	2,96	3,37	2,68
China	2,71	2,72	2,71
Colombia	3,15	2,84	3,04
France	3,76	3,75	3,61
Germany	3,76	3,55	3,73
India	2,92	2,99	3,10
Israel	4,08	4,13	3,85
Italy	3,85	3,93	3,85
Japan	4,27	4,04	4,22
Korea	3,81	3,41	3,88
Malaysia	3,48	3,48	3,46
New Zealand	4,04	4,04	4,00
Peru	3,06	3,06	3,09
Russian Federation	2,47	2,48	2,87
Singapore	4,00	4,01	3,86
South Africa	3,14	2,98	3,27
Sweden	3,56	3,40	3,58
United Kingdom	3,97	4,12	3,71
United States	4,49	4,55	4,62
Average Score	3,56	3,54	3,55
Max	4,49	4,55	4,62
Median	3,76	3,48	3,61
Min	2,47	2,48	2,68
Standard Deviation	0,55	0,55	0,50
Coefficient of Variation	0,15	0,16	0,14
Correlation Coefficient (equal weight scores versus alternate schemes)		0,949	0,950
Spearman Rank Correlation (equal weight ranking versus alternate schemes)		0,930	0,939

Note: The data for this figure reflect updates prepared for Chapter 4 and therefore differ slightly from the results presented in the original background paper (Schultz and Lippoldt, 2014).

NOTES

85 This chapter is based on OECD Trade Policy Paper No. 162 (Schultz & Lippoldt, 2014). There are two substantial annexes available in the original edition. Annex 1 provides a snapshot of the key elements of trade secret protection in each of the sample countries. Annex 2 provides a detailed overview of trade secrets protection in the BRICS and OECD countries covered by the sample.

86 These paragraph references refer to paragraphs 2 and 3 of Article 39 of the TRIPS Agreement.

87 At this point in the original text, there is a footnote, numbered 10, that states:
For the purpose of this provision, “a manner contrary to honest commercial practices” shall mean at least practices such as breach of contract, breach of confidence and inducement to breach, and includes the acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that such practices were involved in the acquisition.

88 Moreover, as Pooley (1997) notes, the idea need not be unique to its owner. Several competitors could have developed the same idea via independent innovation and sought to protect it as a trade secret. This possibility is one factor differentiating trade secrets from patents.

89 For descriptive convenience this chapter will employ the term “trade secrets” as encompassing “undisclosed information.”

90 The Paris Convention entered into force on 26 April 1970. These articles remained unchanged in the subsequent edition of the Paris Convention (1979).

91 *Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1002-1003 (1984).

92 *Ibid.*

93 For example, barriers to accurate quantification include issues such as lack of internationally-standardised valuation methodology for undisclosed information and reluctance of many firms to identify publicly the value of their secret assets.

94 The roadmap is available on-line at the following location (as of 3 April 2013):
http://ec.europa.eu/governance/impact/planned_ia/docs/2013_markt_002_trade_secrets_en.pdf.

95 This strategy is available on-line at the following location (as of 3 April 2013):
http://www.whitehouse.gov/sites/default/files/omb/IPEC/admin_strategy_on_mitigating_the_theft_of_u.s._trade_secrets.pdf.

96 Pooley (1997, 2012 update, p. 34) notes contrasts between patents and trade secrets with respect to subject matter, requirements, definition, disclosure, protection, duration, expense, risk and marketability. He also points out (*ibid.*, p. 40) that depending on the nature of the innovation the choice between copyright and trade secret protection may be easier for innovators: copyright protects only the form of expression of your ideas, whereas trade secrets protection extends to the idea itself.

97 The United States recently incorporated a prior user rights defence into its patent law with the passage of the America Invents Act in 35 U.S.C. § 273, which may provide protection to independent inventors in certain, limited circumstances. However, independent invention after the date that a patent is filed never constitutes a defence.

98 Litigation statistics are not covered directly in the proposed assessment. This is in part due to lack of readily-available information for many countries. For example, while US legal records are searchable via systems such as Pacer or Lexis, the coverage of such systems varies significantly across countries around the world. Many countries do not have the capacity to provide ready on-line access to court case information. This would be a practical limit on the ability to ensure extensive geographic coverage for purposes of the present study. In addition, litigation statistics present difficulties in interpretation related

to institutional context. For example, without additional contextual information, it may not be clear whether a low number of cases indicates that compliance is high, enforcement is lax or another factor is driving developments. Thus, such an assessment could prove resource intensive to implement. While in principle a review of legal case outcomes has the potential to yield new insights into court-related aspects of trade secret enforcement, such an approach was determined to exceed the scope of the present analysis.

⁹⁹ The various elements of trade secrets protection retained for the present analysis are characterised individually and in combination. In the discussion and annexes for this report, data on the various elements are reported and may be employed for further analyses either separately or in various alternative combinations.

¹⁰⁰ Laws that only incidentally sanction trade secret theft were not covered. For example, theft, breaking and entering, trespass, extortion, battery and other wrongful acts may be committed in the course of appropriating trade secrets, and various laws sanction such acts. However, such laws are only relevant where they sanction such acts *because* they involve trade secrets. For example, this project would not account for a law that imposes liability for the theft of a sheet of paper if that law does not address the existence or value of the trade secret printed on that piece of paper.

¹⁰¹ For example, common law jurisprudence may contain definitions and standards that are as clear, precise and well-established as those in civil codes. Courts in several common law countries consistently cite and apply a three factor definition of trade secrecy established in the English case of *Coco v. A.N. Clark Eng'rs Ltd.*, [1969] RPC 41: "First, the information must itself ... must 'have the necessary quality of confidence about it.' Secondly, that information must have been imparted in circumstances importing an obligation of confidence. Thirdly, there must be an unauthorised use of that information to the detriment of the party communicating it." See Annex 1 and Annex 2 of Schultz & Lippoldt (2014) for further details.

¹⁰² In another example, civil law systems may evolve approaches to a new problem as clearly and readily as do common law systems. For example, since 2000 French courts have increasingly extended the offense of "breach of trust" under Article 314-1 of the French Criminal Code to cover intangible information, thus allowing the prosecution of employees and others for trade secret misappropriation. See Christophe Garin, "Customer poaching can now be punished by criminal courts on the ground of breach of trust," *Lexology* (24 May 2012) at: www.lexology.com/library/detail.aspx?g=e11830fd-5222-4084-afdd-a160047f2fec . See Annex 2 of Schultz & Lippoldt (2014) for further details.

¹⁰³ For example, specific provisions of French criminal law sanction the disclosure of technical information by employees and managers, but not confidential business information. However, in recent years generally-applicable provisions of French criminal law have been used to prosecute the disclosure and misappropriation of confidential business information, so the distinction may be fading in this particular instance.

¹⁰⁴ The OECD has also considered this issue in the context of knowledge networks and markets. For example, a paper on *Knowledge Flows and the Mobility of Skilled Employees: An International Perspective on the Role of Non-Compete Agreements and their Legal Enforcement* examined these issues in 2012 [DSTI/EAS/STP/NESTI/TIP(2012)10, Fernando Galindo-Rueda].

¹⁰⁵ While there is some variation among countries in the specifics of such protection, in the case of agricultural chemicals many developed countries have established minimum effective terms of five to ten years.

¹⁰⁶ For a comprehensive, recent review of these laws, see Padmashree Gehl Sampath and Pedro Roffe, "Unpacking the International Technology Transfer Debate: Fifty Years and Beyond," *ICTSD Working Paper* (June 2012), available at: <http://ictsd.org/downloads/2012/07/unpacking-the-international-technology-transfer-debate-fifty-years-and-beyond.pdf> (as of 15 August 2013).

¹⁰⁷ The index avoids summative descriptive assessments such as whether protection is "comprehensive" or "well-established." The accumulation of elements and the resulting score speaks to such issues more precisely than any subjective assessment, and does so in a replicable, generalisable manner.

¹⁰⁸ Due to a lack of recent-period data for some countries, 2010 is the most recent year covered by this iteration of the TSPI. Therefore, please note that events may occur subsequent to the period covered here.

There is an on-going court case in Europe, for example, that has potential implications for certain aspects of the balance of rights between protection of commercially sensitive information submitted to public authorities and access to information relevant to environmental concerns. See Judgment of the General Court of the European Union, Case T-545/11, *Stichting Greenpeace Nederland and PAN Europe v European Commission* (8 October 2013).

- ¹⁰⁹ Several Trade Committee studies considered policies for protection of intellectual property rights in relation to relevant economic performance indicators. OLIS references include: TD/TC/WP(2003)10/FINAL, TD/TC/WP(2004)31/FINAL, TAD/TC/WP(2007)19/FINAL and TAD/TC/WP(2010)12/FINAL. Subsequent OECD *Trade Policy Working Papers* were published as: Park and Lippoldt (2003); Park and Lippoldt (2005); Park and Lippoldt (2008); and Cavazos, Lippoldt and Senft (2010).
- ¹¹⁰ For example, component 4 *Enforcement, investigation and discovery; data exclusivity* is comprised of six elements. The value for the component 4 score can range from 0 to one. In the final calculation of the score for the overall component, the scores for any given element would be no more than 1/6 of one point. This would be the case, for example, for data exclusivity for drugs or data exclusivity for agricultural chemicals (each would contribute no more than 1/6 of one point to the component score).
- ¹¹¹ A similar weighting approach and rationale was employed by Ginarte and Park in developing their widely-cited Patent Rights Index. See Ginarte and Park (1997, pp. 288-89) for their discussion of weighting considerations.
- ¹¹² Annex Table A1 (Annex 1) in Schultz & Lippoldt (2014) provides the detailed scoring for each element and component of the index for each country. In the event a user would like to consider alternative approaches to constructing indicators, these data will provide the essential building blocks (e.g., for recombining various elements or reweighting the components).
- ¹¹³ E.g. the duty of confidentiality might be imposed on employees, fiduciaries and third parties with access to information. Partial coverage might arise if under a country's legal regime licensees cannot be covered.
- ¹¹⁴ The treatment of duties is split within this framework. General coverage of duties is scored under index component 1 (Definitions & Coverage). Component 2 responds to the availability of recourse for specific duties. This permits a detailed assessment, ensuring the indicator responds to variation in key elements.
- ¹¹⁵ The Fraser Institute (2012, pp. 3 and 273-5) score for *Legal System and Security of Property Rights* is a composite indicator produced annually. Scores can range from 0 to 10. Based on objective indicators and expert assessments, it takes into account judicial independence, impartiality of courts, protection of property rights, military interference in the rule of law and politics, integrity of the legal system, legal enforcement of contracts, regulatory restrictions on the sale of real property, reliability of the police and business costs of crime. For details see Annex 1 of the original report (Schultz and Lippoldt, 2014) and www.freetheworld.com/reports.html.

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This annotated reference list reviews the main material from the legal and economic literature on trade secrets. The OECD team has added annotations based on their assessments: key articles are marked with an asterisk (*) and many of the references have comments in italics on the nature or utility of the item. Appended to the references from the literature is a reference listing of key laws and precedent.

Overview: Literature References

This initial scan of the literature found that the economic literature on trade secrets is relatively limited in quantity and scope. It largely falls into three categories: *i)* fundamental economic theories of trade secret law; *ii)* theoretical and empirical examination of the trade-offs between patent and trade secret protection; and *iii)* theoretical and empirical examination of how trade secrecy protection affects firm structure and employee relationships. The legal literature is more expansive in terms of quantity, although much of it is somewhat distant for the purposes of the present project with respect to assessment of economic implications. Also, the United States legal regime for trade secrets is disproportionately represented in the literature.

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SELECTED LAWS AND PRECEDENT

This section lists the most significant statutes governing trade secrets in the jurisdictions conveyed. In the case of common law jurisdictions with few or no statutes governing trade secrets, this listing contains citations to significant cases.

Australia

Statutes

- Australia Therapeutic Goods Act 1989
- Agricultural and Veterinary Chemicals Code Act 1994

Cases

- *Coco v. A.N. Clark (Engineers) Ltd.* [1969] RPC 41 (English law)
- *Franklin v. Giddins* [1978] Qd R 72
- *Mainbridge Industries Pty. Ltd. v. Whitewood* (1984) 73 FLR 117.
- *Moorgate Tobacco Co. Ltd. v. Philip Morris Ltd. (No. 2)* (1984) 156 CLR 414
- *Searle Australia Pty. Ltd. v. Public Interest Advocacy Center & Anor* (1992) 36 FCR 111

Brazil

Statutes

- Article 195, Sections XI – XII Law No. 9.279 of May 14, 1996 (Industrial Property Law).

China

Statutes

- Article 10, Unfair Competition Law of the People's Republic of China (promulgated by the Standing Comm. Nat'l People's Cong., Sept. 2, 1993, effective Sept. 2, 1993)
- Article 22 of the Labour Law
- Article 43 of the Contract Law

France

Statutes

- Article L. 621-1 of the Intellectual Property Code
- Article L. 1227-1 of the Labour Code
- Article 1392 of the Civil Code
- Article 226-13 of the Criminal Code
- Article 311-1 of the Criminal Code

- Article 314-1 of the Criminal Code

Germany

Statutes

- Act Against Unfair Competition of 1909 (UWG)

India

Statutes

- 46th Report on the “Pesticide Management Bill, 2008,” Department Related Parliamentary Standing Committee on Agriculture (2008)

Cases

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- Escorts Construction v. Action Construction, 1999 PTC 36 (Del)
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Israel*Statutes*

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Italy*Statutes*

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- Article 99 IPC, as amended by Legislative Decree No. 131 of 13 August 2010.
- Articles 621, 622 and 623 of the Italian Criminal Code.
- Article 2598 of the Italian Civil Code.

Japan*Statutes*

- Article 1(6), Unfair Competition Prevention Act (Act No. 47 of 1993) (up to the revisions of Act No. 62 of 2011 (Effective December 1, 2011)), unofficial translation available at http://www.wipo.int/wipolex/en/text.jsp?file_id=254517.

New Zealand*Statutes*

- Section 230(2) of the Crimes Act 1961

Cases

- AB Consol. Ltd. v. Europe Strength Food Co. Pty. Ltd., [1978] 2 NZLR 515
- Aquaculture Corp. v. New Zealand Green Mussel Co. Ltd. (No. 1), (1985) 5 IPR 353
- Coco v. A.N. Clark (Engineers) Ltd. [1969] RPC 41 (English law)
- Fisher & Paykel Finance v Karum, [2012] NZHC 331
- SSC&B: Lintas New Zealand Ltd. v. Murphy & Anor, (1986) 3 NZCLC 99,546

Republic of Korea*Statutes*

- Trade Secrets Act, Article 1, Para. 2.

Russia*Statutes*

- Civil Code Article 1465 (2011)
- Civil Code Article 1466(2) (2011)
- Civil Code Article 1467 (2011)
- Civil Code Article 1472(2)(2) (2011)

- Article 183(1), Criminal Code of the Russian Federation No. 63-FZ of June 13, 1996 (as last amended on June 29, 2009)
- Federal Law Commercial Secrecy, No. 98-FZ, Article 10 (July 29, 2004) (as amended July 24, 2007)

South Africa

Cases

- Advtech Resourcing (Pty) Ltd v Kuhn 2007(4) ALL SA 1386 ,C para51
- Bamblela Bolts (Pty) Ltd v Ball and Another (J 2977/11) [2012] ZALCJHB 148
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Sweden

Statutes

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United Kingdom

Cases

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- Exchange Telegraph Co. Ltd. v. Central News Ltd., [1897] 2 Ch. 48Lansing Linde Ltd v Kerr, [1991] 1 W.L.R. 251
- Faccenda Chicken Ltd. v. Fowler, [1986] 1 All ER 617
- House of Lords in Herbert Morris, Ltd. v. Saxelby, [1916] 1 AC 688
- Mustad v. Allcock and Dosen, [1963] 3 All ER 416
- Saltman Engineering Co. v. Campbell Engineering Co. Ltd. [1948] 65 RPC 203

United States

Statutes

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- www.epa.gov/pesticides/bluebook/chapter10.html
- First Restatement of Torts § 737 (1939)
- Uniform Trade Secrets Act Section 1, available at:
- www.uniformlaws.org/shared/docs/trade%20secrets/utsa_final_85.pdf

ANNEXES

Due to the annexes' length, which extends to several hundred pages, interested readers are referred to the original version of this chapter, which is an OECD Trade Policy Working Paper (Schultz & Lippoldt, 2014), available at <http://dx.doi.org/10.1787/5jz9z43w0jnw-en>.