

ECN330 Module 2 SRP. WTO Rules on Trade in Goods: Market Access

MARKET ACCESS ON IMPORTS

Market access and its restriction

Market access (MA) on the import of goods refers to the conditions upon which foreign producers can supply a good on the domestic market. MA can be restricted by governments imposing trade policies that are designed to limit imports directly (e.g., tariffs, quotas) or indirectly through domestic regulations (e.g., policy, laws, rules or norms) that can limit a foreign good's presence on the home market. Such regulations can involve requirements with which the producer must comply or to which the product must conform.

The difference between a trade policy and a domestic regulation is in what the measure is intended to achieve. Trade policy's objective is to directly restrict imports. A domestic regulation, by contrast, has an objective that addresses some other (non-trade) social policy objective (i.e., to support/protect farmers, jobs, wages, income, prices, small/medium enterprises, domestic industry, a strategic firm, national security, the environment, ensure product safety or food security, etc.), but which nevertheless might have an adverse effect on trade.

Trade policies that directly restrict the volume or value of imports include:

- Import tariffs (tax on imports)
 - An ad valorem tax based on percentage of the price
 - A specific tax applied on a per unit basis
 - A mixed tax regime or rates that are variable (e.g., adjusted according to seasons)
- Import quotas (quantitative restrictions on imports)
 - A volume quota limiting the quantity of imports
 - A value quota limiting the expenditures on imports
 - A mixed tariff-quota regime.

By contrast, examples of domestic regulations which can have an equivalent effect on MA are:

- Non-trade barriers (NTBs)
 - Production quotas
 - Subsidies affecting production or domestic sales
 - Domestic taxes (e.g., excise tax)
 - Investment measures
 - Licensing requirements
 - Sanitary and phytosanitary measures (SPS)
 - Technical barriers to trade (TBT)
 - Government procurement rules.

In addition, there are trade policy measures that can be temporarily applied to protect against a sudden surge of imports or as a response to unfair trade practices:

- Contingent protection measures
 - Safeguards
 - Anti-dumping duties
 - Anti-subsidy duties (countervailing measure)

Multilateral disciplines, rules, and principles

The Havana Charter for an International Trade Organization (or the General Agreement on Tariffs and Trade, GATT, 1948), first introduced multilateral rules on the use of MA restrictions, but the focus was on tariffs and quotas. However, the GATT 1948 only applied to trade in industrial goods, not to agricultural products. The rules on domestic programs, regulations and laws with similar effects to import restrictions for industrial goods were loosely covered or were not properly enforced.

Multilateral rules on MA, where every member agrees to apply the rules in the same manner, though with exceptions, have been based on the GATT's basic legal

principles since its inception. The basic GATT principles involve non-discrimination, predictability, transparency and reciprocity. These principles help to ensure that a country's trade policy complies with the rules and serves as a guide for good public policy. They also support the multilateral goal of continuous liberalization.

Non-discrimination implies that trade policy is applied in a manner that treats all trading partners equally, granting each "most-favored nation" (MFN) status, ensuring that that each receives the best access. It also implies that foreign firms and their goods are granted "national treatment", i.e., that the laws or regulations are applied on foreign producers or suppliers in the same manner as on domestic firms, and applied to their goods in a manner that is no different than how they are applied to domestic goods.

In an economic sense, non-discrimination must have to do with the degree to which a measure affects relative prices and efficiency. In an MFN context, it would require that the trade measure be neutral in its effect on relative import prices across foreign suppliers. On a national treatment basis, it would require that the domestic regulation to be neutral in its effect on relative prices of domestic and foreign goods.

Predictability refers to trading partners having a sense for the upper limit of protection or support that is provided to domestic producers. In an economic sense, predictability comes from knowing the upper bound or ceiling level of protection or support from a measure. When a measure is a binding constraint, then foreign competitors have some certainty over how they will be treated. For example, a maximum tariff rate applied at 20% gives assurances to exporters that upon arrival their product will not suddenly be charged a 50% rate. It also suggests that, if the 20% rate is binding, then the tariff should result in a differential between the border price and the domestic price of about 20%. In this case, the binding sets the limit on the level of protection, or the degree of distortion caused by the tariff.

Transparency is linked to predictability in that MA restrictions are made known to trading partners and society at large. Any change in policy or regulation is notified and draft legislation is circulated among the membership for them to have an opportunity to comment on proposed changes. In this way, trading partners are not caught off guard and the policy objectives are justified and proportional (i.e., no stricter than necessary) to meeting the stated objective, a necessary condition for good public policy. But as the previous example illustrates, a 20% binding tariff is clearly expected to result in a 20% price differential. Thus, transparency has an economic meaning in that a policy's distortionary effect (level of support/protection) is also "observable", measurable and comparable across countries.

Reciprocity refers to the give and take of trade negotiations. Politically, trade negotiations are facilitated if all partners are perceived to be making offers (to liberalize some aspect of their MA regime) in exchange for concessions made by counterparts. The principle of reciprocity makes little economic sense if one views unilateral liberalization as producing efficiency gains that improve the welfare of the country, even without asking a partner for a concession. Nevertheless, the politics of the give and take is said to help to conclude the deal making.

As per economic theory, the WTO has a stated preference for the use of tariffs over quotas if indeed imports need to be restricted for legitimate reasons. In fact, quotas are prohibited (except under very specific conditions). There are several reasons. A quota can be more restrictive than

necessary to achieve an objective and thus have a more trade-distortionary effect. They can also be more administratively burdensome because an upper limit on imports requires a licensing regime to allocate the quota rights. The licensing regime will likely be inconsistent with MFN. Thus, the administration can also affect predictability and transparency. A tariff, by contrast, can easily be set in law and applied in the same manner to all trading partners, consistent with MFN, predictability, and transparency.

For NTBs, the UR-GATT strengthened rules on their use under specific agreements and annexes under GATT (e.g., WTO Agreements on Agriculture, Government Procurement, Subsidies and Countervailing Measures, Safeguards, Trade-Related Investment Measures, Technical Barriers to Trade, Sanitary and Phytosanitary Measures, Import Licensing, Customs Valuation, etc.). Governments have the policy space to regulate, of course, to achieve their legitimate purpose but are limited on their ability to protect against foreign competition. Thus, the more an NTB resembles a quantitative restriction or is more restrictive than necessary to achieve its objective, the more likely the measure will violate WTO rules.

MARKET ACCESS COMMITMENTS ON IMPORTS

WTO commitments on goods

The conclusion of the Uruguay Round-GATT (UR-GATT) in 1994 gave rise to the World Trade Organization (WTO) and resulted in stronger and more comprehensive rules on MA on goods and commitments of members. The rules on trade policy mostly dealt with requiring “binding” customs duties on imports. There was a significant increase in the number of goods which were subject to “bound” tariffs — the maximum rates to which members are committed and which are difficult to raise [1].

Each WTO Member produces a “schedule” of tariff concessions covering all products. These concessions were an integral part of the results of the UR-GATT negotiations [3] or the accessions process for a country whose membership began after 1995. The schedule specifies the maximum tariff that can be applied for every good entering into the territory of the Member.

A tariff rate is specified for a broad product category (e.g., poultry meat) or for sub-categories of the product (e.g., whole poultry or cuts of meat, fresh or frozen). In developed countries, bound rates were required for both industrial and agricultural products. For developing countries, bound rates were required on agricultural goods but not on industrial goods (allowing additional time for those countries to use tariff policy measures to serve as protection/support for infant industries or as part of an industrial development strategy).

‘Binding’ tariffs

MA schedules are not simply announcements of tariff rates. They are commitments not to increase tariffs above the listed rates — the rates are “bound”. For developed countries, the bound rates are generally the rates actually charged, but many developing countries have bound rates higher than the actual rates charged, so the bound rates serve as ceilings [1].

A country can break a commitment (i.e. raise a tariff above the bound rate), but only with difficulty. To do so the country has to re-negotiate with its trading partners, those that are most concerned with the loss in MA. This could result in compensation loss of trade [1]. Compensation is not monetary, but trading partners can raise tariffs on selected goods, equal to the loss in the value of trade, from the country that requests to break a commitment.

Developed countries increased the number of imports whose tariff rates were “bound” from 78% of product lines to 99%. For developing countries, the increase was also considerable: from 21% to 73%. Economies in transition from central planning increased their bindings from 73% to 98%. This meant a substantially higher degree of market security for traders and investors [1].

In addition to the commitment to have bound tariff rates, there were also requirements for tariff cuts. There was no legally binding agreement that set out the targets for tariff reductions (e.g. by what percentage tariffs were to be cut as part of the final deal). Instead, individual countries listed their commitments in schedules annexed to Marrakesh Protocol to the GATT 1994. This was the legally binding agreement for the reduced tariff rates of a country [1]. In other words, these were country-specific commitments to the multilateral requirement to bound and reduce tariffs.

Developed countries cut tariffs on industrial goods by 40%, from an average of 6.3% to 3.8% between 1995 and 2000. Developing countries were not required to make specific average cuts. On agricultural goods, developed countries cut tariffs, on average, by 36% by 2000. Developing countries had 10 years to make an average cut of 24%.

WTO rules allow countries exemptions from the rules and commitments. The general exceptions are spelled out in Article XX of the GATT.

GATT Article XX: General Exceptions

On the condition that a measure is applied in a manner that is non-arbitrary, justified to meet a specific objective, or is not a disguised restriction on trade, WTO Agreements will not be construed to prevent a Member state from adopting or enforcing measures that:

- (a) Are necessary to protect public morals;
- (b) Are necessary to protect human, animal or plant life or health;
- (c) Relate to the trade in gold or silver;
- (d) Are necessary to secure compliance with customs enforcement, operation of monopolies, protection of intellectual properties, etc.;
- (e) Relate to products of prison labour;
- (f) Are imposed to protect national treasures of artistic, historic or archaeological value;
- (g) Relate to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restriction on domestic production or consumption;
- (h) Are undertaken in pursuance to obligations under any intergovernmental commodity agreement;
- (i) Involve restrictions on exports of domestic materials necessary to ensure essential quantities of such materials to a domestic processing industry during periods when the domestic price of such materials is held below the world price as part of a governmental stabilization plan; and
- (j) Are essential to the acquisition or distribution of products in general or local short supply [2].

Market Access in Agriculture

With the UR-GATT came the WTO Agreement on Agriculture (AoA), specifying the rules and commitments that apply to agricultural products to which members would be required to comply. This was a fundamental change, the key aspects of which were to stimulate investment, production and trade in agriculture by (i) making agricultural MA conditions more transparent, predictable and competitive, (ii) establishing or

strengthening the link between national and international agricultural markets, and thus (iii) relying more prominently on the market for guiding scarce resources into their most productive uses both within the agricultural sector and economy-wide [3].

Under the GATT 1948, agricultural trade was characterized by high tariff rates and/or NTBs intended to severely limit imports of particular goods, using quotas or outright import bans. With the AoA, agricultural products were subjected to disciplines, bound tariff rates and a commitment to reduce the bound rates over a period of time. This made markets substantially more predictable for agricultural producers and marketers [4]. The least-developed Member states were required to bind all agricultural tariffs, but they did not have to undertake tariff reductions [3].

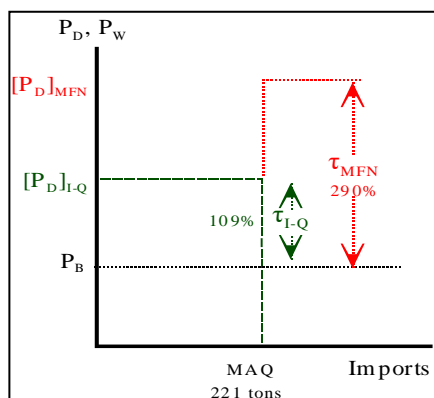
In many cases, tariffs were the only form of protection a country had on agricultural products before the Uruguay Round. However, more than 30% of agricultural produce faced quotas or other import restrictions [4]. The UR-GATT negotiations aimed to remove such barriers. For this purpose, a “tariffication” package was agreed which, amongst other things, provided for the replacement of agriculture-specific non-tariff measures with a tariff which afforded an equivalent level of protection [3]. Thus, where an import quota existed it was to be replaced by its tariff equivalent.

In cases where markets were sensitive to the loss of support or protection that would come from increasing import competition, a tariff-rate quota (TRQ) was the intended form of instrument to be used. The TRQ was a supposed to be a pragmatic means of offering protection to sensitive sectors while allowing limited MA.

As the name suggests, the TRQ is a mixed policy tool which has elements of a tariff and a quota. There are three measures at work: a market access quota, MAQ, an in-quota tariff rate (τ_{I-Q}), and the out-of-quota tariff or the MFN rate (τ_{MFN}).

Norway’s market access regime on chicken

To illustrate how a TRQ works, Norway’s MA regime on chicken meat is presented (see chart MA regime on chicken). First, Norway needed to specify a volume of the MAQ. This was set at 221 tons of imported chicken meat. For imports up to the quota limit, a tariff rate, (τ_{I-Q}), is applied, which Norway set at 109% rate, ad valorem. When applied to the border price (P_B), the domestic price (P_D) of the imported chicken, inclusive of the tariff, would cost $[P_D]_{I-Q}$. For imports beyond the quota limit, the rate, τ_{MFN} , would apply, raising the cost of imported chicken by 290% to $[P_D]_{I-Q}$.



As part of the tariffication package, WTO Members were required to maintain “current import access opportunities” at levels corresponding to those existing during the 1986-

88 base period. Where such “current” access had been less than 5% of domestic consumption of the product in question in the base period, an (additional) minimum access opportunity had to be opened on an MFN basis. This was to ensure that in 1995, current and minimum access opportunities combined represented at least 3% of base-period consumption and were progressively expanded to reach 5% of that consumption by 2000 (developed country Members) or 2004 (developing country Members), respectively. TRQs, including the applicable tariff rates and any other related conditions, are also specified in the schedules of the WTO Members concerned [3].

In practice these MA targets were rarely realized, and compliance was not a requirement. In Norway’s case with mega-tariffs (rates exceeding 100%) even on the in-quota rates, it is not a surprise that the MAQ was a non-binding constraint and the MFN bound rate was a level of protection that was completely unnecessary because imports would be prohibitively expensive.

The tariffs resulting from the tariffication process accounted, on average of the developed country Members, for around one fifth of the total number of agricultural tariff lines. For the developing country Members, the share was considerably smaller. Following the entry into force of the AoA, there is now a prohibition on agriculture-specific non-tariff measures, and the tariffs on virtually all agricultural products traded internationally are bound in the WTO [3]. Again, the reality is that bound agricultural tariffs remain higher, on average, than tariffs on industrial goods in developed countries.

In addition to MA rules on the use of tariffs and the requirement for tariffication, the AoA requires Members set bindings on the maximum value of domestic support (agricultural production subsidies) and export subsidies that a country could provide and reduction commitments on those values. This is discussed further in module 3. Finally, contingency protection is provided through special safeguards, and transparency works through notifications and reporting on compliance with the rules [3].

The prohibition of non-tariff border measures

Article 4.2 of the AoA prohibits the use of agriculture-specific non-tariff measures. Such measures include quantitative import restrictions, variable import levies, minimum import prices, discretionary import licensing procedures, voluntary export restraint agreements and non-tariff measures maintained through state-trading enterprises. All similar border measures other than “normal customs duties” are also no longer permitted. Although Article XI:2(c) of the GATT continues to permit non-tariff import restrictions on fisheries products, it is now inoperative as regards agricultural products because it is superseded by the AoA [3].

However, Article 4.2 of the AoA does not prevent the use of non-tariff import restrictions consistent with the provisions of the GATT or other WTO agreements which are applicable to traded goods generally (industrial or agricultural). Such measures include those maintained under balance-of-payments provisions (Articles XII and XVIII of GATT), general safeguard provisions (Article XIX of GATT and the related WTO agreement), general exceptions (Article XX of GATT), the Agreement on the Application of Sanitary and Phytosanitary Measures, the Agreement on Technical Barriers to Trade or other general, non - agriculture-specific WTO provisions [3].

Another element of the tariffication package, give the Member the right to invoke for tariffied products the special safeguard provisions of the AoA (Article 5), the right which had to be reflected in the Member's schedule. The right to make use of the special safeguard provisions (SSGs) was reserved by 38 Members, and for a limited number of products in each case [3].

The SSG provisions allow the imposition of an additional tariff where certain criteria are met. The criteria involve either a specified surge in imports (volume trigger), or, on a shipment by shipment basis, a fall of the import price below a specified reference price (price trigger). In case of the volume trigger, the higher duties only apply until the end of the year in question. In case of the price trigger, any additional duty can only be imposed on the shipment concerned. The additional duties cannot be applied to imports taking place within TRQs, only those in excess of the quota volume [3].

Transparency is ensured through Members' notification of their bound agricultural tariffs and the TRQ commitments contained in Members' schedules. For TRQs, members needed to set out how each TRQ was to be administered. Such notifications disclose, for example, if imports were permitted on a "first-come-first-served" basis or if import licences were used — and in the latter case, an indication of who was able to obtain a licence and how they are allocated. An ad hoc notification is required if the method of allocation under any tariff quota changes. At the end of each year, a notification of the quantity of imports entering under each TRQ is required (quota fill rate) [3].

Members with the right to use the special safeguard provisions must notify its first use to allow its trading partners to establish the parameters of the special safeguard action, such as the volume or price used to trigger the special safeguard action. In the case of the price trigger, an upfront notification of the relevant reference prices has also been possible. In addition, an annual summary notification of the use of the special safeguard is required [3].

MARKET ACCESS ON EXPORTS

Disciplines and rules on export restrictions

The disciplines on the use of MA restrictions on imports tend to be more strictly enforced at the WTO than measures that are intended to restrict exports. This in part reflects merchantilist thinking, the misguided idea that the game of trade is won by the one that exports the most and imports the least, but it also is intended to give a government the policy space it might need for its national policy interests. For example, an oil exporting country might be reliant on that commodity a large share of its national income and foreign exchange (export earnings). The rules allow the country to limit production (and therefore exports) as a means to increase the world price of the commodity upon which they depend.

Similarly, a country that is an exporter of a staple good such as rice might find that in times of global crisis the world price of rice increases, limiting the access to the staple food by the country's poorest. The government might be tempted to impose an export restriction to lower the domestic price, increasing access to food within its territory.

However, WTO Member states might still find it necessary to enforce disciplines on the use of export restrictions. There are two economic reasons for this, both related to the case of a large-country exporter. First, a large country that restricts exports of a strategic good will cause the world price of that good to increase which will hurt net importing Member states. This adversely affects

the functioning of the world market and negatively affects the credibility of the net exporting country as a reliable supplier of a strategic good. It might also suggest that the objective of the exporting country's government is to manipulate terms of trade for its own advantage.

Second, if the good is a commodity or a primary product, then it typically implies that it will need to undergo additional value-added activity (e.g., processing, refining, manufacturing, etc.) for it to be useful to the user or end user. A restriction on the export of the commodity will leave more of the primary raw material in the domestic market which can support the downstream industries that might intensively use it in their production. This will have the effect of lowering the price of that input at home giving the domestic industry a cost advantage. The restriction of exports means that a key input into downstream production will be scarcer on the world market and made more expensive. This could give the net exporting country a policy-induced cost advantage in downstream, value-added sectors that rely on the imports of the commodity.

GATT rules recognize that in certain situations countries may have to take measures to control exports. As with imports, countries are required in such situations to give preference to price-based measures. The rules thus permit countries to use export taxes but prohibit restrictions on exports unless they can be justified under one of the exceptions [5].

Revenue considerations have led some developing countries to levy export duties. Today, these countries are reducing their dependence on these duties because of their adverse effects on the export trade. However, apart from revenue considerations, export duties may also be levied to attain certain other policy objectives. They may, for example, be temporarily imposed immediately after a devaluation if the lower export prices in foreign currency terms do not bring about the expected rise in exports while providing undue benefit to exports [5].

Duties are levied by countries exporting primary commodities to improve their terms of trade. They may also be used to control exports in order to increase the availability of resources to the domestic processing industry or to control for environmental or ecological reasons further exploitation of the country's natural resources [5].

One of the major advantages of export duties over export restrictions is that they provide governments with additional revenue. Governments often use such revenue to assist the producers of the taxed commodities and products [5].

The basic GATT rule requiring countries to extend MFN treatment applies to duties on both imports and exports. The MFN principle also applies to:

- the method of levying such duties; and
- all rules and formalities connected with exportation.

The GATT provisions prohibiting restrictions on imports also apply to exports. There are, however, a few exceptions to this rule. Thus, it is open to a country to restrict or prohibit exports, if this is necessary to:

- implement standards or regulations on the classification, grading or marketing of commodities in international trade; and
- prevent or relieve critical shortages of foodstuffs or other essential products.

In addition, the rules prevent countries from imposing restrictions:

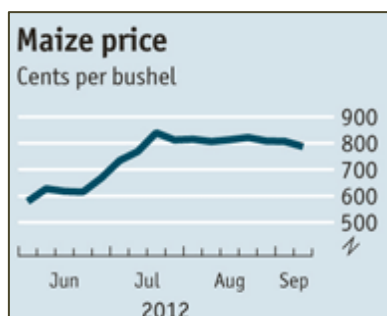
- on raw materials to protect or promote a domestic fabricating industry; and/or
- to avoid competition among exporters [5].

Case of export restriction to keep food prices down

In 2012, the US Department of Agriculture confirmed what everyone knew: that the 2012 maize harvest was bad; that three of the biggest wheat exporters, the US, Russia and Australia, suffered from simultaneous droughts; and that the world experienced its third food-price spike in five years [8].

Although the weather is the proximate cause of the price rises, governments made matters worse. Consider the US bio-fuels policy. A third of the US's maize had been turned into ethanol to fuel cars, driving up grain prices and making them more volatile by reducing stocks. At the start of 2012 the US scrapped the subsidy for ethanol and abolished the tariff on imports of the stuff—steps in the right direction. But a certain amount of ethanol still had to be blended with petrol by law, which kept prices high [8].

Bad US policy encouraged bad policies elsewhere. Higher prices spooked importing and exporting countries alike, causing them to turn away from volatile world markets and seek to insulate themselves. Between 2007 and 2011, 33 countries had imposed export restrictions on food. Agriculture accounted for less than 10% of world trade, but more than two-thirds of the cost of all border distortions [8].



Export bans were designed to protect consumers from the effects of high prices. From a single nation's perspective, such a policy might seem to have the desired effect: as world prices spiral upwards, domestic prices are shielded from the full impact. When many countries do the same thing, so much food disappears from global markets that prices rocket more than they would have done if governments had left well alone. One study calculated that 45% of the huge increase in rice prices in 2006-08 was attributable to trade restrictions. Export bans exaggerate the very thing they seek to defend against [8].

Higher prices, if sustained, can help poor rural households, many of whom depend on agriculture for their livelihood. A spike in food prices merely raises the cost of living without generating much in the way of income or jobs in the short term; and for the urban poor—who make up an increasing slice of most emerging-country populations—higher food prices are almost entirely bad news. That is why farm-trade restrictions do not cut poverty but increase it [8].

There is a long-term concern about government meddling in farming: its rising incidence in China and

India. Total state support to Chinese farmers more than doubled between 2004 and 2012. China and India followed the ignoble path trodden by Japan, the US and Europe in the 1980s: developing an agricultural industry dependent on handouts. It was bad when this happened in the richest parts of the world. Having 2.5 billion people fed by subsidised farming, with its attendant inefficiencies, is worse [8].

Farm protection is like a weed: it grows everywhere and seems impossible to eradicate. Export restrictions by governments make farming less efficient than it should be. They increase poverty. There are better ways to help the poor, such as direct cash transfers. And they are counterproductive, because they exacerbate the problems they seek to solve [8].

The new director general of the WTO, Ngozi Okonjo-Iweala who was appointed in Feb 2021, announced that she hoped to encourage members to lift export restrictions on food and medical products, and even to stimulate vaccine production. When the pandemic first struck the WTO seemed largely irrelevant. That was partly by design it permits trade restrictions if they protect health. Global Trade Alert (GTA), a watchdog, recorded 202 export restrictions on medical supplies and personal-protective equipment between Jan and Sep 2020. Members' failure to alert the WTO of their actions was more egregious. Bernard Hoekman of the European University Institute calculated that over a similar period GTA recorded more than twice the number of trade measures reported to the WTO. Singapore and New Zealand sought to limit export controls and lower import barriers for pandemic-related products. Another complaint was the WTO's intellectual-property rule are too rigid, and protect pandemic profiteers over the poor. Italian producers of 3D-printed ventilator valves were threatened with patent-infringement lawsuits. South African producers struggled to access raw materials for covid-19 tests. In emergencies the Agreement on Trade-Related Aspects of Intellectual Property allows governments to issue "compulsory" licenses to make health-related products without the permission of the patent holder. None had. [9].

WTO AGREEMENT ON TRADE-RELATED INVESTMENT MEASURES

Investment and Trade in Goods

Complicating any discussion on multilateral rules for the liberalization of investment is the theoretical imprecision in economics of the relationship between investment and trade. That is, do trade and investment flows substitute or complement each other? Even limiting the definition of cross-border capital flows to foreign direct investment, FDI, (e.g. foreign financing, in whole or part, of physical capital such as plant and equipment) requires a case-by-case assessment. FDI promotes trade when a foreign subsidiary serves as a supplementary export platform for the domestic parent company. But FDI can displace trade flows when the foreign subsidiary supplies markets once supplied by the parent company.

Globalization in an economic context involves trade in goods and services, and international flows of capital and labor. However, the WTO's purview is primarily over trade, more comprehensively in goods and more limited over services. There is no clause over the freedom of movement of capital and labor as envisaged as in the European Union. The disciplines over foreign investment are piecemeal. Its applications on trade in goods is different from the sector-by-sector application in services trade. WTO rules forever will need to strike a balance between addressing trade concerns by ensuring compliance with the basic principles and the right for a

sovereign government to regulate investment according to national interests. Two examples help illustrate the sensitivities of foreign ownership to national interests.

Foreign investment in agribusiness

In 2011, Lactalis, a French dairy group, expressed an interest in an Italian milk, yogurt, and cheese concern. It had increased its stake in Parmalat, its largest Italian counterpart, to around 29%, just below the threshold for a mandatory takeover offer. The next day Italy's cabinet met to discuss granting itself new powers to block foreign bids for "strategic" companies [6].

With annual sales of €8.5 billion (\$11.3 billion), Lactalis was twice Parmalat's size. And it had knowledge of the Italian market. Between 1997 and 2006, a decade in which Parmalat went from boom to bust, Lactalis bought three Italian cheese brands to become the country's biggest cheesemaker. The new Parmalat—formed after the old one collapsed in 2003, in then Europe's biggest bankruptcy—made net profits of €285m in 2010 and was sitting on €1.4 billion of cash [6].

With official support, Intesa Sanpaolo, a large bank with a 2.4% stake in Parmalat, tried to rally efforts to keep the French at bay. Italian ministers were especially peeved at their French counterparts, whom they accused of stymieing Italian firms' attempts to invest in France. French politicians also have a habit of making absurd arguments about takeover targets being "strategic", as the US's PepsiCo discovered in 2005 when economic nationalism was enough to warn it from Danone, a French dairy group. The message from Rome to Paris was: if your yogurt is a vital national asset, so is ours [6].

These sentiments are widespread, having even been expressed within the special relationship between the US and UK. When the US food manufacturer Kraft took over Britain's Cadbury in 2010, the UK press fumed about the loss of a much-loved chocolate-maker [6].

If in mature economies dairy, chocolate and beer can be considered sensitive sectors limiting the participation of foreign ownership, then imagine the genuine concerns in developing countries of foreign ownership over agriculture, forestry, fishing, mining and natural resource extraction. Also imagine the delicate nature of multilateral discussions concerning liberalization of foreign investment when it comes to actual strategic sectors.

Industrialization and car manufacturing

In 2012 officials from Brazil and Mexico argued over the future of a 2002 agreement that allowed free trade in cars between them. For a decade it worked as it was meant to, and to Brazil's advantage, by encouraging carmakers in Mexico to specialise in larger models and those in Brazil to make smaller ones. In 2011, Mexican exports under the accord grew by 40% to \$2 billion, while Brazil exported cars worth just \$372m. Brazil cried foul. This apparently petty dispute says much about how Latin America's two biggest economies think about trade and industry [7].

By throwing open its market under the North American Free-Trade Agreement (NAFTA) with the US and Canada and a host of other bilateral trade accords, Mexico became a base from which carmakers could export to both halves of the Americas, and worldwide. Volkswagen, for example, made all its Beetles and Jettas there. Although Nissan produced some vehicles at a Renault plant in Brazil, most of those it sold in Latin America came from two plants in Mexico. In all, 2.1m of the 2.6m vehicles produced in Mexico in 2011 were exported [7].

By contrast, in Brazil the main aim of public policy has been to push carmakers to build local factories from

which to supply the country's huge domestic market. Only 540,000 of the 3.4m vehicles manufactured in the country in 2011 were exported. Around three-quarters of Brazil's car exports went to Argentina. Mercosur, to which both countries belong, had long aspired roughly to balance trade in cars and car parts between the two [7].

Thus, the Brazilians worried about a surge of imports that came about partly because of the strength of the real (which rose by 32% against the dollar since the start of 2009). Car imports grew by 30% in 2011 (and those from China by ten times as much). In December 2011 the government slapped a punitive tax increase of 30% on imports of cars whose makers lacked a factory in Mercosur or Mexico. Officials then looked at the accord with Mexico, which they thought became a conduit for the import to Brazil of cars largely made at the East Asian plants of global carmakers, such as VW and General Motors [7].

Brazil sought to change the agreement in three ways.

First, it wanted cars benefiting from it to have at least 40% local content. It complained that Mexico failed to enforce the requirement for 30% local content. That was strongly denied by Bruno Ferrari, Mexico's aptly named economy minister. In any event, Mexico saw its car industry as part of a global supply chain. It was hard for it to raise local-content requirements quickly, since that would change the basis on which companies invested. In Brazil, by contrast, car making has long been an integrated industry, with high local content [7].

Second, Brazil wanted to extend the agreement to trucks and buses, in which it reckoned it was competitive. Mexico was "not afraid of doing that", said Mr Ferrari, but only "with reciprocity". In 2012, Brazil built engines to EU emissions standards, whereas Mexico used both the EU standards and the US's different (though no less strict) ones. But whereas Mexico accepted imports of both types of engines, Brazil accepted only the EU type. Mexico wanted that to change [7].

Third, Brazil wanted to limit tariff-free imports by a quota similar to the one imposed on the car trade in Mercosur in response to the surge in imports. Mr Ferrari noted that he "would rather have discussed how to increase our trade than how to decrease it" [7].

Mexico's stance reflected the openness of its economy, at least to trade in goods (many service businesses in the country are in the hands of cosseted cartels). Its average tariff, weighted by the composition of imports, was 5.56%, compared with Brazil's 10.47%, according to the WTO. In 2010 almost two-thirds of its imports entered free of duty, compared with just over a quarter in Brazil [7].

Mexico suffered a big shake-out of its industry when NAFTA came into effect in 1994. In 2002 Mexico saw several hundred thousand jobs in assembly plants go to China. But openness to global competition made Mexico's surviving industries highly efficient. Industrial production grew after 2010. Manufacturing's share of GDP remained steady at between 17% and 18% since 2003 [7].

In contrast, Brazil's government sees the country's domestic market as an asset to be protected. And it sees imports from China, made even cheaper by the strength of the real, as a threat to its industry. "The regional economy has been threatened by predatory competition that has taken hold around the globe," said Fernando Pimentel, the industry minister, in 2011. "Developed countries are those that have industry and we're going to protect our own" [7].

Yet Brazil's growing protectionism risked locking in high costs. The country has "a competitiveness problem, not a trade problem," said Ricardo Mendes of Prospectiva, a consultancy in São Paulo. Manufacturing's share of GDP fell from 17.2% in 2000 to 14.6% in 2011. Falling industrial production was one reason Brazil's economy grew by just 2.7% in 2011. The blame lay mainly with high interest rates and other domestic burdens [7].

Mercosur was supposed to provide a bigger market for Brazilian industry. But Brazil was locked in a series of trade spats with Argentina, which is even more protectionist [7].

For companies doing business across borders, the politics of globalisation can be a serious obstacle. In March 2012, Brazil and Mexico negotiated a quota on imports from Mexico. Later that year, the government introduced the Inovar-Auto programme under which imported cars attracted higher taxes unless the manufacturer met local-content requirements for innovation and engineering as well as fuel-efficiency targets. Ford, which had a design centre in Brazil, expected to hit those targets. Nonetheless, it had to spend considerable time and effort tracking the local content throughout its operations to satisfy government audits [10].

Multinational enterprises have always been subject to the political idiosyncrasies of their host countries and have learned to live with them. The restrictions that have appeared since 2007 did not make them any less multinational, but it forced them to respond more rapidly. Part of the job to figure out ways to be nimble and flexible, to adjust to changing political realities [10].

Ford can cope. Back in 2006 it had begun to consolidate its range of models (many of which were specific to particular markets) into a few global platforms, which meant assembling and selling the same cars in Europe, the Americas and Asia. That allows it to shift production more easily from one market to another if quotas, tariffs or other rules change. But whereas large companies have the resources to respond to shifting requirements, smaller companies find it much harder to adjust [10].

Trade-Related Investment Measures

As WTO rules primarily concern themselves with issues of trade, any disciplines on the rules governing foreign investment should be seen in light of how domestic regulations on investment and foreign participation affect trade in goods. However, domestic regulations on investment naturally get tangled up with other policy objectives (such as wages, employment, use of locally produced inputs in production, sectoral development, foreign ownership of strategic assets, competition, the effect on small/medium enterprises, taxation, intellectual property, etc.). Such is the contentious nature of the issue that the WTO Agreement on Trade-Related Investment Measures (TRIMs) does not define the concept. Instead, the TRIMs Agreement provides an illustrative list of measures that are inconsistent with the disciplines that are set out.

The TRIMs Agreement recognizes that certain investment measures can restrict and distort trade. It states that WTO members may not apply any measure that discriminates against foreign products or that leads to quantitative restrictions, both of which violate WTO rules or principles [11].

Prior to the UR-GATT negotiations, the linkage between trade and investment received little attention in the original framework of the GATT. GATT 1948 contained provisions on the treatment of foreign investment as part of a chapter on economic development. The Charter was never ratified and only its provisions on commercial policy were incorporated into the GATT [11].

In 1955, the GATT Contracting Parties adopted a resolution on International Investment for Economic Development in which they, *inter alia*, urged countries to conclude bilateral agreements to provide protection and security for foreign investment. Perhaps the most significant development with respect to investment in the period before the UR-GATT was a ruling by a panel in a dispute settlement proceeding between the US and Canada. In Canada — Administration of the Foreign Investment Review Act ("FIRA") (BISD 30S/140, 1984) a GATT dispute settlement panel considered a complaint by the US regarding certain undertakings which were effectively required from foreign investors by the Canadian authorities as conditions for the approval of investment projects. These undertakings pertained to the purchase of certain products from domestic sources (local content requirements) and to the export of a certain amount or percentage of output (export performance requirements). The Panel concluded that the local content requirements were inconsistent with the national treatment obligation of Article III:4 of the GATT¹, but that the export performance requirements were not inconsistent with GATT obligations. The Panel emphasized that at issue in the dispute before it was the consistency with the GATT of specific trade-related measures taken by Canada under its foreign investment legislation and not Canada's right to regulate foreign investment *per se* [11].

The panel decision in the FIRA case was significant in that it confirmed that existing obligations under the GATT were applicable to requirements imposed by governments in an investment context in so far as such requirements discriminated between imported and domestic goods. At the same time, the panel's conclusion that export performance requirements were not covered by the GATT underscored the limited scope of existing GATT disciplines with respect to such trade-related requirements [11].

The UR-GATT negotiations included the subject of trade-related investment measures as a subject for a new round through a carefully drafted compromise:

"Following an examination of the operation of GATT Articles related to the trade-restrictive and trade-distorting effects of investment measures, negotiations should elaborate, as appropriate, further provisions that may be necessary to avoid such adverse effects on trade." The emphasis placed in this mandate on trade effects made it clear that the negotiations were not intended to deal with the regulation of investment as such [11].

The UR-GATT negotiations on trade-related investment measures were marked by strong disagreement among participants over the coverage and nature of possible new disciplines. While some developed countries proposed provisions that would prohibit a wide range of measures in addition to the local content requirements found to be inconsistent with Article III in the FIRA panel case, many developing countries opposed this. The compromise that eventually emerged from the negotiations was essentially limited to an interpretation and clarification of the

¹ The relevant part of Article III:4 states: The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin

in respect of all laws, regulations and requirements affecting their internal sale offering for sale, purchase, transportation, distribution or use.

application to trade-related investment measures of GATT provisions on national treatment for imported goods (Article III) and on quantitative restrictions on imports or exports (Article XI). Thus, the TRIMs Agreement does not cover many of the measures that were discussed in the UR-GATT negotiations, such as export performance and transfer of technology requirements [11].

The coverage of the Agreement applies to investment measures related to trade in goods only and not services. While a TRIM is not defined in the Agreement, it does contain an annex with an Illustrative List of Measures that are inconsistent with GATT Article III:4 (national treatment) or Article XI:1 (prohibition of quantitative restrictions on imports or exports) of GATT 1994. Members are not to apply any TRIM that is inconsistent with the provisions of Article III or Article XI of GATT 1994. The illustrative list is provided below [11].

As an agreement that is based on existing GATT disciplines on trade in goods, the Agreement is not concerned with the regulation of foreign investment. The disciplines of the TRIMs Agreement focus on investment measures that infringe GATT Articles III and XI, in other words, that discriminate between imported and exported products and/or create import or export restrictions. For example, a local content requirement imposed in a non-discriminatory manner on domestic and foreign enterprises is inconsistent with the TRIMs Agreement because it involves discriminatory treatment of imported products in favour of domestic products. The fact that there is no discrimination between domestic and foreign investors in the imposition of the requirement is irrelevant under the TRIMs Agreement [11].

ANNEX: Illustrative List

1. TRIMs that are inconsistent with the obligation of national treatment provided for in paragraph 4 of Article III of GATT 1994 include those which are mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage, and which require:
 - (a) the purchase or use by an enterprise of products of domestic origin or from any domestic source, whether specified in terms of particular products, in terms of volume or value of products, or in terms of a proportion of volume or value of its local production; or
 - (b) that an enterprise's purchases or use of imported products be limited to an amount related to the volume or value of local products that it exports [11].
2. TRIMs that are inconsistent with the obligation of general elimination of quantitative restrictions provided for in paragraph 1 of Article XI of GATT 1994 include those which are mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage, and which restrict:
 - (a) the importation by an enterprise of products used in or related to its local production, generally or to an amount related to the volume or value of local production that it exports;
 - (b) the importation by an enterprise of products used in or related to its local production by restricting its access to foreign exchange to an amount related to the foreign exchange inflows attributable to the enterprise; or
 - (c) the exportation or sale for export by an enterprise of products, whether specified in terms of particular products, in terms of volume or value of products,

or in terms of a proportion of volume or value of its local production [11].

WTO AGREEMENTS ON SANITARY AND PHYTOSANITARY MEASURES AND TECHNICAL BARRIERS TO TRADE

Domestic regulations involving standards

A large share of any government's domestic regulations involves setting product or production standards, food or product safety requirements, and environmental standards. WTO rules must give policy space for governments to address the issues in national regulations.

Article 20 of the GATT allows governments to act on trade to protect human, animal or plant life or health, provided they do not discriminate or use this as disguised protectionism. In addition, there are two specific WTO agreements dealing with food safety and animal and plant health and safety, and with product standards in general. Both try to identify how to meet the need to apply standards and at the same time avoid protectionism in disguise. These issues are becoming more important as tariff barriers fall. In both cases, if a country applies international standards, it is less likely to be challenged legally in the WTO than if it sets its own standards [12].

Sanitary and Phytosanitary (SPS) Measures

Problem: How to ensure that a country's consumers are being supplied with food that is safe to eat — "safe" by the standards one considers appropriate? At the same time, how can one ensure that strict health and safety regulations are not being used as an excuse for protecting domestic producers [13]?

The SPS Agreement sets out the basic rules for food safety and animal and plant health standards. Specifically, SPS Agreement refers to measure that are applied to:

- protect human or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms in their food;
- protect human life from plant- or animal-carried diseases;
- protect animal or plant life from pests, diseases, or disease-causing organisms;
- prevent or limit other damage to a country from the entry, establishment or spread of pests [13].

These include SPS measures taken to protect the health of fish, wild fauna, as well as of forests and wild flora. Measures for environmental protection (other than as defined above), to protect consumer interests, or for the welfare of animals are not covered by the SPS Agreement. These concerns, however, are addressed by other WTO agreements (i.e., the TBT Agreement or Article XX of GATT 1994) [13].

Countries can set their own, different standard and different methods of inspecting products. But it also says regulations must be based on science. They should be applied only to the extent necessary to protect human, animal or plant life or health. And they should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail. Member countries are encouraged to use international standards, guidelines and recommendations where they exist. However, members may use measures which result in higher standards if there is scientific justification. They can also set higher standards based on appropriate assessment of risks so long as the approach is consistent, not arbitrary [13].

All countries maintain measures to ensure that food is safe for consumers, and to prevent the spread of pests or

diseases among animals and plants. These SPS measures can take many forms, such as requiring products to come from a disease-free area, inspection of products, specific treatment or processing of products, setting of allowable maximum levels of pesticide residues or permitted use of only certain additives in food. Sanitary (human and animal health) and phytosanitary (plant health) measures apply to domestically produced food or local animal and plant diseases, as well as to products coming from other countries [13].

SPS measures, by their very nature, may result in restrictions on trade. All governments accept the fact that some trade restrictions may be necessary to ensure food safety and animal and plant health protection. However, governments can be pressured to go beyond what is needed for health protection and to use SPS restrictions to shield domestic producers from economic competition. Such pressure is likely to increase as other trade barriers are reduced as a result of the Uruguay Round agreements. A SPS restriction that is not actually required for health reasons can be a very effective protectionist device, and because of its technical complexity, a particularly deceptive and difficult barrier to challenge [13].

The SPS Agreement builds on previous GATT rules to restrict the use of unjustified SPS measures for the purpose of trade protection. The basic aim of the SPS Agreement is to maintain the sovereign right of any government to provide the level of health protection it deems appropriate, but to ensure that these sovereign rights are not misused for protectionist purposes and do not result in unnecessary barriers to international trade [13].

The SPS Agreement, while permitting governments to maintain appropriate SPS protection, reduces possible arbitrariness of decisions and encourages consistent decision-making. It requires that SPS measures be applied for no other purpose than that of ensuring food safety and animal and plant health. In particular, the agreement clarifies which factors should be taken into account in the assessment of the risk involved. Measures to ensure food safety and to protect the health of animals and plants should be based as far as possible on the analysis and assessment of objective and accurate scientific data [13].

The SPS Agreement encourages governments to establish national SPS measures consistent with international standards, guidelines and recommendations. This process is often referred to as "harmonization". The WTO itself does not and will not develop such standards. However, most of the WTO's member governments participate in the development of these standards in other international bodies. The standards are developed by leading scientists in the field and governmental experts on health protection and are subject to international scrutiny and review [13].

International standards are often higher than the national requirements of many countries, including developed countries, but the SPS Agreement explicitly permits governments to choose not to use the international standards. However, if the national requirement results in a greater restriction of trade, a country may be asked to provide scientific justification, demonstrating that the relevant international standard would not result in the level of health protection the country considered appropriate [13].

Due to differences in climate, existing pests or diseases, or food safety conditions, it is not always appropriate to impose the same sanitary and phytosanitary requirements on food, animal or plant products coming from different countries. Therefore, SPS measures sometimes vary, depending on the country of origin of the food, animal or

plant product concerned. This is taken into account in the SPS Agreement. Governments should also recognize disease-free areas which may not correspond to political boundaries, and appropriately adapt their requirements to products from these areas. The agreement, however, checks unjustified discrimination in the use of sanitary and phytosanitary measures, whether in favour of domestic producers or among foreign suppliers [13].

The SPS Agreement allows countries to give food safety, animal and plant health priority over trade, provided there is a demonstrable scientific basis for their food safety and health requirement. Each country has the right to determine what level of food safety and animal and plant health it considers appropriate, based on an assessment of the risks involved. An acceptable level of risk can often be achieved in alternative ways. Among the alternatives — and on the assumption that they are technically and economically feasible and provide the same level of food safety or animal and plant health — governments should select those which are not more trade restrictive than required to meet their health objective. This relates to predictability. Furthermore, if another country can show that the measures it applies provide the same level of health protection, these should be accepted as equivalent. This helps ensure that protection is maintained while providing the greatest quantity and variety of safe foodstuffs for consumers, the best availability of safe inputs for producers, and healthy economic competition [13].

The SPS Agreement increases the transparency of SPS measures. Countries must establish SPS measures on the basis of an appropriate assessment of the actual risks involved, and, if requested, make known what factors they took into consideration, the assessment procedures they used and the level of risk they determined to be acceptable. Most governments use risk assessment in their management of food safety and animal and plant health. The SPS Agreement encourages the wider use of systematic risk assessment among all WTO member governments and for all relevant products [13].

Transparency requires governments are required to notify other countries of any new or changed sanitary and phytosanitary requirements which affect trade, and to set up offices (called "Enquiry Points") to respond to requests for more information on new or existing measures. They also must open to scrutiny how they apply their food safety and animal and plant health regulations. The systematic communication of information and exchange of experiences among the WTO's member governments provides a better basis for national standards. Such increased transparency also protects the interests of consumers, as well as of trading partners, from hidden protectionism through unnecessary technical requirements [13].

The SPS Agreement encourages governments to "harmonize" or base their national measures on the international standards, guidelines and recommendations developed by WTO member governments in other international organizations. These organizations include, for food safety, the joint FAO/WHO Codex Alimentarius Commission; for animal health, the Office International des Epizooties; and for plant health, the FAO International Plant Protection Convention. WTO member governments have long participated in the work of these organizations — including work on risk assessment and the scientific determination of the effects on human health of pesticides, contaminants or additives in food; or the effects of pests and diseases on animal and plant health [13].

One problem is that international standards are often so stringent that many countries have difficulties

implementing them nationally. Thus, the encouragement to use international standards does not mean that these constitute a floor on national standards, nor a ceiling. National standards do not violate the SPS Agreement simply because they differ from international norms. The SPS Agreement explicitly permits governments to impose more stringent requirements than international standards. However, governments that do not base their national requirements on international standards may be required to justify their higher standard if this difference gives rise to a trade dispute. The justification must be based on an analysis of scientific evidence and the risks involved [13].

What does harmonization with international food safety standards mean? Will this result in a lowering of health protection, i.e., downward harmonization [13]?

Harmonization with international food safety standards means basing national requirements on the standards developed by the FAO/WHO Joint Codex Alimentarius Commission. Codex standards are not "lowest common denominator" standards. The work of these technical organizations is subject to international scrutiny and review. They are based on the input of leading scientists in the field and national experts on food safety - the same government experts responsible for the development of national food safety standards. For example, the recommendations for pesticide residues and food additives are developed for Codex by international groups of scientists who use conservative, safety-oriented assumptions and who operate without political interference. In many cases, the standards developed by Codex are higher than those of individual countries. As noted in the reply to the previous question, governments may nonetheless choose to use higher standards than the international ones, if the international standards do not meet their health protection needs [13].

Can governments take adequate precautions in setting food safety and animal and plant health requirements? What about when there may not be sufficient scientific evidence for a definitive decision on safety, or in emergency situations? Can unsafe products be banned [13]?

Three different types of precautions are provided for in the SPS Agreement. First, the process of risk assessment and determination of acceptable levels of risk implies the routine use of safety margins to ensure adequate precautions are taken to protect health. Second, as each country determines its own level of acceptable risk, it can respond to national concerns regarding what are necessary health precautions. Third, the SPS Agreement clearly permits the precautionary taking of measures when a government considers that sufficient scientific evidence does not exist to permit a final decision on the safety of a product or process. This also permits immediate measures to be taken in emergency situations.

There are many examples of bans on the production, sale and import of products based on scientific evidence that they pose an unacceptable risk to human, animal or plant health. A government's ability to ban products under these conditions is unaffected by the SPS Agreement [13].

Once a country has decided on its acceptable level of risk, there are often a number of alternative measures which may be used to achieve this protection (such as treatment, quarantine or increased inspection). In choosing among such alternatives, the SPS Agreement requires that a government use those measures which are no more trade restrictive than required to achieve its health protection objectives, if these measures are technically and economically feasible. For example, although a ban on imports could be one way to reduce the risk of entry of an

exotic pest, if requiring treatment of the products could also reduce the risk to the level considered acceptable by the government, this would normally be a less trade restrictive requirement [13].

Technical Barriers to Trade (TBT)

Technical regulations and standards are important, but they vary from country to country. Having too many different standards makes life difficult for producers and exporters. If the standards are set arbitrarily, they could be used as an excuse for protectionism. Standards can become obstacles to trade. But they are also necessary for a range of reasons, from environmental protection, safety, national security to consumer information. And they can help trade. Therefore the same basic question arises again: how to ensure that standards are genuinely useful, and not arbitrary or an excuse for protectionism [14].

The TBT Agreement tries to ensure that regulations, standards, testing and certification procedures do not create unnecessary obstacles. However, the agreement also recognizes countries' rights to adopt the standards they consider appropriate — for example, for human, animal or plant life or health, for the protection of the environment or to meet other consumer interests. Moreover, members are not prevented from taking measures necessary to ensure their standards are met. This is counterbalanced with disciplines. A myriad of regulations can be a nightmare for manufacturers and exporters. Life can be simpler if governments apply international standards, and the agreement encourages them to do so. In any case, whatever regulations they use should not discriminate [14].

The agreement also sets out a code of good practice for both governments and non-governmental or industry bodies to prepare, adopt and apply voluntary standards. Over 200 standards-setting bodies apply the code. The agreement says the procedures used to decide whether a product conforms with relevant standards have to be fair and equitable, discouraging methods that would give domestically produced goods an unfair advantage. The agreement also encourages countries to recognize each other's procedures for assessing whether a product conforms. Without recognition, products might have to be tested twice, first by the exporting country and then by the importing country [14].

Manufacturers and exporters need to know what the latest standards are in their prospective markets. To help ensure that this information is made available conveniently, all WTO member governments are required to establish national enquiry points and to keep each other informed through the WTO — around 900 new or changed regulations are notified each year. The TBT Committee is the major clearinghouse for members to share the information and the major forum to discuss concerns about the regulations and their implementation [14].

How to distinguish a SPS from a TBT measure [13]?

The scope of the two agreements is different. The SPS Agreement covers all measures whose purpose is to protect against the four listed items. The TBT Agreement covers all technical regulations, voluntary standards and the procedures to ensure that these are met, except when these are SPS measures as per the SPS Agreement. It is thus the type of measure which determines whether it is covered by the TBT Agreement, but the purpose of the measure which is relevant in determining whether a measure is subject to the SPS Agreement [13].

TBT measures cover any subject, from car safety to energy-saving devices, to the shape of food cartons. To give some examples pertaining to human health, TBT

measures could include pharmaceutical restrictions, or the labelling of cigarettes. Most measures related to human disease control are under the TBT Agreement, unless they concern diseases carried by plants or animals (such as rabies). In terms of food, labelling requirements, nutrition claims and concerns, quality and packaging regulations are generally not considered to be SPS measures and normally subject to the TBT Agreement. On the other hand, by definition, regulations that address microbiological contamination of food, or set allowable levels of pesticide or veterinary drug residues, or identify permitted food additives, fall under the SPS Agreement. Packaging and labelling requirements, when directly related to food safety, are subject to the SPS Agreement [13].

The two agreements have common elements, including basic obligations for non-discrimination and similar requirements for the advance notification of proposed measures and the creation of information offices ("Enquiry Points"). However, many of the substantive rules are different. For example, both agreements encourage the use of international standards. However, under the SPS Agreement the only justification for not using such standards for food safety and animal/plant health protection are scientific arguments resulting from an assessment of the potential health risks. In contrast, under the TBT Agreement governments may decide that international standards are not appropriate for other reasons, including fundamental technological problems or geographical factors [13].

Also, SPS measures may be imposed only to the extent necessary to protect human, animal or plant health, on the basis of scientific information. Governments may, however, introduce TBT regulations when necessary to meet a number of objectives, such as national security or the prevention of deceptive practices. Because the obligations that governments have accepted are different under the two agreements, it is important to know whether a measure is a SPS measure, or a measure subject to the TBT Agreement [13].

Can food safety and animal and plant health requirements be set by local or regional governments? Can there be differences in requirements within a country [13]?

The SPS Agreement permits that food safety and animal and plant health regulations do not necessarily have to be set by the highest governmental authority and that they may not be the same throughout a country. Where such regulations affect international trade, however, they should meet the same requirements as if they were established by the national government. The national government remains responsible for implementation of the SPS Agreement, and should support its observance by other levels of government. Governments should use the service of non-governmental institutions only if these comply with the SPS Agreement [13].

Membership to the WTO implies governments agree to be bound by all multilateral rules in the WTO agreements including the SPS and TBT Agreement. In the case of a trade dispute, the WTO's dispute settlement procedures encourage governments to find a mutually acceptable bilateral solution through formal consultations. If the governments cannot resolve their dispute, they can choose to follow any of several means of dispute settlement, including good offices, conciliation, mediation and arbitration. Alternatively, a government can request that a panel of trade experts be established to hear all sides of the dispute and make recommendations [13].

In a dispute on SPS and TBT measures, the panel can seek scientific advice, including by convening a technical

experts group. If the panel concludes that a country is violating its obligations under any WTO agreement, it will normally recommend that the country bring its measure into conformity with its obligations. This could, for example, involve procedural changes in the way a measure is applied, modification or elimination of the measure altogether, or simply elimination of discriminatory elements [13].

Trade disputes involving SPS and TBT

Since the establishment of the WTO in 1995, international standards received an important role in the regulation of international trade. The WTO SPS and TBT Agreements imply that the member states can fulfil their agreed commitments by basing their national regulations on international standards. The standardization efforts are still based on voluntary participation, but since the work is linked to the WTO, member states must now justify any deviance. The relationship between the WTO and the UN's *Codex Alimentarius* Commission (Codex) has greater importance for the international food trade [15].

The SPS Agreement refers to Codex as the authoritative standardization body in the field of food safety. Standards in the field include such issues as guidelines for the use of veterinary medicines and recommended maximum limits for the intake of certain food additives [15].

The TBT Agreement does not specifically mention any standardization body, but generally advises member states that they should comply with international standards in those areas which are covered by the agreement, e.g., labelling, packaging and quality standards. However, in the area of food trade, Codex plays the most important role with regard to developing standards [15].

What importance have the SPS and TBT agreements had for the status and role of the Codex standards, and their effect on the regulation on international trade? These questions are discussed by taking a closer look at the two trade disputes in the WTO which have included Codex standards under those two agreements. These were the hormone dispute between the EU and USA/Canada (under the SPS Agreement) and the sardine dispute between the EU and Peru (under the TBT Agreement) [15].

The hormone dispute was about the EU import ban on hormone-treated meat from the USA and Canada. The EU ban was absolute, i.e., on hormones whatsoever were tolerated in meat production. However, when the dispute was treated in the WTO system, Codex had approved standards for several of the hormones used by the USA and Canada in meat production. Thus, internationally approved standards for the use of hormones existed, and countries following these standards would thus "automatically" comply with the SPS Agreement's commitments. It must be noted that the EU had voted against the standards when they were being approved by Codex. Thus, the EU's hormone regulations differed from the Codex standards, but the issue was if the EU was able to justify this deviation [15].

The SPS Agreement requires that countries must conduct risk assessments in order to document why regulations that are more stringent than the international standards are necessary to achieve certain (health-related) goals. The EU did not manage to fulfil this requirement, and the import ban was therefore "judged" to conflict with the WTO's SPS Agreement. One of the decisive items in the decision against the EU was that the EU regulations were not based on the voluntary Codex standards – standards which the EU explicitly had opposed [15].

The background for the sardine dispute was an EU regulation stating that only the species *Sardina*

pilchardus was permitted to be marketed as "sardines" in the EU. The EU rules implied that "sardines" also could not be marketed in combination with an additional name, in the way Peru had done for their sardine species *Sardinops sagax*, which they called "Peruvian Sardines". The result was that the Peruvian sardines were denied access to the EU market. Peru chose to appeal to the WTO dispute settlement procedures, based on, among other things, the EU's failure to take the relevant Codex standard sufficiently into consideration [15].

The three main arguments used by the EU to justify its import ban were that: (1) the codex standard was not relevant in this case; (2) the codex standard enables countries to choose if they want to allow the use of additional names or not; and (3) the marketing of Peruvian sardines was confusing for the European consumers. Thus, according to the EU, consumer considerations were a legitimate reason for such stringent requirements for the sardine labeling, in accordance with the TBT Agreement [15].

The EU was defeated on all three points. The WTO dispute settlement procedures confirmed that the Codex standard was a relevant standard, which did not allow any ban on additional labelling, since the additional names sufficiently enable consumers to distinguish "real" sardines from sardine-like products [15].

What do these two dispute cases tell us about the role of standards in the international food trade? They illustrate that international standards can be important in connection with food trade disputes in the WTO. Since 1995, it has become more difficult for WTO member states to introduce and/or maintain national regulations which clearly deviate from international standards. The demands regarding scientific justification for specific, trade-distorting national product requirements and to which consideration such requirements can be justified upon, have become much more stringent [15].

The link between the WTO and international standards has helped to create a new situation for such standardization bodies as Codex. Their activities receive more attention and a higher status. At the same time, there is a trend that these bodies are becoming increasingly politicized, which in turn is a threat to their scientific integrity. This is a real problem, since the standardization bodies are dependent on a high scientific legitimacy in order to be respected among the member states. In any case, these bodies are now very important for how member states can fulfil their WTO commitments regarding international food trade [15].

Genetically modified organisms (GMOs)

Perhaps the most emotionally charged political debate has involved GMOs: how much to regulate and whether and how to label GMOs [16]. GM technology involves selecting specific genes from one organism and introducing them into another – sometimes from another plant or animal species – to produce desirable traits, such as resistance to drought, cold, pests, disease, spoilage or even a particular brand of herbicide to increase yields [19][16]. The outcome of the regulatory, marketing and public perception battle could have far-reaching effects on what US farmers planted and on the worldwide struggle between biofood promoters and foes [16].

In 1994, the Flavr Savr GM tomato reached the shelves of US supermarkets. Americans took a more relaxed approach to the technology than much of the rest of the world. In 1992, the US Food and Drug Administration (FDA), which oversees national food-labelling rules, ruled that since there was no material difference between GM and no-GM food labelling was not required [17]. By the

late 1990s US farmers increased the acreage planted with GMO seeds – to 40% or more of some crops [16]. However, differences rooted in national cultures, levels of skepticism toward new foods especially in a business as complex as biotechnology and confidence in the regulatory bodies involved with food safety standards gave rise to high-profile GM disputes at the WTO [18].

In Europe, Japan and in some developing countries there was opposition to GMOs on environmental, health, philosophical or religious grounds. Well-organized environmental groups crusaded against what they branded "Frankenstein food," fanning doubts about the products from Iceland to New Zealand. Anti-GMO protests staged in the Philippines, India and Hungary, flooded the Internet with virulent attacks on biofoods. In 1997 the EU slapped restrictions on GM plants, passing a law requiring GMO foods to be labelled [16]. In 1998, the US exported 9m tonnes of mixed (GM and non-GM) soyabean to the EU, so it took great interest in how its trading partners would handle such commodities [18].

Foes asserted that long-term studies on the effects of eating GMO foods were inadequate in the late 1990s. They questioned the environmental risks of developing pest-resistant or chemical-resistant crops and feared that bionic organisms could crowd out native species. Consumer advocates stated that people must have the right to know and the ability to reject GM food [16].

Proponents of bioengineering noted that "genetically enhanced" species were essential to generate the crop yields needed to nourish the world's exploding population and to reduce use of herbicides and pesticides. GM foods were exhaustively tested and demonstrated to be safe to pass muster with the US FDA, the Environmental Protection Agency, as well as international regulators. Backers argued that requiring such labels was tantamount to branding demonstrably safe food as inedible and would raise food prices for all consumers [16].

Not all countries were hostile to food altered by gene-splicing: GMO seeds received a warm welcome in Russia, China and Argentina. Some consumers had nothing against GMO foods so long as they knew about it. A 1994 poll in Australia, for example, found that 61% were happy to try GMO foods, but 89% wanted them labelled. Australia and New Zealand set up a common labelling system arguing that consumers had a right to know whether their food contained GMOs [16].

In Japan food is considered most delicious when eaten raw or as close to its natural state as possible. GM food is seen as synthetic, unwholesome and unappetizing. The availability of GMO foods in Japan did not lead to its acceptance. More than 80% of those questioned in a 1997 government survey said they had "reservations" about such foods, and 92% favored mandatory labelling. To blunt a nascent consumer rebellion, the Japanese government proposed labelling bioengineered food in 1999 to give consumers the freedom to reject it. This further alarmed the US, which feared the move could threaten \$11 billion annual sales to Japan, then the US's largest agricultural export market [16].

Beyond the EU and Japan, a truly global food fight was under way. A heated battle broke out in 1999 at a UN-sponsored conference in Cartagena, Colombia, where delegates from more than 130 countries failed to agree on an international treaty to govern biosafety and trade in GMOs. The US government warned that the restrictions debated in Cartagena would not just paralyze the food trade because GM material was used in a wide range of products, from textiles to pharmaceuticals [16].

A subtext in the debate in many countries was suspicion of scientific "miracles," new technologies and imperfect regulators, and the perception that the US biotech industry was heavy-handed in trying to shove new foods down frightened consumers' throats, said Beth Burrows, president of the non-profit Edmonds Institute in the US, who attended the Cartagena conference [16].

Ragnar Löfstedt, professor in risk management at King's College London, identified the three main reasons for Europe's aversion to GM food. First, Americans' trust in their FDA is far greater than that of Europeans in their own health regulators (the wariness dating as far back as the 1960s Thalidomide birth deformities scandal). Second, the US avoided food scandals on the scale of the "mad cow" disease (bovine spongiform encephalopathy) crisis of the 1990s, which led to a decade-long ban on UK beef exports. That coincided with the first GM crop trials (over the effects of GM potatoes on experimental animals [18]) and brought a "knee-jerk reaction" by the EU in its decision to stop approving new types of GM products in 1998 [19].

In Japan, the credibility of the Ministry of Health and Welfare was severely damaged by the 1996 revelation that its bureaucrats had knowingly allowed the sale of HIV-tainted blood products – a scandal that broke the same year that the ministry approved the first of 22 GMO crops for human consumption there [16].

Third, Prof Löfstedt and others stress a faulty communications strategy by GM companies, in particular Monsanto of the US, the industry leader, when it targeted Europe. He notes: "Monsanto was not culturally sensitive enough to realise the potential for a European public backlash. GMOs, rightly or wrongly, were perceived to be a US issue and Europeans did not like Americans to tell them what to do" [19].

In 1999, representatives of the US, the EU and 36 other countries gathered for a meeting of a little-known body called Codex Alimentarius to discuss the labelling of GM foods. Codex was established by the UN Food and Agriculture Organisation and the World Health Organisation in 1962 to recommend minimum standards on food safety that all countries should follow. Codex was a dull operation until the WTO decided to use its standards in international disputes over food trade. For example, the EU's ban on imports of hormone-treated beef from the US defied Codex's scientific assessment that such meat is safe, and so constituted an illegal barrier to trade, said the WTO [18].

GM-related trade rows made Codex committee meetings far livelier. On the table for the meeting was a draft recommendation for mandatory labelling of processed foods containing GMOs, which largely followed the EU approach. US trade officials objected to EU rules becoming international Codex standards [18].

Applying GM labels sounds like an easy way to balance the opposing wishes of producers and consumers. The reality is more complex. Along with the rest of the EU, the UK decided that any food that showed traces of genetic engineering should be labelled as such, to facilitate consumer choice. The US, by contrast, argued that if a GM tomato or soyabean has lost none of its normal nutritional value and gained nothing toxic or allergenic in the process, then a label was not required, since the GM version is "substantially equivalent" to the garden variety [18].

US trade officials, and some companies in the GMO business such as Monsanto, a US agribusiness that was the main commercial promoter of the technique and the arch-

villain for the anti-GM side [22], believed these demands were impractical, unfair and unnecessary. They argued that there was no scientific evidence to suggest that GM food is any less safe to eat than traditional commodities. Geraldine Schofield, head of food regulatory affairs at Unilever, pointed out the push for labelling in Europe was as much about freedom of choice as about food safety (though European farmers' desire for protection may also have played its part). A Eurobarometer survey conducted across the EU in 1998 found that 86% of those questioned believe that food containing GMOs should always be labelled as such. And more than 50% trusted consumer associations to tell the truth about the food supply—twice as many as put their faith in national governments or EU authorities [18].

This is, in contrast to the US, where consumer surveys gave mixed views on the desire for labelling. As Thomas Hoban, a food sociologist at North Carolina State University, pointed out, Americans generally have a more relaxed attitude towards food than, say, the French, for whom it is a cultural matter. European qualms about "contamination" of the countryside by GM crops scarcely occur to Americans, whose landmass is big enough to separate its agricultural heartland from rural playgrounds [18].

Even so, Steve Suppan, director of research at the Institute for Agricultural Trade Policy, a public interest group, noted that many Americans wanted more information about GM on the label; and wanted such foods to pass through additional safety trials, as food additives do, before being released on to the market. Some bodies, including the Centre for Food Safety in Washington, DC, even sued the FDA. Others, like Mr Suppan's group, were busy lobbying US trade officials, at Codex and elsewhere, for the US to bring itself into line with Europe's more cautious stance on GMOs [18].

Nevertheless, GM labelling is neither an easy nor a cheap fix. Hardly any processed food is 100% GMO-free. Even when firms such as Unilever manage to find a source of, say, non-GM soya to put in their products, it tends to get contaminated with GM stuff since there is so much of it about. Trying to keep the two separate on their long trip from field to silo and then from cargo hold to processing plant—a process known as "identity preservation"—requires testing for GMOs at every step of the way. This testing can add an extra 30% to the cost of the final product. And as Dr Schofield pointed out, this is not a premium that customers are ready to pay, especially if there were no obvious benefits from current genetic engineering. Worse, methods and acceptable "contamination" levels had yet to be standardised in Europe in 2000 [18].

However, in 2004, things changed in the EU just as a WTO ruling against the EU was about to be brought forward. A 6-year moratorium (a ban) on GM food was lifted by the European Commission (EC). Commissioners backed a bid by Swiss-based Syngenta to sell Bt-11 sweet corn, the first of about 30 such products awaiting approval, for human consumption. The decision to lift the ban was valid in all 25 EU countries for 10 years. The ruling allowed companies to sell the GM sweet corn in tins, clearly labelled as a GM product, but growing the crop was still illegal. Some EU member states continued to oppose lifting of the ban [20].

But the EU also approved a GM maize seed, developed by Monsanto company known as MON810, for planting. France and Spain had approved it for use earlier in 1998 (but was grown only in Spain). Under EU law, any seed approved in one EU country is automatically approved in all others. But the process of extending approval for

MON810 beyond France and Spain was suspended during the EU moratorium. The EC's decision said the seed, modified to be resistant to the corn borer – a pest, could then be grown in any EU nation [21].

The US consistently challenged through the WTO the EU's reluctance to import and sell GM crops and food and for the first time Europe allowed them to be planted throughout its territory [20][21]. The real ideological – and commercial – battleground for GMOs was in the developing world. Alarm was raised in the US when Zimbabwe in 2002 refused an aid shipment of US grain because it might have contained GM maize. The US tried to strengthen its case by arguing that GM crops can alleviate poverty, not least since they eliminate the need for poor farmers to budget for inputs such as insecticides [19].

Anti-GM campaigners in the EU said the EC decision to lift the ban had little scientific backing and no support among the people of Europe. "The EC is supposed to represent the interests of European citizens and the environment but chose in this case to defend US farmers and narrow agribusiness interests," said Greenpeace's Eric Gall [20]. A study produced for the International Food Information Council in 2005 showed that fewer than 0.5% of US consumers identified food biotechnology as a safety concern. In contrast, a Eurobarometer opinion poll across the 25-nation EU found that 54% considered GM food to be dangerous [19].

David Byrne, the EU's commissioner for Health and Consumer Protection in charge of food safety, said the GM sweet corn was scientifically assessed as being as safe as any conventional maize. "Food safety is therefore not an issue, it is a question of consumer choice," he said. "The Commission is acting responsibly based on stringent and clear legislation". The ban was replaced by strict new traceability and labelling rules which would provide protection for consumers [20]. Moreover, the maize seed had been "thoroughly assessed to be safe for human health and the environment. "It has been grown in Spain for years without any known problems; it will be clearly labelled as GM maize to allow farmers a choice," said Byrne [21].

Beate Gminder, a spokeswoman for the EC, told the BBC that any farmer within the EU was now legally entitled to buy and grow MON810, even though some countries like the UK established their own sets of rules for assessing biotech crops. "It is legally not possible that the UK cannot allow planting if they haven't put in a safeguard clause," she told the BBC. By a "safeguard clause", Ms Gminder referred to national legislation designed to prevent spread of transgenic material from GM crops into neighbouring fields of related plants - also known as "co-existence legislation" - an issue with which several European governments had grappled [21].

The more militant anti-GM groups argued to say no to both GM food and non-food items: whether it goes into your mouth, into the steer that ends as your beefsteak, or into your petrol tank, GM maize is grown in fields not far from non-GM maize, and may "contaminate" it. Good science or not, there is a real commercial argument: one may think the fear of non-food GM crops quite irrational, but if consumers do fear them, a farmer may be entirely rational not to plant them. Things can go wrong—as in the US in 2002, when GM maize, born of seeds from the previous year's bio-pharmed crop, was found in fields of ordinary soya—the news swiftly reached far more people than ever heard of the routines put in place to avoid such errors [22].

Wide public support enabled anti-GM zealots to win battles on the food front in Europe and elsewhere; and fear of losing trade deterred GM in other countries that grew and exported the stuff. But food is a special case. It is easy to shout "Frankenfood" and scare someone into taking no risks, real or imagined; it is not so easy with a shirt as non-food uses of GM moved ahead [22]. Most campaigners downplayed the wildest claims about Frankenfoods, emphasising consumer choice instead, which is hard for GM food producers to argue against. If they lobbied against labels, it could be construed as trying to suppress information and consumers might have concluded wrongly that the industry had something to hide [17].

Thus, the war would go on in the supermarkets and cattle feed-lots [22]. European consumers shunned GM food after labels were introduced (some perhaps on the mistaken idea that it was an official health warning), and many European supermarkets declared themselves (not entirely accurately) GM-free [17]. In 2014, GM food was still absent from supermarkets and remained a subject of consumer suspicion. Few politicians would be willing to endorse GMOs [19].

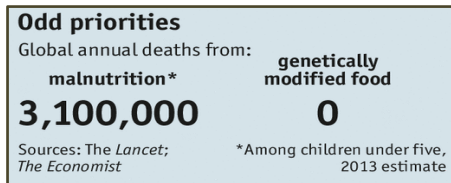
But the non-food uses of GM ensured that the technology was here to stay, and those uses multiplied. The big, publicly visible boom in non-food GM, was to come in chemicals, plastics, fibres and fuel. Instead of petroleum, these could be derived from maize, soya or sugar beet in Europe [22].

At the microscopic level, bacteria are routinely modified to produce enzymes for use in industrial processes. In 2004 cotton was the only widespread non-food GM crop, but others were on the way. Researchers were modifying potatoes, even trees, to suit the paper industry; GM oilseed rape (canola) made better detergents or lubricants. Sheep could be altered, as Australian scientists had done, to grow more and better wool. Both plants and animals could be altered to produce pharmaceuticals; the resultant "bio-pharming" was taking off, and its commercial day would come. And a huge new use for GM crops was already under way: production of biofuel or bioplastics, made from maize or sugar, rather than petroleum [22].

The paper industry illustrates the diversity of GM. Its basic raw material is trees. Researchers in New Zealand and Chile have produced pest-resisting pines. Oji Paper, a Japanese giant that uses fast-growing eucalyptuses from South-East Asia, has put carrot genes into them so they can flourish in acid soil. But GM can go further. Trees contain not only the cellulose that papermakers want, but lignin—crudely, the stuff that makes a tree a tree—which they don't. Separating the two is costly; how nice to use trees that start off with less lignin. They can be created. Researchers at North Carolina State University have bred aspens with only half the lignin of ordinary ones—and, they have the additional advantage that they grow faster [22].

Then there is bio-pharming for which there is no visible end for its technical possibilities. The US, well ahead of Europe in this respect, was issuing 30-40 permits a year in 2004 for field trials: tomato, potato, alfalfa, lupin, rice and maize are among other favoured plants. Far smaller organisms can be used: bakers' yeast is one. The list of potential products is vast: human albumin and haemoglobin, interferon, vaccines for hepatitis-B, anthrax, cholera and diarrhoea are among the few that a layman has even heard of [22].

Thirty years after which Americans had been eating the stuff, studies had still found no threat to human health from GM ingredients nor any other ill effects.



In the mid-2010s, some 64 countries, including the EU-28, required labelling. The US did not, but that was changing. In 2012-13 GM-labelling initiatives in California and Washington state failed narrowly after biotech and food companies spent millions on ads to persuade voters that they would be costly and pointless. The initiatives contained impossible-to-attain “zero-tolerance” provisions that could have led to endless lawsuits. In 2013, Maine and Connecticut passed labelling laws, though both had trigger provisions stopping them from taking effect until nearby states followed suit. Generic polling found 90% or more of Americans in favour of compulsory GM-labelling. Many signed petitions urging the FDA to mandate labels [17].

Aware of the threat, the Grocery Manufacturers Association, a food industry body, convened 35 food organisations to lobby for a law obliging the FDA to test all new GM traits before they reached the shelves, and to finalise guidelines for a voluntary labelling regime [17].

A final argument by GM proponents in Europe was the long-term consequences of discouraging GMOs. The resistance would imply that Europe lost out on corporate investment. They cited Syngenta, which in 2004 started moving its biotechnology research headquarters from UK to the US “to be in a more positive environment for this kind of work”. Christian Vercheuren, director-general of CropLife, a trade association representing Monsanto and other leading GM companies, said “The industry had not given up on the EU, but it had considerably scaled back” [19].

Michael Fernandez, executive director of the Pew Initiative, said: “There is some potential that the European industry could be left behind with regard to other kinds of applications [for GMOs]. If you have a regulatory and political climate that is not conducive to R&D, they [Europeans] could end up losing out” [19].

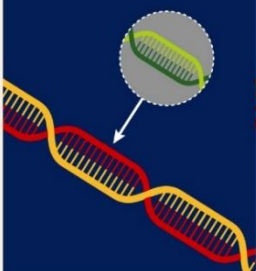
Then came gene editing. Gene editing is a form of genetic engineering where genes can be deleted or added from the same or similar species. It is distinct from genetic modification, which introduces DNA from foreign species. Proponents argue that gene editing is the same as conventional plant breeding but simply accelerated, with greater accuracy. “If you introduce a foreign gene, it’s a GMO. If you just change the genetic letters within the organism, it’s conventional-like,” says Petra Jorasch of lobby group Euroseeds, which represents plant breeders. This is what is done with conventional breeding methods [23].

That is not how it is currently seen in Europe. The European Court of Justice, the EU’s highest court, decided in 2018 that gene editing should come under GMO regulation, where regulators must give high priority to potential risks. When GMO technology first arrived in Europe in the 2000s it met fierce opposition in a region that prides itself on the quality and provenance of its food. Products were labelled “frankenfoods” and trial fields were attacked by protesters. Regulators tightened rules so much that only one type of genetically modified wheat has ever been grown in the EU (although dozens of crops are now authorised for imports, mostly for animal feed) [23].

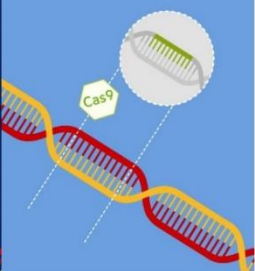
The mood on gene editing in Europe is shifting. In Sep 2022, agriculture ministers from the 27 member states urged Brussels to speed up a re-examination of GMO regulation. The EC confirmed that it would issue a proposal to ease regulation for some gene-editing technologies in 2023. The drought and conflict in Europe, combined with high energy costs, have driven up food prices and caused shortages in the developing world [23].

GMO vs Crispr: How gene modification differs from editing

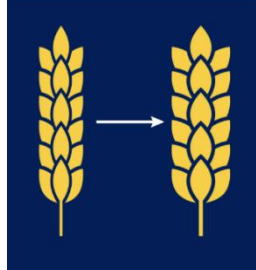
GMO




Crispr



GMO involves inserting a foreign gene into the DNA. This takes place at a random location. The Crispr component identifies the DNA to be altered and the Cas9 enzyme acts like scissors, snipping out the unwanted DNA strand. A new DNA strand is added, and enzymes repair it.





The GMO plants take on characteristics associated with the new gene. Tests can clearly distinguish GM from non-GM plants. With Crispr, the techniques change the plant, but the outcome is indistinguishable from traditional breeding processes. It is also quicker and cheaper than creating a new GMO.

With the situation changed, the EU must be able to produce a sufficient supply of food. We need to take advantage of technology to adapt to climate change and maintain biodiversity,” says Pekka Pesonen, secretary-general of Copa-Cogeca, the EU farmers’ union. But fears of “frankenfoods” run deep [23].

Environmentalists and activists say agricultural companies have seized on climate change to foist untested technology on the public. Solving hunger is a seductive argument, they say, to win over politicians and sceptical populations without evidence to back it up. “There is no reason to deregulate gene editing,” says Mute Schimpf, food campaigner at NGO Friends of the Earth Europe. “It is a new technology developed in the last 10 years. We don’t know how it might impact on nature, on agriculture and how the consumer interest will be affected” [23].

Europe is now an outlier among large economies in treating gene-edited crops in the same way as GMOs, and some lawmakers are beginning to believe the risks are outweighed by the potential benefits for farmers, for the economy and for the environment. “Plants obtained with new genomic techniques could help build a more resilient and sustainable agri-food system,” said Stella Kyriakides,

European commissioner for health and food safety. “This has been the guiding principle for EU food policy in the past and will always continue to be so” [23].

Scientists have been crossbreeding species to create more resilient crops for decades. For example, researchers have produced a strain of wheat that combines the high yield of one type with the solid stem of another, which helps it resist wind and rain. Advocates say gene editing does much the same, more effectively. It could, for example, help develop wheat that provides nutrients to the soil, says Pesonen, reducing the need for fertiliser. “They are fundamentally different to GMOs,” Pesonen says. “Imagine the improvement that we could get in the best-case scenario, both in terms of the nutrients or the protein content and the competitiveness” [23].

Hopes are also high for creating crops that can withstand the effects of the shifting climate. “If we could breed crops based on what we know on genetics to be more drought tolerant, more saline tolerant, more heat tolerant, and to produce more under certain conditions, that definitely could help us in terms of both food security as well as adaptation to climate change,” says Ismahane Elouafi, chief scientist at the UN Food and Agriculture Organization [23].

Critics of the technology see this argument as a canard. They say the European Commission’s move is driven not by science, but by agribusiness lobbying, and that the current regulatory regime should be maintained. They are also concerned about the potential lack of transparency for consumers. Christoph Then, of German NGO Testbiotech which warns on the risks of genetic engineering, says the intended and unintended changes caused by gene editing could go far beyond what can be expected from conventional breeding. “We think that there needs to be proper risk assessment. We think the current [regulatory] framework is appropriate,” he says [23].

Molecular geneticist Michael Antoniou at King’s College London warns that gene-editing technology is not as precise as claimed, is not the equivalent to breeding and is no different to genetic modification. He fears unintended changes in the gene’s biochemistry and its composition. “You risk the possibility of creating new toxins and new allergens or adding to known toxins and allergens,” he says [23].

Despite expectations that gene-edited crops could help mitigate the effects of climate change, the reality is they are still a pipe dream. Only a handful of gene-edited products have been approved for sale, including a soyabean that produces oil with reduced saturated fat in the US, and a tomato with an amino acid that reduces blood pressure in Japan. Even with gene editing, creating a crop which, for example, is drought resistant will take at least five years, according to scientists at the University of Calgary [23].

While disease resistance is “quite easy to target in response to editing”, says Sarah Raffan, a researcher focusing on gene editing of wheat at the UK’s Rothamsted Research institution, drought resistance is a more “complex trait”. “This one gene might add a little bit of drought resistance under certain conditions, but you then need another gene for different things.” There has been greater progress in gene editing to improve yields. Inari, a US agritech company set up in 2016, has been working on gene editing to increase yields on wheat, corn and soyabeans as well as reducing the necessary water and nitrogen fertilizer [23].

Inari is targeting yield increases of up to 20% in corn, wheat and soyabeans, with input reduction targets of 40%

in water and nitrogen fertilise for corn. Trivisvavet says the start-up is almost there with its soyabean yield targets, noting: “All of this can’t be done with the [conventional] technology.” Inari has research labs in the US and Belgium and Trivisvavet wants the EU to move faster on allowing gene editing [23].

“If [the EU doesn’t] embrace this technology, it’s going to be super tricky to address [the effects of] climate change. We hope that the EU will actually join forces with the rest of the world,” she says. Drought tolerance, yield increases, and improving yields with smaller amounts of inputs are complicated problems to solve, she notes. “You need to start now to actually address the problems that are escalating. If you start five years from now, it would be too late.” The global outlook EU policymakers who support bioengineering also fear falling behind the rest of the world in the technology race [23].

Many countries, including the US, Canada, Brazil and Japan, do not differentiate gene editing from conventional breeding. More governments have been clarifying their regulatory regimes around gene editing over the past few years. The UK is looking to ease its regulations since departure from the EU: new legislation that would allow gene-edited crops and animals to be developed and sold in England is to be debated in the House of Lords, the second chamber of parliament [23].

With the EU being a leading importer of agricultural products, including corn and soyabeans for animal feed, its policies on genetic engineering have a big impact on those of its trade partners. That’s especially the case for developing countries that rely on income from the EU, says Elouafi at the FAO. “[With] countries from the global south, if there is a debate over gene editing [and whether it is] a GMO or not, they tend to not use it even for their research programmes. They are so afraid to lose the European market that they just stop using it.” It also holds back R&D, scientists warn. “Plant breeders are hesitant to add breed varieties using genome editing if they’re not going to be able to sell it,” says Raffan [23].

The campaign to bring gene editing to Europe faces a steep obstacle: for the EU to rule that the technology is on a par with conventional breeding would require a qualified majority of member states in favour. However Germany, the biggest member, has already said it would remain neutral, which counts as a “no” vote. Lawmakers may be influenced by a growing popular backlash against the technology. A recent public consultation by the EC received 70,000 responses with 98% opposed to a policy change, as NGOs urged members of the public to write in, often providing canned responses for them to use [23].

Other surveys have found that consumers tend to have low awareness and knowledge of gene-edited food. A survey of more than 2,000 people by the UK government’s Food Standards Agency in July 2021 found that only 20% of the respondents said they were fairly or very well informed on the subject. After being given information on gene editing and GMO technologies, 39 per cent of the respondents said they thought gene-edited foods were fairly or very safe to eat, while 30% thought they were fairly or very unsafe, while 31% responded they did not know. The European Food Safety Agency, which is responsible for risk assessments, in October published a report finding that gene-editing techniques were lower risk than GMOs, less likely to cause unintended mutations or interfere with traditional plants [23].

Advocates hope information like this will make sceptical lawmakers think twice, and consider what sustaining the ban on gene editing might mean for farmers. Brussels is still pushing ahead with plans to slash pesticide use in half

by 2030, to reduce nitrogen pollution from farms — meaning less fertiliser — and to cut methane emissions from animals, measures likely to shrink the EU herd. Farmers say they are running out of tools to maintain productivity. Maybe Europe will become dependent on other countries if new technologies are not adopted [23].

Dolphin-Safe Tuna

In 2011, a WTO panel found fault with the US "dolphin safe" labeling practice for tuna products, ruling that the label meant to inform consumers on the use of dolphin-friendly fishing practices was unnecessarily trade restrictive. The ruling marks the third time the WTO and its predecessor GATT have gone against US policy on dolphin protection. However, the three-member panel disagreed with the complainant Mexico that the label discriminated against Mexican tuna [24].

Against the background of increasing importance of product labels for issues such as biofuels, fair-trade commodities or low-carbon intensive appliances, the decision was long awaited. The panel's take at whether the US label was a mandatory regulation (which it confirmed) rather than a voluntary standard (it denied) was considered crucial for future labeling standards [24].

"The WTO ruling ... [means that] the label Mexican producers can access the US market without restrictions," said the Mexican Minister of Economy. At the core of the dispute was US policy disallowing "dolphin-safe" labels on tuna caught in the eastern Pacific Ocean with "purse-seine" nets – encircling nets which can frequently ensnare unwanted marine life such as dolphins in addition to those targeted – used by Mexican fisheries. The labeling practice had the effect of blocking Mexican tuna from the US market. Washington rejected the claim, stating that its labeling rules did not discriminate against Mexican products, as the label is available to all tuna products independent of their origin [24].

Mexico City argued that the label was unnecessarily trade restrictive. Mexico's tuna fleet uses purse-seine nets but nonetheless complies with international standards - notably the Agreement on the International Dolphin Conservation Program (AIDCP), which Mexico, the US, and others negotiated in response to an earlier US-Mexico trade dispute on a similar issue. The international standard follows a "non-injury" rather than a "finishing-method" approach meaning that tuna caught with purse-seine nets can qualify for dolphin-safe labels, provided that independent veterinarians certify that no dolphins were injured.

Nevertheless, the US dolphin-safe labeling provision was found to be more trade-restrictive than necessary to inform consumers and protect animal health and was inconsistent with the WTO's TBT Agreement. The TBT Agreement requires that technical regulations "are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to trade." The "dolphin-safe" label only "partly" fulfilled the objective of dolphin protection, as it did not address the observed mortality caused by other tuna fishing methods outside the eastern Pacific Ocean [24].

The panel sided with the US on the non-discrimination of its labeling, concluding that the measure did not favour US tuna products. The panel backed the US claim that the AIDCP's label standard did not constitute an effective and appropriate means of fulfilling the US legitimate objectives. This was because, in the opinion of the panel, the standard failed to guarantee the level of dolphin protection pursued by the US. The AIDCP standard only informs consumers whether dolphins were killed or seriously injured by the fishing method, but failed to

inform them of other adverse impacts caused by the fishing methods [24].

The ruling drew quick public attention with a number of consumer and environmental groups harshly criticizing the decision. "A WTO tribunal is telling US consumers that product labels that we rely on to make sure that our shopping and dining choices do not result in dolphins being killed is a WTO violation," said L. Wallach from Public Citizen, a consumer rights advocacy group. "It makes very real the threats that these overreaching 'trade' pacts pose" [24]. ♦

International Standards and Trade in Endangered Species

Blue fin tuna

Technical regulations are intended to have industry apply best practices in production and value-added activities. International bodies charged with setting international standards based on science should facilitate trade. All producers would be required to meet similar standards even if they were not required to apply the same production method. When the good in question involves a common resource, multilateral institutions should be more able to balance the conflict between the objectives of achieving a sustainable fishing catch and trade objectives. The case of Atlantic blue-fin tuna illustrates how difficult this can be.

There are two ways to overfish the sea. One is to ignore scientific advice and fish without limits. The other is to accept the advice, and then discover it is not good enough [26]. The majestic Atlantic bluefin-tuna, fished in the waters of the Mediterranean and the Atlantic for at least 7,000 years, has fallen into the former camp [25].

The International Commission for the Conservation of Atlantic Tunas (ICCAT), the inter-governmental body charged with managing this fishery, has been so stunningly bad at the job that it was dubbed the International Conspiracy to Catch All Tuna. In the late 2000s, the scientific advice was to catch at most 15,000 tonnes of tuna. The ICCAT imposed a limit of 30,000 tonnes, but the actual catch was 60,000 tonnes [25].

Member states handed themselves quotas far in excess of those prescribed by the organisation's scientific advice. Overfishing since the 1970s reduced its population by more than 80%. In 2008 things were so bad that ICCAT's chairman warned members that their power to manage the bluefin would end up being taken away from them. Moves were made to transfer responsibility for the bluefin to CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) which has the power to ban trade in endangered species. At a meeting in Monaco in 2009 it was proposed that the bluefin be listed in Appendix I of CITES. Such a listing amounts to a declaration that the species is sufficiently endangered for trade in it to be banned for all international trade while the stock recovered [26].

Conservation groups, and many scientists, called for a complete moratorium on bluefin fishing for some time, but had been roundly ignored. In 2010, even the industry asked for action. Seafish, a UK organisation that represents everyone from fishermen to traders, backed a ban. The Atlantis Group, a global seafood company based in Reykjavik, also lobbied for "very radical measures", proposing that the annual quota be halved, to 9,750 tonnes, and be "maintained in accordance with scientific advice". [27].

In 2009, the ICCAT met in Brazil and announced a quota of 13,500 tonnes. Although lower than in previous years, it was far higher than it should have been. A quota of 8,500 tonnes or less would, according to models of the species' population dynamics, have halted overfishing and given a 90% chance of rebuilding stocks by 2019. The World Wide Fund for Nature (WWF) argued that one study found that even a strictly enforced 8,000-tonne quota would have only a 50% chance of bringing about a recovery by 2023 [27].

Though ICCAT also promised to commit itself to catch levels based on scientific evidence, it proposed to postpone doing so, giving a 60% probability of rebuilding the stock by 2023. It did, however, introduce other measures intended to improve the fishery's management by reducing illegal fishing, improving the collection of data and introducing a new framework for the presentation of scientific advice [27].

In the US, there were rumblings that the other type of overfishing was occurring in Alaska's Pollock fishery, one of the world's largest. This was due to a flawed understanding of the science involved. Unlike the bluefin, the Alaskan pollock is among the most intensively managed fisheries in the world—it is run by the US National Marine Fisheries Service. Pollock are an important ingredient of fish fingers, fillets and many other products. Moreover, many people go out of their way to eat pollock in the belief that it is a sustainable choice of fish [26].

Data from 2008 suggested the population was low. However the Marine Stewardship Council, a London-based charity that certifies the fishery as sustainable through an independent auditor, said this was within the natural range of variation for the species, and that a recovery was expected. Not everyone agreed. Greenpeace argued that the fishery was on the verge of collapse. Greenpeace said it would use the US Endangered Species Act to try to force the government to have the fishery closed. It was not that the pollock itself would be endangered at this stage, but the Steller's sea lion, which the act did cover, might be threatened if too much of its food were being eaten by people. [26]

In theory a temporary trade ban would allow stocks to rebuild themselves. But would it work? The case for a bluefin ban is easier to make because, like the European eel, pink and red corals, humphead wrasse and many other species that have recently been proposed for listing at CITES, it is marine. That means there is no competition between man and fish for habitat. Moreover bluefin is widely traded (most of it goes to Japan), so a temporary trade ban could make a real difference—and is therefore justified. Reducing demand in Japan is difficult, but since most bluefin tuna is fished elsewhere in the developed world, it should be possible to reduce supply. Meanwhile, consumers elsewhere have taken an increasing interest in the provenance and sustainability of the fish they eat, helping stocks to recover and trade in bluefin to resume in a sustainable manner [25].

More broadly, governments that have signed up to CITES need to do more to monitor and enforce its rules. They also need to think ahead by tracking prices, as well as volumes, of all wildlife species at risk. Banning the trade in a species should be a last resort. If bluefin tuna and other species are managed properly, their exploitation can help ensure their preservation, rather than hasten their extinction [25].

Land-based wildlife

In all, CITES bans trade in nearly 1,000 animal and plant species; trade in many more is limited by permits. William

Clark, chairman of the Interpol working group on wildlife crime in the late 2000s, said that there were clear signs that illegal trade was increasing. More frequent seizures of larger volume have been occurring, despite unchanged enforcement capacity. The increased seizures reflected sophisticated criminal gangs involved in the trade [28].

So, if trade is indeed on the rise, then the efficacy of trade bans as a conservation measure is at least debatable. Some bans do work. Exports of wild birds from four of the five leading bird-exporting countries fell by more than two-thirds between the late 1980s and the late 1990s because of CITES-related trade measures, including a US import ban. Tanzania went from exporting 38,000 birds in 1989 to ten a decade later. When trade in most big cats was outlawed, volumes dropped, from 450,000 skins in 1980 to about 45,000 in 1999 [28].

The temporary ban on the trade in the vicuña, a relative of the llama, and its wool is another success. The population had dwindled to 12,000 by the 1960s from maybe 2m at the time of the Spanish conquest of Latin America. Four South American countries imposed a trade ban in 1967; a CITES ban followed in 1975. Later CITES allowed trade in sheared wool on a permit basis. The population rose to more than 250,000. The ban lasted long enough to give vicuñas time to recover, but not so long that illegal trade became entrenched [28].

In essence, there are two sorts of possible response to the question of how to conserve endangered species—apart, from doing nothing. One is a command-and-control mechanism, i.e., trade bans. They can work, but they tend to be inefficient because they fail to take into account the response of human beings to economic incentives. The alternative is to try and harness the incentives that command-and-control ignores. Economic incentives may include removing subsidies for conversion to agricultural land, differential land-use taxes, conservation subsidies, individual transferable quotas and communal property rights. They are all part of a growing economic toolkit for encouraging conservation while minimising the cost of doing so [28]. Sometimes trade can be a part of this.

Admittedly, markets may not solve every problem. Richard Damania, an economist with the World Bank, says that the reason for saving the snow leopard, say, has nothing to do with market values but reflects intrinsic values, in a similar way to opposition to slavery. Nevertheless, market mechanisms are likely to be useful means to moral ends. But trade makes conservationists nervous and animal-welfare charities suspicious. Barbara Maas, who headed Care for the Wild, dismissed the idea that wildlife trade can be used to support conservation as a “fundamentally anthropocentric world view” [28].

CITES arose at a time when command-and-control environmental legislation was popular, but parts of the organisation do want change. Policy interventions that do not take into account the underlying causes of wildlife loss have a high risk of failure. Bans are popular and easy to adopt by enacting legislation, but they do not work everywhere or in all cases. If trade in a species is banned as a last resort, it is a “failure of the system”: governments should have intervened earlier using CITES regulatory measures or other incentives [28].

Banning trade is not normally a good idea, according to *The Economist*. In the case of wildlife, a ban must meet at least four conditions. First, the species in question must be seriously threatened by international trade. (If the problem is habitat loss, domestic use or disease, a trade ban will not help.) Second, bans must be coupled with measures to reduce demand. Third, they must not undermine incentives to conserve endangered species in the wild.

And lastly they must be supported by the governments and citizens where the species lives [25]

If you want to see what happens when these conditions are not met, look at the long-term trade bans that apply to elephants, rhinos, and tigers. Bans have sometimes undermined the conservation of large land animals because, in effect, they put a zero value on the animals' lives (except in the few places where tourism is possible). Why should local governments spend money protecting something that does not bring in any cash? Why should an African farmer give up his land for a worthless creature that often etas his livelihood [25]?

When the African elephant's decline was at its worst in the 1980s, four countries were responsible for most of the losses: Sudan, Tanzania, Zaire and Zambia. They lost 750,000 elephants in a decade. Other governments invested in retaining elephants through provision of land and resources for management. In 30 countries there were no aggregate gains or losses in elephant populations, though in some other countries there was an increase [28].

Nevertheless, in 1989 the signatories of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) agreed to ban trade in ivory. In 2007, the 172 member countries of CITES extended the ban for a further nine years, having sanctioned but two sales from stocks, of which only one took place. A stroll in Chinatown in San Francisco suggests that this trade has thrived, nonetheless. A report by researchers for Care for the Wild, a UK animal-welfare and conservation charity, said that around half the ivory comes from illegally killed elephants [28].

A sharp increase in ivory seizures in the 2000s pointed to a flourishing trade. Rising wealth in Asia raised the returns from poaching. Prices leapt from \$200 a kilo in 2004 to \$850-900 in 2008. New ivory was appearing. Some scientists think poaching was as prevalent as it was before the original ban [28].

The ivory ban is frequently held up as a prime exhibit for CITES, which many conservationists consider a highly successful agreement. Elephant numbers, according to figures from the International Union for the Conservation of Nature, rose by 4% a year in the well-protected populations of southern and east Africa, but in central and west Africa no one knows what was going on. Some countries, such as Botswana, home to a quarter of the African total, and South Africa, have so many elephants that they would like to shoot more of them (and have asked CITES, without success, for permission to sell more ivory) [28].

The only certainty is that the official figures do not reflect the extent of poaching. A huge haul of ivory in 2002, the result of the slaughter of between 3,000 and 6,500 beasts, probably came largely from elephants in Zambia. Yet Zambia reported the illegal killing of only 135 animals in the previous ten years [28].

By its nature, the scale of illegal wildlife trade is impossible to know precisely. Legal trade, according to one estimate, was worth around €240 billion (\$300 billion) in 2005, most of it accounted for by timber and fisheries (see chart, legal global wildlife trade). Illegal trade is big business too. One guess puts the value of illegal caviar trade at many times that of legal commerce—itsself worth €244m. [28]

However, for other species a ban merely spawned a thriving illegal trade. After trade in all five species of rhino was banned, the black rhino became extinct in at least 18 African countries. The global rhino population

fell from 75,000 in the early 1970s to around 11,000 in the 2000s, and some species are on the verge of extinction. Tigers have fared no better. John Hutton, the director of the World Conservation Monitoring Centre, an arm of the UN Environment Programme, says that the 30-year trade ban, "hasn't made a blind bit of difference and the strategy is a failure." [28].

Commodity	Estimated value (€m)
Live animals	
Primates	75
Cage birds	38
Birds of prey	5
Reptiles (inc. snakes and turtles)	31
Ornamental fish	257
Animal products for clothing or ornaments	
Mammal furs and fur products	4,000
Reptile skins	255
Ornamental corals and shells	85
Natural pearls	57
Animal products for food (excl. fish)	
Game meat	365
Frogs legs	40
Edible snails	60
Plant products	
Medicinal plants*	1,000
Ornamental plants	11,000
Fisheries food products (excl. aquaculture)	68,600
Timber	154,000
Total	239,500

Source: TRAFFIC *2004 estimate

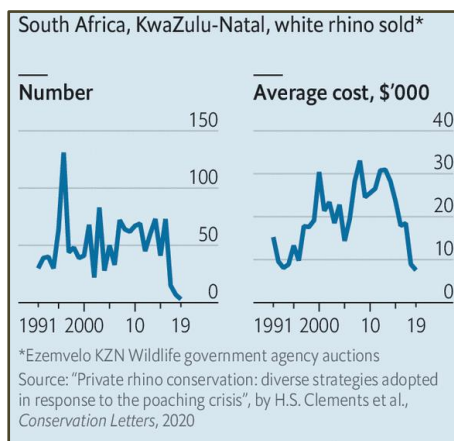
In 2022 the signatories to CITES upheld a ban on the rhino trade in place since 1977. The ban's proponents insist the legalising trade would create more demand than can be met through legal supply, so best to dampen demand through the ban. The surge in poaching since 1977 suggests prohibition has had little effect on demand [29].

The southern white rhino in South Africa was almost hunted to extinction. In 1929, there were just 150 rhinos left. "Operation rhino", launched in 1960 by Ian Player, a conservationist, revived numbers by distributing rhinos from a national park to private reserves. Further boosts came after the introduction of auctions for rhinos in the 1980s and stronger ownership rights over the animals in the 1990s. Both improved the financial incentives for conserving them. "Creating property rights and market institutions was a game changer. Today more than half of southern whites in South Africa graze on private land [29].

A market for rhinos was created, but the buying and selling of live rhinos is not an easy business. Nor is it a lucrative one now. The average price in dollars for a southern white in 2019 was almost 70% less than a decade earlier (see chart, South Africa white rhino). Male rhinos cost about 150,000 rand (\$7,900). In 2023, John Hume, owner of 2,000 southern whites, - some 15% of the global wild population - received no bids when he put them up for sale. A conservation NGO funded by international donors stepped in to buy the rhinos at a fraction of his asking price [29].

Over the past 15 years, rhinos have turned from asset into liability. The main reason is the cost of protecting them from poaching. After reaching 18,796 in 2010, the number

of southern white rhinos in South Africa – home to 80% of the global total – fell to 12,968 in 2021. Most were killed on state-run parks. Less than 10% of annual losses from poaching happen on private land because private owners spend at least four times as much on security as national parks to [29].



The economics of rhino ownership is a bottomless pit. Reserve-owners make money from tourism and hunting. The latter which is offensive to many is mostly of old bulls who would otherwise compete for resources – so their culling can help increase numbers. Rhino owners argue that the simplest solution would be to legalise the trade in rhino horn. A rhino can grow 1-1.5 kg of horn a year. Those that have theirs chopped off sport spiky snouts within a few years. Owners could sustainably provide more horn to the market than currently reaches it even in peak-poaching years [29].

Other creative efforts include African Parks organizing donor-funded transshipment of rhinos to other countries. In 2022, the World Bank issued the first “rhino bonds” which raised money for two South African state-run parks with black rhinos. Another idea is “biodiversity credits”, which pay those preserving flora and fauna [29].

Anyway, the point is not that bans never work. Consider again the conditions. They can work, especially in the short term or when species are in dire danger. So, their longer-term success depends on the three other conditions. Take demand first. They must be coupled with a reduction in demand for the banned products. If a ban helps to shift people's tastes, all the better. Trade in cat and seal skins, and in parrots, fell because consumer campaigns destroyed demand at the same time as trade bans cut the legal supply. That was true of ivory for a time, in the West, but rose again as Asia's wealth increased. Trade is reduced most when demand is sensitive to price: cat and seal skins and parrots fall into this class. Demand is influenced by fashion (e.g., for fake fur), or when close substitutes are available—such as birds bred in captivity. For tigers and rhinos, demand has proved more resilient. The trade ban increased the price of horn, but demand has stayed strong—and so has the incentive to poach. The resulting illegal trade has proved hard to combat [28].

Next consider incentives. For a ban to work the ban must not undermine incentives to conserve endangered species in the wild. Bans may cut out legal wildlife trade, but some economists say they undermine efforts to conserve animals and plants in the wild and may even create incentives to get rid of them. If people have no economic interest in maintaining wild animals or their habitat, the attraction of converting the land to some other use, such as agriculture, increases. Cornelis van Kooten, an economist at the University of Victoria in British Columbia, points out that the North American bison was doomed because the land it lived on became more valuable for rearing cattle [28].

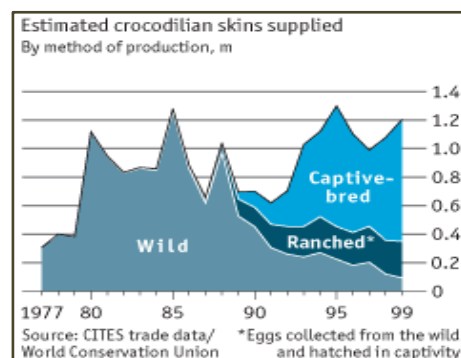
In a more modern example, Kenya banned hunting for sport and other consumptive uses of wildlife in the late 1970s. The competition for land between a rising human population and animals, which can be a danger to crops, life and limb, is intense. Kenya's wild-animal population has fallen by about 70% in the past 30 years, says Michael Norton-Griffiths, an economist in Nairobi [28].

A recent EU ban on the import of wild birds has had a similar effect. Ostensibly a veterinary measure to prevent the spread of avian influenza, the ban has bankrupted an Argentine plan to conserve the blue-fronted amazon, a parrot, through sustainable use. “It went from a well policed, sustainably managed operation, to one where there was no incentive to conserve the birds at all,” says John Caldwell, who manages CITES's trade database in the UK. As a result, habitat may be stripped out for commercial crops [28].

In addition to removing incentives to conserve, bans also remove a source of income with which to manage conservation. Partly for this reason, some countries have asked CITES for permission to sell elephant ivory, rhino horn or tiger bone (which is available from some captive-bred tiger populations in China). Apart from allowing the two one-off ivory sales and some trophy hunting of elephants, CITES has firmly rebuffed these requests [28].

One official argument against trade is that a legitimate source of specimens can act as cover for illegal sales. True, but technological advances are likely to make it easier to distinguish legal and illegal goods. Another is that sales would cut prices and hence stimulate demand. True again, but lower prices would also reduce the incentive to poach. Sales would also improve the incentives for landowners or governments to keep wildlife. Studies based on seizures show no evidence of an effect on illegal trade, says Steven Broad, director of TRAFFIC, a UK group that monitors wildlife trade [28].

Instead of banning trade outright, CITES has sometimes permitted breeding programmes providing an alternative, legal source of animal products. These have been hugely successful in reducing uncontrolled exploitation, for example of crocodylians. The trade in their skins is now largely supplied from alligators, caimans and crocodiles bred in captivity, although a quarter are either ranched or come from the wild (see chart, crocodylian skins) [28].



How far this could be taken is hard to say. The costs of rearing a tiger in captivity reach thousands of dollars. Killing one in the wild is far cheaper. And for some species, such as tigers and bears, there is anecdotal evidence of a strong consumer preference for wild products. However, no one has yet tried to replace these with products from animals bred in captivity [28].

There is another economic snag. Although captive breeding of parrots, salmon, deer and crocodiles may save wild populations from over-exploitation, it may leave

them undervalued. Captive breeding can erode incentives to conserve species in the wild. If they are to be conserved, money needs to be spent. It is the reinvestment of resource rents, says James MacGregor, of the International Institute for Environment and Development in London, that is important for the sustainable use of a species [28].

Finally, bans have to be supported by governments and citizens in the countries where these species live. If these conditions are not met, bans are unlikely either to reduce trade or to maintain endangered species. They may even make matters worse. Lots of factors affect the success of government and social institutions. National enforcement of CITES trade bans, noted Heather Sohl of the British arm of WWF, an environmental charity, is vital for them to work. Frequently, however, governments have not kept their promises. Why should this be? [28]

The obvious economic explanation is that the over-exploitation of animals and plants is an example of the “tragedy of the commons”. If no one owns the wildlife or the land on which it lives, the behaviour that is individually rational—poaching, clearing land and so forth—may be collective folly. Trade ban or no trade ban, without enforceable property rights, the underlying tragedy remains [28].

Timothy Swanson, a professor in resource economics at University College, London, argues that the tragedy lies not in the commons itself but in governments' failure to control access to wildlife and the land it occupies. The reason lies in their “opportunity costs, alternative development priorities, governance problems and resources”. He illustrated this in *International Review of Environmental and Resource Economics*, about the losses of elephants before the CITES trade ban [28].

Emerging SPS- and TBT-related issues

In Dec 2021 the EC approved the text of proposed regulation related to deforestation-free products entering the EU (in addition to timber, wood products and rubber are agricultural commodities: soy, palm oil, coffee and cocoa). In Jun 2023 the regulation was adopted. The food industry has been scrambling to prepare for new EU rules to cut carbon emissions from the supply chains of these commodities, which enter into force by the end of 2024 for large businesses (and Jun 2025 for small and medium enterprises). The rules oblige companies to prove their goods have not been produced on deforested land after 2020. Food companies operating in the EU will have to geolocate the land on which their commodities were produced, and hand these coordinates to the EU to make checks, which will depend on the deforestation risk rating of the producing country [31]. Certificates must accompany the goods to prove they have not been produced on land deforested [30].

The EU is the first region to ban imports of products linked with deforestation. The EU is to finalise a list of “high-risk” countries whose exported commodities will be subject to extra checks [31]. Environmental NGOs have called this the gold standard for protection of forests. Pledges by US importers would strengthen the plan to eliminate palm oil linked to deforestation, destruction of peatlands and labour exploitation from their supply chains. Other players from China and South Korea are considering it [30].

Many agricultural nations in the global south have raised objections, accusing Brussels of issuing proposals that lack detail and will raise prices for European consumers while failing to stop deforestation. The EU says that it is working intensively on implementation of the deforestation regulation with partner countries and

companies to help them. It remains unclear how strict the EU will be in enforcing the rules [31].

Agricultural exporters are pushing back on what they say are “one-sided” elements of the law, including the EU’s definitions of deforestation and forest degradation. The EU uses the UN FAO’s definition, which is more stringent than that of most governments. Exporters are concerned with the benchmarking system and the process by which a country’s level of deforestation risk is assessed. Brazil, Argentina, Ghana, Nigeria and Canada – all agricultural exporters – regard Brussels’s’ move as a protectionist measure [30].

Brazil’s top customer for agricultural exports such as soyabeans and beef is China and then the EU. One concern is that under such a system a two-tier supply chain might result, one under which companies would ship deforestation-free goods to the EU and the rest to other regions [31].

The world’s two largest palm oil producers, Indonesia and Malaysia, are also leading international criticism of the EU deforestation law which they say is protectionist and discriminatory. The EU’s move to phase out palm oil as a renewable biofuel has also been criticised by them. They argue that it is a deliberate act by the EU to block MA. Malaysian politicians have threatened a ban on palm oil exports to the EU. Indonesia’s export ban on nickel is already in dispute at the WTO [30].

In Indonesia, forest converted to palm plantations in 2020 was more than 90% lower than the peak in 2012 but production volumes jumped by 72%. But Indonesian palm oil sector is much more transparent and at a high level of commitment, as opposed to the low compliance levels in Latin America in the soyabean and beef industries [30].

As regards coffee and cocoa, the International Trade Centre, a joint UN and WTO agency, warned that product stored in the EU during a transition period up to Dec 2024 could be deemed non-compliant and could have to be sold outside the EU or destroyed. Some 70% of the cocoa is from Ivory Coast and Ghana, where deforestation and child labour are rife. If it lands on the EU market within the transition period it will be approved for sale with the bloc, but if it is held and released after the end of the transition year, it may not be. If it is not approved for the EU market it will have to be sold elsewhere and “dumped”. The Intercontinental Exchange (ICE), one of the main coffee and cocoa futures trading venues, has warned that the confusion risks causing market disruptions that can affect the entire supply chain from farmer to consumer. ICE noted that almost 200 000 tonnes of cocoa and 150 000 tonnes of coffee beans were held in ICE-licensed warehouses in ports across Europe in 2023 [32].

MARKET ACCESS NEGOTIATIONS FOR GOODS

Industrial or non-agricultural goods

Tariffs reductions though a formula were the primary feature of the negotiations on MA for non-agricultural goods. Tariff reductions would be made using a “simple Swiss” formula that produces deeper cuts on higher tariffs. The formula as it stood at the collapse of the DDR negotiations are outlined below (paragraph 5 of the modalities on MA on non-agricultural goods) [33].

The following formula shall apply on a line-by-line basis:

$$t_1 = \frac{\{a \text{ or } (x \text{ or } y \text{ or } z)\} * t_0}{\{a \text{ or } (x \text{ or } y \text{ or } z)\} + t_0}$$

where,

- t_1 = Final bound rate of duty
- t_0 = Base rate of duty
- $a = 8$ = Coefficient for developed Members
- $x = 20, y = 22, z = 25$.

The coefficients for developing Members had not been finalized when the talks ended. A higher coefficient, as envisaged for developing members, meant lower reductions in tariffs were required. The tariff reductions would be implemented gradually over a period of five years for developed members and ten years for developing members, the year following the entry into force of the Doha results [33].

MA on agricultural goods: tariffs and tariff quotas

The Doha Development Round (DDR) tariff negotiations occurred in phases. The discussions first focused broadly on two issues: the high levels of tariffs outside the quotas (with some countries pressing for larger cuts on the higher tariffs), and the quotas themselves (their size, their method of administration, and the in-quota tariff rate). By the time of the 2002-2003 preparations for “modalities”, the discussions covered six headings: tariffs; TRQs; TRQa administration; special safeguards; importing state trading enterprises, and other issues [34].

A number of developing countries complained that they faced difficulty if they tried to increase their incomes by processing the agricultural raw materials that they produce. This is because the countries they see as potential export markets impose higher duties on processed imports than on the raw materials — known as tariff escalation — to protect their own processing industries [34].

Some countries see tariffs and other import barriers as necessary to protect domestic production and maintain food security. For this reason, some countries link lower import barriers with disciplines on other countries’ export restraints and export taxes — if producing countries do not restrict their exports, then importing countries can feel more secure about being able to obtain food from them. Some developing countries said they needed flexibility in deciding the level of import duties they charge to protect their farmers against competition from imports whose prices are low because of export subsidies [34].

In phase 2, proposals emerged for the modalities for each of the items on the agenda. A summary of the modalities for some of the items are presented. For tariff reductions, different tiers were proposed. The draft modalities as they stood in 2008 are reported in the table that follows [34].

Agricultural tariff cuts, consolidated proposal			
Developed countries (DCs)		Developing countries*	
Tariff range	Required cut	Tariff range	Cut
$0 < \tau \leq 20\%$	50%	$0 < \tau \leq 30\%$	2/3 the cut of the DCs
$20 < \tau \leq 50\%$	57%	$30 < \tau \leq 80\%$	
$50 < \tau \leq 75\%$	64%	$80 < \tau \leq 130\%$	
$\tau \geq 75\%$	75%	$\tau \geq 130\%$	
Minimum overall average cut of 54% for all			
Source: WTO doc [34]			
Note: * excludes “small, vulnerable economies”			

The right to designate sensitive products was part of the flexibilities that were to be provided to members to help them agree to the committed cuts overall. The flexibilities as they were specified are outlined in the table that follows [34]. Paragraph 71 read:

71. Each developed country Member shall have the right to designate up to 4% of tariff lines as "Sensitive Products". Canada and Japan declared that they were not

in a position to agree to such a limitation. Where such Members have more than 30% of their tariff lines in the top band, they may increase the number of Sensitive Products by 2%, ... [subject to other details].

73. Members may deviate from the otherwise applicable tiered reduction formula in final bound tariffs on products designated as Sensitive. This deviation may be one-third, one-half or two-thirds of the reduction that would otherwise have been required by the tiered reduction formula. Accordingly all of the tariff lines for a particular product shall take a uniform deviation [34].

Designation of sensitive products		
Developed countries		Developing countries
Limits on the number of sensitive products		
4-6% of all agricultural tariff lines		1/3 more tariff lines than DCs
Deviation from reductions in tariffs		
Min rate cut	Max rate cut	Same min and max rates as DCs using LDC rate cuts
1/3 the rate cut as that for non-sensitive products; quota volume larger	2/3 the rate cut as that for non-sensitive products; quota volume larger	
Source: WTO doc [34]		

The Bali agreement in 2013 furthered the modalities on tariff rate quotas that were negotiated during the DDR. The conditions are outlined in the table that follows include what was agreed during the DDR and updated in the Bali negotiations [35].

DDR and Bali negotiations, tariff rate quotas	
TRQ expansions	Depended on conditions for sensitive product designation and deviations in cuts. Flexibility granted for TRQs already above 10% of consumption.
In-quota tariff	Rates reduced by 50% or a ceiling of 10%, whichever resulted in lower tariff. Developing countries in-quota rates reduced by 15%
TRQ administration	Quota allocated as per WTO “import licensing” rules; unused quota volume must be recycled to try to fill the quota
Additional details – Bali negotiations	An “underfill mechanism” can be initiated when: fill rates < 65%; this would help determine whether it is attributable to market circumstances rather than quota administration procedures
Source: WTO [35]	

State of the multilateral system

With supply chains so integrated, it might be tempting to conclude that multilateral negotiations are no longer necessary and new trade barriers less likely to arise. The inability to get a Doha deal done is a worry not because of the modest amount of freer trade forgone but because it is the first international forum in which big emerging economies, such as India, Brazil and China, have played an influential role. Thus, failure to reach agreement bodes ill for future multilateral co-operation. The WTO was weakened. Momentum has shifted to (far less desirable) regional and bilateral trade deals. If countries lose faith in multilateral negotiations as a means to achieving better market access, they may turn to litigation to reach their trade goals [36].

In many ways this has already transpired, particularly under both the Trump and Biden administrations, but not

necessarily because of it, and it has broadened and intensified with geopolitical tensions.

The centrepiece of the Doha trade round was freer trade in farm goods, a shift to benefit poor countries disproportionately. But the round was launched in 2001, well before the commodities boom, so its main emphasis was on government policies that kept prices artificially low, such as production and export subsidies in rich countries. At the collapse of the Doha negotiations, the main concern was the policies that pushed prices up: unilateral export bans, subsidies for consumers and the pursuit of biofuels. The fear became about security of supply. Food self-sufficiency had again become a political rallying cry [36].

The food with the most volatile price during the 2007-08 price spike was rice, precisely because it was the least traded. Freer trade in food is the best way to ensure stable access and prices. But an efficient global market needs strictures against unilateral barriers to exports as much as imports, and the WTO's current rules do little to control export restrictions. Nor were current trade rules much use for controlling the use of regulations to boost biofuels (a policy that in 2021 was no longer an important feature). Nevertheless, fixing this requires multilateral talks of a different sort [36].

The irrelevance of the global negotiating agenda to the shift in trade concerns goes beyond agriculture. Global talks should concentrate on fears over “security”—of food, energy, environment and income. Proponents of this view note that there are strikingly few rules governing trade in oil, the world's single most important commodity. The WTO prohibits export quotas, but not the production quotas on which the OPEC oil cartel is based. The WTO is ill-equipped to deal with other potential flashpoints too, from “green tariffs” (barriers imposed against countries that do not take action on climate change) to complaints about undervalued currencies or investment protectionism, particularly the backlash against sovereign-wealth funds and other investors owned by the state [36]. The lack of appetite for multilateral cooperation only makes these issues more daunting.

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