

## E CONCLUSION

This Report has shown that it is important to distinguish standards according to their function. The conceptual framework adopted in the Report distinguished standards related to network externalities, imperfect information and negative production or consumption externalities.

Given this range of functions, the effect of standards on international trade flows is likely to vary. Standards targeting network externalities will probably increase trade flows. Voluntary standards targeting imperfect information (e.g. safety standards) or negative production externalities may also have a positive impact on trade, as they are likely to increase the variety of products supplied in the market. Mandatory safety standards and environmental product standards have ambiguous effects on the size of trade flows, but are likely to decrease trade if they create a cost disadvantage (in relative terms) for producers exporting to the countries imposing the standard. The impact of mandatory process standards relating to the environment depends on whether they are applied to foreign producers. If they are, trade flows may decrease.

Increases and decreases in trade flows do not always bear a matching relationship to increases or decreases in welfare, or income. In the final analysis, the welfare consequences of policies are more important than their effects on trade flows. In the field of standards, it will often be the case that increased trade is welfare-enhancing. But there will also be those cases where the welfare calculus takes account of other factors such that increased trade does not contribute to increased welfare. It is important to bear this relationship between trade and welfare in mind.

The case in favour of international standards is likely to be much stronger in the context of compatibility standards (network externalities). In this case, markets will tend to oversupply varieties. Compatibility standards therefore reduce the number of varieties in markets. Yet, in this case, market forces are likely to generate the desirable outcome without the need for government intervention. However, oversight of some sort may still be needed because of possible anti-competitive effects if a *de facto* standard is proprietary.

When standards addressing global production or consumption externalities are set at the national level they are likely to be inefficient. This is, for instance, the case for global environmental externalities. International collaboration is necessary in order to correct for such externalities but the optimal solution will not necessarily involve harmonized standards, as production technologies and consumer preference differ across countries.

The case in favour of harmonization of standards is relatively weak when it comes to standards addressing imperfect information (e.g. safety standards) and local environmental externalities. To the extent that countries differ it may be preferable to have different policies rather than one single policy.

Producers will set standards in a profit maximizing way. As a consequence they automatically take consumer interests into account, but only to the extent that consumer preferences are reflected in prices. This is unlikely to be the case in the presence of production externalities and/or imperfect information. Consumer and producer interests would therefore deviate in these cases. Government intervention is necessary to ensure that consumer interests are taken into account. This is also the case when the interests of employers and employees do not coincide. Consumer and producer interests are likely to coincide when it comes to network externalities and it therefore makes sense for compatibility standards to be set by the private sector.

Producer and consumer interests may also differ in international trade. While producers may have an incentive to set standards so as to provide them with an artificial advantage, this is not in the interest of consumers. It should be the aim of governments to take both producer and consumer interests into account and to ensure that standards are not used as protectionist devices.

With the exception of environmental standards and SPS-related measures, a large part of the empirical literature on standards and trade has tended not to distinguish the nature or motivation of the standards being studied. This has made it difficult to confirm the theoretical insights using the available empirical literature.

The number of empirical studies have also been limited and the available databases subject to important limitations. Nevertheless, some preliminary conclusions can be drawn. Standard-setting activity seems to be pronounced in industries characterized by network externalities. The bulk of technical regulations focus on various problems associated with imperfect information. In some major markets, these regulations cover a large number of tariff lines and a significant share of imports, so there is potential for these regulations to have an adverse effect on trade.

The cost or price-raising effects of standards do not emerge as an important concern in OECD countries. However, the same conclusions do not seem to apply to either smaller firms. With respect to the cost of compliance by firms in developing countries, the evidence is mixed with the survey work suggesting that firms in developing countries face very high costs, while the case studies tell a more complex story where the costs of and benefits from compliance vary enormously among firms and countries and depend on a range of factors.

Illustrating the theoretical finding that the effects of standards on international trade flows is likely to vary, there is evidence that intra-industry trade can be spurred by greater standard-setting activity in industrial sectors. This points to the important role that standards play in increasing compatibility. The adoption of standards, even purely national ones, can increase trade.

It has not been possible to draw strong conclusions on the relative merits of harmonization or mutual recognition of standards to facilitate trade. But early evidence suggests that more robust and significant trade-enhancing effects are found in the case of mutual recognition, especially where conformity assessment is concerned.

The welfare-based literature finds that SPS measures are generally restrictive and involve a welfare loss in the importing country. The presumed health risks or losses from the introduction of pests through imports need to be extraordinarily high in order to justify some regulatory regimes in place. But questions have been raised about the appropriateness of the analytical framework employed, since there may be circumstances when regulatory authorities are not able to assign credible probabilities to the outcomes, and therefore are more risk averse than assumed in the papers. Standards are not necessarily barriers for developing countries. There are conflicting conclusions too about the trade impact of SPS measures on developing countries. There have been cases where access to export markets was denied due to sanitary or phytosanitary issues, resulting in substantial costs in terms of lost sales and market share. But rising standards also serve to accentuate underlying supply chain strengths and weaknesses and thus impact differently on the competitive position of individual countries. Some countries are able to use high quality and safety standards to reposition themselves in global markets.

Finally, recent empirical studies do not change the presumption that in most sectors, environmental standards do not have significant effects on trade and on investment flows. Less work has been done to examine empirically the issues of race to the bottom and regulatory chill, but available studies point to little or no effect on the behaviour of regulators.

The standards development process organized by national, regional and international standards institutions is markedly different from the past. Standards institutions now focus more on the specific concerns of industry and commerce. Hence, there is greater participation by the private sector. A lot of standards are now voluntary rather than mandatory. Standards must comply or be compatible with international norms and the testing and certification elements need to be recognized internationally. Standards institutions must be flexible and responsive to changes in market demand for standards.

The national standardization infrastructure of most industrialized countries is now integrated into the network of international standardization. The trend is towards separating standardization activities from regulatory activities, with the former left to the private sector and the latter with the public sector. In general, regulations concerning safety, health and the environment are issued by governments, although often the

specific measures that satisfy the objectives of government regulations are spelled out in technical standards developed by private organizations.

Many developing countries are increasingly being integrated into this standardization system. But a considerable number of low-income and transition countries have not followed the trend. Standards institutions in poorer countries are generally located in the public sector, with little or no participation of the private sector. Improving participation of developing countries in international standardization is crucial. While numerous initiatives have been undertaken to improve the situation, recent evidence suggests that these initiatives have yet to achieve a significant improvement.

The crucial role that conformity assessment plays in commercial transactions was highlighted in this Report. Purchasers and regulators want to ensure that the requirements and standards they impose on suppliers are fulfilled. These assessment procedures add to the transaction costs of international trade and can be larger for foreign suppliers than for domestic ones if a certification of compliance with a product regulation can only be given by bodies in the importing country.

A significant amount of international cooperation is taking place to establish confidence in the work of conformity assessment bodies in other countries and, in particular, on the conclusion of mutual recognition agreements (MRAs) between accreditation bodies. However, while MRAs may help purchasers to gain trust in the results of foreign bodies, it is not certain to what extent they are relied upon by governments in regulated sectors. A range of government-to-government MRAs, which are often bilateral or plurilateral, show that commitments of mutual acceptance of conformity assessment results in sectors involving health, safety and environmental concerns tend to be quite limited.

In developing countries, the provision of conformity assessment services is often inadequate or costly. But here also, international cooperation is playing an important role in addressing their problems. Regional provision, especially of accreditation services, has proven a viable way forward for smaller and poorer countries. Considerable technical assistance is being provided from a variety of sources to build the necessary conformity assessment infrastructure. Much remains to be done, however, and many developing countries will tend to be excluded from mutual recognition agreements until the appropriate infrastructure is developed.

Finally, WTO Agreements and jurisprudence relating to standards were examined. The relevant multilateral agreements have been developed over the years, in part and fundamentally from original GATT provisions. The current Agreements on Technical Barriers to Trade and Sanitary and Phytosanitary Measures came into force in 1995. They contain comprehensive disciplines intended to guide the design and application of technical regulations and SPS measures. While no attempt has been made to review systematically the effects that the two Agreements have had on standard-setting activity or trade, it turns out that important legal principles in the Agreements have strong links with economic thinking about standards. Economic and legal reasoning have evolved along very similar lines, although a number of issues which are likely to prove challenging to WTO jurisprudence have also been identified in this Report. These included the questions of national versus global welfare maximization, consumer preferences and scientific evidence, the role of international standards, and how to enforce process standards in the multilateral trading system.

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