

WTO Rules on Trade in Goods: Subsidies

1. SUBSIDIES AND DOMESTIC SUPPORT

Agreement on Subsidies and Countervailing Measures (SCM),

WTO, www.wto.org (click on 'trade topics' > subsidies)

Under World Trade Organization (WTO) rules, the disciplining of the use of subsidies is covered under two Agreements: The Agreement on Subsidies and Countervailing Measures (SCM Agreement) and the Agreement on Agriculture (AoA). The separate treatment of subsidies on industrial goods and agricultural products has its roots in the history of trade negotiations. Agriculture, particularly commodity and food production, was a sector that was long exempted from trade disciplines because agricultural programs and policies aimed at meeting specific national objectives rather than trade objectives (an important exception was the use of export subsidies). Multilateral trade negotiations on the treatment of subsidization of industrial goods, by contrast, has a longer history and thus a stricter enforcement. Thus, the treatment of subsidies under SCM (on industrial goods) and under AoA (on agricultural goods) reflects the differences in treatment and enforcement.

Subsidies and countervailing measures: overview

The SCM Agreement addresses two separate but closely related topics: multilateral disciplines regulating the provision of subsidies, and the use of countervailing measures to offset injury caused by subsidized imports. Multilateral disciplines are the rules regarding whether or not a subsidy may be provided by a Member. They are enforced through invocation of the WTO dispute settlement mechanism. Countervailing duties are a unilateral instrument, which may be applied by a Member after an investigation by that Member and a determination that the criteria set forth in the SCM Agreement are satisfied.

Definition of subsidy Unlike the Tokyo Round Subsidies Code, the WTO SCM Agreement contains a definition of the term “subsidy”. The definition contains three basic elements: (i) a financial contribution (ii) by a government or any public body within the territory of a Member (iii) which confers a benefit. All three of these elements must be satisfied in order for a subsidy to exist.

The concept of “financial contribution” was included in the SCM Agreement only after a protracted negotiation. Some Members (EC) argued that there could be no subsidy unless there was a charge on the public account. Other Members (US) considered that forms of government intervention that did not involve an expense to the government nevertheless distorted competition and should thus be considered to be subsidies. The SCM Agreement basically adopted the former approach. The Agreement requires a financial contribution and contains a list of the types of measures that represent a financial contribution, e.g., grants, loans, equity infusions, loan guarantees, fiscal incentives, the provision of goods or services, the purchase of goods.

A financial contribution to be a subsidy must be made by or at the direction of a government or any public body within the territory of a Member. Thus, the SCM Agreement applies not only to measures of national governments, but also to measures of sub-national governments and of such public bodies as state-owned companies.

A financial contribution by a government is not a subsidy unless it confers a “benefit.” In many cases, as in the case of a cash grant, the existence of a benefit and its valuation will be clear. In some cases, however, the issue of benefit will be more complex. For example, when does a loan, an equity infusion or the purchase by a government of a good confer a benefit? Although the SCM Agreement does not provide complete guidance on these issues, the Appellate Body has ruled (Canada – Aircraft) that the existence of a benefit is to be determined by comparison with the market-place (i.e., on the basis of what the recipient could have received in the market). In the context of countervailing duties, Article 14 of the SCM Agreement provides some guidance with respect to determining whether certain types of measures confer a benefit. In the context of multilateral disciplines, however, the issue of the meaning of “benefit” is not fully resolved.

Specificity. Assuming that a measure is a subsidy within the meaning of the SCM Agreement, it nevertheless is not subject to the SCM Agreement unless it has been specifically provided to an enterprise or industry or group of enterprises or industries. The basic principle is that a subsidy that distorts the allocation of resources within an economy should be subject to discipline. Where a subsidy is widely available within an economy, such a distortion in the allocation of resources is presumed not to occur. Thus, only “specific” subsidies are subject to the SCM Agreement disciplines. There are four types of “specificity” within the meaning of the SCM Agreement:

- **Enterprise-specificity.** A government targets a particular company or companies for subsidization;
- **Industry-specificity.** A government targets a particular sector or sectors for subsidization.
- **Regional specificity.** A government targets producers in specified parts of its territory for subsidization.
- **Prohibited subsidies.** A government targets export goods or goods using domestic inputs for subsidization.

Categories of Subsidies

The SCM Agreement creates two basic categories of subsidies: those that are prohibited, those that are actionable (i.e., subject to challenge in the WTO or to countervailing measures). All specific subsidies fall into one of these categories.

Prohibited subsidies Two categories of subsidies are prohibited by Article 3 of the SCM Agreement. The first category consists of subsidies contingent, in law or in fact, whether wholly or as one of several conditions, on export performance (“export subsidies”). A detailed list of export subsidies is annexed to the SCM Agreement. The second category consists of subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods (“local content subsidies”). These two categories of subsidies are prohibited because they are designed to directly affect trade and thus are most likely to have adverse effects on the interests of other Members.

The scope of these prohibitions is relatively narrow. Developed countries had already accepted the prohibition on export subsidies under the Tokyo Round SCM Agreement, and local content subsidies of the type prohibited by the SCM Agreement were already

inconsistent with Article III of the GATT 1947. What is most significant about the new Agreement in this area is the extension of the obligations to developing country Members subject to specified transition rules (see section below on special and differential treatment), as well as the creation in Article 4 of the SCM Agreement of a rapid (three-month) dispute settlement mechanism for complaints regarding prohibited subsidies.

Actionable subsidies Most subsidies, such as production subsidies, fall in the “actionable” category. Actionable subsidies are not prohibited. However, they are subject to challenge, either through multilateral dispute settlement or through countervailing action, in the event that they cause adverse effects to the interests of another Member. There are three types of adverse effects. First, there is **injury** to a domestic industry caused by subsidized imports in the territory of the complaining Member. This is the sole basis for countervailing action. Second, there is **serious prejudice**. Serious prejudice usually arises as a result of adverse effects (e.g., export displacement) in the market of the subsidizing Member or in a third country market. Thus, unlike injury, it can serve as the basis for a complaint related to harm to a Member's export interests. Finally, there is **nullification or impairment of benefits** accruing under the GATT 1994. Nullification or impairment arises most typically where the improved market access presumed to flow from a bound tariff reduction is undercut by subsidization.

Agricultural subsidies Article 13 of the Agreement on Agriculture establishes, during the implementation period specified in that Agreement (until 1 January 2003), special rules regarding subsidies for agricultural products. **Export subsidies which are in full conformity with the Agriculture Agreement are not prohibited by the SCM Agreement, although they remain countervailable. Domestic supports which are in full conformity with the Agriculture Agreement are not actionable multilaterally, although they also may be subject to countervailing duties.** Finally, domestic supports within the “green box” of the Agriculture Agreement are not actionable multilaterally nor are they subject to countervailing measures. **After the implementation period, the SCM Agreement shall apply to subsidies for agricultural products subject to the provisions of the Agreement on Agriculture, as set forth in its Article 21.**

Transition Rules and Special and Differential Treatment

Developed countries

Members not otherwise eligible for special and differential treatment are allowed three years from the date on which for them the SCM Agreement enters into force to phase out prohibited subsidies. Such subsidies must be notified within 90 days of the entry into force of the WTO Agreement for the notifying Member.

Developing countries

The SCM Agreement recognizes three categories of developing country Members: least-developed Members (“LDCs”), Members with a GNP per capita of less than \$1000 per year which are listed in Annex VII to the SCM Agreement, and other developing countries. The lower a Member's level of development, the more favourable the treatment it receives with respect to subsidies disciplines. Thus, for example, LDCs and Members with a GNP per capita of less than \$1000 per year listed in Annex VII are exempted from the prohibition on export subsidies. Other developing country Members have an eight-year period to phase out their export subsidies (they cannot increase the level of their export subsidies during this period). With respect to import-substitution subsidies, LDCs have eight years and other developing country Members five years, to phase out such subsidies. There is also more

favourable treatment with respect to actionable subsidies. For example, certain subsidies related to developing country Members' privatization programmes are not actionable multilaterally. With respect to countervailing measures, developing country Members' exporters are entitled to more favourable treatment with respect to the termination of investigations where the level of subsidization or volume of imports is small.

Members in transformation to a market economy

Members in transformation to a market economy are given a seven-year period to phase out prohibited subsidies. These subsidies must, however, have been notified within two years of the date of entry into force of the WTO Agreement (i.e., by 31 December 1996) in order to benefit from the special treatment. Members in transformation also receive preferential treatment with respect to actionable subsidies.

Notifications

Subsidies Article 25 of the SCM Agreement requires that Members notify all specific subsidies (at all levels of government and covering all goods sectors, including agriculture) to the SCM Committee. New and full notifications are due every three years with update notifications in intervening years. The notifications are the subject of extensive review and discussion by the SCM Committee.

Countervailing legislation and measures All Members are required to notify their countervailing duty laws and regulations to the SCM Committee pursuant to Article 32.6 of the SCM Agreement. Members are also required to notify all countervailing actions taken on a semi-annual basis, and preliminary and final countervailing actions at the time they are taken. Members also are required to notify which of their authorities are competent to initiate and conduct countervailing investigations.

Dispute Settlement

The SCM Agreement generally relies on the dispute settlement rules of the DSU. However the Agreement contains extensive special or additional dispute settlement rules and procedures providing, inter alia, for expedited procedures, particularly in the case of prohibited subsidy allegations. It also provides special mechanisms for the gathering of information necessary to assess the existence of serious prejudice in actionable subsidy cases.

Subsidy disputes and current issues

Under this section are articles appearing in the press on issues or disputes related to the application of subsidies by different countries.

"BNDES: Lender of first resort for Brazil's tycoons", *Fin Times*, 12 Jun 2015, p. 5 by Joe Leahy

State support

Many major Brazilian companies borrow money at a heavy discount from BNDES, the state-run national development bank. BNDES loans mostly at a taxpayer-subsidised rate that is about half what many of its customers pay on their credit cards. With annual disbursements bigger than the World Bank, BNDES embodied the belief of the president's leftist Workers' party, or PT, in the virtues of state intervention in the economy. This faith grew and was strengthened by the vogue for Chinese-style state capitalism that grew out of the free market-led collapse of the 2008 global financial crisis.

However, by 2015 the belief in state-managed capitalism was being tested as Brazil's economy entered its fifth

year of stagnation. The cost of statist policies caused a rise in public debt and the budget deficit. Brazil's public finances had to be brought under control, and one of the main tasks was to rein in BNDES. The government outlined changes in the development bank's policies as the focus intensified on the role of private interests in the state.

The bank grew so much that its subsidy costs the government more than Brazil's much-lauded *bolsa família* monthly benefit for poor families — earning the bank the nickname Bolsa Empresário, or “tycoon grant”. Critics argued it was a source of economic distortion and cronyism that undermines Brazil's hard-won democracy.

Founded in 1952, BNDES originally fostered the country's steel industry and created a shareholding arm, BNDESPar, to manage its equity investments. It aimed to address “market failure”, lending to industry when the private sector was unwilling or unable. Over the decades, particularly during Brazil's period of runaway inflation in the 1970s and 1980s, long-term finance was not available from the market, so BNDES stepped into the breach. During the PT governments of Luiz Inácio Lula da Silva and Ms Rousseff, the bank exploded in size. BNDES's total assets grew nearly fourfold since 2007 to R\$814bn as of June 2014, while disbursements in 2014 were estimated at R\$190bn, more than the annual output of neighbouring Uruguay.

Critics say the central complaint about BNDES is it essentially amounts to a transfer from taxpayers to businesses. This is particularly pernicious in a country that is one of the most unequal in the world. “There have to be some public objectives, some social justification,” Arminio Fraga, a former central bank governor and opposition figure, said of BNDES lending.

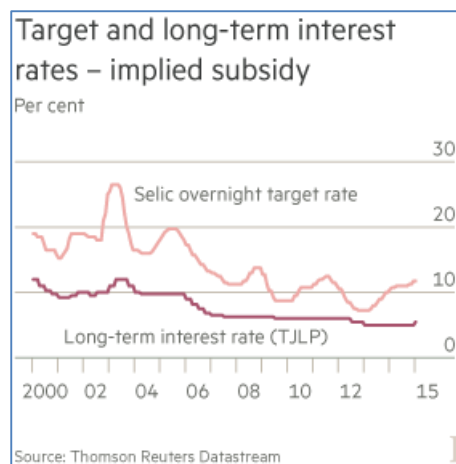
About 60% of BNDES lending goes to large conglomerates rather than small and medium-sized enterprises, including many large companies deemed so-called “national champions”, in which it often also holds significant minority stakes. BNDES and BNDESPar hold about 17.3% of the state-owned oil company Petrobras, while BNDESPar alone holds an estimated 8.4% of Vale, the world's biggest iron ore exporter, and 24.6% of JBS, the world's largest meatpacker. BNDES also funded the oil, mining and logistics empire of companies controlled by Eike Batista, who was Brazil's richest man until his group imploded in 2014.

All of these are quoted companies with ready access to western capital markets, and do not need public money, critics said. Even Mr Batista raised billions on the stock market before going bust. “The large companies can raise money on their own — it will be more expensive but it will not impede their investments,” said Sergio Lazzarini, professor at São Paulo business school Insper and co-author of *Reinventing State Capitalism*, which analyses BNDES.

The dominant presence of BNDES in long-term lending has crowded out the private sector when record low interest rates globally might have fostered the domestic capital market, critics argue. Even some clients admit as much. “To be competitive, you have to take those BNDES rates into consideration,” Marcelo Odebrecht, the head of the eponymous construction group, said in Valor Econômico, a business daily.

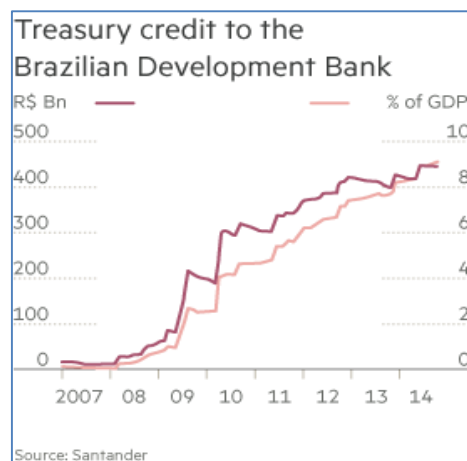
BNDES funding is so irresistible to businesses because it lends based on the TJLP, its long-term benchmark interest rate. As part of Mr Levy's drive to clean up Brazil's accounts, the government in 2015 raised the TJLP for the first time in 10 years. Even so, it remained at only 5.5%, less than half Brazil's “risk-free” short-term

rate, or Selic, which was set by the central bank and stood at 11.75% [see chart, interest rate].



BNDES could provide this generous subsidy because it has cheap funding from two main sources — the treasury and workers' employment insurance funds. For the workers, this implies a huge opportunity cost as they could have earned far higher market rates on the money elsewhere. “It's like a transfer of wealth from workers to the industrialists,” says Aldo Musacchio, professor of business at Harvard and co-author of *Reinventing State Capitalism*. The Treasury, meanwhile, incurs a loss as it raises money for the bank by issuing bonds at the Selic rate.

Leftist governments were defensive about criticism of BNDES. A previous finance minister claimed the bank's huge ramp-up in lending helped counter the effects of the financial crisis. Yet the bank sustained high lending levels after the crisis subsided in 2010. Outlays in 2014 matched those from 2013, which was itself a record [see chart, treasury credit].



The bank pointed to its competent staff — non-performing loans were negligible and made more profits per employee than private sector lender Itaú-Unibanco and other development banks in Germany or China. It is not the clichéd state bank that props up bad companies, said Seth Colby, an academic at Johns Hopkins University. “The policies of the BNDES are often contested, but its organisational capacity is highly regarded.”

Yet BNDES might not be profitable if its true cost of funding was accounted for. In addition, BNDES enjoyed low default rates because it picked the best borrowers, which should have turned to the market instead, said Mr Musacchio and Mr Lazzarini.

Such arguments even call into question the raison d'être of BNDES. Brazil still only invests 17% of gross

domestic product every year — less than the 22% or more needed to raise growth or investment rates in faster-growing Latin American countries such as Chile, Colombia, Mexico or Peru.

Nor has its lending necessarily led to more jobs being created. Mr Musacchio says listed companies that received BNDES funding usually did not increase their capital expenditure plans after receiving the loans. Instead, they used the cheap money to reduce their costs. “They are really lending to firms that don’t need the money,” he says.

Arguably more serious, are charges that its activities distort Brazil’s macroeconomic and political landscape. Critics say Brasília uses BNDES and other state-run banks to dress up the budget deficit by having it pay dividends to the government from treasury bonds that it keeps on its books. “They transform your own debt into revenue ... which is completely crazy,” says Mansueto Almeida, a specialist in Brazilian government finances. BNDES denied this is a deliberate government policy.

There are also concerns that BNDES’s cheap capital might undermine the central bank’s efforts to control inflation. Its low rates mean other Brazilians have to suffer higher rates. Studies also show that donors to the ruling party tended to receive more BNDES money. The biggest donor in the 2014 election was JBS, the meatpacking group controlled by the Batista family (no relation to Eike Batista) with BNDES as a shareholder. That was especially so for companies bidding for public contracts. One 2011 study by Taylor C Boas, F Daniel Hidalgo and Neal P Richardson found: “Firms specialising in public works projects could expect a substantial boost in government contracts — at least 8.5 times the value of their contributions — when they donated to a federal deputy candidate from the Workers’ party.”

The tussle over BNDES goes to the heart of Brazil’s problems — these range from a statist vision of the economy that has concentrated power into the hands of the ruling party and its main corporate donors, to corruption, a slowing economy and public services often so shoddy that they brought millions of protesters on to the streets in 2013.

"Aircraft-makers: Another nose in the trough", *The Economist*, 16 Sep 2010, p. 69-70



Boeing gets huge illegal subsidies, the WTO rules AIRBUS, Europe's aircraft-making champion, has long had its nose in the subsidy trough. In Sep 2010, the WTO ruled that Boeing, its US rival, was also a guzzler of illegal handouts. More precisely, the WTO gave an interim verdict on a claim by the European Union and Airbus that Boeing received subsidies, mainly channelled through the Department of Defence and NASA, which violate global trading rules.

Not long ago, it was Airbus that was the subject of a WTO ruling on an American complaint that Airbus received billions of euros in illegal subsidies, allowing it

to snatch half the market for big passenger jets. It found that some government support to Airbus, in the form of repayable “launch aid”, was illegal. Boeing's chairman, Jim McNerney, hailed “a landmark decision and a sweeping legal victory”.

This time Airbus is jubilant. A European source said “we could not have hoped for more.” The trade referee found that much of the \$22 billion benefit Boeing enjoyed from tax breaks and defence and research contracts was also an illegal subsidy. Airbus has long complained that, whereas it repays the launch aid with interest, Boeing never has to pay back a cent.

That is true but disingenuous. European governments shoulder a hefty share of Airbus's risk and the loans are cheaper than private investors would offer. Despite claiming a resounding win, Boeing appealed against some aspects of the June decision. Airbus, in turn, claimed that about 70% of Boeing's allegations had been dismissed by the WTO, which also failed to detect any price undercutting by Airbus as a result of the subsidies.

The scene is now set for further appeals and counter-claims, which could last for another three years or more. This is not just the biggest and most intractable trade row to come before the agency. It has developed into a political battle. If governments on either side were to levy countervailing import duties (as the WTO allows when an illegal subsidy persists), it could spark a disastrous trade war. No one wants that, so it probably won't happen.

Yet the stakes are still high. The US's Congress insisted that considerations of illegal subsidies should play a part in the selection of the air-refuelling tanker to be ordered by the US Air Force in November. Airbus (with the US's Northrop Grumman) initially won the order (worth \$35 billion) in 2008, only for the award to be overturned after Boeing complained about the bidding process, and a new contest begun. The WTO ruling this week on subsidies to Boeing may come too late for it to influence the way the contract is awarded, with the subsidy stigma counting against Airbus alone. Since both claims were filed on the same day in October 2004, some Europeans believe that the US put pressure on the WTO to delay the Boeing judgment.

Government support for developing new passenger aircraft first emerged as a contentious issue in 1988. Airbus was beginning to eat into Boeing's market with its A320 single-aisle jet—the sort of plane that accounts for four out of five planes sold. An agreement in 1992 limited government launch aid to 33% of the cost of developing an aircraft, to cap subsidies to Airbus, while the support to Boeing from the Pentagon and NASA was held to 3% of turnover. But Boeing tore up this deal in 2004 as Airbus prepared to launch the A380 super-jumbo (to challenge Boeing's 747) and the A350 (to vie with the 777 and 787).

Endlessly circling

The WTO found that some A380 launch aid was indeed an illegal export subsidy, but Airbus contends this can be dealt with merely by changing the wording of the contracts drawn up by the German, British and Spanish governments to match the French version, which passed muster with the WTO. The A350 case was not considered because its financing agreement was not in place when the investigation began.

The appeals and other arguments could run and run. Even after final rulings are made, there will doubtless be interminable hearings on how to implement them. In the Airbus verdict and again this week, the WTO gave no guidance on how the sins it exposed should be remedied. Airbus has frequently suggested negotiations with a view

to a bilateral deal like the previous one, only for Boeing to reject the idea out of hand: this week's verdict might make the Americans more amenable.

An Airbus executive observes that the legal battle could end in one of three ways. The two sides could negotiate a settlement. They could get bored and give up. Or they could carry on fighting indefinitely, to the benefit of no one but lawyers. A European source said he hoped that the latest ruling would persuade Boeing to come to the negotiating table.

Changes to the aircraft business are also increasing pressure for a settlement. Manufacturers in Russia, China and Japan are joining Brazil's Embraer and Canada's Bombardier in the market for big passenger jets. Most of these newcomers get government support.

Indeed Boeing is no stranger to launch aid from government. Japanese manufacturers making a third of Boeing's 787 receive such aid from the Japanese government. And Boeing was in line to get such help directly from the American government back in the days when it was considering building a supersonic rival to the Anglo-French Concorde. One thing is certain: unless the Europeans and Americans sit down to negotiate, there will be nothing supersonic about the speed at which this dispute is resolved.

"Twin WTO ruling on Airbus dispute", *Fin Times*, 18 May 2011, by J Chaffin, M. Odell, J. Lemer and H. Weitzman

The WTO upheld a ruling that Airbus benefited from some illegal government subsidies to develop almost its entire range of aircraft but overturned a more serious finding that the A380 super jumbo had received prohibited export subsidies.

The findings by the WTO followed an appeal in June 2010 by the EU of a report into state support for Airbus that had left rival Boeing and the US administration claiming a clear victory.

Boeing calculated that Airbus received \$18bn in illegal subsidies, including \$4bn for the A380, the most recent aircraft developed by the Toulouse-based company. Airbus, a subsidiary of EADS, disputes the figure, pointing out that most of the state subsidies were in the form of repayable loans, an instrument that in principle the WTO has declared legal.

However, Airbus conceded that the latest ruling upheld earlier findings that the interest rates charged on some of the loans provided by the UK, France, Spain and Germany amounted to a subsidy as they were not competitive with market rates. The WTO has given the EU six months to comply.

In its original report, the WTO found that the loans on the A380 were structured so that they had to be repaid only upon successful aircraft sales, and therefore constituted prohibited export subsidies – the most egregious form under the trade body's rules.

Both sides on Wednesday seized on elements of the ruling to claim victory in a long-running and tortuous transatlantic trade dispute that started in 2004. "This is a big win for Europe," said Tom Enders, Airbus chief executive, adding that the company could continue with its "public-private partnership" for future models.

But Boeing and the US officials disputed this. "The message is clear: launch aid is illegal and the European Union and the member states should refrain from future launch aid disbursements," said Ron Kirk, the US trade representative.

Privately, European officials acknowledged that they would probably have to adjust the interest rates on government loans to bring them into line with commercial rates. The outcome could have implications for the global aviation industry as Russia, China and Brazil try to bolster their own commercial aircraft champions, say executives, but they warn that this dispute could drag on for years.

The WTO still had to rule on an appeal on a separate report earlier that found Boeing had benefited from at least \$5.3bn in US subsidies.

"China's economy: Perverse advantage",

The Economist, 27 Apr 2013, p. 61

The scale of China's industrial subsidies

China is the workshop to the world. It is the global economy's most formidable exporter and its largest manufacturer. The explanations for its success range from a seemingly endless supply of cheap labour to an artificially undervalued currency. A provocative study¹ by Usha and George Haley, of West Virginia University and the University of New Haven, respectively, points to another reason for China's industrial dominance: subsidies.

The Chinese government does not report all subsidies made to domestic industrial firms, so the Haleys plugged the holes with information from industry analysts, policy documents, non-governmental outfits and companies themselves. By looking at the gaps between end-user prices and benchmark prices, they have cobbled together numbers on many of the subsidies enjoyed by the biggest industrial state-owned enterprises (SOEs).

On their conservative calculations, China spent over \$300 billion, in nominal terms, on the biggest SOEs between 1985 and 2005. This help often came in the form of cheap capital and underpriced inputs unavailable to international rivals [see chart, subsidies to Chinese industry]. The glass industry got soda ash for a song, for example. The auto-parts business got subsidies worth \$28 billion from 2001 to 2011 through cheap glass, steel and technology; the government has promised another \$10.9 billion by 2020. The subsidies to the paper industry



¹ Usha Haley and George Haley, *Subsidies to Chinese Industry*, Oxford University Press, April 2013.

topped \$33 billion from 2002 to 2009. All industrial SOEs benefited from energy subsidies.

The harm done by these subsidies to foreign competitors is ably chronicled by the Haleys. Rivals are forced to go up against national champions that enjoy subsidised inputs and seemingly free money in markets that are protected. Worse yet, the bosses of Chinese SOEs are not in business principally to make a profit: they are often encouraged by the government to pursue other goals, such as resource acquisition, foreign policies and technology transfer, regardless of cost.

Less obvious is the fact that these policies harm China as well, by nurturing unproductive and unaccountable behemoths. A recent study by Sea-Jin Chang of the National University of Singapore and Brian Wu of the University of Michigan found that new firms in China are more productive than incumbents but they are also more likely to fail. The authors blame “institutional barriers”.

Indeed, these barriers to creative destruction are even higher than they first appear, because state subsidies extend beyond state firms. Another new study by Fathom China, a research firm, argues that although small and medium-sized private firms are often starved of capital in China, many big private firms are at the official trough. The researchers looked at 50 prominent private-sector Chinese firms, and found that 45 receive subsidies (see table). Top of the list is Geely, an automobile firm that bought Sweden’s Volvo, which on Fathom’s reckoning would lose more than half its net profits without official aid.

The “private” sector		
Subsidies for selected private-sector Chinese firms 2011		
Company	Subsidy as % of net profit	Subsidy \$m
Geely Automobile	51.3	141
China Yurun Food	36.1	84
Uni-President	18.2	9
Sihuan Pharmaceutical	14.5	19
Wuxi PharmaTech	12.2	10
Want Want China	11.3	47
Hengan International	10.3	36
Gome	9.2	27
China Shanshui Cement	7.6	28
China Gas Holdings	7.2	7

Sources: GK Dragonomics; Fathom China

Such distortions breed indiscipline and overcapacity. An effort to sponsor clean-energy champions is partly responsible for a global glut of solar panels, for instance, forcing even Chinese manufacturers such as Suntech into bankruptcy. (Suntech has just been bailed out by Wuxi’s city government.) A similar problem looms in the steel industry, where the country’s excess capacity of some 200m tonnes surpasses the entire capacity of Japan’s steelmakers.

Could change be coming? In the past few weeks the *People’s Daily*, an official paper of the Communist Party, has run several articles discussing SOEs, which is seen by some as a sign that an overhaul may be on the central government’s agenda. But many state-owned firms are powerful, with some of their bosses holding ministerial rank, and resistant to change. Chinese officials have

repeatedly and publicly promised to raise the SOE dividend-payout ratio, for example, but SOE heads may have thwarted such efforts.

Leaders in Beijing are trying to encourage consolidation among SOEs but, as the Haleys note, “the central government’s removal of subsidies has often resulted in the provincial governments increasing them.” The unhappiest consequence of China’s subsidy policy may be that it has created beasts too powerful to rein in.

“Economics focus: Punch-up over handouts”, *The Economist*, Mar 23, 2005, p. 76

Rich countries under pressure to end farm subsidies. Might some poor countries be sorry to see them go? BURKINA FASO, in west Africa, depends on cotton for about 40% of its merchandise exports. According to the International Cotton Advisory Committee, a body that advises governments, world prices would have been about 26% higher in the 2001-02 season were it not for the \$4 billion the US subsidized its cotton growers.

In 2005 the WTO upheld its ruling that such subsidies distorted trade and breached limits agreed in 1994. President Bush’s budget for the fiscal year proposed deep cuts in farm subsidies. Furthermore, a promise to eliminate rich countries’ export subsidies (eventually) and to make a “substantial” cut in other kinds of handouts was vital to reviving the Doha round of global trade talks. It was also agreed that the grievances of Burkina Faso and its neighbours should be addressed “ambitiously, expeditiously and specifically”.

As the round inched forward, some free-traders were troubled. Jagdish Bhagwati, an economist at Columbia University and author of a book defending globalisation, is one of them. Agricultural subsidies are certainly undesirable, he wrote in the *Far Eastern Economic Review*. But the claim that removing them will help the poorest countries is “dangerous nonsense” and a “pernicious” fallacy.

Arvind Panagariya, a colleague of Mr Bhagwati’s at Columbia University, agrees². His argument rests on a surprising observation: most poor countries are net importers of agricultural goods. A study in 1999 found that 33 of the 49 poorest countries import more farm goods than they export; 45 of them are net importers of food. Subsidies depress the price of agricultural products on world markets. That hurts rival exporters, as Burkina Faso can testify. But importers gain.

By the same logic, the repeal of subsidies should benefit exporters but hurt importers. In a paper published in 2003³, Stephen Tokarick, of the International Monetary Fund, estimated by how much. He reckoned that, if OECD countries were to scrap their subsidies (but keep their tariffs), Brazil and Argentina, both strong agricultural exporters, would gain. But the rest of Latin America would lose \$559m a year (in 1997 dollars). India would benefit a bit, but the rest of South Asia would be \$164m worse off. Sub-Saharan Africa would lose \$420m, while North Africa and the Middle East would face a cost of \$2.9 billion.

The impact on different households within a poor country is another question. William Cline⁴, of the Centre for

² “Agricultural liberalisation and the developing countries: Debunking the fallacies”, <http://www.columbia.edu/~ap2231/>

³ “Measuring the impact of distortions in agricultural trade in partial and general equilibrium”, IMF working paper 03/110. <http://www.columbia.edu/~ap2231/>

⁴ “Trade policy and global poverty”, Centre for Global Development and Institute for International Economics, 2004.

Global Development, a US think-tank, pointed out that poor households tend to be rural, and rural households tend to sell more food than they eat. For them, rising farm prices are to be welcomed. It is the urban poor that should worry—and maybe the rulers of poor and fragile nations, who have traditionally striven to keep food prices low. Hard-pressed peasants are less of a threat than disgruntled city folk within a stone's throw of the presidential palace. An end to OECD farm subsidies, however, would transfer money from town to countryside.

If such a transfer is to be welcomed, Mr Panagariya asks, why wait for OECD countries to cut their subsidies? Poor countries could take matters into their own hands by slapping a countervailing tariff on the subsidised produce. That would raise the domestic price of food, benefiting rural households. It would also be a neat way of raising revenue at rich countries' expense.

Such a tariff would only raise farm prices at home, of course. Mr Cline thinks most poor countries would benefit from a rise in the relative price of agricultural goods in the world market. He argues that many poor countries possess an underlying comparative advantage in farm goods. Yes, they tend to be net importers of food. But that is deceptive. Thanks to the large aid flows such countries receive, they tend to be net importers of everything.

Mr Panagariya again demurs. He points out that many poor countries enjoy privileged access to the sheltered markets of the European Union. Thus they already enjoy higher prices for their exports than they could expect to find on the open market.

The sugar producers of Mauritius, for example, sell their produce behind the EU's steep import barriers at three times the market rate. By some estimates, the island owes almost 30% of its export earnings to the preferences the EU bestows upon it. But these privileges are not without cost. The World Bank reckons that every \$1 that a country such as Mauritius gains from its trade privileges costs the EU and the United States \$6. As an aid programme, it is not terribly efficient.

The paradox of the Doha round is that the members fighting hardest to retain subsidies, such as the EU, are those with most to gain from abolition. Poor countries, on the other hand, stand to gain more from cuts in tariffs. According to Mr Tokarick, the abolition of rich-world tariffs would yield \$12.5 billion for poor countries, with no regional losers. If they also liberalised their own agricultural trade, they would reap another \$21.4 billion.

The US's cotton subsidies deserve to be addressed "ambitiously, expeditiously and specifically", as the WTO agreed in 2004. But no less ambition and expedition must also be mustered in the fight against tariffs.

EC Law on State Aid (Changes after the entry into force of the Treaty of Lisbon, 1 Dec 2009)

Part Three: Community policies

Title VI: Common rules on competition, taxation and approximation of laws

Chapter 1: Rules on competition

Section 2: Aids granted by States

Article 87

Article 92 - EC Treaty (Maastricht consolidated version)

Article 92 - EEC Treaty

Article 87

1. Save as otherwise provided in this Treaty, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market.

2. The following shall be compatible with the common market:

- (a) aid having a social character, granted to individual consumers, provided that such aid is granted without discrimination related to the origin of the products concerned;
- (b) aid to make good the damage caused by natural disasters or exceptional occurrences;
- (c) aid granted to the economy of certain areas of the Federal Republic of Germany affected by the division of Germany, in so far as such aid is required in order to compensate for the economic disadvantages caused by that division.

3. The following may be considered to be compatible with the common market:

- (a) aid to promote the economic development of areas where the standard of living is abnormally low or where there is serious underemployment;
- (b) aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;
- (c) aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;
- (d) aid to promote culture and heritage conservation where such aid does not affect trading conditions and competition in the Community to an extent that is contrary to the common interest;
- (e) such other categories of aid as may be specified by decision of the Council acting by a qualified majority on a proposal from the Commission.

Article 88

Article 93 - EC Treaty (Maastricht consolidated version)

Article 93 - EEC Treaty

Article 88

1. The Commission shall, in cooperation with Member States, keep under constant review all systems of aid existing in those States. It shall propose to the latter any appropriate measures required by the progressive development or by the functioning of the common market.

2. If, after giving notice to the parties concerned to submit their comments, the Commission finds that aid granted by a State or through State resources is not compatible with the common market having regard to Article 87, or that such aid is being misused, it shall decide that the State concerned shall abolish or alter such aid within a period of time to be determined by the Commission.

If the State concerned does not comply with this decision within the prescribed time, the Commission or any other interested State may, in derogation from the provisions of Articles 226 and 227, refer the matter to the Court of Justice direct.

On application by a Member State, the Council may, acting unanimously, decide that aid which that State is granting or intends to grant shall be considered to be compatible with the common market, in derogation from the provisions of Article 87 or from the regulations provided for in Article 89, if such a decision is justified by exceptional circumstances. If, as regards the aid in question, the Commission has already initiated the procedure provided for in the first subparagraph of this paragraph, the fact that the State concerned has made its application to the Council shall have the effect of suspending that procedure until the Council has made its attitude known.

If, however, the Council has not made its attitude known within three months of the said application being made, the Commission shall give its decision on the case.

3. The Commission shall be informed, in sufficient time to enable it to submit its comments, of any plans to grant or alter aid. If it considers that any such plan is not compatible with the common market having regard to Article 87, it shall without delay initiate the procedure provided for in paragraph 2. The Member State concerned shall not put its proposed measures into effect until this procedure has resulted in a final decision.

Article 89

Article 94 - EC Treaty (Maastricht consolidated version)

Article 94 - EEC Treaty

Article 89

The Council, acting by a qualified majority on a proposal from the Commission and after consulting the European Parliament, may make any appropriate regulations for the application of Articles 87 and 88 and may in particular determine the conditions in which Article 88(3) shall apply and the categories of aid exempted from this procedure.

2. ECONOMICS OF SUBSIDIES AND DOMESTIC SUPPORT

The lecture is based on personal reflections and case study of WTO rules and country-specific commitments. The following chapters provide some of the background for the economic theory and the OECD's overview of agricultural support provide the rationale for measuring support.

Helmerger and Chavas, *The Economics of Agricultural Prices*, chapters 9 and 10, "Analysis of Farm Programs: Parts I and II", Prentice Hall, 1996.

OECD's Producer Support Estimate and Related Indicators of Agricultural Support (The PSE Manual), OECD: Paris, 2010.

<http://www.oecd.org/tad/agricultural-policies/psemanual.htm>

Ch 2. OVERVIEW OF THE OECD INDICATORS OF AGRICULTURAL SUPPORT

2.1. Why measure agricultural support?

⁵ The term "policy evaluation" is understood to be the analysis of levels and composition of agricultural support with respect to the implementation of the policy reform agenda. The term is not used as the evaluation of the effectiveness or efficiency of

The OECD indicators were developed to monitor and evaluate developments in agricultural policy, to establish a common base for policy dialogue among countries, and to provide economic data to assess the effectiveness and efficiency of policies. The indicators were mandated by OECD Ministers in 1987, and have since been calculated for OECD and an increasing number of non-OECD countries, and are widely referred to in the public domain.

The objectives and priorities of agricultural policies in OECD countries encompassed over time a wide range of issues – from overcoming food shortages or surpluses in the post-war period to securing food safety, environmental quality and preservation of rural livelihoods at present. Policy instruments have been equally varied, reflecting changes in domestic political and economic settings and, progressively, developments in the international economic arena. Despite this diversity, policy measures applied in a country within a certain period of time can be brought together and expressed in one or several simple numbers – called support indicators – which are comparable across time and between countries. The utility of doing this is three-fold.

First, support indicators can be used to *monitor and evaluate developments of agricultural policies*.⁵ This includes the extent of policy reform achieved by countries, both over time and through specific reform efforts (e.g. the US Farm Bills and various CAP reforms), as well as progress towards achieving the commitment agreed to at the 1982 OECD Ministerial Council of reforming agricultural policies. This commitment stated that "agricultural trade should be more fully integrated within the open and multilateral trading system", and it called for OECD countries to pursue "a gradual reduction in protection and a liberalisation of trade, in which a balance should be maintained as between countries and commodities." Ministers also requested the OECD to develop a method to measure the level of protection to monitor and evaluate progress.

Closely related to this, the indicators establish a *common base for policy dialogue* by using a consistent and comparable method to evaluate the nature and incidence of agricultural policies. While the indicators were calculated initially for OECD countries, the analysis currently includes 43 countries (27 EU members treated as a single entity), with estimates covering the period from 1986 to the present. The international comparability of the indicators and wide country coverage makes the indicators a useful tool for policy dialogue not only amongst OECD countries, but also with non-OECD countries, inter-governmental organisations (WTO, World Bank, IMF and FAO), farming and non-government organisations, as well as research institutions.

Finally, the indicator database is used in further research on policy impacts. The data serve as an *input into modelling* to assess the effectiveness and efficiency of policies in delivering the outcomes for which they were designed and to understand their effects on production, trade, income, the environment, etc. While the indicators cannot by themselves quantify these impacts, the economic information upon which they are based is an important building block for further analysis.

2.2. Overview of support indicators: key terms, definitions and distinctions

policies, except in the cases where the focus is specifically on that issue.

- “Support” is understood as gross transfers to agriculture from consumers and taxpayers, arising from governments’ policies that support agriculture.
- In addition to budgetary expenditures, support includes other estimated transfers, which do not require actual monetary disbursements (e.g., credit concessions).
- The indicators reflect the provision of support, or the level of effort made by governments, as implied by their agricultural policies. As such, they are not intended to and do not measure policy impacts on production, farm incomes, consumption, trade or environment.
- The indicators represent different ways to analyse agricultural policy transfers and measure their levels in relation to various key economic variables. Together they provide a comprehensive picture of agricultural support.
- The indicators can be distinguished according to the recipient of the transfer, the unit of measurement in which they are expressed, and the type of aggregation.

Agricultural policies may provide direct payments to farmers. They may maintain domestic agricultural prices above those at the country’s border, or grant tax and credit concessions to farmers. Support is not only comprised of budgetary payments that appear in government accounts, but also includes support of market prices, as well as other concessions that do not necessarily imply actual budgetary expenditure, such as tax concessions. The common element to all these policies is that they generate transfers to agriculture.

The concept of “transfer” presumes both a source of the transfer and the existence of a recipient. In the present methodology, agriculture is generally regarded as a supported sector and the main recipient of policy transfers. Consumers of agricultural commodities and taxpayers represent the two sources of transfers, *i.e.* the economic groups bearing the cost of agricultural support. The term “agriculture” designates primary agricultural producers as an economic group. Agricultural producers are viewed from two perspectives – as individual entrepreneurs, and collectively. These distinctions underlie the key dimensions in which agricultural support is measured and the basic structure of the indicators.

The terms “support” and “policy transfers” are broadly synonymous, but may be used in different contexts. The term “support” is predominantly used to mean a “policy measure” (that generates a policy transfer) and usually appears when identifying, scoping and classifying the relevant policies. The term “policy transfer” is used mainly with respect to calculations, *i.e.* the process of obtaining numerical expressions of policies.

More fundamental for understanding of the indicators, however, is the distinction between the notions of “provision of support” and the “impact of support” (*i.e.* impacts of policy transfers). The indicators are the various measures of gross policy transfers. As such, they reflect the *provision* of support, or the level of effort made by governments, as implied by their agricultural policies. The indicators do not account for the losses of that effort within the economic system, as experienced by the recipients of support. In fact, a proportion of the transfers will not end up as extra producer net income because support induces higher prices for agricultural inputs and factors, as well as generating deadweight loss of economic welfare.

Moreover, the actual impact of policies on its recipients will depend on, among other things, the basis upon which support is provided (*e.g.* whether it is provided per tonne of output, per land unit, per farm, etc.), the level of support, and the responsiveness of farmers to changes in support. The indicators, therefore, are not intended to and do not measure *the impact* of policy effort on farm production, farm incomes, trade or environment. This explanation of the indicators as representing measures of policy effort is crucial for understanding them properly.

The support indicators, which are introduced below, are different ways to analyse agricultural policy transfers and measure their levels in relation to various key economic variables. The names, abbreviations and definitions of the indicators are listed in the box below. No single indicator can capture all aspects of agricultural support. Each serves a purpose, highlighting a dimension of the support framework. The indicators are interlinked and mutually reinforcing. When analysed together, they provide a comprehensive picture of the level and composition of support.

Three distinctions can be made between the indicators. The first relates to the *intended recipient* of the transfer – producers individually, producers collectively, or consumers, although agriculture is always understood to be the economic sector supported by the policies.

A second distinction can be made in relation to the *unit of measurement*. An indicators is expressed in *monetary terms, as percentages or as ratios*. An advantage of monetary indicators is that they can be used to analyse the composition of support, *e.g.* to calculate the shares of PSE or GSSE by policy category, or the shares of TSE according to whether the transfers come from consumers or taxpayers. However, the monetary indicators are influenced by the size and structure of the country’s agricultural sector, as well as the country’s rate of inflation. Consequently, there are difficulties in using them to compare support levels between countries, to evaluate changes over time, or to assess the level of support provided within a country to different commodities. In contrast, percentage indicators and ratios, which relate policy transfers to some other monetary base, *e.g.* the value of agricultural production, allow such comparisons to be made.

Finally, the indicators can be distinguished according to the *type of aggregation* at which they can be derived — across commodities or geographically. While all the indicators can be calculated at the national and multi-country level, some can also be calculated for individual commodities or for groups of commodities.

Names and definitions of the OECD indicators of agricultural support
1. Indicators of support to producers
<i>Producer Support Estimate (PSE)</i> : the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. The PSE in percentage terms (%PSE) is the PSE as a share of gross farm receipts (inclusive of support). The PSE is the most widely reported support measure. (Other support measures are not provided in this summary.)
2. Indicators of support for general services in agriculture

General Services Support Estimate: the annual monetary value of gross transfers to general services provided to agricultural producers collectively (such as research, development, training, inspection, marketing and promotion), arising from policy measures that support agriculture regardless of their nature, objectives and impacts on farm production, income, or consumption. The GSSE does not include any transfers to individual producers. It is also measured as a share of GDP.

3. Indicators of support to consumers

Consumer Support Estimate (CSE): the annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. It is also measured as a share of consumption expenditure (measured at farm gate) net of taxpayer transfers to consumers. (There are other measures of support to consumers that are not provided in this summary.)

4. Indicators of total support to agriculture

Total Support Estimate (TSE): the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, net of associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products. TSE is also measured as a share of GDP.

2.3. Basic principles of measuring support

Several key principles determine the scope and policy measures to be considered in the estimation of agricultural support and the method for measuring support, such as:

- A policy measure is included if it generates transfers to agricultural producers, regardless of the nature, objectives or impacts of the policy measure;
- Transfers are measured in gross terms, taking no account of adjustments which producers may make to receive the support, e.g., to meet compliance conditions;
- Transfers to individual producers are measured at the farm gate level.

A number of principles, or general rules, guide the measurement of agricultural support. Principles 1 to 3 determine the scope of policy measures to be considered in estimating agricultural support and provide criteria for identifying agricultural policies in a complex mix of government actions. Principles 4 and 6 help to define the method for measuring support and are important for interpreting the indicators.

Principle 1: generation of transfers to agricultural producers as a key criterion for inclusion of policy in the measurement of support. Policy measures generate explicit or implicit transfers to supported individuals or groups. A policy measure is considered for measurement if agricultural producers, individually or collectively, are the only, or the principal, intended recipients of economic transfers generated by it. This is sufficient criterion for inclusion of a policy measure in the estimation of agricultural support.

Principle 2: there is no consideration of the nature, objectives or economic impacts of a policy measure beyond an —accounting for transfers. This principle complements principle 1, in that the stated objectives, or perceived economic impacts of a policy measure, are not used as alternative or additional criteria to determine the inclusion or exclusion of a policy measure in the estimation of agricultural support.

Principle 3: general policy measures available throughout the entire economy are not considered in the estimation of agricultural support, even if such measures create policy transfers to/from the agriculture [i.e., only partial equilibrium analysis is considered]. Thus, a situation of zero support to agriculture would occur when there are only general economy-wide policies in place with no policies specifically altering the economic conditions for agriculture.

Principle 4: transfers generated by agricultural policies are measured in gross terms. Policy transfers can be defined in gross or net terms, i.e. as revenue (gross receipts) or income (revenue less costs) generated by a policy measure. The phrase *gross transfers* in the definitions emphasises that no adjustment is made in the indicators for costs incurred by producers in order to receive the support, e.g. costs to meet compliance conditions attached to certain payments, or tax clawbacks.

Principle 5: policy transfers to individual producers are measured at the farm gate level, which follows from the objective to measure support only to primary producers of agricultural commodities. Consequently, the word “consumer” in the definitions and methodology is understood as a first-stage buyer of agricultural commodities.

Principle 6: policy measures supporting individual producers are classified according to implementation criteria, such as: (i) the basis upon which support is provided (a unit of output, an animal head, a land unit, etc.); (ii) whether support is based on current or non-current production parameters; and (iii) whether production is required to receive support or not; and other criteria. These policy characteristics affect producer behaviour, and distinguishing policies according to implementation criteria enables further analysis of policy impacts on, for example, production, trade, income, and the environment.

Annex 2.1. A Short History of the Indicators

The widespread policy goal from the late 1940s to produce more food led to increasing concern about the effects of agricultural policies on trade relations and on the cost of policies. Combined with rapid technical progress and structural changes, trade barriers and domestic production support measures led to surpluses of farm goods, which were stocked or exported with additional subsidies. World prices for temperate-zone commodities were driven down. The costs of stock-holding and export subsidies placed heavy burdens on government budgets, consumers in countries with protected markets faced higher food bills, and competitive producers in other countries were penalised by restrictions on access to those markets. By the beginning of the 1980s, a number of OECD countries realised that action was urgently needed.

At the 1982 OECD Ministerial Council (consisting of Ministers of Economics, Trade and Foreign Affairs, plus a few Agriculture Ministers), it was agreed “that agricultural trade should be more fully integrated within the open and multilateral trading system... (and) that the desirable adjustments in domestic policies can best take

place if such moves are planned and co-ordinated within a concerted multilateral approach aimed at achieving a gradual reduction in protection and a liberalisation of trade, in which a balance should be maintained as between countries and commodities.” Ministers also decided that the Secretariat should “study the various possible ways in which the above aims could be achieved as a contribution to progress in strengthening co-operation on agricultural trade issues and as a contribution to the development of practical multilateral and other solutions.”

An integral part of this investigation was to develop an appropriate basis for measuring agricultural subsidies. After considering the options available, the Secretariat decided to use the Producer Subsidy Equivalent (PSE), initially defined as *the payment that would be required to compensate farmers for the loss of income resulting from the removal of a given policy measure* (OECD, 1987).⁶ While the PSE was at first used for modelling the effects on world commodity prices of a small reduction in agricultural subsidies, it was also recognised as a very useful tool in its own right to establish a consistent and comparative method to evaluate agricultural policies between countries.

The notion of a “subsidy equivalent” derives from the economic theory of protection developed in the 1960s to evaluate the effects of tariffs (Corden, 1971). According to this theory, the *producer subsidy equivalent of a policy measure*, whether an import tariff, export subsidy, payment per tonne or per hectare, etc., is the payment per unit of output that a government would have to pay producers to generate the same impact on production as that policy measure. (Likewise, the consumer tax equivalent is the per unit tax that a government would have to impose to generate the same impact on consumption as that policy measure.) In the early 1970s, Tim Josling had applied this concept to the empirical measurement of agricultural subsidies in work for the FAO, introducing the term PSE (Josling, 1973 and Josling, 1975).

In 1987, a major OECD study entitled *National Policies and Agricultural Trade* offered an in-depth analysis of the agricultural policies of individual OECD countries based largely on the PSE and related indicators. This study recognised the linkages between domestic and trade policies and concluded that in order to improve the trading environment actions were necessary on both trade barriers and domestic policies.

It was clear from the start that the “income compensation” definition did not match what was actually being measured by the OECD PSE. While policy measures providing the same amount of *monetary* transfers to producers have the same *revenue* subsidy equivalent, they may have different production and income subsidy equivalents which depend on the way the measures are implemented (per unit of output or per hectare of land producing the same output, for example). One of the first critiques in this regard noted, *inter alia*, that the PSE was a measurement of revenue transfer (Peters, 1988).

As a result, the PSE was redefined in 1990 as *the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impact on farm production or income*.

Four major refinements were made in 1999:

- The PSE acronym was changed from meaning “Producer Subsidy Equivalent” to “Producer Support Estimate”. It was recognised that: (a) transfers associated with a wide range of diverse policies have different “subsidy equivalents”; and (b) that some of the transfers were given for the provision of services and positive externalities rather than to subsidise the production of agricultural commodities. The more neutral term “support” acknowledges that a monetary transfer is involved whatever the policy objective.
- Changes were made to the classification of policies within the PSE (Table below). This was required because of the growing scope of support policies introduced since the mid-1980s. Previously, there were five PSE categories with policies classified according to the *type* of support measure. The 1999 refinements introduced seven types of support measures with policies classified according to how they were *implemented*.
- A closely related change involved the establishment of a separate indicator to measure support provided to producers collectively, the General Services Support Estimate (GSSE). Support for “General Services” had been previously included in the PSE. This was separated from the calculation of the PSE, which now measures only support received by producers individually.

Consequently, the indicator and method for measuring the total cost to consumers and taxpayers of agricultural policies also changed, from the Total Transfers to Total Support Estimate (TSE).

- Finally, a new method for calculating the national (aggregate) PSE was introduced. Previously, this had been calculated by “extrapolating” the average %PSE for a common set of commodities to all agricultural production. A new method was introduced whereby only the average ratio of MPS to gross farm receipts for a set of commodities is extrapolated across to the rest of agricultural production (section 6.1.1), with all transfers from non-MPS policies included specifically within the PSE through classification in the appropriate categories.

Further changes were introduced in 2007 to enable the indicators to better capture recent policy developments, e.g. the move to —decouple the provision of support from specific commodity production and —re-couple the provision of support to other criteria. Three major changes were made:

- Although still based on implementation criteria, the PSE categories were substantially redefined.
- Labels were introduced, with the result that each policy, in addition to being classified into a PSE category, could also have up to six different labels attached to it so as to provide additional detail on implementation criteria; labels serve as shorthand for categories not included in the main presentation. For example, labels give additional information on whether a payment is with or without limit, or whether a payment implies any constraints on input use by the recipient, etc.
- PSEs for individual commodities are no longer calculated. Instead, a country total PSE is divided into Single Commodity Transfers, Group Commodity Transfers, All Commodity Transfers; and Other Transfers to Producers. This change reflects the fact that as a result of policy reform, support in many OECD countries is less tied to an individual

⁶ The consumer subsidy equivalent (CSE) was defined as the “implicit tax on consumption resulting from a given policy

measure (market price support element of the PSE) and any subsidies on consumption.”

commodity. Support is being increasingly provided to groups of commodities or all commodities in general, or without obliging a recipient to engage in commodity production at all. In this situation the link between some support transfers and individual commodities becomes less apparent. This necessitated an alternative presentation of support transfers with respect to their commodity specificity.

Initial 1987 categories	1999 Revision
A. Market price support	A. Market price support
B. Direct payments	B. Payments based on output
C. Reduction in input costs	C. Payments based on area planted/animal numbers
D. General services	D. Payments based on historical entitlements
E. Other	E. Payments based on input use
	F. Payments based on input constraints
	G. Miscellaneous
2007 Revision	
A. Support based on commodity output	
A1. Market price support	
A2. Payments based on output	
B. Payments based on input use	
C. Payments based on current area, animal numbers, receipts or income, where production is required	
D. Payments based on non-current area, animal numbers, receipts or income, where production is required	
E. Payments based on non-current area, animal numbers, receipts or income, where production is not required	
F. Payments based on non-commodity criteria	
G. Miscellaneous	

3. AGRICULTURAL SUBSIDIES AND DOMESTIC SUPPORT COMMITMENTS

Understanding the WTO: The Agreements, WTO, www.wto.org (click on 'trade topics')

The Agriculture Agreement: new rules and commitments

The objective of the AoA is to reform trade in the sector and to make policies more market-oriented. This would improve predictability and security for importing and exporting countries alike.

The new rules and commitments apply to:

- **market access** — various trade restrictions confronting imports
- **domestic support** — subsidies and other programmes, including those that raise or guarantee farmgate prices and farmers' incomes
- **export subsidies** and other methods used to make exports artificially competitive.

The agreement does allow governments to support their rural economies, but preferably through policies that cause less distortion to trade. It also allows some flexibility in the way commitments are implemented. Developing countries do not have to cut their subsidies or lower their tariffs as much as developed countries, and they are given extra time to complete their obligations. Least-developed countries don't have to do this at all. Special provisions deal with the interests of countries that rely on imports for their food supplies, and the concerns of least-developed economies.

"Peace" provisions within the agreement aim to reduce the likelihood of disputes or challenges on agricultural

subsidies over a period of nine years, until the end of 2003.

Domestic support: some you can, some you can't

The main complaint about policies which support domestic prices, or subsidize production some other way, is that they encourage over-production. This squeezes out imports or leads to export subsidies and low-priced dumping on world markets. The AoA distinguishes between support programmes that stimulate production directly, and those that are considered to have no direct effect.

Domestic policies that do have a direct effect on production and trade have to be cut back. WTO members calculated how much support of this kind they were providing per year for the agricultural sector (using calculations known as "total aggregate measurement of support" or "Total AMS") in the base years of 1986-88. Developed countries agreed to reduce these figures by 20% over six years starting in 1995. Developing countries agreed to make 13% cuts over 10 years. Least-developed countries do not need to make any cuts. (This category of domestic support is sometimes called the "amber box", a reference to the amber colour of traffic lights, which means "slow down".)

Measures with minimal impact on trade can be used freely — they are in a "green box" ("green" as in traffic lights). They include government services such as research, disease control, infrastructure and food security. They also include payments made directly to farmers that do not stimulate production, such as certain forms of direct income support, assistance to help farmers restructure agriculture, and direct payments under environmental and regional assistance programmes.

Also permitted, are certain direct payments to farmers where the farmers are required to limit production (sometimes called "blue box" measures), certain government assistance programmes to encourage agricultural and rural development in developing countries, and other support on a small scale ("de minimis") when compared with the total value of the product or products supported (5% or less in the case of developed countries and 10% or less for developing countries).

Export subsidies: limits on spending and quantities

The AoA prohibits export subsidies on agricultural products unless the subsidies are specified in a member's lists of commitments. Where they are listed, the agreement requires WTO members to cut both the amount of money they spend on export subsidies and the quantities of exports that receive subsidies. Taking averages for 1986-90 as the base level, developed countries agreed to cut the value of export subsidies by 36% over the six years starting in 1995 (24% over 10 years for developing countries). Developed countries also agreed to reduce the quantities of subsidized exports by 21% over the six years (14% over 10 years for developing countries). Least-developed countries do not need to make any cuts.

During the six-year implementation period, developing countries are allowed, under certain conditions, subsidies to reduce the costs of marketing and transporting exports.

The least-developed and those depending on food imports

Under the AoA, WTO members have to reduce their subsidized exports. But some importing countries depend on supplies of cheap, subsidized food from the major industrialized nations. They include some of the poorest countries, and although their farming sectors might receive a boost from higher prices caused by reduced

export subsidies, they might need temporary assistance to make the necessary adjustments to deal with higher priced imports, and eventually to export. A special ministerial decision sets out objectives, and certain measures, for the provision of food aid and aid for agricultural development. It also refers to the possibility of assistance from the International Monetary Fund and the World Bank to finance commercial food imports.

What is a 'distortion'?

This is a key issue. Trade is distorted if prices are higher or lower than normal, and if quantities produced, bought, and sold are also higher or lower than normal — i.e. than the levels that would usually exist in a competitive market.

For example, import barriers and domestic subsidies can make crops more expensive on a country's internal market. The higher prices can encourage over-production. If the surplus is to be sold on world markets, where prices are lower, then export subsidies are needed. As a result, the subsidizing countries can be producing and exporting considerably more than they normally would.

Governments usually give three reasons for supporting and protecting their farmers, even if this distorts agricultural trade:

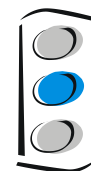
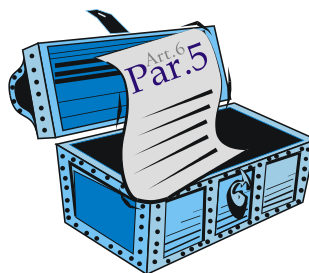
- to make sure that enough food is produced to meet the country's needs
- to shield farmers from the effects of the weather and swings in world prices
- to preserve rural society.

But the policies have often been expensive, and they have created gluts leading to export subsidy wars. Countries with less money for subsidies have suffered. The debate in the negotiations is whether these objectives can be met without distorting trade.

the post-Uruguay Round reform period are committed to reduce these subsidies.

The reduction commitments are expressed in terms of a "Total Aggregate Measurement of Support" (Total AMS) which includes all supports for specified products together with supports that are not for specific products, in one single figure. In the current negotiations, various proposals deal with how much further these subsidies should be reduced, and whether limits should be set for specific products rather than continuing with the single overall "aggregate" limits. In the Agriculture Agreement, AMS is defined in Article 1 and Annexes 3 and 4.

BLUE BOX



This is the "amber box with conditions" — conditions designed to reduce distortion. Any support that would normally be in the amber box, is placed in the blue box if the support also requires farmers to limit production (details set out in Paragraph 5 of Article 6 of the Agriculture Agreement).

At present there are no limits on spending on blue box subsidies. In the current negotiations, some countries want to keep the blue box as it is because they see it as a crucial means of moving away from distorting amber box subsidies without causing too much hardship. Others wanted to set limits or reduction commitments, some advocating moving these supports into the amber box.

"Domestic Support in Agriculture",

www.wto.org

The Boxes

In WTO terminology, subsidies in general are identified by "boxes" which are given the colours of traffic lights: green (permitted), amber (slow down — i.e. be reduced), red (forbidden).

In agriculture, things are, as usual, more complicated. The Agriculture Agreement has no red box, although domestic support exceeding the reduction commitment levels in the amber box is prohibited; and there is a blue box for subsidies that are tied to programmes that limit production. There are also exemptions for developing countries (sometimes called an "S&D box", including provisions in Article 6.2 of the agreement).



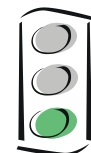
AMBER BOX

All domestic support measures considered to distort production and trade (with some exceptions) fall into the amber box, which is defined in Article 6 of the AoA as all domestic supports except those in the blue and green boxes. These include measures to support prices, or subsidies directly related to production quantities.



These supports are subject to limits: "de minimis" minimal supports are allowed (5% of agricultural production for developed countries, 10% for developing countries); the 30 WTO members that had larger subsidies than the de minimis levels at the beginning of

GREEN BOX



The green box is defined in Annex 2 of the AoA.

To qualify, green box subsidies must not distort trade, or at most cause minimal distortion (paragraph 1). They have to be government-funded (not by charging consumers higher prices) and must not involve price support.

They tend to be programmes that are not targeted at particular products, and include direct income supports for farmers that are not related to (are "decoupled" from) current production levels or prices. They also include environmental protection and regional development programmes. "Green box" subsidies are therefore allowed without limits, provided they comply with the policy-specific criteria set out in Annex 2.

In the current negotiations, some countries argue that some of the subsidies listed in Annex 2 might not meet the criteria of the annex's first paragraph — because of the large amounts paid, or because of the nature of these subsidies, the trade distortion they cause might be more than minimal. Among the subsidies under discussion here are: direct payments to producers (paragraph 5), including decoupled income support (paragraph 6), and government financial support for income insurance and

income safety-net programmes (paragraph 7), and other paragraphs. Some other countries take the opposite view — that the current criteria are adequate, and might even need to be made more flexible to take better account of non-trade concerns such as environmental protection and animal welfare.

Further readings:

http://www.wto.org/english/tratop_e/agric_e/agric_e.htm and
http://www.wto.org/english/tratop_e/agric_e/negoti_e.htm

Agricultural subsidies and current issues

Under this section are articles appearing in the press on issues or disputes related to the application of agricultural subsidies.

"Country Roads: America Looks for New Ways Forward for Its Worried Farmers", *Financial Times*, Sep 14, 2005, p. 15; and

"A stopped clock ticks again", *The Economist*, Oct 13, 2005, p 78

The US administration prides itself on taking an aggressive liberalising stand in farm talks. Speaking at the swearing-in of Mr Rob Portman, [former] US trade representative, Mr Bush boldly claimed: "Rob knows that America's farmers and workers can compete with anybody, anytime, anywhere in the world, so long as the rules are fair." However, the US can currently spend up to \$19.1 billion on farm-production subsidies [AMS ceiling], which heavily distort trade. The EU can spend over \$75 billion. Robert Portman offered to cut his country's limit by 60%, if the EU agreed to cut its permitted subsidies by 80%. Mr Portman also suggested limiting other subsidies, which do not distort trade as heavily [e.g. blue box], to 2.5% of the value of agricultural production. These two limits provide plenty of scope for creative accounting. Even as the US lowers the ceiling on the most trade-distorting subsidies, some of this money will be reclassified as something else.

To the big agricultural exporters, such as Brazil, handouts to rich-world farmers, however galling, matter less than access to rich-world consumers. The trade powers have settled on how to cut farm tariffs, if not by how much. Tariffs will be divided into four "tiers", according to their height. Those in the top tiers will be cut by more than those in the bottom.

"The administration has done a pretty good job of convincing farmers that the solution to their problem is expanding markets abroad," says Ann Tutwiler, chief executive of the International Food and Agricultural Trade Policy Council, a pro-liberalisation think-tank. But she adds: "The reality is more complex." While some corn, soyabean and big dairy farmers may be efficient enough to compete in world markets without subsidies, many of their counterparts in rice, sugar and fruit and vegetables are not. Even where US farm productivity is better than its competitors, higher costs and land prices wipe out the advantage. In rice, for example, US farmers have the highest yields in the world, of some 7 tonnes a hectare. According to a UN conference in 2004, their unit cost of production per tonne is \$331 compared with \$79 for Vietnam and \$70 for Thailand.

Such farmers have often been bailed out by subsidies, which the Organization of Economic Co-operation and Development says were worth 33% of rice farmers' gross receipts in 2002-04. That approach, particularly those subsidies aimed at promoting exports, has been under

attack from litigation in the WTO, including a successful case against US cotton exporters brought by Brazil, one of the world's leading farm exporters. Uruguay, with Brazil's support, has threatened to bring a similar case against the US to the WTO over rice subsidies.

Overall, the US subsidises its farmers less than many rich countries: subsidies account for 17% of gross farm receipts compared with an average of 30% for OECD nations. But the export orientation of its farmers raises hackles elsewhere. Pedro de Camargo Neto, the Brazilian lawyer who put together the cotton case, regards the US as a worse offender than the EU, since subsidised US farmers compete with Brazilians in global markets. "Europe is a closed market, certainly, but the US is an unfair competitor," he says.

A framework agreement, under which the Doha round has been negotiated, calls for a credible end date for export subsidies. Export subsidies are just one of the "pillars" of agricultural protection under discussion in Doha. The other two – domestic support payments to farmers and tariffs against farm imports – are economically much more significant. A recent World Bank paper suggests that 92% of the benefit to the developing world from rich nations' farm liberalisation would come from cutting tariffs, not reducing or reforming subsidies.

The farm talks have stalled over who is prepared to cut what. The US says that, as one of the rich world's lesser users of all forms of protection, it will not unilaterally disarm. JB Penn, US under-secretary for agriculture, says: "We will make significant reductions in domestic support on two conditions. One, if others – namely the EU and Japan – do the same. Two, if we get significant market access."

This places it in conflict with the EU – not just because the US wants access to European markets but because the EU has emerged as one of the strongest of those holding out against a multilateral tariff reduction formula in Doha that would cut higher import taxes across the world by more than lower ones. "As long as Europe is defensive, it will affect everyone," says a senior US trade official. "Its position plays a disproportionately large role."

While rapid progress in farm liberalisation depends on the EU and the US achieving a common position, at present their relationship is based more on finger-pointing and grandstanding than on co-operation. During the Group of Eight rich countries' meeting in July, Mr Bush reiterated a long-standing offer to end all farm subsidies, including domestic support, if the EU followed suit. In truth, this is a bluff the US knows will not be called. Given how high EU subsidies are – 34% of farmers' incomes in 2002-04 – and the political cost of eliminating them, the US's "zero-for-zero" offer is the rough equivalent of a penguin challenging a walrus to fly.

Meanwhile, the EU continues to point to the rhetorical promise it made last year to eliminate all farm export subsidies, calling on the US to do the same. While the EU's farm subsidies remain larger than those in the US, it points out that it has moved in the direction of making them less distorting of trade. The latest version of the Common Agricultural Policy has moved from the traditional regime of price supports towards making direct payments to farmers, "decoupled" from production. This should reduce the incentive to overproduce and drive down price by dumping surplus produce abroad.

The US, on the other hand, wants to change the rules in the WTO to allow some of its current subsidies to continue. In particular, the US says it should be able to keep a programme known as "counter-cyclical

payments", which compensate farmers for falls in prices. Such payments, together with related marketing loans, increased six-fold last year because of lower food prices. The US argues that, because such programmes are in essence a form of insurance and merely smooth farmers' incomes over time, they do not lead to overproduction.

Critics say the programmes have such a high reference price that they act as a permanent production subsidy. In this year's assessment of agricultural policies in its member countries, the OECD argued: "Although potentially less distorting, counter-cyclical payments . . . continue to be significant and limit market signals."

The Group of 20 developing countries have already made tough demands for limits on domestic subsidies and have made it clear that progress in agriculture is essential for liberalising goods and services trade, the other main parts of the Doha round.

"Agriculture: At the trough",

Economist, 1 Jun 2013, p. 43

An awful farm bill faces opposition

Handouts for US farmers amounted to \$256 billion between 1995 and 2012. The fattest subsidies went to the richest farmers. Every five years, Congress mulls a new farm bill. To confuse matters and [politicize the process], the bills typically address two entirely separate problems: the plight of the poor (to whom the federal government gives food stamps) and the unpredictability of farming (which the government seeks to alleviate). Politicians from rural states, which are over-represented in the Senate, back farm bills for obvious reasons. Many urban politicians back them, too, not least because some of their constituents depend on food stamps.

It will cost around \$950 billion over a decade, says the non-partisan Congressional Budget Office (CBO). Republicans complain that claiming food stamps had become too easy under President Barack Obama—the number of claimants rose from 26.3m in 2007 to 47.6m in 2013. They wanted to trim the programme from \$760 billion to around \$740 billion over ten years. Democrats retorted that the rolls swelled because the economy was in the doldrums. They insist that food stamps are a vital safety net for the poor and opposed any cuts.

Proponents of the new bill boasted that it would end "direct payments" to farmers. These are the subsidies paid to producers of wheat, corn, cotton, rice, peanuts, etc, regardless of whether they actually grow these crops—or even plant them. Other plums, such as "counter-cyclical payments" (extra handouts when prices are low) were also to be eliminated.

That may sound like a ray of sunshine for taxpayers. However, Vincent Smith, a professor of farm economics at Montana State University, said the new bill offered a "bait and switch". Direct payments are the bait, he explains, but they have been replaced by an expanded programme of subsidised crop insurance. The CBO calculated that more than two-thirds of the \$50 billion saved by cutting direct payments would be used to boost other farm programmes, such as crop insurance and disaster relief. If crop prices fall, insurance payouts will explode. And crop prices were near historic highs in 2013.

Federal crop insurance is not new; it began in the 1930s, but its cost has risen from \$2 billion in 2001 to \$7 billion in 2012 (see chart, farm subsidies). Taxpayers pay two-thirds of each farmer's premiums, and most of the claims. During the 2012 drought, crop-insurance payouts were a

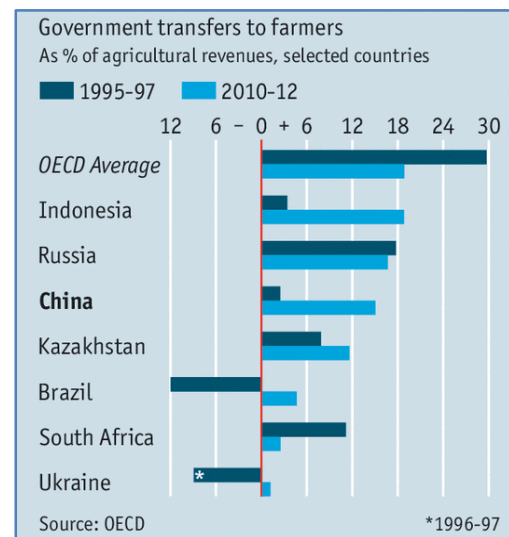
bountiful \$17 billion. Uncle Sam shouldered three-quarters of that.



Insurance already costs more than direct payments, and there is no limit to how much of it farmers may receive. The bigger the farm, the bigger the trough. (If taxpayers need insurance against misfortune, they must pay for it themselves, of course.)

Subsidised crop insurance is also bad for the environment. Craig Cox of EWG, a green pressure group, worries that it spurs farmers to take greater environmental risks, for example by farming on flood plains or steep hills. He feared that a "pumped-up" version would create even more perverse incentives.

One amendment to the draft reduced by 15% the subsidies for crop-insurance premiums if a farmer makes profits of more than \$750,000 a year. Some farms receive more than \$1m a year in subsidy. Senator Durbin, a co-sponsor of the amendment, said the amendment would save more than \$1.1 billion over ten years—a whopping 1/875th of the total bill.



The sugar lobby fought off an attempt to remove Depression-era supports that keep sugar much more expensive in the US than in the rest of the world. The industry's sweetheart was Al Franken, a Democrat from Minnesota and the author of a book called "Lies and the Lying Liars who Tell Them". He argued that cheap sugar would destroy US jobs. Such as those of Minnesota's many sugar-beet growers.

The bill may face pitchforks in the House of Representatives. John Boehner, the Speaker, fumes that it takes "Soviet-style" dairy supports and makes them worse. A new scheme seeks to protect the margins of

milk producers, who are grumbling that the cost of cattle feed has risen. Randy Schnepf of the Congressional Research Service wondered whether this might be because the government encourages Americans to turn corn into ethanol and burn it in their cars.

Mr Boehner's spokesman says the Speaker would like an open debate on the floor of the House. He expects lawmakers to tussle over crop insurance, dairy supports, food stamps and the food aid that the US sends overseas.

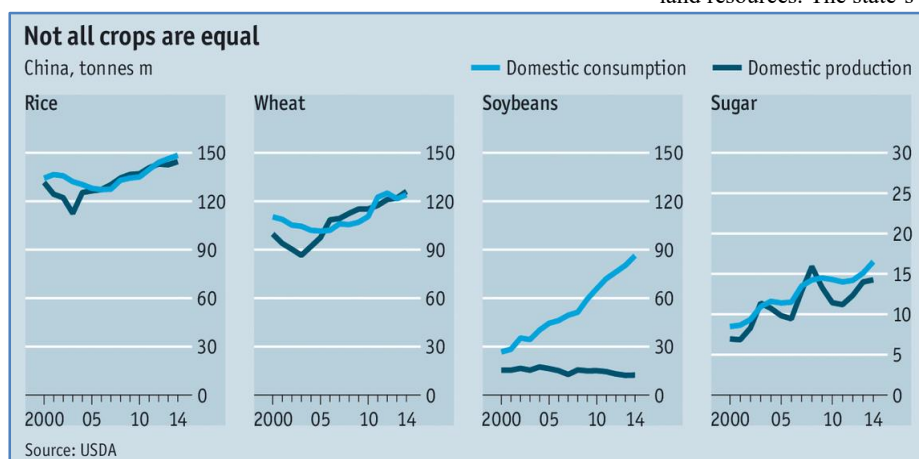
This last point is important. Congress has traditionally decreed that such aid should be shipped from the US, which costs more and ruins farmers in the poor countries that the policy is supposed to help. Mr Obama urged lawmakers to allow food aid to be bought locally, thus saving more lives. One way of doing this would be via the farm bill, but neither draft allows it.

"China and global farming: The wrong direction", *Economist*, 16 May 2015, p. 51

As others cut farm support, China spends more
 THE total value of support given by the Chinese government to farmers exceeds that of any other country: \$165 billion in direct and indirect agricultural subsidies in 2012. The next highest totals were those of Japan at \$65 billion and the US at just over \$30 billion, according to research by the Organisation for Economic Co-operation and Development (OECD). On a relative basis, however, China's support is more in line with global norms. Subsidies as a share of farm income are about 17%, rapidly catching up with the average for the OECD. The most lavish spenders include Japan, South Korea and Switzerland, where subsidies account for more than half of farm income.

More troubling is the trajectory (see chart). Among major emerging markets tracked by the OECD, China is second only to Indonesia in the rate of its subsidy growth. China's farm support rose from 1.4% of GDP in 1995-97 to 2.3% in 2010-12. It is moving in the opposite direction from developed countries, which are gradually reducing such support. OECD average support fell from 1.6% of GDP in 1995-97 to 0.9% in 2010-12.

There are also concerns about the kind of support provided by China. Even those who advocate less intervention in farming by governments acknowledge that it can play a useful role in mitigating boom-bust cycles. The challenge is to design support that minimises distortions. Schemes that lead to more investment in yield enhancements or that provide flat subsidies, regardless of production levels (i.e. decoupled), are best. Those that encourage farmers to plant crops (coupled) even if real demand is weak are harmful.



The OECD calculates that nearly 70% of Chinese subsidies are of the most distorting sort. For example, the government guarantees minimum purchase-prices, currently well above global levels, to grain growers. Other Asian countries are worse offenders. In Indonesia, the most problematic forms of subsidies account for nearly all of the government's agricultural spending. But given China's size, its interventions and the mismanagement of its food reserves are likely to have more far-reaching consequences for global markets.

"Farm subsidies: bitter harvest", *Economist*, 16 May 2015, p. 50-1

Drive for food self-sufficiency comes at a growing cost
 Between 201 and 2015, as farm wages soared, sugar-cane growers in southern China looked across the border to Vietnam for help. They hired (illegal migrant) Vietnamese workers—nearly a quarter cheaper than Chinese ones—to tend their fields, especially during the winter harvest e.g. sugar. To encourage loss-making farmers to go on planting sugar cane, officials in Beijing considered a system of direct subsidies. Costs were rising, crop yields stagnated and the government provided ever more support to keep its farms afloat.

Since a largely man-made famine that started in the late 1950s, in which tens of millions died, China has defied the odds by feeding its people almost entirely on its own. It has provided for a fifth of the world's population with less than a tenth of its arable land. Now, as middle-class appetites grow, China is past the point of being able to rely on its own farms. In 2011 it became the world's largest importer of agricultural products, powered by its demand for soybeans, a feedstock for pigs.

Since the earliest days of its rule, the Communist Party has striven for self-sufficiency in grains and extensive self-reliance in commodities from sugar to pork. The second draft of a proposed law on national security that came out in May 2015, specified the state's responsibility for guaranteeing "grain security", a term that Chinese officials often associate with self-sufficiency. Enabling China to grow enough to feed itself was a strategic goal for Mao (notwithstanding the famine he caused). For much of his rule, the Soviet Union and the US were enemies; he had little faith in global markets. Some Chinese officials continue to think in much the same way.

Maintaining self-reliance is expensive. China spent \$165 billion on support for farmers in 2012, twice as much as five years earlier and a third more than the EU, according to the OECD, a rich-world think-tank. It also creates inefficiency. State-set minimum purchase prices for rice, wheat and corn are well above global levels. This helps to boost production, but it also deters farmers from diversifying into cash crops that would make better use of land resources. The state's intervention results in thirsty

crops such as wheat and corn being widely grown on land where water is scarce. Chemicals used to boost their production pollute water supplies. Yield growth has slowed since the 1990s and output plateaued in recent years, but costs continue to rise—not least of labour, as the young migrate to cities.

In years when China's farms produce a surplus of staple crops, the state buys

the excess for its reserves. Many other countries do the same, building up reserves to stabilise food prices and as insurance in case of drought or blight. But China's reserves are believed to be unnecessarily big (exact figures are a state secret). Its corn stockpile, for example, is estimated to cover seven months of consumption; a level of three months is normally seen as safe.

The government's grain chief, Ren Xiaozheng, has called the huge reserves "a cheerful burden", a view undermined by a state television report in April revealing corruption in the system. Officials in the north-east had bought low-quality grain at discounted prices, reporting that they had paid the higher state-set price for good grain. They pocketed the difference, stuffing the inferior product into the reserves. Such fiddling is thought to be common.

Even in the production of sugar, a commodity that is less important to China's food strategy than rice or wheat, dysfunction caused by the state's interference is abundantly apparent. Officials call for 85% of annual consumption to be met through domestic production. But Chinese sugar-cane farms are inefficient, producing less than half the yield of those in Brazil, the world's biggest producer. Domestically grown sugar costs more than twice as much as international sugar. After factoring in shipping costs and import tariffs of up to 50%, it is still cheaper to buy from abroad—hence the government's foot-dragging on import approvals, to prevent the local market from being flooded.

Some officials appear to understand the need to make self-sufficiency goals more flexible. Li Keqiang, the prime minister, last year said China's goal was "absolute security" in edible grains. Some saw ambiguity in his wording: public debate ensued about whether buying more on global markets, rather than growing more at home, could provide that security. But the party prides itself on its rural origins. It does not want to stoke unrest in the countryside. So it continues to block imports when it feels domestic producers are threatened.

"Japan sets out plans to reform rice subsidies", *Fin Times*, 27 Nov 2013, p. 4

Farmers to focus more on exporting

Japan's government approved a plan to overhaul its decades-old system of handouts to rice farmers, signalling progress on a much-trumpeted policy goal amid negotiations with the US and other partners on a regional trade pact. Direct payments to hundreds of thousands of farmers have been at the heart of agricultural policy in Japan since 1970, when the government began to prop up prices by subsidising production of table rice according to annual estimates of demand, while encouraging shifts to other crops such as wheat, soybeans or rice for animal feed.

Yoshimasa Hayashi, agriculture minister, announced that subsidies for producing table rice tied to quotas would be scrapped by 2019. A separate system of payments to rice farmers, introduced by the previous government in 2010, would also be abolished and replaced by a fund to support agricultural infrastructure in villages particularly affected by the changes, he said. The package amounts to "a historically great transformation", said Akira Amari, economy minister, at a separate briefing. The reforms should spur consolidation of small, individually owned paddies into larger, more productive fields, making Japan's farmers more competitive on international markets, he said.

"It is essential to change farm policies to enable farmers with good management abilities to become financially independent," said Mr Amari. The decision to end the subsidies, coming as Shinzo Abe, the prime minister, is trying to sustain flows of investment drawn to Japan by the promise of structural reforms to revitalise the sluggish economy, was well timed, analysts said. It also comes as Japan is deep in talks to establish the Trans-Pacific Partnership, a free-trade bloc including 11 other nations such as the US, Australia and Vietnam.

Japan's complex system of subsidies and tariffs, which combine to guarantee farmers' incomes well above those of most other rural households, has been a source of friction in TPP negotiations, which are overseen by Mr Amari. "I think this sends a very clear message to large audiences, both domestic and external," said Ken Ash, trade and agriculture chief at the OECD in Paris. "In the context of Japan's aggressive monetary and fiscal policy actions, and in the context of its wider growth agenda, it would have been a signal if there were no reforms of Japanese agriculture."

Under the current system, farmers producing rice for staple food receive a subsidy of ¥150,000 (\$1,480) per hectare after each harvest, while producers of rice for flour or animal feed get ¥800,000 per hectare. If the new law is passed as planned, the subsidy for staple rice will be steadily cut to zero by fiscal 2018. The basic subsidy for flour or feed rice will remain the same, rising to ¥1.05m if yields are better than average. An official at the ministry of agriculture, forestry and fisheries said that the shift should encourage farmers to think less about meeting shrinking demand at home and more about exporting.

The terms of Japan's entry into the TPP are still in the balance. One of Mr Abe's pledges during the Upper House election campaign this summer was to maintain tariffs on the "big five" farm products of rice, wheat, beef/pork, dairy and sugar. However, to do so would mean only 93% of farm trade was liberalised, below the TPP's 98% target.

"Charlemagne: If the CAP doesn't fit", *The Economist*, 24 Apr 2010, p. 30



A new round of farm reform may produce less spending but more interference in markets

THE European Commission kicked off a new debate on the reform of the common agricultural policy, or CAP—a mere 40 years or so after the first such debate began. During 2011 it evolved into a bigger argument about the EU's next five-year budget. With money tight, even the loudest advocates of farm subsidies are changing their arguments. To simplify, money (a visible cost) may come to matter less than wheezes to regulate markets (which impose a hidden cost).

As always, France is the self-appointed leader of the pro-CAP camp. It remains the biggest single beneficiary,

scooping up about a sixth of the EU farm budget of €57 billion in 2010. Then President Nicolas Sarkozy saw his support among farmers plunge. Mr Sarkozy sketched out a new grand bargain. France, he said, should be “flexible” over subsidies, but “unbending” in its demands for more regulation of market prices and for “community preference” (ie, favouring EU produce over imports).

That might sound like give and take. In fact, Mr Sarkozy was offering to give up something that once suited France for something that now suits France more. The CAP reform comes as the taps on farm money for eastern Europe open (new members had only partial payments in their early years). In 2013 France would become a net contributor to the CAP—and, coincidentally, be more open to budget rigour. And a switch from taxpayers’ cash aid to price support via “community preference” is a step back from reform.

Something has to give, even so. EU leaders have agreed that the overall budget should focus more on competitiveness. There is talk of money for non-CAP things like research, innovation and “green” industries. Rich countries that bankroll the EU, including Germany, Britain and France, say that the next overall budget must remain no bigger than now: about 1% of overall EU national income. So the CAP is likely to get smaller, at least proportionally (agriculture now accounts for some 40% of EU spending, down from two-thirds 20 years ago).

Yet this smaller CAP budget will also be under greater pressure. Even with payments at full flow, there are huge inequalities between new and old members. That must change, says the new agriculture commissioner, Dacian Cioloș, a Romanian. The CAP must be “fair and transparent” if all Europeans are to support it. Mr Cioloș talks of the need to compensate farmers for “public goods” such as landscape management and animal welfare. Voters need to understand that farmers cannot live by selling their produce alone. He talks lyrically of hill farmers on high mountain pastures, whose grazing herds prevent avalanches and provide jobs in remote villages.

Bruno Le Maire, the French farm minister, advances a bolder argument. “The legitimacy of CAP funding is derived exclusively from the environmental and food-safety demands we make of our producers,” he declares. Yet in the next breath, he talks of the “strategic” goal of securing the “total food independence” of Europe. The Chinese are buying up millions of hectares of Africa to grow food, he notes. But is it coherent to scaremonger about food security in Europe and yet to call for less intensive (and thus less productive) agriculture? Europe has made an “idealistic” choice, Mr Le Maire says cheerfully, and an “expensive” choice: to produce more food and pay attention to the environment.

Such rhetorical leaps and pirouettes conceal something more pragmatic: a drive by CAP supporters to find mechanisms that do not involve big subsidies but still stabilise the incomes of farmers. Paolo De Castro, chairman of the European Parliament’s agriculture committee, says no country wants a bigger EU budget, so CAP reform “is not a question of more money, it means more regulation.” The EU needs “better market instruments”. Mr Le Maire is frank that French farmers long for a return to price controls, production quotas and other tools of state planning. Those old ways are gone, he says. Instead he paints a corporatist vision of managed markets, in which “producer organisations” fix maximum and minimum market prices (this would mean changing EU competition rules). Alongside EU-subsidised insurance for farmers, there could be new “adjustment funds” to smooth variations in farm revenues, with

governments and farmers putting aside money when things are going well, for release in leaner times.

Mr Le Maire fudges just what he means by “community preference”. It could mean a tax on imports that do not meet EU standards, he says. Or it could mean more precise labelling (to encourage consumers to buy local produce and shun imports), or distribution networks to favour local sales. Better to play to Europe’s strengths, says Mr Cioloș: local production and quality. His big idea is CAP mechanisms that help small farmers sell directly to local shoppers, bypassing big supermarket chains.

Others have a say in this debate. Franco-German agreement is needed before Paris can get its way on the future CAP. The Germans like the idea of the EU compensating farmers for higher Euro-standards, but are wary of market-meddling (and not sure who would pay). CAP reformers used to dream of simply slashing the farm budget. But they also favoured direct cash support for farmers because it is visible and so stirs up political debate. By contrast, price regulation and obscure trade barriers are harder to spot and more burdensome to the poor. Free markets and consumers will be the losers.

4. CONCLUDING COMMENTS: SUBSIDIES AND DOMESTIC SUPPORT POST-DOHA

WORLD TRADE ORGANIZATION TN/AG/W/4/Rev.4
6 December 2008

Committee on Agriculture, Special Session

Revised Draft Modalities for Agriculture

I. Domestic Support

A. Overall reduction of trade-distorting domestic support: A Tiered Formula

Base level

1. The base level for reductions in Overall Trade-Distorting Domestic Support (hereafter “Base OTDS”) shall be the sum of:

- (a) the Final Bound Total AMS specified in Part IV of a Member’s Schedule; plus
- (b) for developed country Members, 10% of the average total value of agricultural production in the 1995-2000 base period (this being composed of 5% of the average total value of production for product-specific and non-product-specific AMS respectively); plus
- (c) the higher of average Blue Box payments as notified to the Committee on Agriculture, or 5% of the average total value of agricultural production, in the 1995-2000 base period.

2. For developing country Members, item (b) of paragraph 1 above shall be 20% of the average total value of agricultural production in the 1995-2000 or 1995-2004 period as may be selected by the Member concerned. For developing country Members, the base period for the purposes of item (c) of paragraph 1 above shall be 1995-2000 or 1995-2004 as may be selected by the Member concerned.

Tiered reduction formula

3. The **Base OTDS** shall be reduced in accordance with the following tiered formula, where the Base OTDS is:

- (a) > US\$60 billion (or equivalent in the monetary terms) the reduction shall be 80%;
- (b) > US\$10 billion and ≤ US\$60 billion (or equivalent in the monetary terms) the reduction shall be 70%;
- (c) ≤ US\$10 billion (or equivalent) the rate of reduction shall be 55%.

4. Developed country Members with high relative levels of Base OTDS in the second tier (i.e. at least 40 per cent of the average total value of agricultural production in the 1995-2000 period) shall undertake an additional effort. The additional reduction to be undertaken shall be equal to one half of the difference between the reduction rates specified in paragraphs 3(a) and 3(b) above.

Implementation period and staging

5. For developed country Members, the reductions shall be implemented in six steps over five years.

- (a) For Members in the first two tiers specified in paragraphs 3(a) and 3(b) above, the Base OTDS shall be reduced by one-third on the first day of implementation. The remaining reductions shall be implemented annually in five equal steps.
- (b) For Members in the third tier specified in paragraph 3(c) above, the Base OTDS shall be reduced by 25 per cent on the first day of implementation. The remaining reductions shall be implemented annually in five equal steps.

B. Final Bound Total AMS: A Tiered Formula

Tiered reduction formula

13. The **Final Bound Total AMS** shall be reduced in accordance with the following tiered formula, where the Final Bound Total AMS is:

- (a) > US\$40 billion (or the equivalent in the monetary terms) the reduction shall be 70%;
- (b) > US\$15 billion and ≤ US\$40 billion (or equivalent) the reduction shall be 60%;
- (c) ≤ US\$15 billion (or equivalent) the rate of reduction shall be 45%.

14. Developed country Members with high relative levels of Final Bound Total AMS (i.e. at least 40 per cent of the average total value of agricultural production during the 1995-2000 period) shall undertake an additional effort in the form of a higher cut than would otherwise be applicable for the relevant tier. Where the Member concerned is in the second tier, the additional reduction to be undertaken shall be equal to the difference between the reduction rates specified in paragraphs 13(a) and 13(b) above. Where the Member concerned is in the bottom tier, the additional reduction to be undertaken shall be one half of the difference between the reduction rates specified in paragraphs 13(b) and 13(c) above.

Implementation period and staging

15. For developed country Members, reductions in Final Bound Total AMS shall be implemented in six steps over five years. For developed country Members in the top two tiers specified in paragraphs 13(a) and 13(b) above, this shall be implemented by means of a 25 per cent reduction on the first day of implementation, followed by reductions in equal annual instalments over five years.

For other developed country Members, the reductions shall be implemented in six equal annual instalments over five years, commencing on the first day of implementation.

C. Product-Specific AMS Limits

General

21. Product-specific⁷ AMS limits shall be set out in terms of monetary value commitments in Part IV of the Schedule of the Member concerned in accordance with terms and conditions specified in the paragraphs below.

22. The product-specific AMS limits specified in the Schedules of all developed country Members other than the United States shall be the average of the product-specific AMS during the Uruguay Round implementation period (1995-2000) as notified to the Committee on Agriculture. These shall be tabulated by individual product for each Member in an Annex to these modalities.

23. For the **United States** only, the product-specific AMS limits specified in their Schedule shall be the resultant of applying proportionately the average product-specific AMS in the 1995-2004 period to the average product-specific total AMS support for the Uruguay Round implementation period (1995-2000) as notified to the Committee on Agriculture. These shall be tabulated by individual product in the Annex to these modalities referred to in the paragraph above.

24. Where a Member has, after the base period specified in paragraphs 22 and 23 above, introduced product-specific AMS support above the *de minimis* level provided for under Article 6.4 of the Uruguay Round Agreement on Agriculture, and it did not have product-specific AMS support above the *de minimis* level during the base period, the product-specific AMS limit specified in the Schedule may be the average amount of such product-specific AMS support for the two most recent years prior to the date of adoption of these modalities, for which notifications to the Committee on Agriculture have been made.

25. In cases where the product-specific AMS support for each year during the base period specified in paragraphs 22 and 23 above was below the *de minimis* level provided for under Article 6.4 of the Uruguay Round Agreement on Agriculture and the Member concerned is not in the situation covered by paragraph 24 above, the product-specific AMS limit specified in the Schedule for the product concerned may be that *de minimis* level, expressed in monetary terms. The application of the provisions in this paragraph and paragraphs 21 to 24 shall not require a Member's product specific AMS limit to be lower than the base period *de minimis* level, expressed in monetary terms as set out in this paragraph.

26. The scheduled product-specific AMS limits shall be implemented in full on the first day of the implementation period. Where the average notified product-specific AMS in the two most recent years for which notifications are available was higher, the limits shall be implemented in three equal annual instalments, with the starting point for implementation being the lower of the average of those two years or 130 per cent of the scheduled limits.

⁷ "Product-specific" commitments have the same meaning as they are used in the Uruguay Round Agreement on Agriculture.

D. De minimis

Reductions

30. The **de minimis levels** referred to in Article 6.4(a) of the Uruguay Round Agreement on Agriculture for developed country Members (i.e. 5 per cent of a Member's total value of production of a basic agricultural product in the case of product-specific *de minimis* and 5 per cent of the value of a Member's total agricultural production in the case of non-product-specific *de minimis*) shall be reduced by no less than 50 per cent effective on the first day of the implementation period. Furthermore, where, in any year of the implementation period, a lower level of *de minimis* support than that resulting from application of that minimum percentage reduction would still be required to ensure that the Annual or Final Bound OTDS commitment for that year is not exceeded, a Member shall undertake such an additional reduction in what would otherwise be its *de minimis* entitlement.

E. Blue Box

Basic criteria

35. The value of the following domestic support, provided that it is consistent also with the limits as provided for in the paragraphs below, shall be excluded from a Member's calculation of its Current Total AMS but shall count for purposes of that **Member's Blue Box commitments and OTDS**:

- (a) Direct payments under production-limiting programmes if:
 - (i) such payments are based on fixed and unchanging areas and yields; or
 - (ii) such payments are made on 85 per cent or less of a fixed and unchanging base level of production; or
 - (iii) livestock payments are made on a fixed and unchanging number of head.
- Or
- (b) Direct payments that do not require production if:
 - (i) such payments are based on fixed and unchanging bases and yields; or
 - (ii) livestock payments are made on a fixed and unchanging number of head; and
 - (iii) such payments are made on 85 per cent or less of a fixed and unchanging base level of production.

36. Each Member shall specify in its Schedule which of these categories – (a) or (b) – it has selected for the purposes of establishing all its Blue Box commitments in this Round. Any exception to this universal application would be with the agreement of all Members prior to finalization of Schedules. In no circumstances could both domestic support categories be made available for any particular product or products.

37. Any Member that is in a position to move its domestic support from AMS to Blue pursuant to paragraph 43 below, or introduce product-specific Blue Box support pursuant to paragraphs 47 and 50 below subsequent to the conclusion of this negotiation shall have the option to do so on the basis of either criterion above but, once selected and scheduled, this shall be binding.

Additional criteria

(a) Overall Blue Box limit

38. The **maximum value of support** that can, **under** the above criteria of "Blue Box", be provided under Article

6.5 shall not exceed 2.5 per cent of the average total value of agricultural production in the 1995-2000 base period on the basis of notifications to the Committee on Agriculture where they exist. This limit shall be expressed in monetary terms in Part IV of Members' Schedules and shall apply from the first day of the implementation period.

39. In cases where a Member has, consistent with the terms of Article 6.5(a) of the Uruguay Round Agreement on Agriculture, placed in the Blue Box an exceptionally large percentage of its trade-distorting support – defined as 40 per cent – during the 1995-2000 base period, the limit for that Member shall, instead, be established by application of a percentage reduction in that average base period amount. That percentage reduction shall equal the percentage reduction that the Member concerned is to make in its Final Bound Total AMS. This Blue Box limit shall be expressed in monetary terms and bound in Part IV of that Member's Schedule. An implementation period of no more than 2 years may be provided for any such Member in the event that immediate implementation is unduly burdensome.

5. RULES AND COUNTRY-SPECIFIC COMMITMENTS ON EXPORTS

Export subsidies have long been ruled to be a violation of multilateral trade rules, and have been identified as destabilizing of the international market of commodities. Though direct export subsidies are clear for all to see their adverse effect to competing exporters and import competing sectors, the indirect programs aimed at facilitating exports are less clear. These programs include export credits, promotion programs, duty-free zones, tax breaks, and the like.

"Rules applicable to exports",

Business Guide to the Uruguay Round, ITC, UNCTAD and WTO, 138-42

Export incentives providing for the reimbursement of indirect taxes

GATT rules permit to relieve a product to be exported of:

- Customs duties and other indirect taxes levied on inputs used and consumed in its manufacture;
- Indirect taxes on the exported product; and
- Indirect taxes on the production and distribution of the exported product.

The term "indirect taxes" cover such taxes as "sales, excise, turnover, value added, franchise, stamp, transfer, inventory and equipment taxes". The Agreement on Subsidies and Countervailing Measures (SCM), which provides that foregoing by government of the taxes that are due and payable constitutes an export subsidy, clarifies that:

Exemption of an exported product from duties or indirect taxes borne by the like product when destined for domestic consumption, or the remission of such duties or taxes in amounts not in excess of those which have accrued, **shall not be deemed to be a subsidy.**

It is important to note the reasons for these rules. Under GATT's national treatment rule, a country may levy on an imported product, in addition to customs duties, all indirect taxes that it imposes on like products produced domestically, provided the duties are not levied at rates higher than those applied to domestic products. Unless therefore the exported product is either relieved or

exempted from the indirect taxes payable in the exporting country, it becomes subject to double taxation – in both the exporting and importing country.

The rules, however, allow an exported product to be relieved an indirect taxes only. It may not be relieved of the direct taxes (such as income tax and taxes on profits) payable by producing enterprises. The SCM agreement clarifies that "exemption, remission or deferral specifically related to exports, of direct taxes or social welfare charges paid or payable" by the producing enterprise constitute a prohibited export subsidy. The economic rationale for this rule arises from the assumption that the burden of indirect taxes is generally shifted to the product and is reflected in its price, while direct taxes are not so shifted, but are absorbed by the tax payer producer.

Almost all countries today have incentive schemes. These schemes make it possible for exporting enterprises to claim exemption from, or drawback of, customs duties paid on inputs used in the manufacture of export products and the reimbursement of indirect taxes borne by such products. Further, in order to ensure that exporting enterprises are not disadvantaged in selling in outside markets, countries rarely impose taxes on exports.

"Work to be done: How the government can help things along", *Economist*, 3 Apr 2010, p. 14-5

Import protection generally shelters the least productive industries and therefore the ones least likely to export.

The argument for protecting or subsidising "infant industries" until they have become strong enough to compete abroad is complicated. Sometimes it has worked: defence spending, for example, was critical to the early development of computers, semiconductors and the internet. But how can it be made to fit in with world trade rules? New findings on the nature of exporting reveal a potentially productive role for government.

It starts with the insight that exporting is a bit like films: failures far outnumber successes, but the successes are often spectacular. Marc Melitz of Harvard University notes that making just one foreign sale entails big fixed costs: finding a buyer, setting up distribution and learning to deal with regulations that might be tilted in favour of local companies. Many companies that export once never do so again. But those that do so regularly often grow at a remarkable speed. Eventually, exports come to be dominated by firms and products that survive this winnowing process.

This suggests that the right role for government is not to shower money on a handful of putative winners but to take a portfolio approach: finding companies on the margin of exporting and helping as many as possible overcome the fixed costs of entry. Eventually some should become big, productive exporters. Consular services that guide companies through foreign markets are one form of support; trade finance is another, particularly since the seizure in financial markets impaired private trade financing. The Export-Import Bank authorised record volumes of trade credit in 2012 [see chart, export credit, next story], but Fred Hochberg, its president, said the US still spent less on such efforts than China or Canada do, even though its economy is much larger. Further trade liberalisation would encourage firms to export by offering certainty of continued market access, but since talks broke down there has been little multilateral push in that direction. Mr Obama's free-trade agenda focused on the enforcement of existing trade laws. [Under President Trump, even existing trade deals are being reconsidered.]

Another area for government to consider is innovation. In the 1970s and 1980s the federal government poured billions of dollars into the Synthetic Fuels Corporation to develop liquid and gas fuel from coal, and into the fast-breeder nuclear reactor. Both failed because of political interference and a collapse in the price of conventional energy. Ignoring those lessons, Mr Obama pledged \$1 billion to FutureGen, a joint government-industry project to generate electricity and hydrogen from coal and sequester the carbon dioxide. Both the federal government and private partners periodically pulled their support. Because its electricity would be costly, commercial success was far from assured.

One study found that federal energy-research spending became more productive when it switched from large-scale demonstration projects to lots of smaller-scale technologies. Many failed, but the handful that succeeded, such as advanced refrigerator and freezer compressors, generated outside returns.

Supply-side incentives go only so far. When Rebecca Henderson of Harvard University and Richard Newell of Duke University (now head of the federal Energy Information Administration) reviewed the history of federal innovation policy, they concluded that one of the state's most effective roles was "stimulating or providing demand". Simply put, if policymakers get the price signals right, firms and consumers will of their own accord reorient their efforts away from consumption and towards exports and cleaner energy.

In exports the most important price signal is the dollar. "The best attainable of industrial policies for sustained development is an undervalued exchange rate," write Stephen Cohen and Brad DeLong in "The End of Influence". It is "better, more automatic, less manipulable and less easily distorted by corruption and rent-seeking" than subsidising domestic industries. In this instance they were writing about China and other emerging markets, but the same is broadly true of rich countries.

The US explicitly sought to drive the dollar down to help its trade balance in 1985, and again in 1989-90. A repeat is not on the cards. It would risk panic among the foreign investors who still finance much of the US's public debt, and anger trade partners whose own currencies would appreciate, hurting their exports. Nor is the dollar as obviously overvalued as it was in 1985 (see dollar trade-weighted index).



"Free exchange: Beggar-thy-neighbour banking," *Economist*, Jul 5th 2014, p. 67

Export credit agencies are an enduring instrument of mercantilism

FOR most of its 80 years, the US Export-Import Bank laboured in obscurity, providing loans, loan guarantees

and credit insurance to foreign buyers of US products from jumbo jets to quiche. In 2014 it was in the spotlight having been declared to be the embodiment of corporate welfare.

The fight over ExIm has drawn rare attention to one of the most pervasive and enduring instruments of mercantilism in the world trading system. Export-credit agencies got their start early last century. Britain's, established in 1919, was part of an effort to improve its balance of payments and thus return to the gold standard. The US ExIm Bank was originally conceived as an instrument of foreign policy, to provide leverage over the Soviet Union and support for Cuba.

The global financial crisis gave such banks a new lease of life. When banks pulled back from trade finance after Lehman Brothers collapsed in 2008, governments prodded their export agencies to fill the gap to prevent a bigger fall in trade volumes. Official export credit extended by the G7 alone soared from \$35 billion in 2007 to \$64 billion in 2009, and has remained around those levels since (see chart below). Subsidised loans for exports have long been recognised as a form of mercantilism, which is why rich countries struck a gentlemen's agreement in 1978 to curb them. Signatories to the "OECD arrangement" agree to maximum loan maturities, commercially-based interest rates and minimum risk premiums for insurance. When one signatory strikes a financing deal, it notifies the others, giving them the opportunity to match the terms.

Given these safeguards, many advocates say official export credit is not really a subsidy at all but simply compensation for a market failure. Banks are reluctant to provide long-term export financing, to lend to countries with shaky political or legal regimes, or to small businesses, even more so since new capital standards have made such loans costlier. Export-credit agencies simply fill an unmet need—and their profits prove it.

These arguments are suspect. The scarcity of private financing for certain exports reflects genuine risks that taxpayers are forced to assume. The profit earned by lenders may simply reflect the advantages that come with being part of the government. The Congressional Budget Office reckons that if ExIm's future revenue were discounted using the interest rate paid by the Treasury (the bank's main source of funding), it would make a profit of \$14 billion over the next decade. But discounting at market rates would turn that into a loss of \$2 billion. This is far less than the implicit cost of federal student and mortgage loan guarantees. But it does not suggest ExIm has found lucrative untapped opportunities.

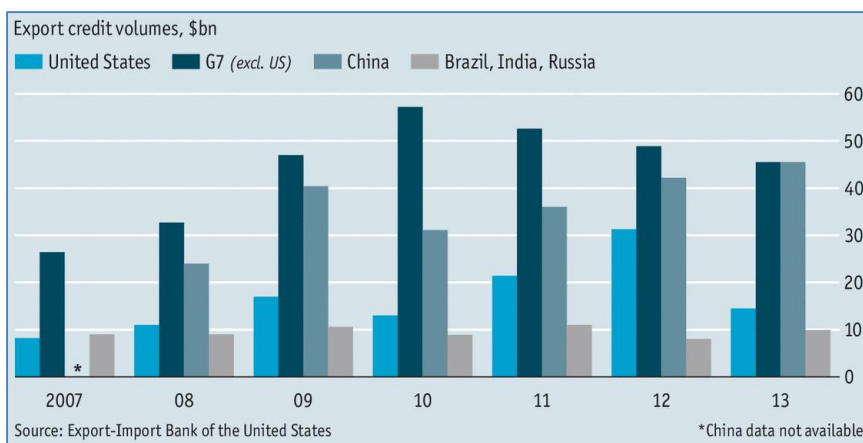
Even if export credit is a subsidy, advocates say it is unavoidable. Any high-minded country that refuses to subsidise exports simply surrenders sales, jobs and income to countries with no such qualms. If ExIm

stopped financing sales of Boeing aircraft, the argument runs, either Airbus would grab market share, or Boeing would move production to another country that did finance those sales. This line has been trotted out in recent years as a growing share of export finance takes place outside the OECD arrangement. Two factors are at work. First, many OECD members are using instruments not covered by the arrangement, such as floating-rate loans linked to Libor, and "untied" development aid that implicitly, but not explicitly, pays for the donor country's exports, as is common with Japan's lending.

The second factor is the surge in lending by countries outside the OECD, above all China. ExIm reckons that China's official export credit last year amounted to \$45.5 billion. Adding in untied aid, project finance and other surreptitious forms of export credit boosts the total to \$111 billion, more than a third of the global total. China regularly offers easier terms than the OECD arrangement would allow. Other countries feel obliged to match them, as ExIm Bank did in 2012 for a Pakistani purchase of locomotives.

Ordinarily, export subsidies are a bad bet even if used to match another country's handouts. The resources used to provide the support must either come from distortionary taxes or borrowing, which in normal times would raise interest rates and crowd out private investment. Industries receiving the boost would also absorb capital and labour that might be more productively used elsewhere. Unless foreign subsidies create some market failure (by threatening to destabilise an industrial cluster, for instance) the least harmful course of action may be to accept the foreign government's largesse. At present, with the world awash in savings and interest rates stuck near zero, the case against subsidies is weaker. Subsidising exports may boost demand for domestic production, leaving the country better off—unless, of course, every country does the same, in which case no one gets an advantage.

The WTO discourages protectionism by permitting a country hurt by another's subsidies to raise tariffs in retaliation. But this is of limited use with export credits because the victim is neither the importer nor the exporter, but a third country whose exports are artificially suppressed. That country would accomplish nothing by raising tariffs. The world would be better off without subsidised export credits. Failing that, the best solution would be for the OECD arrangement to cover more types of lending and more countries (OECD membership is not required to be a party to the agreement).



Ministerial Conference Ninth Session
Bali, 3-6 December 2013

EXPORT COMPETITION

1. We recognize that all forms of export subsidies and all export measures with equivalent effect are a highly trade distorting and protectionist form of support, and that, accordingly, export competition remains a key priority of the agriculture negotiations in the context of the continuation of the ongoing reform process set out in Article 20 of the Agreement on Agriculture, in accordance with the Doha work programme on agriculture and the 2005 Hong Kong Ministerial Declaration.

2. In this context, we therefore reaffirm our commitment, as an outcome of the negotiations, to the parallel elimination of all forms of export subsidies and disciplines on all export measures with equivalent effect, as set out in the 2005 Hong Kong Ministerial Declaration. We regret that it has not been possible to achieve this objective in 2013 as envisaged in that Declaration.

3. We consider that the revised draft modalities for agriculture (doc. TN/AG/W/4/Rev.4 dated 6 December 2008) remain an important basis for an ambitious final agreement in the export competition pillar, including with regard to special and differential treatment for LDCs and NFIDCs.

4. We recognize the decrease in recent years in the use of export subsidies subject to reduction commitments under the Agreement on Agriculture, as indicated by information contained in Members' notifications to the WTO, and the positive developments that have also taken place in other areas of the export competition pillar.

5. We recognize that the reforms undertaken by some Members have contributed to this positive trend. We emphasize however that this generally positive trend is not a substitute for the attainment of the final objective on export competition in the Doha negotiations.

6. We emphasize the importance of consolidating progress in this area within the Doha negotiations so as to achieve as soon as possible the final objective set out in the 2005 Hong Kong Ministerial Declaration and we underscore the importance of further engagement among Members to this end.

7. We therefore reaffirm the importance of Members maintaining and advancing their domestic reform processes in the field of export competition. We strongly encourage those Members who have engaged in reforms to continue in that direction and Members yet to undertake reforms to do so, given the positive impact that such reforms can have and the significant negative consequences that failure to reform would generate.

8. With the objective on export competition set out in the 2005 Hong Kong Ministerial Declaration in mind and with a view to maintaining the positive trend noted previously, we shall exercise utmost restraint with regard to any recourse to all forms of export subsidies and all export measures with equivalent effect. To this end, we undertake to ensure to the maximum extent possible that:

- The progress towards the parallel elimination of all forms of export subsidies and disciplines on all measures with equivalent effect will be maintained;

- The level of export subsidies will remain significantly below the Members' export subsidy commitments;
- A similar level of discipline will be maintained on the use of all export measures with equivalent effect.

9. We agree that fulfilling the objective set out in the 2005 Hong Kong Ministerial Declaration on export competition remains a priority issue for the post Bali work programme. We agree to continue to work actively for further concrete progress in this area as early as feasible. [document continues ...]

6. MULTIFUNCTIONALITY, NON-TRADE CONCERNS AND AGRICULTURAL RISK

Multifunctionality in agriculture refers to the value that agriculture provides beyond the commercial sales of agricultural produce. Agriculture, it is generally agreed, provides public goods and services beyond what is actually produced, e.g., cultural landscape, biodiversity and environmental amenities, rural viability and livelihoods, etc. Thus, providing support or protection to agriculture can, in effect, provide a greater value of public goods and services to society that otherwise would not be provided. Moreover, risks throughout the agricultural and agribusiness marketing system might also be used as an argument in favour of support and protection.

Ministerial Conference Ninth Session
Bali, 3-6 December 2013

PUBLIC STOCKHOLDING FOR FOOD SECURITY PURPOSES

The Ministerial Conference, decides as follows:

1. Members agree to put in place an interim mechanism as set out below, and to negotiate on an agreement for a permanent solution¹, for the issue of public stockholding for food security purposes for adoption by the 11th Ministerial Conference.

2. In the interim, until a permanent solution is found, and provided that the conditions set out below are met, Members shall refrain from challenging through the WTO Dispute Settlement Mechanism, compliance of a developing Member with its obligations under Articles 6.3 and 7.2 (b) of the Agreement on Agriculture (AoA) in relation to support provided for traditional staple food crops² in pursuance of public stockholding programmes for food security purposes existing as of the date of this Decision, that are consistent with the criteria of paragraph 3, footnote 5, and footnote 5&6 of Annex 2 to the AoA when the developing Member complies with the terms of this Decision.³

Notification and transparency

3. A developing Member benefiting from this Decision must:

- a. have notified the Committee on Agriculture that it is exceeding or is at risk of exceeding either or both of its Aggregate Measurement of Support (AMS) limits

(the Member's Bound Total AMS or the de minimis level) as result of its programmes mentioned above;

- b. have fulfilled and continue to fulfil its domestic support notification requirements under the AoA in accordance with document G/AG/2 of 30 June 1995, as specified in the Annex;
- c. have provided, and continue to provide on an annual basis, additional information by completing the template contained in the Annex, for each public stockholding programme that it maintains for food security purposes; and
- d. provide any additional relevant statistical information described in the Statistical Appendix to the Annex as soon as possible after it becomes available, as well as any information updating or correcting any information earlier submitted.

Anti-circumvention / safeguards

- 4. Any developing Member seeking coverage of programmes under paragraph 2 shall ensure that stocks procured under such programmes do not distort trade or adversely affect the food security of other Members.
- 5. This Decision shall not be used in a manner that results in an increase of the support subject to the Member's Bound Total AMS or the de minimis limits provided under programmes other than those notified under paragraph 3.a.

[document continues . . . followed by annex]

ANNEX Required documentation

[Developing Member's name]

General information

1. Factual information confirming that DS:1 notifications and relevant supporting tables for the preceding 5 years are up-to-date (e.g. date and document details)
2. Details of the programme sufficient to identify food security objectives and scale of the programme, including: <ul style="list-style-type: none"> a. Name of the programme b. Traditional staple food crop(s) covered c. Agency in charge of implementation d. Relevant laws and regulations e. Date of commencement of the programme f. Officially published objective criteria or guidelines
3. Practical description of how the programme operates, including: <ul style="list-style-type: none"> a. Provisions relating to the purchase of stocks, including the way the administered acquisition price is determined. b. Provisions related to volume and accumulation of stocks, including any provisions related to pre-determined targets and quantitative limits c. Provisions related to the release of stocks, including the determination of the release price and targeting (eligibility to receive procured stocks)
4. A description of any measures aimed at minimizing production or trade distortive effects of the programme
5. Statistical information (as per the Statistical Appendix below) [see slide presentation]
6. Any other information considered relevant, including website references

"World trade: Baling out of Bali," *Economist*, 9 Aug 2014, p.54-5



FOR THE first half of 2014 officials at the WTO had a spring in their step. In December 2013 its 159 members, meeting in Bali, had struck a “trade facilitation agreement” (TFA)—a pledge to cut red tape at customs posts around the world. It was the first big win of the Doha round, a 13-year slog to bring down trade barriers. But on July 31st, just before ratification, India withdrew its support, prompting the deal’s collapse. Some Indian concerns with the latest round of trade talks are valid; but its actions raise existential questions for the WTO.

Developing countries had the most to gain from the TFA. According to the Peterson Institute for International Economics, in Washington, DC, it would create 21m jobs, almost all in poor countries. Even such a limited bargain, which does not cut tariffs, would boost developing-country GDP by \$523 billion. India, among a handful of countries which receives help from the WTO to boost its trade, would have seen large payoffs.

At first glance its volte-face seems surprising. The deal was negotiated by India’s previous, protectionist-minded government, yet it was the relatively business-friendly administration of Narendra Modi that scuppered it. In truth, it was never clear if India’s farming policies could be compatible with any WTO deal.

Under the organisation’s rules, trade-distorting subsidies to farmers in a developing country cannot exceed 10% of the total value of its harvests. But under a new food-security law, India is bringing in a \$4 billion-a-year scheme to provide cheap food for 800m people; and the minimum support prices the government offers to farmers, which for rice have more than doubled since 2001-02, will continue rising. If these measures breach the 10% limit, India would be open to a WTO challenge. The government insists it will not sacrifice food security on the altar of a trade deal.

In December, before India’s elections, the WTO tried to accommodate its demands with a “peace clause” that would have made the food-security programme immune from challenge for four years. But the new government was unsatisfied with the fudge, worried that come 2017 it would have little bargaining power to get a permanent exemption.

India’s hardball tactics will hurt a country struggling to shake off its protectionist reputation. Of 95 countries tracked by the World Bank in 2013, India’s exports-to-GDP ratio was 19th from bottom. Agricultural protection is high. In 2012 the EU, rightly scorned for its own farm policies, spent the equivalent of 0.73% of GDP on agricultural support. India’s 1.15 trillion rupees (\$18.8 billion) spending on food subsidies touches 1% of GDP—and has doubled since 2009. Even that is before counting subsidies to farmers for fertilisers, tractor fuel and the like.

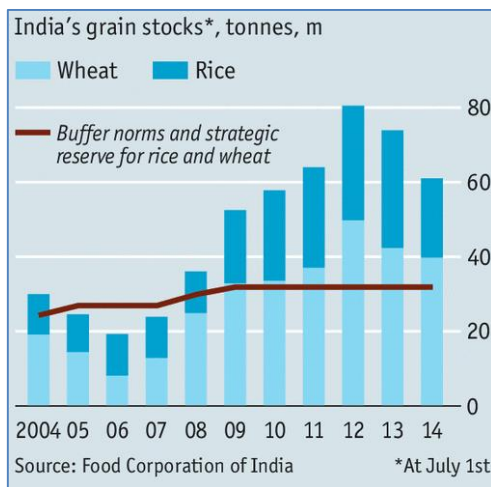
Arvind Subramanian of the Peterson Institute argues that India has been let down by agreements made during the

Uruguay round of trade talks that finished in the mid-1990s. At that time, rich countries were allowed to keep many protectionist policies in return for promising to reduce them progressively. India, which was deemed not to subsidise domestic agriculture at the time, was thus left with stricter limits on supporting farmers, even as it lowered its import tariffs.

The WTO could help out. The reference prices for commodities that it uses to measure handouts to producers date from 1986-88, which has the effect of exaggerating India's protectionism. Rich countries are loath to update the reference prices, lest it open the floodgates for all sorts of other quibbles.

India could do some things to help itself. Three things stand out. First, it could exploit another historical legacy of the Uruguay deal. It has been a more enthusiastic tariff-cutter than that deal required: it is free, for example, to raise the tariffs on vegetables from 30% to more than 100%. A commitment to keeping such tariffs low, or cutting them further, could form part of a deal whereby the WTO turns a blind eye to other subsidies even beyond 2017.

Second, India's food-security law need not lead to increases in rice and wheat purchases. The government intends to buy more than 30m tonnes of rice in the year from October, a 13% rise on the last haul. But its rice reserves exceeded 21.2m tonnes in July—over twice the recommended buffer stock (see chart, grain stocks). Stores get so bloated that grain threatens to spoil and bureaucrats dump it on the world market: India is the world's largest exporter of rice. To help poor farmers, India could instead focus on producer subsidies that are not linked with levels of output, such as cash transfers. The WTO finds this sort of help more palatable.



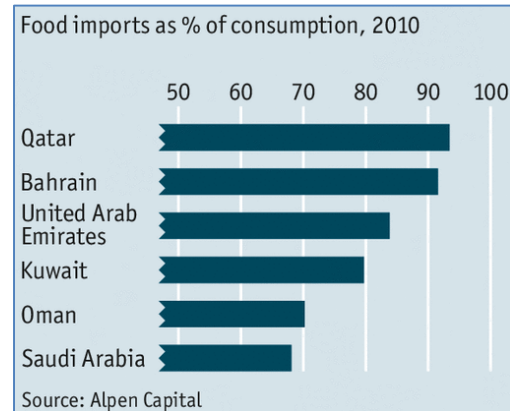
Third, it could phase out minimum support prices, which tend to favour bigger, richer farmers (and which 62% of Indian farmers do not even know exist). With the money saved, it could focus on subsidising grain sales to India's poor. No-one objects to using state funds to subsidise consumption, at least not on trade grounds.

"Food security in the Gulf: How to keep stomachs full," *Economist*, 22 Feb 2014, p. 30

Gulf Arabs are debating how best to feed themselves
AN EMIRATI in a white dishdash enthusiastically demonstrates the hydrophobic sand made by his company, DIME. Adding a layer of the sand under the topsoil stops water from leaching away, making it easier to grow crops in arid climates or in water-scarce lands such as those of the United Arab Emirates (UAE).

Agricultural entrepreneurs reckon that such innovations could allow the country to grow more of its own food.

The Gulf countries have long been preoccupied by the question of how to feed their people. Turmoil in the Arab world since 2011 has spiced up such concerns, which are further sharpened by a rise in the price of staples since 2009 and memories of a threatened 1970s grain embargo. The region's population is expected to grow by 40% between 2010 and 2030. Some Gulf countries import as much as 90% of their food (see chart, food imports).



Their governments have been unsure of the best way to keep everyone fed—and content. Qatar reportedly declared that it would produce 70% of its food at home by 2023, by adopting new technologies of desalination and hydroponics. That idea was soon dropped. Saudi Arabia, with the busiest farm sector among the six countries of the Gulf Co-operation Council, scaled back wheat grown by irrigation because it was draining non-renewable aquifers.

Heavy reliance on imports is problematic when countries such as Argentina suddenly restrict their exports in response to rising prices. Buying farmland in countries such as Sudan, Tanzania and Pakistan is another Gulf ploy. The UAE and Saudi Arabia are among the top ten investors in land abroad, according to Land Matrix, a body that tracks such deals. But this has drawbacks, too. Getting big projects off the ground in places that lack infrastructure is tricky. And Gulf states who fund them have sometimes been accused of being neocolonial.

Many of the region's rulers are now considering investing in food companies abroad, often in more developed countries. The UAE's Al Dahra Agriculture, which works closely with the government and owns land abroad, recently bought eight farm companies in Serbia for \$400m. It has also invested in an Indian rice producer. In addition, countries like Saudi Arabia are looking at ways of keeping strategic food reserves.

Gulf rulers may end up following a mixture of such strategies to fill their peoples' stomachs. They should at least be commended for grappling with the problem, says a regional food expert. Poorer and hungrier Arab countries, like Egypt and Yemen, are far less willing to address it.

Economics of Food Security through Stabilization

For some basic economics on food security through stabilization see reading:

Herrmann, R., K. Burger and H.P. Smit, International Commodity Policy: A Quantitative Analysis, chapter 2, "The Economics of stabilization: A historical survey", Routledge, 1993.

7. SPS AND TBT AGREEMENTS

Sanitary and Phytosanitary measures and Technical Barriers to Trade are domestic regulatory measures whose objectives are intended to meet some social policy objective rather than to serve as a limitation on market access. Given that such measure can have an equivalent effect as a trade barrier, disciplines are required to prevent their misuse toward that end. The WTO Agreements on SPS and TBT are the rules that seek to provide a balance between a government's right to regulate markets, for a variety of social policy reasons, and disciplines to prevent limitations on market access.

UNDERSTANDING THE WTO: THE AGREEMENTS - Standards and safety

Article 20 of the General Agreement on Tariffs and Trade (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.

Intro to the Sanitary and Phytosanitary Measures (SPS) Agreement

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?

The SPS Agreement sets out the basic rules for food safety and animal and plant health standards. 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.

Key Features

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.

Protection or protectionism?

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.

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.

Justification of measures

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.

International standards

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.

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.

Adapting to conditions

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.

Alternative measures

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. 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.

Risk Assessment

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.

Transparency

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.

A special Committee has been established within the WTO as a forum for the exchange of information among member governments on all aspects related to the implementation of the SPS Agreement. The SPS Committee reviews compliance with the agreement, discusses matters with potential trade impacts, and maintains close co-operation with the appropriate technical organizations. In a trade dispute regarding a sanitary or phytosanitary measure, the normal WTO dispute settlement procedures are used, and advice from appropriate scientific experts can be sought.

QUESTIONS AND ANSWERS

What are SPS measures? Does the SPS Agreement cover countries' measures to protect the environment? Consumer interests? Animal welfare?

The 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.

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).

Weren't a nation's food safety and animal and plant health regulations previously covered by GATT rules?

Yes, since 1948, national food safety, animal and plant health measures, which affect trade, were subject to GATT rules. Article I of the GATT, the most-favoured nation clause, required non-discriminatory treatment of imported products from different foreign suppliers, and Article III required that such products be treated no less favourably than domestically produced goods with respect to any laws or requirements affecting their sale. These rules applied, for instance, to pesticide residue and food additive limits, as well as to restrictions for animal or plant health purposes.

The GATT rules also contained an exception (Article XX:b) which permitted countries to take measures "necessary to protect human, animal or plant life or health," as long as these did not unjustifiably discriminate between countries where the same conditions prevailed, nor were a disguised restriction to trade. In other words, where necessary, for purposes of protecting human, animal or plant health, governments could impose more stringent requirements on imported products than they required of domestic goods.

In the Tokyo Round of multilateral trade negotiations (1974-79) an Agreement on Technical Barriers to Trade was negotiated (the 1979 TBT Agreement or "Standards Code"). This agreement was not developed primarily for the purpose of regulating SPS measures, but it covered technical requirements resulting from food safety and animal and plant health measures, including pesticide residue limits, inspection requirements and labelling. Governments, members of the 1979 TBT Agreement, agreed to use relevant international standards (such as those for food safety developed by the Codex) except when they considered that these standards would not adequately protect health. They agreed to notify other governments, through the GATT Secretariat, of any technical regulations that were not based on international standards. The 1979 TBT Agreement included provisions for settling trade disputes arising from the use of food safety and other technical restrictions.

Intro to the Technical Barriers to Trade (TBT) Agreement

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.

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.

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.

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.

How to distinguish a SPS from a TBT measure?

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.

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.

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.

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.

How do governments and the interested public know who is doing what?

The transparency provisions of the SPS Agreement are designed to ensure that measures taken to protect human, animal and plant health are made known to the interested public and to trading partners. The agreement requires governments to promptly publish all SPS regulations, and, upon request from another government, to provide an explanation of the reasons for any particular food safety or animal or plant health requirement.

All WTO Member governments must maintain an Enquiry Point, an office designated to receive and respond to any requests for information regarding that country's SPS measures. Such requests may be for copies of new or existing regulations, information on relevant agreements between two countries, or information about risk assessment decisions.

Whenever a government is proposing a new regulation (or modifying an existing one) which differs from an international standard and may affect trade, they must notify the WTO Secretariat, who then circulates the notification to other WTO Member governments (over 700 such notifications were circulated during the first three years of implementation of the SPS Agreement).

Does the SPS Agreement restrict a government's ability to establish food safety and plant and animal health laws? Will food safety or animal and plant health levels be determined by the WTO or an international institution?

The SPS Agreement explicitly recognizes the right of governments to take measures to protect human, animal and plant health, as long as these are based on science, are necessary for the protection of health, and do not unjustifiably discriminate among foreign sources of supply. Likewise, governments will continue to determine the food safety levels and animal and plant health protection in their countries. Neither the WTO nor any other international body will do this.

The SPS Agreement does, however, encourage 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.

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.

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

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.

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?

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.

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?

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.

Does the SPS Agreement require countries to prioritize trade over food safety, or animal and plant health?

No, 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.

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.

Can national food safety and animal and plant health legislation be challenged by other countries? Can private entities bring trade disputes to the WTO? How are disputes settled in the WTO?

Since the GATT began in 1948, it has been possible for a government to challenge another country's food safety and plant and animal health laws as artificial barriers to trade. The 1979 TBT Agreement also had procedures for challenging another signatory's technical regulations, including food safety standards and animal and plant health requirements. The SPS Agreement makes more explicit not only the basis for food safety and animal and plant health requirements that affect trade but also the basis for challenges to those requirements. While a nation's ability to establish legislation is not restricted, a specific food safety or animal or plant health requirement can be challenged by another country on the grounds that there is not sufficient scientific evidence supporting the need for the trade restriction. The SPS Agreement provides greater certainty for regulators and traders alike, enabling them to avoid potential conflicts.

The WTO is an inter-governmental organization and only governments, not private entities or non-governmental organizations (NGOs), can submit trade disputes to the WTO's dispute settlement procedures. NGOs can, of course, make trade problems known to their government and encourage the government to seek redress, if appropriate, through the WTO.

Membership to the WTO implies governments agree to be bound by all multilateral rules in the WTO agreements including the SPS 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.

In a dispute on SPS 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.

TRADE DISPUTES AND CASES AT THE WTO: SPS AND TBT CONCERNS

"Standardization and International Food Trade", by F. Veggeled

Norwegian Agriculture: Status & Trends, 2003, Center for Food Policy, NILF, p. 111-12

Due to the establishment of the WTO in 1995, international standards received an important role in the regulation of international trade. The WTO Agreements on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and Technical Barriers to Trade (TBT Agreement) 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. In the following, I will discuss the relationship between the WTO and the UN's *Codex Alimentarius* Commission (Codex), and briefly analyze the importance of this relationship for the international food trade.

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.

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.

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? I will discuss these questions 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).

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.

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.

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.

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.

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.

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.

The link between the WTO and international standards has helped to create a new situation for such standardization bodies as Codex. Their activities are receiving 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. ♦

"Fare trade", *The Economist*, May 15, 1997, 20

Food safety quarrels will blow a hole in free trade unless governments put more trust in science, and in consumers

Some arguments about food safety can seem paltry. But people in many parts of the rich world worry more than they used to about the safety of what they eat. Europeans have been spooked by the UK's mad cows, Americans by the rising incidence of food-borne illnesses. It is not uncommon for politicians to declare that "when children reach for a piece of food, parents deserve to have peace of mind". This is true, but there is a problem. The problem is that fears about food safety give trade protectionists a wonderful opportunity to cheat.

Fair is foul when fowl is fare

When a government bars imports of blue jeans or photographic film it is pretty obviously acting as a simple protectionist. But the true motives of a government that says it is barring imports in order to stop people feasting on unclean fowl, or on meat stuffed with synthetic growth hormones, or maize that has been modified by frightening new technologies, are harder to discern. In such cases—each of them at present the subject of a quarrel between the US and EU—a lot of people who accept the general case for free trade also see a case for legitimate exceptions. The question, given that no trade loophole ever goes unabused, is how to sort the legitimate exceptions from the illegitimate.

The rules of the World Trade Organisation say that a government may bar imports to protect the life or health of humans, animals and plants—so long as this is based on scientific evidence and does not discriminate against foreign goods just because they are foreign. Since the advent of the WTO it has become a little harder to cheat, because if one government suspects another of bodging the science it can now take the dispute to arbitration. In one of its first such rulings, the trade body is poised to announce that there is no apparent health risk in beef produced with synthetic growth hormones, and that Europe's 8-year-old ban on the import of such animals is an unfair trade barrier.

This is a fine start, but the new mechanism is not enough on its own to eliminate bogus claims about unsafe food. That requires a change of heart by governments. Europe can surely muster vets to say in an appeal that hormone treatment is safe if it is properly controlled, but that it is hard to control. And if the vets fail, politicians will weigh in soon enough to say—a truly weasel position this one—that even if the beef is safe, it arouses public fears, which should be listened to as attentively as the scientists are. The next bad step will be to say that the WTO's test is wrong: instead of the importer having to prove that a product is dangerous, let the exporter show that it is safe.

These arguments weaken support for trade. Indeed, few things are likelier to give free trade a bad name than to have it associated with the foisting on consumers of potentially unsafe food. If a food product is clearly dangerous, no government should be compelled for trade reasons to put it on sale. The only cause for optimism is that few of the present disputes involve products of that sort. In the cases of hormone-treated beef and genetically engineered maize, the scientific consensus is that they are safe, and national governments should be brave and honest enough to say so. In a few—chicken treated in chlorine, arguably—there is genuine uncertainty. But in such cases, why not just label the chickens and let the consumer choose? ♦

"Food safety fears 'used as excuse to ban imports'", by W. Barnes, *Financial Times*, Apr 6, 2004, p. 7

Stringent, often excessively strict, hygiene standards are increasingly being used by rich countries to block food imports from developing economies, according to researchers in Thailand, India and Australia. By exploiting popular fears of tainted food and by using ultra-sensitive testing technology importing countries are able to bypass international free trade agreements, said Professor Bhanupong Nidhiprabha, of Thammasat University's economics faculty, and a researcher studying safety standards in the food trade. "Rich countries can draw up arbitrary safety standards then ban imports saying it is their sovereign right," the professor said. The leading 10 food producers are all developing countries, China is number 10, and the main markets are the EU, US and Japan.

The recent bird flu scare was manna for Western safety officials, said a trade negotiator at the Thai commerce ministry. "The rich food importers are getting better at manufacturing safety hazards – real and imagined." The UN Food and Agriculture Organisation reported recently that one-third of global meat exports (6 million tonnes) were threatened by outbreaks of bird flu and mad cow disease. If current bans were extended to the end of the year trade worth up to \$10bn would be lost, it added. It is widely, if reluctantly, accepted by food exporters that politicians will invoke extreme safety measures when tackling "headline" viruses, even if the scientific consensus is that, in the case of bird flu, cooked chicken is safe.

The way the EU banned prawn and chicken imports after detecting traces of nitrofluran and chloramphenicol, prohibited veterinary drugs, was disturbing to Asian officials. That scare damaged sales, particularly from Thailand, the world biggest exporter of farmed shrimp. Asian officials claim that extremely sensitive machines developed in Europe can detect antibiotics at lower levels than sometimes found in European food and even sometimes in nature. "Our food industry is facing a critical situation. Food is tested for chemical in parts per billion – we're getting to the point where they'll find something undesirable in everything if they want to," said the director of planning and research at the Food Institute of Thailand. Europe had a large and jealous chicken industry, he said.

The WTO says that "sanitary" bans must be justified, but that still leaves much room for manoeuvre. A World Bank study found that trade in cereals and nuts would increase by \$12bn if all 15 importing countries adopted the international Codex standards for aflatoxin contamination, which is produced by a cancer-linked mould, than if they all abided by tougher EU requirements.

Some safety measures appear exotic. Australia demand that imported chicken meat be heated to 70 degrees Celsius for 143 minutes, creating "poultry soup" according to one exporter. Redirecting rejected food is tricky: following their travails in Europe six Asian countries that have targeted the US for shrimp exports are now fighting charges of food dumping. One EU trade official said that food disputes would become increasingly bitter partly because developing countries were also slapping "safety" bans on foreign imports. He cited China's tit-for-tat food dispute with Europe in 2002 and the Thai commerce ministry's current calls for safety restrictions on imported drinks and cosmetics. ♦

"Fight over genetically altered food", by S. Efron, *Intern'al Herald Tribune*, Mar 17, 1999, p. 4

In Japan where food is considered most delicious when eaten raw or as close to its natural state as possible, genetically manipulated food is seen as synthetic, unwholesome and definitely unappetizing. To blunt a nascent consumer rebellion, the Japanese government proposed labelling bioengineered food to give consumers the freedom to reject it. This alarmed the United States, which fears such a move could threaten its \$11 billion annual sales to Japan, the No. 1 market for US agricultural exports.

Beyond Japan, a truly global food fight is under way. The outcome of the regulatory, marketing and public perception battle that has been joined in Japan could have far-reaching effects on what US farmers plant next year, on the skyrocketing US-Japan trade imbalance and on the worldwide struggle between biofood promoters and foes.

At issue in the emotional political debate is how much to regulate and whether and how to label genetically modified organisms, known in biospeak as GMOs. These organisms are created when new genes – sometimes from another species – are introduced into a plant or animal to produce desirable traits, such as resistance to cold, pests, disease, spoilage or even a particular brand of herbicide.

While US farmers are quickly increasing the acreage planted with GMO seeds – to 40% or more of some crops – there is growing opposition in Europe, Japan and in some Third World countries on environmental, health, philosophical or religious grounds. The European Union has slapped restrictions on genetically modified plants and passed a law requiring GMO foods to be labelled.

Well-organized environmental groups are crusading against what they have branded "Frankenstein food," fanning doubts about the products from Iceland to New Zealand. Anti-GMO protests have been staged in the Philippines, India and Hungary, according to activists, who are flooding the Internet with virulent attacks on biofoods.

Not all countries are hostile to food altered by gene-splicing: GMO seeds reported have received a warm welcome in Russia, China and Argentina. And plenty of consumers have nothing against GMO foods so long as they know what is on the menu. 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 are now trying to set up a common labelling system. Prime Minister Jenny Shipley of New Zealand said earlier this month that consumers have a right to know whether their food contains GMOs.

Nevertheless, a heated battle broke out last month 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 being debated in Cartagena would paralyze international trade. The debate is by no means limited to food: Genetically modified material is being used in a wide range of products, from textiles to pharmaceuticals.

Yet it is food that seems to generate the more emotional response. Consumer advocates say that people must have the right to know – and thus reject – food that has been subjected to genetic "tampering." Biotech backers say that requiring such labels is tantamount to

branding demonstrably safe food as inedible would raise food prices for all consumers.

Proponents of bioengineering also say "genetically enhance" species are essential to generate the crop yields needed to nourish the world's exploding population and to reduce use of herbicides and pesticides. They say the foods have been exhaustively tested and demonstrated to be safe enough to pass muster with the US Food and Drug Administration and the Environmental Protection Agency, as well as international regulators.

Foes assert that long-term studies on the effects of eating GMO foods have been inadequate. They question the environmental risks of developing pest-resistant or chemical-resistant crops, and they fear that bionic organisms could crowd out native species.

A subtext in many countries is suspicion of scientific "miracles," new technologies and imperfect regulators, and the perception that the US biotech industry has been heavy-handed in trying to shove new foods down frightened consumers' throats, said Beth Burrows, president of the nonprofit Edmonds Institute in Edmonds, Washington, who attended the Cartagena conference.

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 here.

Availability of GMO foods in Japan has not led to acceptance. More than 80% of those questioned in a 1997 government survey said they had "reservations" about such foods, and 92.5% favored mandatory labelling.

Unease is beginning to translate into action. The city of Fujisawa, near Tokyo, has banned all GMO foodstuffs from its school lunches. A tofu maker has begun advertising its product as "recombinant-DNA-soybean free." And a number of powerful food-buying co-ops – which claim nearly 20 million members, or about 1 in every 6 Japanese – are trying to screen out or label GMO foods.

Mr Kowaka's video with the Colorado potato bug footage has sold about 1,000 copies at \$130 each. Titled "The dangers of recombinant-DNA food," it is being shown at lectures and gatherings by consumer, environmental and religious groups, he said. "It seems Americans only care about the quantity of their food, but Japanese are concerned about the quality," Mr Kowaka said. "Nobody wants to eat this stuff." ♦

"Sticky labels",

The Economist, Apr 29, 1999, 79-80

Applying labels to novel foods sounds like an easy way to balance the opposing wishes of producers and consumers. The reality is more complex

WHEN it comes to genetically modified food, as with so many things, the UK and US are two countries divided by a common language—this time written in fine print on a can of beans. Along with the rest of the EU, the UK has decided that any food that bears tell-tale traces of genetic engineering should be labelled as such, so that consumers can choose whether they wish to savour the fruits of new technology. The US, on the other hand, reckons that if a genetically tweaked tomato or soybean has lost none of its normal nutritional value and gained nothing toxic or allergenic in the process, a label is not required, since the

souped-up version is “substantially equivalent” to the garden variety.

Such differences of opinion, rooted in national cultures, are not surprising in a business as complex as biotechnology. And on many issues, countries can simply agree to disagree. But genetically modified foods are the stuff of international trade, not just domestic policy. And the US, which last year exported 9m tonnes of mixed (modified and unmodified) soyabeans to the EU, takes great interest in how its trading partners handle such commodities.

On April 28th representatives of the US, the EU and 36 other countries gathered in Ottawa to discuss the labelling of genetically modified foods at a meeting of a little-known body called Codex Alimentarius. Codex was established by the Food and Agriculture Organisation and the World Health Organisation in 1962 to recommend minimum standards on food safety that all countries should follow. According to the head of the Community Nutrition Institute in Washington, DC, Codex was a dull operation until the World Trade Organisation (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 defies Codex’s scientific assessment that such meat is safe, and so constitutes, says the WTO, an illegal barrier to trade.

Trade rows have made recent Codex committee meetings far livelier, especially over genetically modified foods. On the table in Ottawa is a draft recommendation for mandatory labelling of processed foods containing genetically modified organisms (GMOs), which largely follows the EU approach. American trade officials, who have complained about the EU rules since they were first formulated in 1997, are keen that they should not spread further by becoming Codex standards. Australia, New Zealand and Brazil, which once supported the American position, have since back-tracked. The argument is aggravated by lobbies such as Consumers International, who want labelling to cover any foodstuff that has its origins in genetic engineering, even if it lacks all trace of engineered DNA or protein.

American trade officials, and some companies in the GMO business such as Monsanto, believe these demands are impractical, unfair and unnecessary. They argue that there is no scientific evidence to suggest that the current crop of genetically modified foods is any less safe to eat than traditional commodities. Yet as Geraldine Schofield, head of food regulatory affairs at Unilever, points out the push for labelling in Europe is as much about freedom of choice as about food safety (though European farmers’ desire for protection may also play its part). There are already national review bodies to ensure that genetically modified food is safe before it comes to market. Admittedly, many consumers are unaware of this approval process and some lobbyists argue that it should be tougher. But just as consumers choose to buy “dolphin-friendly” tuna or kosher meat, they may prefer to avoid genetically modified foods because of their personal views on, say, the environment. Surely it is only fair to give them the tools to do so?

Buyer beware

A Eurobarometer survey conducted across the EU last year 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.

This is in contrast to America, where consumer surveys give mixed views on the desire for labelling. As Thomas Hoban, a food sociologist at North Carolina State

University, points 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 genetically modified crops scarcely occur to Americans, whose landmass is big enough to separate its agricultural heartland from rural playgrounds. And though Americans generally mistrust government meddling, they have great confidence in the country’s food and drug regulatory body, the FDA, to ensure that all food, genetically modified or not, is safe.

Even so, Steve Suppan, director of research at the Institute for Agricultural Trade Policy, a public interest group in Minneapolis, says that many Americans want more information about genetic modification on the label; and they also want 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, have even sued the FDA. Others, like Mr Suppan’s group, are busy lobbying American trade officials, at Codex and elsewhere, for America to bring itself into line with Europe’s more cautious stance on GMOs. Yet such critics find it hard to catch the public’s attention, whereas their European counterparts are often front page news—particularly in Britain, where faith in food safety has already been shaken by bovine spongiform encephalopathy (“mad cow disease”) and a recent fuss over the effects of genetically modified potatoes on experimental animals.

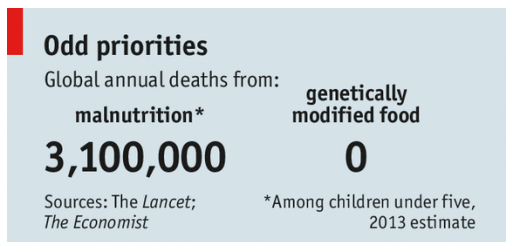
So it is hardly surprising that Europeans want to make up their own minds about buying genetically modified foods. But quite apart from looming trade disputes with America, labelling is neither an easy nor a cheap fix. Hardly any processed food these days is 100% GMO-free. Even when firms such as Unilever manage to find a source of, say, non-modified soya to put in their products, it tends to get contaminated with genetically modified 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 points out, this is not a premium that customers are ready to pay, especially since they see no obvious benefits from current genetic engineering. Worse, methods and acceptable “contamination” levels have yet to be standardised in Europe.

Attitudes may change when the next wave of genetically modified foods, which have been engineered for consumer-friendly traits such as higher vitamin content, emerge from the laboratory. Some industry analysts reckon this may be the only way out for companies stuck in European consumers’ bad books. One of the first products, DuPont’s high-oleic soyabean, which yields an oil lower in artery-clogging saturated fats, is now awaiting regulatory approval in Europe. Producers will gladly keep such crops “identity-preserved” and clearly labelled, because their value depends on it. So even though labelling is currently controversial, there may one day be a technical fix after all.

“Genetically modified food: Vermont v science”, *Economist*, 10 May 2014, p. 34-5

A little state that could kneecap the biotech industry Repeated studies have found no threat to human health from GM ingredients, which are found in up to four-fifths of processed food in US shops; nor have any ill effects appeared during the 20 years in which Americans have been eating the stuff. Indeed, ever since the genetically

engineered Flavr Savr tomato reached supermarket shelves in 1994. Americans have taken a more relaxed approach to the technology than much of the rest of the world. Some 64 countries, including the 28 of the European Union, require labelling. The US does not, but that is changing.



In 2012 and 2013 GM-labelling initiatives in, respectively, 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. Last year Maine and Connecticut passed labelling laws, though both have trigger provisions stopping them from taking effect until nearby states follow suit. Generic polling finds 90% or more of Americans in favour of compulsory labelling. Over a million have signed petitions urging the federal Food and Drug Administration (FDA), which oversees national food-labelling rules, to mandate labelling of GM food. (In 1992 the FDA ruled that since there was no material difference between GM and non-GM food, labelling was not required.)

But most campaigners downplay the wildest claims about Frankenfoods, preferring to emphasise consumer choice, which is hard for GM food producers to argue against. If they lobby to suppress information, consumers may wrongly assume they have something to hide. Yet if the government requires labels, consumers may assume that this is an official health warning, even if it isn't.

Europeans shunned GM food after labels were introduced, and many European supermarkets declare themselves (not entirely accurately) GM-free. The same could happen in America. "The activists did a great job of scaring people about their food sources," sighs Norm McAllister, a farmer (and Republican state senator) who grows GM corn in Vermont.

The fatuous fear of Frankenfoods

Genetic modification is one of the most promising tools for feeding a global population that will one day hit 9 or 10 billion. Yet its development depends partly on consumers in rich countries, since the 842m malnourished people don't have much spare cash. As with other technologies, the techniques honed in rich countries tend eventually to spread to poor ones. But if greens scare Americans into rejecting GM food entirely, that benign process may be interrupted.

Vermont (population 626,000) is small enough that food firms could withdraw their products from its shelves at no great cost. But dozens of states, including California, are considering labelling bills. If they pass, the US would have a patchwork of labelling laws, creating a financial and logistical headache. Food firms would have to separate GM from non-GM ingredients, disrupting the whole supply chain. Prices would rise for everyone.

Aware of the threat, the food industry is seeking federal help. The Grocery Manufacturers Association, an industry body, has convened 35 food organisations to lobby for a law that would oblige the FDA to test all new GM traits before they reach the shelves, and to finalise guidelines for a voluntary labelling regime. Crucially, this would preclude state laws that mandate labelling, like Vermont's.

The organic lobby, naturally, cries foul. But, points out Greg Jaffe of the Centre for Science in the Public Interest, an advocacy group, in other countries compulsory labelling has tended to restrict consumers' choice; try finding GM products in European supermarkets. As things stand, those who want to avoid GM foods can buy organic products. Moreover, state laws are often badly written; the California and Washington initiatives contained impossible-to-attain "zero-tolerance" provisions that could have led to endless lawsuits.

Retailers and some manufacturers are already shifting with the wind. Whole Foods, a supermarket for the rich, plans to introduce GM labelling for all products by 2018. Ben & Jerry's, a Vermont-based maker of pricey ice-cream, plans to source all its products with non-GM ingredients by the end of the year, as it already does in Europe. Even Walmart, the US's largest food retailer, is reported to have softened its stance on labelling. A legal challenge to Vermont's law looks likely, possibly on free speech grounds. The bill provides for a defence fund, partly filled by taxpayers. "A \$1m lawsuit is nothing to California," says David Zuckerman, a state senator and organic farmer who supported the bill, "but for little Vermont that would be significant." ♦

"GMO: Food fight", *Economist*, 14 Dec 2013, p. 53-4

Debate over GM foods exposes concerns

Public unease about GMO is common even in China. Alongside concerns about food safety, it has taken on a strongly political hue. Chinese anti-GM activists often describe their cause as patriotic, aimed not just at avoiding what they regard as the potential harm of tinkering with nature, but at resisting control of China's food supply by America through US-owned biotech companies and their superior technology. Conspiracy theories about supposed US plots to use dodgy GM food to weaken China abound online. "America is mobilising its strategic resources to promote GM food vigorously," its narrator grimly intoned. "This is a means of controlling the world by controlling the world's food production."

China already uses plenty of GM products. More than 70% of its cotton is genetically modified. Most of the soyabbeans consumed in China are imported, and most of those imports are GM (often from the US). The technology is widely used for growing papayas. The government wants to develop home-grown GM varieties and has spent heavily on research, eager to maintain self-sufficiency in food. Officials see GM crops as a way of boosting yields on scarce farmland.

In 2009 China granted safety certificates for two GM varieties of rice and one of maize. This raised expectations that it might become the first country in the world to use GM technology in the production of a main staple. But further approvals needed for commercial growing have yet to be granted. To the consternation of GM supporters, the safety certificates for the rice are due to expire next August.

Public anxiety about food safety soared in recent years thanks to a series of scares in China. Of 100,000 respondents to an online poll in November, nearly 80% said they opposed GM technology. Nevertheless, a fightback has begun. Since the change of China's leadership a year ago, supporters of GM food inside the government and among the public have begun fighting back. In October Chinese media reported that 61 senior academics, in a rare concerted effort, had petitioned the

government to speed up the commercialisation of GM crops. The Ministry of Agriculture was also said to be preparing a new public-education campaign on the merits of GM food (it issued a swift rebuttal of anti-GMO remarks, saying GM foods certified in China were just as safe as any other food). ♦

"Crop resistance: why a transatlantic split persists over genetically modified food?", by J. Grant and R. Minder

Financial Times, 1 Feb 2006, p. 11

A ruling in a long-standing trade complaint brought against the EU by the US, Canada and Argentina will be important in US attempts to persuade the developing world that GM products are both safe and beneficial.

Three-quarters of processed foods sold in the US contain GM organisms. But in Europe, GM food is absent from supermarkets and remains a subject of much consumer suspicion. A study produced for the International Food Information Council last year showed that fewer than 0.5 percent of US consumers identified food biotechnology as a safety concern. In contrast, a Eurobarometer opinion poll across the 25-nation European Union found that 54% considered GM food to be dangerous. It is a transatlantic divide and a landmark trade dispute between the two regions.

The WTO is about to rule in a case brought against the European Union in 2003 by the US, Canada and Argentina, which claim that an EU moratorium on the approval of GM foods and crops, introduced in 1998, lacked scientific basis and created an unfair trade barrier. The case has significance beyond the moratorium, which the EU argues has in any event become all but obsolete following its enactment of stricter labelling and tracing legislation and the limited resumption of product approvals in May 2004, when the EU gave clearance to a GM corn developed by Syngenta.

Instead, the ruling will be important in efforts by the US to prevent EuroGM concerns from spreading, especially to Asia and Africa. David Bullock, professor of agricultural and consumer economics at the University of Illinois, says with a neatly chosen metaphor: "The US is trying to nip things in the bud."

GM crops – first grown in the three nations that brought the WTO case – now cover 90m hectares (222m acres) in 21 countries. Summing up the challenge for US farmers – for whom exports already represent one-quarter of their cash receipts. – Richard Crowder, the chief US agricultural negotiator, says: "As incomes rise in the rest of the world and our market further matures, trade will be ever more important for agriculture."

Once the first commercial amounts of GM soyabeans, cotton and maize were planted in 1996, US farmers have become increasingly reliant on the advanced crop types produced through genetic modification. The technology involves selecting specific genes from one organism and introducing them into another to produce traits – such as drought-resistance or resilience against pests – that can increase farmers' harvests. About 85% of soyabeans, 76% of cotton and 45% of maize planted in the US in 2004 were of GM varieties, according to the Pew Initiative on Food and Biotechnology.

In Europe, few politicians are willing to endorse GMOs – and some even avoid condemning the burning of trial fields by anti-GM activities such as José Bové in France. Patrick Rudelsheim, a specialist on European GM regulation who supervised field trials for several leading

GM companies, says: "A field destruction in itself is a serious investment loss, but perhaps more depressing is the subsequent lack of support from the authorities. It's often pure judicial *laissez faire*."

At the retail level, Europe's GM clock has arguably been turned back in the past decade. The little GM food that was available, notably tomato puree sold in the UK by the J Sainsbury and Safeway chains in 1996, was subsequently removed from the shelves amid a wider food safety debate. Today, one European supermarket executive says, it would be "almost commercial suicide" to sell GM food.

Ragnar Löfstedt, professor in risk management at King's College London, identifies three main reasons for Europe's aversion to GM food. First, he argues, Americans' trust in their Food and Drug Administration 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 has avoided food scandals on the scale of the "mad cow" crisis of the 1990s, which led to a decade-long ban on British beef exports. That coincided with the first GM crop trials and brought a "knee-jerk reaction" by the EU in its decision to stop approving new types of GM products in 1998.

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

Europeans have therefore remained sceptical about whether GMOs are harmless, notably when it comes to growing GM crops alongside traditional produce, where strains can cross-pollinate. US politicians and GM scientists argue that the burden of proof lies the other way, namely to find evidence that GM crops cause harm. Jonathan Ramsey, a Monsanto spokesman in Europe, says European consumer perceptions will shift, adding that people had "reflected on the scare stories that were around 10 years ago on super weeds and fish genes in tomatoes and have come to see that this was actually scare mongering".

Yet the real ideological – and commercial – battleground for GMOs is increasingly 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 debate has also been intense in countries such as Zambia and Ethiopia. The US has 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. Officials have pointed to agricultural progress in countries such as Brazil, which almost doubled its GM crops last year to 9.4m hectares, the fastest growth rate worldwide.

However, many environmental and consumer groups contest those benefits. In a report last month focusing on Monsanto, Friends of the Earth underlined some of the paradoxical aspects of GM farming in the developing world – including an alleged increase in the use of herbicides to combat weeds that have grown tolerant to Roundup Ready soyabeans, a leading GM crop. The result, according to Charles Margolis of the Washington-based Center for Food Safety, a non-profit advocacy group, is that "companies like Monsanto are now telling these farmers to use really toxic chemicals. It's a joke."

In spite of such scepticism – and regardless of the WTO case – the US can point to signs that it is starting to win the argument on GM acceptance globally, according to recent statistics on the extent of GM crop plantings. A study produced last month by the non-profit International Service for the Acquisition of Agribiotech Applications and funded by the Rockefeller Foundation showed that developing countries have adopted GM crops at four times the pace of developed economies in the last decade. Of the 8m farmers growing such crops globally, 90% were located in developing countries. Acceptance of GMOs is receiving a further boost with the emergence of largely government-backed research into the technology in China – which is developing a strain of rice rich in vitamin A as well as a work in India and Iran, which joined the GM-growing club.

Experts say such development may have more effect than any WTO pressure on Europe to relax its opposition to GMOs. Even within the Vatican it is recognised that GMOs can have a role in reducing poverty. But the short-term prospects for GM farming remain unclear. Of the four countries that started or resumed GM crop production last year, three were EU members: Portugal, France and the Czech Republic. However, that has been countered by growing regional opposition to GMOs – 172 regional governments across Europe have sought or implemented bans on GM crops, according to Friends of the Earth, the environmental campaign group. At a national level, Switzerland's voters rejected GM crops in referendum last November. Maria Rauch-Kallat, health minister of Austria, which currently holds the EU's presidency, says she believes her country's "strict resistance" to GMOs will remain. "Like others in Europe, Austrians are very close to nature. Our vision of a good society is certainly not one where everybody is allowed to do whatever is technologically possible."

According to GM proponents, the first consequence of such resistance is that Europe is losing corporate investment. They cite Syngenta, which in 2004 started moving its biotechnology research headquarters from Britain 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, says "The industry has not given up on Europe but it has considerably scaled back." But the longer-term and more serious impact for Europe may lie beyond GMOs, in more sophisticated agribio technologies to develop modified foods with a particular health benefit – such as reducing the incidence of diabetes.

Some of that research is being carried out in Europe, including a project called Lipgene, involving 25 laboratories across Europe co-ordinated by Trinity College, Dublin, which is working on a linseed oil to contain fats that occur in fish oil and have cardiovascular benefits. But more advanced and large-scale efforts are under way in the US. Last month Kellogg, the cereal maker, said it would put in its baked products a type of soyabean oil developed by Monsanto that eliminates the need for hydrogenation, a process that normally creates harmful fatty acids.

Michael Fernandez, executive director of the Pew Initiative, says: "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." ♦

"European Union lifts GM food ban",
BBC news, 2004/05/19

A six-year moratorium on genetically modified food has been lifted by the European Commission. Commissioners backed a bid by Swiss-based Syngenta to sell Bt-11 sweet corn for human consumption. The decision fell to the Commission after EU governments failed to reach agreement on whether to lift the ban, which had been challenged by the US.

Anti-GM campaigners say the decision has little scientific backing and has no support among the people of Europe. "The European Commission is supposed to represent the interests of European citizens and the environment, but has chosen in this case to defend US farmers and narrow agro-business interests," said Greenpeace's Eric Gall.

Backers

But David Byrne, the EU's commissioner in charge of food safety, says the GM sweet corn has been 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 EU executive had pressed for an end to the moratorium, saying strict new traceability and labelling rules provide protection for consumers.

Last month, France, Portugal, Austria, Luxembourg, Greece and Denmark continued to oppose a lifting of the ban. Spain, Belgium and Germany abstained, while Italy, the UK, the Netherlands, Ireland, Sweden and Finland voted to approve it.

Sceptical consumers

The decision will be valid in all 25 EU countries for 10 years. The ruling allows companies to sell the GM sweet corn in tins, clearly labelled as a GM product, but growing the crop is still illegal.

Syngenta's Bt-11 is the first of about 30 such products awaiting approval. The European Commission last approved a genetically modified organism for sale in 1998.

The US has consistently challenged through the World Trade Organisation the European Union's reluctance to import and sell genetically modified crops and food.

Correspondents say that although the manufacturers may win the right to sell their products, convincing sceptical European consumers will be another battle altogether. ♦

"Europe gives GM seed green light",
BBC new, <http://news.bbc.co.uk>, 2004/09/09

For the first time, the European Union has approved a genetically modified seed for planting.

The European Commission's decision says the variety of maize developed by the Monsanto company can now be grown in any EU nation. Observers say a sudden switch to the crop is unlikely, not least because it can be grown only in warmer states. The maize, known as MON810, is modified to be resistant to the European corn borer, a pest.

In 1998 it was approved for use by the governments of Spain and France, and has been grown in Spain. Under European law, any seed which is approved in one EU

country is automatically approved in all the others. But the process of extending approval for MON810 beyond France and Spain was suspended for five years by the EU moratorium on new GM products. The moratorium was lifted in May this year, and approved by the Commission.

David Byrne, the European Commissioner for Health and Consumer Protection, said in a statement that the maize 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," he said.

Becky Price of research and campaigning group GeneWatch UK told the BBC that assessment of MON810 might be a contentious area. "When this was assessed back in 1998, all a company had to do was to present notification that the crop was 'substantially equivalent' to non-GM varieties," she said. "If they were applying now, they would have to supply data showing that the crop is substantially equivalent."

Beate Gminder, a spokeswoman for the Commission, 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 have 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 genetically modified crops into neighbouring fields of related plants - also known as "co-existence legislation" - an issue which several European governments are grappling with. "The problem is that only Denmark has established such legislation," said G. Ritsema of Friends of the Earth.

Symbolic seed

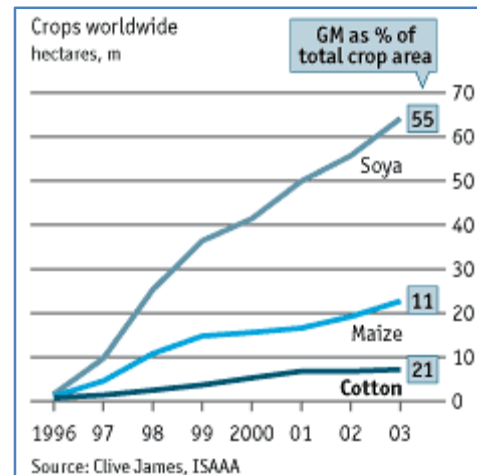
Governments can register an exception from the EC ruling on health and safety grounds, allowing a suspension of the legal right to plant within their borders - though they have to prove their case. "Some EU member states including some of the newly joined countries are sceptical about genetically modified food, and we will encourage them to protest," said Geert Ritsema.

An important issue which may prevent the adoption of MON810 is public opposition to GMOs, still strong in many European nations. Whatever happens with MON810, the symbolic significance of this development cannot be overstated; a continent which has led opposition to genetically modified agriculture is now, for the first time, allowing a GM crop to be planted throughout its territory. ♦

"Non-food GM: The men in white coats are winning, slowly", *Economist*, 7 Oct 2004

Non-food use of genetic modification is moving ahead, but it still has obstacles to overcome, and far to go
IF you are a stay-at-home European or Australian, it is quite possible that never, knowingly or not, have you eaten any genetically modified (GM) product. But, unknowingly, you may well be wearing one right now: GM cotton is widely grown. You may have been treated with a drug produced with the use of GM. Wide public support has enabled anti-GM zealots to win battles on the food front in Europe and elsewhere; and fear of losing trade deters GM in other countries that grow and export the stuff, even if they would readily eat it themselves. Yet, overall, opponents of GM are losing the war.

That might sound unlikely: this year's big GM news was not an advance but an inglorious retreat. Monsanto, a US agri-business that is the main commercial promoter of the technique, and thus the arch-villain for the anti-GM side, decided not to bring its GM wheat variety to market, not even in the largely GM-tolerant United States. Food is a special case. It is easy to shout "Frankenfood" and scare someone into taking no risks, real or imagined, with his bread or burgers; not so easy with his shirt. The war may go on in the supermarkets or cattle feed-lots, but the non-food uses of GM technology ensure that the technology is here to stay, and those uses are steadily multiplying.



At the microscopic level, bacteria are routinely modified to produce enzymes for use in industrial processes. Cotton is so far the only widespread non-food GM crop, but others are on the way. Researchers are modifying potatoes, even trees, to suit the paper industry; GM oilseed rape (canola) can make better detergents or lubricants. Sheep can be altered, as Australian scientists have done, to grow more and better wool. Both plants and animals can be altered to produce pharmaceuticals; the resultant "bio-pharming" is still in its infancy, but its commercial day will come. And a huge new use for GM crops is already under way: production of bio-fuel or bio-plastics, made from maize or sugar, say, rather than petroleum. The exhaust is not going to spray out deadly footloose Frankengenes (or any genes at all).

Not that the way ahead is clear. The spread even of non-food GM will be affected by the vagaries of public perception. You may be happy to fill up with GM-derived fuel, but remain uneasy about GM food. If so, anti-GM militants argue, you must say no to both: 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, that 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.

Applied to cotton, that argument has plainly carried little public weight. Cottonseed oil is in fact eaten, notably in margarine, but few people associate cotton with food. No such luck for any sort of grain. The argument will surely affect bio-fuel projects in Europe: such fuels may be acceptable, but not GM-based ones.

Yet, whatever the uncertainties, non-food GM is indeed going ahead, for all the propaganda against it, some solid, some arguable and some fictitious. It is quite true that Monsanto's GM seeds cost more than others, and that it tries to keep a grip on the use and supply of them; too tight a grip, say those who speak for third-world farmers. But it is not true, for instance, that its (or other people's) pest-resistant GM cotton has lower yields. A recent study in western India reported significantly higher ones. And,

yield apart, quite certainly this cotton can bring higher profits, because it needs far less spraying. A Chinese study of two cotton-growing provinces in 2001 estimated savings of \$250 per hectare (2.5 acres) in labour and insecticide—which, by the way but not by chance, also means far less poisoning of farmers by sprays.

The best answer to those who doubt GM's practical benefits comes not from researchers but farmers. On one (pro-GM) estimate, in 1997 the world grew 1.4m hectares of GM cotton; last year, 7.2m ha. In the US, which introduced it, by now 75% of cotton is GM. China authorised its commercial planting only in 1997; by 2001 there were 1.5m ha, 30% of the cotton area; last year 2.8m ha. India, the world's biggest cotton-grower, began with GM cotton only in 2002, and in 2003-04 planted less than 100,000ha. But in the new season that figure would treble, predicted a Monsanto joint-venture that already sells \$12m a year of seed there. The actual spread may well have been even faster.

In all three countries, those figures are the result of choices made by farmers, not by bureaucrats or supply companies. The anti-GM notion that third-world farmers have to be arm-twisted or deceived into GM planting is nonsense. If they can measure the results in renminbi or rupees, farmers will embrace GM.

So much for the notion that the only real gainer from GM crops is wicked, multinational Monsanto. In fact, on the seed-supply side, it has rivals. Swiss-based Syngenta, its big European competitor, is moving into GM cotton, through a deal signed in August with Delta and Pine Land, a US market leader already offering Monsanto versions. Though mostly under licence from Monsanto, its Indian competitors have recently produced GM cotton varieties of their own. China's Academy of Sciences developed its own varieties in the mid-1990s, and offers more than 20, adapted to varying climatic or soil needs.

The low-down on Roundup

Nor is it true that the whole thing is really a plot to sell Monsanto's Roundup herbicides, by hooking the farmer on crops modified so they can be safely sprayed with Roundup, but with nothing else. That may sound plausible of soya, the world's main GM crop, which is nearly all modified to be herbicide-tolerant. Similar GM cotton varieties indeed exist. But the main GM cotton is Bt cotton, named after a tiny bug, *Bacillus thuringiensis*, whose insect-fighting properties have been transferred (to several crops besides cotton) not to sell more herbicide, Roundup or any other, but to require less pesticide.

What is notable about GM cotton is how little has been altered. The sundry GM varieties are built to aid farmers, not textile mills. Resistant to pests, herbicides or both, the result is still cotton. Here is just a new way of producing the stuff.

Many other GM ideas, in the pipeline or farther off, will alter the product, as old-style breeding does. Sheep in future will grow not just more wool, but softer wool. Old flowers will get new colours or scents: a Melbourne company has already released purple GM carnations; in Indiana an academic is at work on the scent of roses. Lawn and golf-course grass will be tougher, trees more resistant to drought, or adapted to clean up contaminated soil.

Other shifts are already producing “the same old stuff”, but in novel ways. Pigs or indeed potatoes can produce human proteins for medical use (though none has yet received authorisation), foot-and-mouth vaccine can come from alfalfa, genes from enzyme-making bacteria can do the same job in tobacco, and useful new enzymes can be found and put into old bacteria. Researchers see

few limits, other than human timidity, to how far they can go.

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. Do not expect Canada or the Nordic countries to be shortly covered with GM pines; commercial use of GM trees in Europe is at least ten years off.

Likewise with starch. Papermakers use it—several tonnes are required per 100 of finished paper—both to bind the pulp fibres together and to “size” the surface, so you can print on it. In Europe and North America, the starch often comes from potatoes. But spuds produce two kinds of starch: amylopectin, which papermakers like, and amylose, which they dislike. In the 1990s the world leader in potato starch, AVEBE, a Dutch co-operative, developed a GM potato containing more amylopectin, less amylose, but was thwarted by the European Union, which forbade its marketing. AVEBE is now growing a new version, though it will be years before it can reach the market. Through a Swedish subsidiary, BASF, a German chemicals giant, also has created a high-amylopectin GM potato. The Swedish authorities gave permission for an experimental plot in 1999, and last April for large-scale planting. The company would love to grow its potato elsewhere in Europe, but EU consent is still required and that has not yet been forthcoming.

Potatoes need not be an only source of engineered starch. The world grows 190m tonnes a year of cassava, nearly all for food or animal feed. Its starch too can go into paper, and in Thailand a little already does. That could become a lot: Thailand grows enough cassava to be the only significant exporter, and recently decided to allow commercial GM crops. If public fears of GM food and “contamination” can be overcome, cassava could be one.

The whiff of fear

Those fears have already affected tobacco. It is a “halfway house”: cigarettes are not eaten, but they are consumed. Tobacco has in fact already been genetically modified, both to produce more nicotine and less. The now-vanished high-nicotine cigarettes landed their maker, Brown & Williamson, with a (failed) lawsuit from the US's Food and Drug Administration. Today's low-nicotine GM ones just do not sell very well: Vector, which makes them, recently put on hold plans for a nationwide roll-out. Neither outcome had much to do directly with GM. But growers of ordinary tobacco hate Vector's GM smokes; partly, although they will not admit it, because “low-nicotine” is hardly their favourite slogan, but also, as with food crops, for fear of contamination and consumer reaction, even though Vector grows its GM weed outside traditional tobacco areas.

Not least, ordinary growers fear for their exports and, as with food, they may be right. In the 1990s China was the first country to grow GM tobacco, aiming to improve the crop's resistance to viruses. Within a few years, foreign pressure forced it to cry off. Doubts in Europe will deter both European and other growers and processors. SEITA, as France's cigarette monopoly was then called, was once authorised to do research on GM tobacco, but made little commercial use of the results.

What about bio-pharming, for which tobacco is well suited because it produces lots of leaf and has been much studied? This prospect arouses fewer fears—at least in Kentucky, says a source there, where the first bio-pharmed crops have been grown. The rival varieties are very different. And the money could be good. A hectare's output of cigarette tobacco is worth about \$9,000. As against? Well, one enthusiast in 2002 estimated the same hectare could grow over \$400,000-worth of a skin-growth hormone, or near \$5m of an anti-coagulant protein. That is surely dreamworld: as supply of the protein rose, its value would fall, and anyway only a portion of such riches would reach the grower. Even so, the sums (not least, far lower labour costs) are still interesting.

Down on the pharm

There is no visible end to the technical possibilities of bio-pharming. The US, well ahead of Europe in this respect, has recently been issuing 30-40 permits a year 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.

The time between field trials and commercialisation is long, however—at least six years, because any hopeful results still need testing and must then win regulatory approval. But in time bio-pharming and other uses of GM will become a familiar, low-cost means of producing, in volume, things that were once rare. Insulin, for instance, has long been made by putting the human gene for it into a helpful bacterium. Previously, it came, in a less than ideal form, from the pancreatic glands of slaughtered pigs.

The big, publicly visible boom in non-food GM, however, is likelier to come in chemicals, plastics, fibres and fuel. Instead of petroleum, these will be derived from maize, soya or other crops—sugar beet in Europe, say. In time, plants may even be modified to make polymers themselves; it was done experimentally, but then dropped, by Britain's ICI and later Monsanto in the 1990s. Metabolix, a US research company is now getting bacteria to grow finished plastics that are biodegradable.

The use of farm crops for such purposes is not new. After long research into maize-based plastic, Cargill (grains) linked up with Dow (chemicals) in 1997 and their joint-venture, which began production in 2000, now sells about 140,000 tonnes a year for packaging and bedding. Nor need the crops be GM: Cargill Dow's maize has not been, but it could. The ethanol makers who already supply over one-fifth of Brazil's motor fuel use sugar cane, but they could as well use soya, some of it the theoretically illegal, but in fact amnestied, GM versions that local farmers have eagerly adopted. The first step in any such process, fermentation of the maize (or other) glucose, involves enzymes, which nowadays are usually produced using GM: new "super enzymes" are found by experiment, and the appropriate genes to produce them are fed into some fungus or bacillus that will do the job better than nature till then has done it for herself.

Many organisms are used—DSM, a Dutch chemicals company, lists 34—and the enzymes go wider still: into detergents, cheesemaking (instead of rennet from calves' stomachs), cotton-weaving and countless other processes, new and old.

But that is all scientists' stuff. The world, perhaps to its own peace of mind, has only a nascent idea of it. Greater awareness will come when, to the joy of farmers and

governments of oil-lacking countries, the men in white coats have advanced enough for the suits to set their enzymes to work, profitably, on what any eye can see in the fields.

Yes, but how soon? The key word here is "profitable". Even at today's output (about a thousandth of world plastics output), says Cargill Dow, sales of its maize-based plastic "will barely scratch the surface" of its \$750m investment. DuPont, with Genencor, a biotech leader, has put genes from two organisms into a third, to help turn maize glucose into a fibre that it calls Sorona. It is still far from commercial production, let alone profit.

Those two are well-publicised products, already some way down the road, from world leaders. In the Netherlands, DSM, which makes a feedstock for nylon, is studying sugar beet as a source. Given the EU protection that beet needs to make it competitive with imported cane sugar, can this ever make a profit?

Beautiful bio-fuels

Bio-fuel (which does not depend on GM, but could well use it) is more advanced. Yet not far. Brazil's output, near 4 billion US gallons (15 billion litres) a year of sugar-based ethanol, leads the world. The US makes maize-based ethanol, usually mixed one-part-in-ten with petrol. But even with a tax break of 52 cents a gallon (13.7 cents a litre) of pure ethanol, the 80, mostly small, plants will make only 3 billion-plus gallons this year, or less than 2% of all motor fuel used. Bills now before Congress propose 5 billion gallons by 2012; that would by then mean only about 2.5%.

Of course, with high oil prices, these ethanol plants may multiply faster than expected: in oil terms, about \$10 on a barrel of crude matches the ethanol subsidy, and oil has risen more in price than that this year. Brazil's lower-cost ethanol could boost supply (but—you guessed—imports pay a duty of 54 cents a gallon: at bottom, the ethanol subsidy is about farm incomes, not replacing oil).

The EU, producing both bio-diesel and ethanol, is far behind. In all, it makes about 700m gallons a year. Its aims (and motives) are a bit higher: 5.75% of consumption from bio-fuels by 2010. But that too will need subsidies.

The use of GM on the farm crops—and in making the enzymes to work on them more efficiently—will in time speed up and cheapen the production of bio-fuels. None of these figures suggest the new processes and fuels are about to take over the world tomorrow morning. Indeed, profit is the big doubt for these grand oil-replacement dreams: they depend much on its price. Pharmaceuticals—especially, though not alone—face a huge and poorly mapped quagmire of intellectual property rights. Yet the real hurdle for non-food GM may still be public opinion.

The pharmaceutical and chemicals companies are mighty, and are quite capable of lobbying hard on behalf of their GM-based innovations. But GM's foes are many, and they can be unscrupulous with facts. If anything goes 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 reaches far more people than ever hear of the routines in place to avoid such errors. GM needs skills, and courage, in its public relations no less than its laboratories or finance departments.

Economist, “Genetically modified crops”, Economic and Financial Indicators, 26 Feb 2011, p. 93

The amount of land planted with genetically modified (GM) crops grew by 10% in 2010 to 148m hectares (366m acres), according to the International Service for the Acquisition of Agri-biotech Applications (ISAAA), an industry body. The US is by far the largest GM grower, with almost half the total number of hectares, followed by Brazil (which increased its GM area the most) and Argentina. GM is no longer the preserve of rich nations. Rates of growth are much higher in developing countries (up 17% in 2010) than in developed ones (only 5% up). Over 15m farmers planted GM crops in 2010; 94% of them come from developing countries, which include 19 of the 29 countries where GM technology is used.



“Regulating Pesticides: A Balance of Risk”,

Economist, 3 Jul 2008, p. 84-5

Pesticides keep food edible and cheap, but they are, by definition, poisonous—a dilemma for EU legislators

Everybody hates pesticides (dangerous, unnatural things), but everybody likes their benefits (cheap and unblemished food). Sensibly regulating their manufacture and use is thus a minefield. **What is the difference between risk and hazard?**

The difference between hazard and risk, in this context, is that **hazard is something measured in a laboratory by finding out how much of a substance is needed to kill or injure a laboratory animal. Risk is something measured in the real world. Risk depends not just on how toxic a chemical is, but on how it is actually used, how much of it is used and how often it is used.** Europe’s rules on pesticides were based on risk until 2008 when legislation regulating plant-protection products was approved by the European Parliament, shift the basis of the law towards an assessment of hazard.

The legislation’s supporters claim it will remove some of Europe’s most hazardous chemicals from the market. Wolfgang Reinert, an official at the EC’s directorate on Health and Consumers, says the **new rules embrace the philosophy that something should be for sale only after the producer has proved it can be used safely.** Many agricultural scientists, however, argue that the **change will have widespread, alarming consequences for farming, and will lead to further increases in food prices at a time when they are already uncomfortably high.** ADAS, a British environmental and rural consultancy, has produced a report which says even the lowest-impact

proposals would reduce food production by a quarter. In January an Italian report came up with a similar figure.

Taking-cides

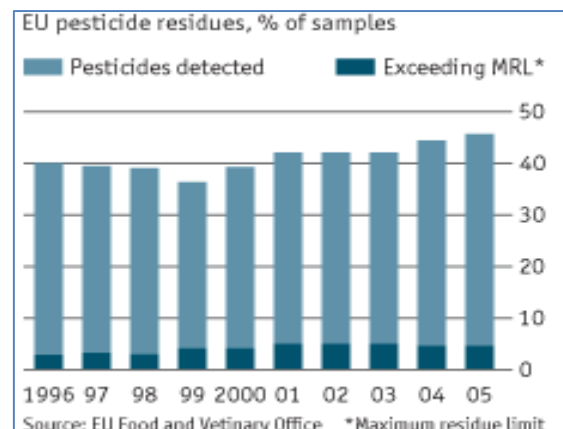
The threat to the use of pesticides is serious. Depending on exactly how it is enacted, the legislation could outlaw all but one of the pyrethroids, a widely used class of insecticides; triazole, a fungicide used to protect cereal crops; and dithiocarbamate, a herbicide that controls a cereal-strangling weed called black grass. **Yet these hazardous substances pose little risk if used properly.**

John Atkin, the head of the crop-protection part of Syngenta, a Swiss agrichemical and seed company, believes the changes are wrong. “Current regulations are tough and we have already reached a point where some useful compounds, particularly for minor crops, have been lost, to the detriment of agricultural productivity.” (The minor crops in question include leeks, green beans and flower bulbs.) He adds that even under the existing rules some 700 substances have disappeared from the market, out of an original total of around 1,150.

Others without a commercial axe to grind agree with him. Ian Dewhurst, the principal toxicologist at the UK government’s Pesticide Safety Directorate, points out that **by failing to think about real-world risks, the EU may end up acting against the wrong pesticides.** It is not just that the EU could ban what is, in practice, safe, but also that it could let through what is causing the most harm. Ian Denholm, head of plant and invertebrate ecology at Rothamsted Research, a UK agricultural institute agrees, and **judges that the present system, founded on science-based risk-assessment, is a “rigorous gold standard”.**

The counter-argument is that, gold standard or not, the existing legislation (which was drafted in the late 1980s) is not working. **As the chart shows, the share of food samples that exceed the maximum residue limits (MRLs) in Europe has remained constant for many years.** Elliott Cannell, spokesman for the Pesticide Action Network, a London-based environmental group, reckons the average European eats food contaminated with pesticides at least once a fortnight. **The virtue of a risk assessment is that it captures what happens in the real world. If it fails to capture the actual threats to health, as these results suggest is happening, then it is failing to do its job.**

Vyvan Howard, a toxicologist and pathologist at the University of Ulster, a supporter of the reform, **reckons that the existing system is not as good as it claims to be.** He says it assesses exposure on a complex model of the world that is not always correct. “We know,” he says, **“we get pesticides turning up where we don’t expect them.”** He points to the example last month of gardeners in Britain being warned not to eat home-grown vegetables after manure they might have used became contaminated with a herbicide called aminopyralid.



The new system, according to Dr Howard, is based on science, but with pragmatism. The idea is to reduce the overall toxicity of the entire armory of pesticides. The new criteria would remove the most hazardous products from the food chain altogether. He believes this is particularly important for protecting fetuses, whose development is especially susceptible to disruption by outside chemical signals.

Just dilute before use

Science is one thing - politics is another. In response to the sceptics' concerns, Europe's agriculture ministers met to hammer out a compromise allowing any country that felt it could not replace a particular pesticide to ask permission to continue to use it (i.e. approximation). This angered green groups and pleased neither agricultural scientists nor the UK government. The exemption, Dr Denholm reckons, is "totally worthless". The job of obtaining an exemption, he says, is too bureaucratic and could involve as much as two years of consultation.

One lesson from all this is that you cannot please all of the people all of the time. Cheap, pesticide-free food is probably an unachievable objective. The other lesson, however, is that science—so often seen as a way of arriving at clear-cut answers—is itself a process of muddling through to the truth. Hazard assessment has a certain purity, but that purity is often irrelevant to real risk. On the other hand, a true risk assessment is impossible, since not all of the variables can be identified, let alone measured and modelled.

There is one lesson that science can offer politicians. It is this: by all means do the experiment and find out, but if the experiment fails, have the guts to admit you were wrong and try something else. After the new legislation is introduced, if it turns out to be a costly mistake, it should not be allowed to last.

<http://Europa.eu>, "New rules on pesticide residues to strengthen food safety in the European Union", European Commission (EC), Brussels, 1 September 2008

The EC made an important step forward in its efforts to ensure food safety in the EU, as a regulation revising and simplifying the rules pertaining to pesticide residues entered into force. The new rules set harmonised Maximum Residue Levels (MRLs) for pesticides. They ensure food safety for all consumers and allow traders and importers to do business smoothly as confusion over dealing with 27 lists of national MRLs is eliminated. With the previous regime, different MRLs could apply to the same pesticide for the same crop in different Member States, a situation which gave rise to questions from consumers, farmers and traders. Regulation (EC) No 396/2005 is the result of a considerable joint effort by the EC, the European Food Safety Authority (EFSA) and the Member States. EU Health Commissioner Androulla Vassiliou said: "Today represents a milestone in our effort to ensure that food in Europe is safe. The new rules apply the principle that food produced or imported in one Member State must be safe for consumers in all of them. They ensure that pesticide residues in food are as low as possible and have no harmful effect on our citizens."

"Regulating chemicals: No thanks, we're European", *The Economist*, Nov 24th 2005

A piece of European legislation that will affect industry across the world

MOLLIE the toxic child was in Strasbourg last week as part of a campaign to stiffen European rules on the import and production of hazardous chemicals. A study by the

WWF last year found 35 toxic chemicals in Mollie's blood, and similar levels in 13 families tested in 12 European countries. She was in Strasbourg to persuade members of the European parliament to vote green. That is the emotive side of a gigantic clash between industrial interests and proposed European Union legislation designed to minimise citizens' exposure to hazardous chemicals—in their cars, homes, work and playgrounds.

The plan is to subject up to 30,000 substances to a procedure known as REACH (registration, evaluation and authorisation of chemicals). The European Commission produced a proposal in 2003, since when industrial, consumer and environmental groups have been lobbying hard. A consultation in 2003 led to 968 written responses, of which 587 alone came from Germany, the home of thousands of small companies that handle complex materials. All companies involved in mining, processing, manufacturing or assembly inside Europe, or with the European market in mind, could be affected by REACH.

For that reason, lobbyists have included mining and processing interests in Australia, Canada, Chile and sub-Saharan Africa, to name just the most vocal. American business associations have also complained that the EU proposal cuts across broader plans by the OECD and the World Trade Organisation. Small businesses worldwide may be shut out of Europe by the cost of compliance, many fear. An EU estimate of the cost to industry of abiding by the new regulations ranges from €2.6 billion (\$3.1 billion) to €5.2 billion over 11 years. But the EU sees savings on the other side of the ledger—by limiting exposure to hazardous materials, it foresees savings in health-care costs of as much as €50 billion over the next 30 years. Even giant chemical companies agree that it would be useful to know more about the chemicals people are exposed to. Of the 30,000 substances identified by REACH, only about 10% have been studied in any detail, says the WWF.

But while most people can accept the need for some legislation, they disagree on precisely what it should say. There have been bitter disagreements, even within the EU bureaucracy. The original REACH proposal was drafted by the commission's environment directorate, which was strongly influenced by the likes of WWF. But the enterprise and industry directorate—led by Günter Verheugen, the German vice-president of the commission—has been fighting for the interests of industrialists. The draft REACH regulation, which European parliamentarians voted for by 407 to 155 on November 17th, contained more than 1,000 proposed amendments, of which fewer than 300 survived.

The result pleased neither industrialists, nor greens. Consumer groups complained that REACH's original concept had been watered down—for example by waiving the registration of any substance imported in quantities of less than one tonne a year. Moreover, many other substances would require no more than registration. The priority for screening potentially hazardous substances would be set by volume rather than by other measures of risk—which was the original plan.

The chemical industry was disappointed too, by a rule that hazardous substances will be authorised for at most five years, after which business must find a substitute, unless it can establish some "socio-economic justification". Five years is too short argues Utz Tillmann, who works on environmental issues at BASF, Europe's biggest chemical company. It took BASF ten years to persuade the car industry to favour a plastic fuel tank over one made of steel, he recalls.

Handlers of non-ferrous metals on the other hand were pleased that ores and concentrates escape the new rules.

So do oil-based plastics—because they would have overwhelmed a new European Chemicals Agency due to be set up in Helsinki to handle REACH. Metals traders are forming consortia to standardise the treatment of metals held in warehouses the world over for delivery against futures contracts—fearing that a two-tier market might otherwise develop, one inside the EU and one outside.

At every turn, REACH threatens to trigger unintended consequences. Sandra Carey, of the British non-ferrous-metal lobby, sees it as the EU's most important legislation ever. Her greatest concern is that an over-extended REACH would raise barriers around Europe and suck raw materials and manufacturing in the direction of India and China.

Nevertheless, the EU Council of Ministers, which will be chaired by Britain until December 31st, seems determined to secure a final agreement on REACH by the end of the year. The British are generally wary of burdening industry, but are keen to add some shine to an otherwise lacklustre six-month presidency. Germany won some breathing space this month to give its new government time to review the draft. But EU ministers are due to meet on December 19th and will either accept the parliament's amendments or challenge them and send the bill back for a second reading. The lobbying goes on.

"Halal food: cut-throat competition",

Economist, 17 Sep 2009, p. 69; "Food and religion: A meaty question", 9 Feb 2013, p. 51-2



Feeding Europe's Muslims is a growing business

Catering to Muslim food consumers is a market worth some \$700 billion globally according to KasehDia, a consulting company specializing in the trade. Nestlé has produced halal goods since the 1980s; 75 of its 456 factories have a halal certification. Big European shops are following suit. Carrefour, the world's second-largest retailer, launched a new range of products. Casino, a French supermarket chain, has a halal line, and the UK's Tesco and Sainsbury carry halal products. KFC, a US fast-food chain, is introducing halal food in eight of its UK restaurants. Its French ones are already certified.

The main reason for growth is demographic. Muslim populations are growing quickly as a result of higher birth rates and immigration. Although Muslims are disproportionately poor, they spend plenty of money on food. Islam is associated with a strong tradition of communal feasting. Antoine Bonnel, who runs the Paris Halal Expo, reckons that the average French Muslim spends a quarter of his or her income on food, compared with 12-14% for non-Muslims.

Nearly a third of the money goes on meat. That demand, which contrasts with a drop in meat-eating among health-conscious Christians and godless folk, has helped transform the global livestock market. The slaughtering

of all lamb and goat meat in Australia for export is now done in accordance with halal custom, which involves killing animals with a single cut and draining their blood. A tenth of Australia's total meat exports, worth about \$570m a year, is halal. Brazil dominates the global market with a 54% share of exported halal meat.

As the halal market grows, two problems are emerging. The first is the lack of broad standards. Halal regulations vary widely both between countries and within them. In Australia, all slaughter for halal meat is regulated by the government. In France, by contrast, there are over 50 certification bodies, all in competition with one another. Mr Bonnel describes it as "a huge nightmare" that can lead to charges of impurity. The Malaysian government's Halal Industry Development Corporation has tried to create a global standard, with little success so far.

The second problem is squeamishness among non-Muslims. Animals slaughtered according to halal custom are supposed to be alive when their throats are cut, a practice that animal-rights groups condemn. Switzerland, Norway, Iceland and Sweden forbid it outright. Some governments have reached a compromise that allows for animals to be partly stunned before being killed. But not all Muslims are happy with this. The halal market may be buoyant, but the waters are choppy.

Who should regulate kosher and halal food?

Keeping the government's nose out of anything with religion is one of the US's founding principles. With this in mind a federal district judge in Minnesota dismissed a lawsuit contending that Hebrew National, a big US meat-products brand, fraudulently labelled its hot dogs "100% kosher". Critics claimed the meat did not meet kosher requirements. The judge ruled that since kosher is a standard "intrinsically religious in nature", under the first amendment it was none of the court's business. Triangle K, the certifying body approving the *wieners*, and its Orthodox rabbis, would have to defend themselves. Unhappy customers could always shop elsewhere.

Few Western countries have laws explicitly regulating kosher or halal products—chiefly meat produced by the ritual slaughter of animals, subject to particular standards of health or hygiene. Governments prefer to rely on private companies and market forces to do the job. If people find out certified items are not as pure as they claim to be, they stop buying them. When governments do get involved it is usually under the auspices of consumer protection or food safety. They have been wary of wading in on specifically religious grounds. But with Muslim populations swelling throughout Europe and the business of religiously approved goods booming, the question of how to regulate is becoming more urgent.

The US has been battling with this issue for decades. Of its 50 states, 22 have introduced kosher-fraud laws over the past century. New York introduced a law in 1915 saying that food labelled fit for Jews must comply with "orthodox Hebrew religious requirements". But in the past 20 years various state courts have deemed such laws unconstitutional. New Jersey firms must merely produce documentary proof that their products are kosher.

Private certifiers have stepped into the breach. Five regulatory heavyweights (not including Triangle K) dominate the market, certifying products the world over. All the main kosher meat producers in the US today adhere to the same stringent standard. The certifying bodies do a much better job than the government, says Mr Lytton of Albany Law School writing on kosher regulation. They pounce on mistakes and are swift to admit their own. The US kosher food industry generates \$12 billion in sales a year so no one wants to lose customers because of sloppiness. In Israel, by contrast,

the state is closely involved, promoting the Chief Rabbinate's kosher label as the only acceptable one. But those standards are the lowest common denominator, says Mr Lytton, and many religious Jews find them too lax. They insist on stricter checks from private companies which costs extra.

Still, Jews are more united than Muslims about the exact nature of their religion's dietary rules. Jewish law leaves no doubt that stunning animals before slaughter is prohibited. Muslims disagree about that. Hundreds of halal-certification bodies operate, with varying standards and logos. They differ in their methods of slaughter. Some countries allow products containing a small percentage of non-halal ingredients to be classed as halal. Others do not. A worldwide standard is one idea.

Muslim countries, where governments see ruling on religious matters as part of their job, are keen to help. JAKIM, Malaysia's Dept. for Islamic Development, is responsible for halal standards. Misuse of the halal label can mean jail. The Sultanate of Brunei, proud of its mark, the Brunei Halal Brand, wants to certify products around the world. That would help non-Muslim producers, such as Brazil, already one of the world's largest exporters of halal meat, which are keen to expand in Muslim markets.

The importance of the halal label spreads well beyond food. Many of the world's 1.6 billion Muslims want reassurances that medicines and make-up, for example, are free from animal products or alcohol.

"Trade and conservation: Fin times",

Economist, 18 Mar 2010; "Tuna and Pollack: A tale of two fisheries", 10 Sep 2009; and "Tuna fishing: Changing tides", 19 Nov 2009



Ban the trade in bluefin tuna—but set a clear path to sustainable exploitation

THERE are two ways to overfish the sea. One is to ignore scientific advice and plunder on regardless. The other is to accept the advice, and then discover it isn't good enough. 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.

The International Commission for the Conservation of Atlantic Tunas (ICCAT), the inter-governmental body charged with managing this fishery, has been a disgrace. The ICCAT has been so stunningly bad at the job that it was dubbed the International Conspiracy to Catch All Tuna. In one recent year the scientific advice was to catch at most 15,000 tonnes of tuna. ICCAT imposed a limit of

30,000 tonnes. The actual catch was 60,000 tonnes. Little wonder the bluefin is overfished.

Every year, its member states have handed themselves quotas far in excess of those prescribed by the organisation's scientific advice. But overfishing in the past four decades has reduced its population by more than 80%.

In 2008 things were so bad that ICCAT's chairman warned members that if they did not do better their power to manage the bluefin would end up being taken away from them. But they failed to restrain themselves, and the backlash has begun. Moves have been 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.

Conservation groups, and many scientists, have been calling for a complete moratorium on bluefin fishing for some time, but have been roundly ignored. This year, however, even the industry has been asking 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". Others have lobbied quietly behind the scenes.

Facing this hail of demands, ICCAT met between 9-15 November in Recife, Brazil, and announced a quota of 13,500 tonnes. Although this was lower than in previous years, it was still far higher than it should have been. A quota of 8,500 tonnes or less would, according to models of the species's population dynamics, have halted overfishing and given a 90% chance of rebuilding stocks by 2019.

Though ICCAT also promised to commit itself to catch levels based on scientific evidence, it proposed to postpone doing so until somewhere between 2011 and 2013, and then only at levels that would give 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.

It remains to be seen whether this will be enough to save ICCAT from being gutted of its responsibilities by CITES next year. The agency representing the US at the ICCAT meeting said the agreement was a "marked improvement" but added that it was "insufficient to guarantee the long-term viability of either the fish or the fishery".

Conservation groups, unsurprisingly, remain on the warpath. The World Wide Fund for Nature (WWF) argued that one study has shown that even a strictly enforced 8,000-tonne quota would have only a 50% chance of bringing about a recovery by 2023. Sergi Tudela, WWF's head of fisheries in the Mediterranean, said the announced reduction was an arbitrary political measure for one year. WWF vowed to take the fight to CITES.

Over in the US, there are rumblings that the other type of overfishing is happening in Alaska's Pollock fishery, one of the world's largest. This is 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.

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 is expected this year. Not everyone is so sanguine. Greenpeace, which has been arguing for almost a year that the fishery is on the verge of collapse, says it has had a tip-off that such a collapse is indeed under way. Greenpeace said it would use the US Endangered Species Act to try to force the government to have the fishery closed. It is not that the pollock itself would be endangered at this stage, but the Steller's sea lion, which the act covers, might be threatened if too much of its food were being eaten by people.

In theory a temporary trade ban would allow stocks to rebuild themselves. But would it work? As this newspaper has occasionally pointed out before, banning trade is not normally a good idea. 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.

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?

Tightening the net

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 will be difficult, but since most bluefin tuna is fished elsewhere in the developed world, it should be possible to reduce supply. Meanwhile, consumers elsewhere are taking an increasing interest in the provenance and sustainability of the fish they eat. With luck, all this will allow stocks to recover so that in due course trade in bluefin can resume—in a sustainable manner.

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. ♦

“Call of the wild: Is the prohibition of trade saving wildlife or endangering it?”, *Economist*, 6 Mar 2008

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. Last year CITES, which now has 172 member countries, extended this ban for a further nine years, having sanctioned but two sales from stocks, of which only one has taken place. A stroll in Chinatown in San Francisco suggests that trade is thriving nonetheless. A report by researchers for Care for the Wild, a UK animal-welfare and conservation charity, says that around half the ivory in this market comes from illegally killed elephants. Other studies reveal similar stories elsewhere in the West.

A sharp increase in ivory seizures in recent years also points to a flourishing trade. Rising wealth in Asia is raising the returns from poaching. Prices have leapt from \$200 a kilo in 2004 to \$850-900. New ivory is appearing: some can encase mobile phones. Some scientists think poaching is as prevalent as it was before the original ban.

Citing CITES

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

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

of Nature, have been rising by 4% a year in the well-protected populations of southern and east Africa, but in central and west Africa no one knows what is going on. Some countries, such as Botswana, home to a quarter of the African total, and South Africa, now 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).

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 had reported the illegal killing of only 135 animals in the previous ten years. Suppose, says Samuel Wasser of the University of Washington, in Seattle, that

customs officers capture one-tenth of what is poached (a guess, but a fair guess). That implies that 7.8% of Africa's elephants are killed every year, compared with 7% before the ban. This is a continent-wide average: while pachyderm populations in Botswana and South Africa are booming, elephants elsewhere are faring badly.

In all, CITES bans trade in nearly 1,000 animal and plant species; trade in many more is limited by permits. In testimony to US House of Representatives on March 5th, William Clark, chairman of the Interpol working group on wildlife crime, said that there were clear signs that illegal trade was increasing. More frequent seizures, of larger volume, have been occurring, even though enforcement capacity has not changed much. The increased seizures, said Mr Clark, reflect larger, more frequent shipments by the sophisticated criminal gangs now involved in the trade.

If trade is on the rise, then the efficacy of trade bans as a conservation measure is at least debatable. To be sure, some bans have worked. 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 as a result of CITES-related trade measures, including an American 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. 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 has risen 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.

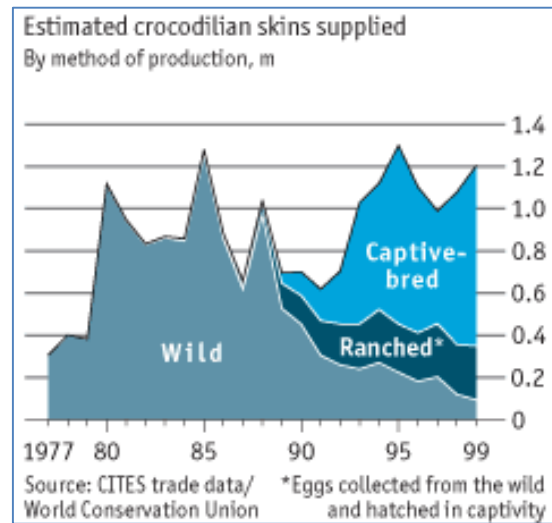
Horns and stripes

However, for other species a ban has 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 has fallen from 75,000 in the early 1970s to around 11,000 today, 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 United Nations Environment Programme, says that the 30-year trade ban, "hasn't made a blind bit of difference and the strategy is a failure."

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 table). 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.

The point is not that bans never work. They can, especially in the short term or when species are in dire danger. But their longer-term success depends on three factors. First, they must be coupled with a reduction in demand for the banned products. If a ban helps to shift people's tastes, so much the better. Second, they must not undermine incentives to conserve endangered species in the wild. Third, they 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.

Take demand first. Trade in cat and seal skins, and in parrots, has fallen because consumer campaigns



destroyed demand at the same time as trade bans cut the legal supply. That was true of ivory for a time, at least in the West, but rising Asian wealth has been pushing demand up again. Trade is reduced most when demand is sensitive to price: cat and seal skins and parrots fall into this class. Demand is also influenced by fashion (for example, for fake fur). Sometimes, 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.

Second, consider incentives to conserve. 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.

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.

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.

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.

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.

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 crocodilians. 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).

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.

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.

Paws for thought

The third lot of factors affecting the success of trade bans is the effectiveness of government and social institutions. National enforcement of CITES trade bans, says 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?

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.

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 illustrates this in a recent paper in the *International Review of Environmental and Resource Economics*, about the losses of elephants before the CITES trade ban.

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. Other governments, says Mr Swanson, had invested in retaining elephants, through the provision of land and resources for management. The bad four countries had a deliberate policy of retaining open access, in order that elephants be removed. They lost 750,000 elephants in a decade; 30 countries had no aggregate gains or losses and in several populations increased.

Governments, he says, can protect and develop natural resources, such as tin mines and tea plantations. The reason they fail to do so for wildlife and forests is better viewed as a consequence of social choice than of imperfect property rights. There are plenty of examples of successful commons, from Swiss grazing pastures and Japanese forests to fisheries in Maine and Fiji. The problem with wildlife is a lack of social structure or formal rules that govern access and use. If governments do not provide them, wildlife will suffer.

Breeding obvious

In essence, there are two sorts of possible response to the question of how to conserve endangered species—apart, that is, from doing nothing. One is a command-and-control mechanism: trade bans are examples of these. 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.

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.

Although CITES arose at a time when command-and-control environmental legislation was popular, parts of the organisation do want to change. Juan Carlos Vasquez, its legal and trade-policy officer, says that 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.” Mr Broad says that 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.

More successes, such as the temporary ban on trading vicuña products (and its lifting), are needed. Signs of CITES's evolution are evident in its decision to allow some species to be traded under permit, for example in one-off ivory sales. Such changes will be fought tooth and nail. Trade makes conservationists nervous and animal-welfare charities suspicious. Barbara Maas, who heads Care for the Wild, dismisses the idea that wildlife trade can be used to support conservation as a “fundamentally anthropocentric world view”. In Kenya attempts to amend legislation to allow for the wider consumptive use of wildlife were subject to heavy lobbying by international animal-welfare charities. (One lobby group is said to have threatened to undermine Kenya's tourist trade.)

Similarly, attempts to allocate money to CITES for economic studies of wildlife use and conservation have faced “strong resistance”, say people close to the organisation, partly due to pressure from international lobbies. The biggest problem with economic studies, says Mr MacGregor, is that “questions will be asked about the use of funding for a lot of conservation work that is founded on faith.” CITES could become a much more powerful tool for conservation. The question is whether it will be allowed to do so. ♦

"Tiger Trade", *Economist*, 19 Apr 2007

Market failure: Breeding tigers in farms for their parts could kill the species in the wild

"TO SAVE the tiger, you have to sell it." So claimed Chinese officials and scientists at the Global Tiger Forum, a gathering of governments and conservationists in Kathmandu this week. The Forum studies the latest science and advises on policy. It will send its recommendations to the next meeting of signatories to CITES, the convention governing trade in endangered species, in the Netherlands in June.

The principal market for tiger parts, only available illegally, is China, where virtually every bit of the tiger has some medicinal or other use. The 17-strong Chinese delegation to the forum argued that the health benefits of tiger-bone wine and other concoctions are clear, and in high demand. They claimed a ban on the internal trade in tiger parts, which China imposed in 1993, has cost the country \$4 billion, and yet poaching persists. The answer, they argued, is to flood their market with products from the 5,000 tigers that live on Chinese farms. The ban had been imposed only because tigers could not be bred in captivity, they said, but now they can be.

Conservationists are campaigning against allowing farmed-tiger parts to be traded. Only an estimated 2,500 breeding adult tigers survive in the wild, 80% of them in India. They are under severe pressure from loss of habitat and prey species as well as poaching. A relaxation of China's rules, they say, would drive the giant cats to extinction in the wild.

"It's make or break," says Belinda Wright, director of the Wildlife Protection Society of India. "If we lose this fight, we've lost the battle." A return to open trade, conservationists fear, would stimulate demand for a product that was slipping from public favour. China is widely given credit for successfully enforcing the ban and removing tiger from the official list of medicinal substances.

Wild tiger would probably remain more valuable because in Chinese medicinal thought it is regarded as more potent. What is more, it would remain cheaper for dealers to obtain. It costs thousands of dollars to raise a tiger in a cage but as little as \$20 to hire a poor peasant to poach one.

A captive-bred tiger has never successfully been released into the wild, and conservationists say it would be impossible to do so with the 5,000 on Chinese farms, as their owners sometimes claim to intend. Sue Lieberman, of WWF, a conservation group, says the tigers are being bred like "chickens on a farm". And, despite denials from the Chinese government, there is abundant evidence that farmers are already turning tigers into food and wine. ♦

"Trade in wildlife: Just let them get on with it" *Economist*, 31 Mar 2008, p. 69

Poor people relying on nature's gifts should be helped to help themselves

Conservationists and animal-welfare types take note: trade in wildlife products, as long as properly managed, is an indispensable boon for the poor. It was worth \$300 billion in 2005—chiefly in timber and fisheries. This is the message of a report* from TRAFFIC, a UK-based group, monitoring commerce in undomesticated animals, freely growing plants and their products. Some countries have a large domestic trade in wildlife, unreported by

statistics. Estimates of how many people depend on the wildlife trade for at least part of their income vary from 200m globally to a billion in Asia and the Pacific alone. The Convention on Biological Diversity in Bonn says damage to nature can halve living standards for the poor.

Wildlife trade provides not only cash for children to go to school, but food and health care (in the form of natural medicines). This is important for the world's poorest, in marginal agricultural areas. Many poverty-reduction efforts depend on the survival of natural wildlife.

Brimming with bounty

Uganda's lake fisheries yield fish worth over \$200m a year while employing 135,000 fishermen and 700,000 small operators in processing, trade and associated industries. The fisheries generate \$87.5m in exports and contribute to 2.2% of GDP. The wild-meat trade in seven east and southern African countries can amount to an equivalent of 40% of household monthly income.

Well-managed trade, as exists in species such as seahorses, humphead wrasse and certain ornamental fish, not only promotes these species' own conservation but can also help the preservation of other important animals and plants. The report laments that too much harvesting of, and trade in, wild products is poorly supervised, with the result that habitats are degraded and stocks depleted.

One important point: allowing for the secure ownership of wildlife resources by a clearly defined group of poor people is essential for sustainable harvesting. If no public authority is able to offer secure tenure of land or resource rights to a reasonable number of people, there is little incentive to invest in long-term sustainability. This explains the over-collection in central Africa of rattan, a climbing plant used in making wicker furniture. Nobody owns the forest or wilderness where rattan usually grows—thus, it is increasingly scarce.

Establishing property rights is hard, but necessary; it might mean the exclusion of "outsiders", often other poor people or even refugees, from using wildlife resources. Many of the problems involved in the marine aquarium trade in wild fish in Indonesia and the Philippines are caused by migrant fishermen. In Gabon the government is considering giving village associations a legal monopoly on selling bush meat to outside traders.

The wildlife trade is rarely high on official agendas, and those relying on it are often the weakest groups in society. The report recommends to establish wildlife farms, and certification schemes that help poor people to advertise the sustainability of their wares. ♦

* "Trading nature", by Dilys Roe, TRAFFIC, 2008

"Saving sharks: Rays of hope" *Economist*, 16 Mar 2013, p. 51



Endangered sharks/rays win a modicum of protection. China's rise has brought incalculable benefits, but is not without collateral damage. Every year around the world between 100m and 275m sharks are killed for their fins, to make a soup prized as a delicacy—which more people

can afford. Shark numbers are declining by an estimated 6-8% a year, and a number of species are endangered.

Five species—the oceanic whitetip, the porbeagle and three types of hammerhead—were added to Appendix II of the Convention on International Trade in Endangered Species (CITES). Trade in them will be regulated. Also added is the manta ray, a fish valued for its feathery gill-rakers, sought after in China as an ingredient in a health tonic. Some populations are on the brink of extinction.

The decision, taken at a CITES conference, held every 2-3 years, was close. The proposal squeaked home after a secret vote during the conference's final day on an attempt by Japan and China to reopen the debate. Despite intensive lobbying, the two countries failed to do so.

In CITES' 40-year life, efforts to protect oceanic species have been resisted by fishing nations. Green groups such as WWF hailed this week's victory as a landmark—the first time commercially fished marine species have been listed under CITES. A group of South American countries came to the sharks' defence. With the growth of ecotourism, sharks and rays are becoming more valuable alive than dead. Many other developing countries that have seen industrial-scale fishing empty their seas backed the proposal.

China, Japan, Singapore and others objected, arguing that it is hard to identify sharks by their fins, and the trade should be treated as a fishery-management issue. China put on record that it thought it would be unable to control the trade, whose biggest hub is Hong Kong, where 50% of shark fins change hands.

Governments have 18 months to comply with the new rules. The EU is offering grants to poor countries. In the long run, hope for the sharks rests on reducing demand for them. Campaigns in Singapore have induced some big supermarkets and restaurants to shun shark fins. As with so many other commodities, the demand that really counts comes from China. ♦

"Mixed victory for Mexico as WTO rules on 'Dolphin Safe' Labelling", *Bridges Trade BioRes*, International Centre for Trade and Sustainable Development (ICTSD) 19 Sep 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.

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.

"The WTO ruling is a blow to the label 'dolphin-safe'," Mexican Economy Secretary B. Ferrari stated to the Associated Press. "Mexican producers can access the US market without restrictions, as is their right." The US retains its right to appeal the decision. "We do not exclude the possibility of an appeal," a spokeswoman for the US's Trade Representative Office said. An appeal has

to be submitted within the next two months; a final ruling would be issued late in the first quarter of 2012.

"Dolphin-safe" attacked on three levels

At the core of the dispute is the US policy disallowing "dolphin-safe" labels on tuna caught in the eastern Pacific Ocean (ETP) 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 do not discriminate against Mexican products, as the label is available to all tuna products independent of their origin.

Mexico City argued that the label was unnecessarily trade restrictive and that the US failed to comply with relevant international agreements. 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. 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 fails to inform them of other adverse impacts caused by the fishing methods.

Nevertheless, the US dolphin-safe labeling provision was found to be more trade-restrictive than necessary to inform consumers and protect animal health, and inconsistent with the WTO's Agreement on Technical Barriers to Trade (TBT). 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 ETP.

Environmentalists blast decision

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 these overreaching 'trade' pacts pose." ♦

"Chinese manufacturing: The diddle kingdom", *The Economist*, Jul 5th 2007

Tainted Chinese goods prompt safety scares globally
IT HAS been a rough few months for China's exporters. In March tainted pet food originating in China was found to be killing animals in America. Chinese shipments of toxic toothpaste, toys and seafood, as well as hundreds of thousands of faulty tyres, have all caused big safety scares. The defective goods that have long bedevilled

Chinese consumers are beginning to spread to the outside world—a trend that is exacerbating concern about China's burgeoning exports.

Tales of dangerously shoddy manufacturing within China are nothing new. In 2004 bogus baby formula killed dozens of infants. Chinese media have reported half a dozen dead and many ill from a flawed antibiotic, 11 dead from tainted injections, 56 people ill as a result of contaminated meat, toxic snacks pulled off shelves and fake blood protein discovered in hospitals. In May the head of the agency regulating Chinese food and drugs, Zheng Xiaoyu, was sentenced to death for accepting bribes in exchange for licences to produce fake drugs and medical devices. A report from the General Administration of Quality Supervision, Inspection and Quarantine, China's standards watchdog, said that 20% of domestic products tested had failed to meet safety standards.

Safety lapses have only recently begun to attract the attention of foreigners. On July 1st Charles Schumer, a US senator who is a vocal critic of China, issued a report noting that 60% of goods recalled by the US's main safety regulator came from China. In June alone, the report says, dangerous faults or poisons prompted the recall of 68,000 folding chairs, 2,300 toy barbecue grills, 1.2m space heaters, 5,300 earrings, 1.5m toy trains and 19,000 children's necklaces. The US Food and Drug Administration has also rejected several shipments of contaminated food from China this year, and a wholesaler in New Jersey recalled Chinese chocolates containing potentially carcinogenic ingredients.

Skittish Americans are not the only ones worried about Chinese exports. In Panama around 100 people are reported to have died after ingesting tainted cough syrup from China. In Hong Kong, stores routinely sell staple goods such as eggs and milk from China more cheaply than those from other countries—a good indicator of the perceived danger. Legislators in the territory upbraided the government for lax safety standards on July 4th. In response, it pledged to develop a food supply “traceability system” to find and remedy problems at their source—in China. The European Union has also expressed concern.

Poor countries where manufacturing is booming often struggle to maintain quality standards at first. “Made in Japan” and “Made in Korea” were once synonymous with shoddiness. Post-war Japan was also an environmental disaster.

Many faults are never detected. In the US, as in most countries, only a relatively small proportion of imports is inspected. Moreover, numerous agencies have the power to monitor and block shipments, creating a bureaucratic quagmire. Schumer proposes an import tsar to oversee the scrutiny of Chinese goods, but critics fear that such a position would be susceptible to political pressure, and would resort to protectionism in the name of safety.

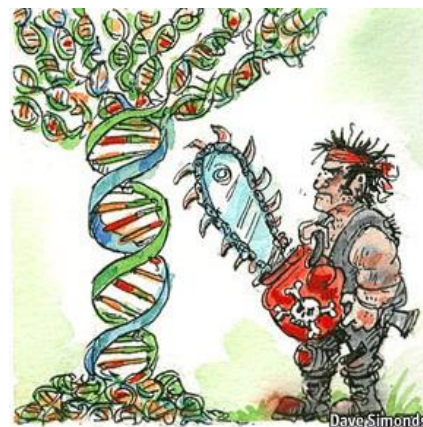
Besides, the problem might be solving itself. One manufacturer in southern China recalls how a factory dumped dyes in the water supply in the 1990s, turning all the locals' clothes blue—and doubtless wreaking havoc with their insides too. That factory has now closed. Another manager recalls appalling conditions at a juice factory that led, mercifully, to closure. Today a typical factory is more like one of PepsiCo's Chinese plants, he says, with safety standards among the most stringent in the world.

Such improvements are driven by enlightened self-interest. Many manufacturers are aware of what a slur the phrase “Made in China” has become, and are taking

precautions to preserve their reputations. Small and ill-supervised suppliers and subcontractors have been responsible for many of the worst disasters. Coca-Cola has banned its subcontractors from subcontracting again, to ensure strict quality control. McDonald's, aware that one bad hamburger could destroy its reputation, has gone even further, setting up a whole proprietary supply chain within China with more than 40 facilities producing beef, chicken, lettuce, cucumbers, rolls and even special sauce. Companies such as Li & Fung vie to help manufacturers monitor their supply chains and improve the quality of the goods they buy.

Perhaps the most encouraging aspect of the recent scandals is that they are emerging at all. For the first time in decades, the Chinese government has gone so far as to appoint respected professionals who are not members of the Communist party to run the ministries of science and health. Both of the ministers concerned have studied and worked in Europe. The better they do their jobs, the greater the number of scandals and problems that are likely to emerge. Last week the government said it had shut down 180 food factories in the past six months. If the quality of Chinese manufacturing is to improve, the first step is to expose its flaws. ♦

"The timber industry: Seeing wood for the trees", *The Economist*, 22 Sep 2012, p. 65



Genetic-testing of wood can curb illegal logging rang-utans, indigenous peoples and carbon emissions, so you don't want it made with illegally harvested logs. Or suppose you run a chain of furniture shops, and you don't want to go to jail for buying illegal timber. Either way, you face a snag: how to tell if a log is legal?

Enter DoubleHelix Tracking Technologies, a Singapore-based firm that uses DNA testing to pinpoint where a piece of wood is from. “You can't forge DNA,” says Andrew Lowe, its chief scientist. The firm sells its services to big retailers such as Lowe's, B&Q and Marks & Spencer.

John Simon, the boss of Simmonds Lumber, another DoubleHelix client, explains how it works. His firm, an Australian timber importer, used to rely on masses of paperwork when buying merbau, a pricey hardwood from Indonesia. Given the ease with which proof-of-origin papers can be faked, it was hard to tell where any of it really came from. Now, thanks to DoubleHelix, Simmonds can show that a piece of merbau decking assembled in Australia comes from a specific (and legit) stump in Indonesia.

“We do it for both moral and business reasons,” says Mr Simon. Customers like to know that their decking is not destroying the planet. Company bosses want to stay out of trouble. Conservation laws are growing fiercer,

especially in America, where businessfolk who break them may be jailed even if they did not know their wood was illegally sourced.

DNA tests face two problems. One is the cost: testing \$45,000-worth of merbau will set you back \$250, says Jonathan Geach, the executive director of DoubleHelix. The second is that accurate global DNA maps exist only for about 20 species of tree, and the tests are no use unless you know what you are looking for. Neither problem seems insuperable, however. More species can be mapped, and the cost of testing will fall, as surely as a chainsawed tree. That's bad news for the \$30 billion-a-year illegal logging industry, but good for forests. ♦

"Combating illegal fishing: Dragnet",

The Economist, 24 Jan 2015, p. 66-7



A new satellite-based surveillance system will keep a sharp eye on those plundering the oceans

The scale of illegal and unreported fishing is, for obvious reasons, difficult to estimate. The Pew Charitable Trusts, a US research group, has nevertheless had a stab at it. It reckons that around one fish in five sold in restaurants or shops has been caught outside the law. That may amount to 26m tonnes of them every year, worth more than \$23 billion. This illegal trade, though not the only cause of overfishing, is an important one. Stamping it out would help those countries whose resources are being stolen. It would also help to conserve fish stocks, some of which are threatened with extinction. It might even (if the more apocalyptic claims of some ecologists are well founded) slow down the journey towards a wider extinction crisis in the oceans.

A global game of hide and seek

A new monitoring system has been developed by the Satellite Applications Catapult, a UK government-backed innovation centre based near Oxford, in collaboration with Pew. In essence, it is a big-data project, pulling together and cross-checking information on tens of thousands of fishing boats operating around the world. At its heart is what its developers call a virtual watch room, which resembles the control centre for a space mission. A giant video wall displays a map of the world, showing clusters of lighted dots, each representing a fishing boat. The data used to draw this map come from various sources, the most important of which are ships' automatic identification systems (AIS). These are like the transponders carried by aircraft. They broadcast a vessel's identity, position and other information to nearby ships and coastal stations, and also to satellites. An AIS is mandatory for all commercial vessels, fishing boats included, with a gross tonnage of more than 300. Such boats are also required, in many cases, to carry a second device, known as a VMS (vessel monitoring system). This transmits similar data directly to the authorities who control the waters in which the vessel is fishing, and carrying it is a condition of a boat's licence to fish there. Enforcement of the AIS regime is patchy, and captains do sometimes have what they feel is a legitimate reason for turning it off, in order not to alert other boats in the area

to profitable shoals. But the VMS transmits only to officialdom, so there can be no excuse for disabling it. Switching off either system will alert the watch room to potential shenanigans.

The watch room first filters vessels it believes are fishing from others that are not. It does this by looking at, for example, which boats are in areas where fish congregate. It tracks these boats. Satellites armed with synthetic-aperture radar can detect a vessel's position regardless of weather conditions. This means that a ship's fishing pattern can be logged. Zigzagging, for example, suggests it is long-lining for tuna. When the weather is set fair, this radar information can be supplemented by high-resolution satellite photographs. Such images mean, for instance, that what purports to be a merchant ship can be fingered as a transshipment vessel by watching fishing boats transfer their illicit catch to it.

As powerful as the watch room is, its success will depend on governments, fishing authorities and industry adopting the technology and working together. Those authorities need to make sure AIS and VMS systems are not just fitted, but are used correctly and not tampered with. This should get easier as the cost of the technology falls.

Enforcing the use of an identification number that stays with a ship throughout its life, even if it changes hands or country of registration, is also necessary. An exemption for fishing boats ended in 2013, but the numbering is still not universally applied. Signatories to a treaty agreed in 2009, to make ports exert stricter controls on foreign-flagged fishing vessels, also need to act. Fishermen seek out ports with lax regulations to land illegal catches.

Preserving Nature's bounty

One of the most promising ideas for using the watch room is that shops could employ its findings to protect their supply chains, and thus their reputations for not handling what are, in effect, stolen goods. Governments sometimes have reason to drag their feet about enforcing fisheries rules. Supermarkets, though, will generally want to be seen as playing by them. The watch room's developers say they are already in discussions with a large European supermarket group to do just this. The watch room will also allow the effective monitoring of marine reserves around small island states that do not have the resources to do it for themselves.

The first test of this approach is to regulate a reserve of 836,000 square kilometres around the Pitcairn Islands group, a UK territory in the middle of the South Pacific with only a few dozen inhabitants. The Pitcairn reserve, which may be set up later this year, will be one of the world's largest marine sanctuaries. By proving that the watch room can keep an eye on such a remote site, its developers hope other places with similar requirements will be encouraged to get involved. The watch-room system is also capable of enlargement as new information sources are developed. One such may be nanosats. These are satellites, a few centimetres across, that can be launched in swarms to increase the number of electronic eyes in the sky while simultaneously reducing costs. Closer to the surface, unmanned drones can do the same. ♦