Codex in Motion: Food Safety Standard Setting and Impacts on Developing Countries' Agricultural Exports

Le Codex en mouvement : établissement de normes de sécurité sanitaire des aliments et effets sur les exportations agricoles des pays en développement

Codex in Bewegung: Festlegung von Lebensmittelsicherheitsstandards und Auswirkungen auf die Agrarexporte von Entwicklungsländern

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The Codex Alimentarius Commission (CAC) plays a central role in the global food system. Codex food safety standards are considered to be the 'international standard' used as guidance for national food safety regulation and often used as a reference to litigate World Trade Organization (WTO) trade disputes. While the work of the Codex committees[1] receives considerable attention and reference, they have also been recognised as 'battle-grounds [that] are at the center of some of the most prominent disputes over food regulation within the global trading system' (Josling *et al.*, 2004, p. 54).

Diverse food standards across countries reflect national regulatory traditions and food culture, but are also highly contentious, because they imply trade costs and market access difficulties for countries with differing regulatory systems. The CAC attempts to bridge these differences across countries by agreeing on internationally accepted food standards; these include provisions on food hygiene, food additives, pesticide residues, veterinary drugs residues, contaminants, labelling and presentation, methods of analysis and sampling, and import and export inspection and certification. In practical terms, this means that standard by standard, food item by food item, for each potential contaminant, residue level, additive or hygiene issue, a standard has to be negotiated in an often time-consuming procedure. According to the Food and Agriculture Organization and World Health Organization (FAO/WHO, 2018), over its 56-year history, Codex has produced: more than 4,100 maximum levels (MLs) for food additives; over 5,200 maximum residue limits (MRLs) for over 300 pesticides; over 600 MRLs covering 63 veterinary drugs; more than 200 commodity standards; and over 100 MLs covering 18 contaminants in food.

While harmonisation of food standards globally may be the ultimate goal, pragmatically it is difficult to achieve. Both developed and developing countries must balance reductions in human health risks against economic benefits in production and trade associated with setting food safety standards that are 'appropriate' and 'reasonable' among 188 Codex member nations and one member organisation, the European Union (EU). There are several instances in which the adoption of Codex standards has been protracted, put on hold, or discontinued. Factors contributing to delays in reaching agreement on Codex standards include: (1) concerns with respect to WTO implications of the standards; that is the 'status of national regulatory requirements which may differ from the international standard being developed, and hence the potential for a WTO challenge'; (2) 'non-science issues' specified as 'consumer opinions and preferences, impact on consumer confidence, prohibition in national legislation, etc'; and (3) the question of how to deal 'with situations where objections to the adoption of a standard are not based either on sound science or on other factors that are globally applicable' (CAC, 2012: para. 18, 40, 43, 51).

> "Lorsque le Codex accélère les travaux pour adopter une norme, les gains de flux commerciaux réalisés par les pays en développement individuels peuvent être économiquement significatifs."

Examples of food safety standard setting in which the Codex process was discontinued include: (i) *General standard for processed cheese*, discontinued in 2017 after

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Sri Lanka had problems with exports of Ceylon cinnamon to the EU.

over 10 years of discussion with no consensus; (ii) *MRL for ivermectin in beef*, discontinued in 2017 because of new scientific information from the Joint Expert Committee on Food Additives (JECFA); and (iii) *MLs for cadmium in dry mixtures of cocoa and sugars sold for final consumption*, discontinued because of limited international trade. Other examples include *Non-centrifuged dehydrated sugar cane juice*, discontinued in 2019 after several years of discussion; MRLs for Bovine Somatotropin (BST) and Zilpateral which have been on the agenda since 1998 and 2012, respectively; and a ML for methylmercury in amberjack and swordfish discontinued in 2018 because of low levels of concentration and lack of consensus. Finally, there are other prominent examples of food safety issues that continue to plague governments and trade negotiators in high-income markets such as the US and EU, despite the existence of Codex standards and guidance (Wieck and Rudloff, 2020). As Josling and Tangermann (2016) note: '… the issue of [EU] banning so-called "chlorine chicken" is now one of the battle cries of those in the EU opposed to the TTIP' (p. 3). As Josling *et al.* (2004) conclude, the global food system has much to gain from a well-designed and rigorously enforced set of international food safety regulations that target hazards that threaten consumer health and undermine confidence in the food supply.

These situations pose challenges to exporters, particularly from developing countries, for at least two reasons. First, lower-income nations often lack sufficient capacity and scientific technical expertise to evaluate, develop and implement their own food safety standards. Second, empirical evidence suggests that developing countries benefit more than developed countries from an internationally harmonised system of food safety standards (Beghin *et al.*, 2015; Murina and Nicita, 2017).

The objective of this article is to assess the duration of selected Codex case-study decisions and evaluate the implications for agri-food trade with a focus on developing countries. Specifically, (1) we review the decision procedures in the CAC; (2) summarise for the last ten years the number of standards that were under consideration by the CAC, and (3) evaluate the trade flow effects of five case studies of food safety standards: (i) three cases in which Codex consensus was achieved and standards adoption was accelerated, and (ii) two cases in which the adoption of Codex standards have been delayed and remain on the agenda for future discussion.

Table 1: Number of standards for Adoption in Codex Commission, 2010–Present

	Step 1	Step 5	Step 8			Decision on discontinuation
	Proposals adopted for new work	Draft text adopted	Codex standard adopted	Sent back for further discussion	Held up	
2010	16	11	38	none	Bovine Somatrophin1 (bST), ractopamine	1
2011	23	9	31	2	bST, ractopamine	3
2012	13	9	28	1	bST	2
2013	14	9	46	2	bST	2
2014	18	4	28	2	bST	3
2015	19	5	36	1	bST	6
2016	7	12	31	4	bST	3
2017	32	8	42	none	bST	4
2018	10	5	20	none	not mentioned	4
2019	10	11	28	2	not mentioned	4
Source:	Appendix VI 2019: App. V	Appendix IV 2019: App. III	Appendix III 2019: App. II	Meeting report	Meeting report	Appendix VII2019: App. VI

Note: 1:bST has been held at step 8 since 1998

Source: Authors' compilation based on CAC Meeting Reports (various years).

Codex procedures and number of standards adopted, 2010–present

Codex follows a fixed procedure in standard setting. Any participating member or observer may propose that Codex begin work on a new standard by submitting a project document to the relevant Codex committee, 'detailing the need for a standard, the timeframe for the work and its relative priority' (FAO/WHO, 2018, p. 17).

If the CAC, the main decision body of Codex, agrees to develop a standard (Step 1), an 8-step standard setting procedure is followed. Much of the work takes place in the relevant committees (e.g. the Committee on Contaminants in Food or the Committee on Fresh Fruits and Vegetables). At Step 2, a standard is drafted; at Step 3, the document is circulated to Members, and their comments circulated at Step 4; Step 5 allows for committee discussion within the relevant committee and preliminary adoption; Steps 6 and 7 provide additional time for review and comment; Step 8 is adoption by the committee and transmittal to the CAC for final adoption. If adopted, the new standard becomes part of the Codex Alimentarius (the 'food code'). There are three decision points along this 8-step procedure. In the first steps (1–2), the decision point is agreement by the relevant committee and subsequently the CAC to start new work on a standard. During the following steps (3–8) the relevant committee(s) revise the document based on comments from countries and observer organisations with decision points being approved by the relevant committee and the CAC at Step 5 (preliminary adoption) and Step 8 (adoption), respectively. While theoretically a standard could be blocked at any time in the process, it is most likely to occur at one of the three decision points. Consequently, standard setting may be delayed or discontinued.

Table 1 summarises the number of standards that were newly proposed for work, adopted, delayed or put on hold from 2010 to the present. On average, 16 work proposals for new (or modified) standards were considered each year, and 33 standards were adopted. The number of standards adopted often exceeds the number of proposals submitted. This is because for MLs for food additives and MRLs in veterinary drugs, often only one new work proposal is submitted that includes a group of several MLs or MRLs which are subsequently adopted. Thus, on average, more standards are adopted than new work initiated. On the other hand, some standards are not adopted in the final stage (step 8) as certain members may note the need for further discussion. At the extreme, one standard, dealing with the use of Bovine Somatotropin (bST) has been held back at the final stage for over a decade, as members cannot agree on the formulation of the standard.

The case studies in this article discuss two recent cases where discussion over formulating international standards has been ongoing since 2014, and three cases in which international standards were more rapidly adopted at step 5/8 with steps 6 and 7 being omitted. On average, it takes 4.2 years to develop a standard but 'significantly less [time] for pesticide Maximum Residue Levels (MRLs) or food additive levels' (FAO/WHO, 2018, p. 7).

Codex in motion: duration of standard-setting for selected cases

Five cases are selected for review and analysis. They were chosen because: (i) the products impacted are important to at least some developing country regions in terms of export earnings; and (ii) to contrast the potential trade implications for developing countries when the setting of international standards was delayed compared to situations where the adoption of standards was expedited. The five case studies are as follows:

Codex Standards that were Accelerated and Adopted

1) Sulphur Dioxide (SO_2) levels impacting Sri Lankan cinnamon exports.
2) Melamine contamination impacting China's milk and powder exports.
3) Guidance document for microbial hazards concerning Honduran melon exports.

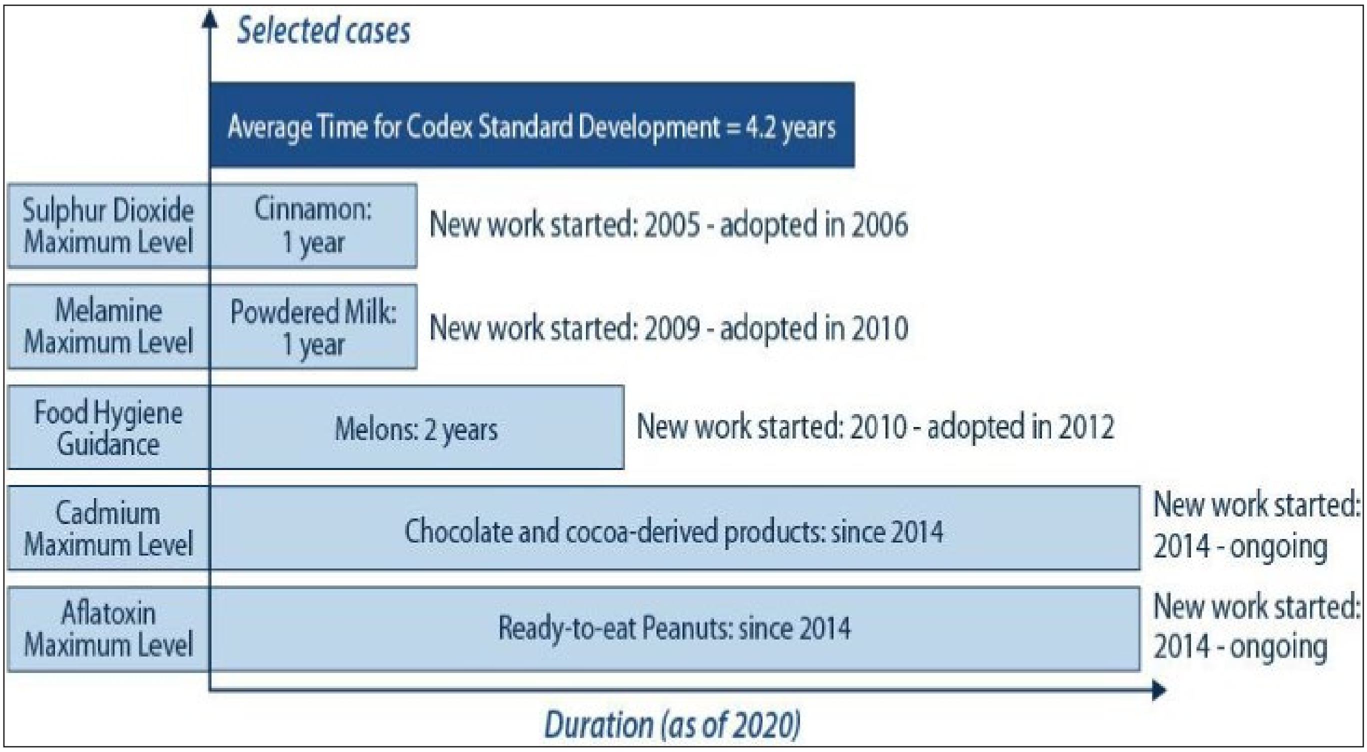
Codex Standards that are Delayed

4) Cadmium MLs in chocolate.
5) Aflatoxin MLs in ready-to-eat peanuts.

It should be noted that while the development of Codex standards is a deliberative process, given the nature of performing a case study analysis, some limitations regarding representativity and inference towards a larger set of countries apply. In particular, we focus on developing country exports that have been affected by the lack of a Codex standard and their difficulty meeting standards set by national authorities. However, as one reviewer noted there are likely countries that gain from the lack of an international standard if they can meet an importing countries' often stricter national standards. Thus, the case study trade flow impacts presented here may not reflect the full spectrum of winners and losers from the lack of a Codex standard. However, empirical evidence suggests that similarity of standards across countries is generally supportive for trade (Disdier *et al.,* 2019; Grant and Arita, 2017). Moreover, the Agreement on the Application of Sanitary and Phytosanitary Measures (Article 3) encourages (but does not obligate) members to harmonise their measures with international standards. Thus, focusing on these somewhat polarising Codex cases and the CAC standard setting process allows us to shed light on the potential economic and trade implications associated with Codex delays. In addition, case-study impacts have also been econometrically analysed supporting our descriptive case study findings (see Wieck and Grant, 2020).

Differences in length of Codex decision making can be seen when comparing the selected case studies with the average standard setting duration of approximately 4.2 years (Figure 1). In particular, when food incidences were reported, Codex shows rather quick adoption times with the duration of the standard work ranging from 1–2 years. In the case of cadmium in chocolate and aflatoxins in ready-to-eat peanuts however, the duration of standard setting has taken three times as long,

Figure 1: Comparison of Codex work for selected cases



Source: Authors' own illustration.

as consensus on the final level of MLs has been held up.

> “Wenn der Codex die Arbeiten zur Annahme eines Standards beschleunigt, können die von einzelnen Entwicklungsländern erzielten Gewinne aus den Handelsströmen von großer wirtschaftlicher Bedeutung sein.”

In what follows, we summarise each case study. It is important to note that a food scare incident in a country does not automatically start the process of standard setting in Codex. It is up to the companies in the affected country to bring the issue to their government and trade officials so that it can be raised in the CAC where a decision by the Codex Members must be taken to initiate the process of drafting standards, if none exist.

Sulphur dioxide (SO_2) impacting Sri Lankan cinnamon exports. In 2004, Sri Lanka encountered problems with consignments of Ceylon cinnamon exported to the EU. At issue was the detection of consignments containing SO_2, for which the EU's regulation on food imports prevented a sizeable share of Sri Lanka's cinnamon exports from entering the EU market. Given the importance of cinnamon exports to Sri Lanka, the 29th Session of the CAC, held in Geneva in July 2006,[2] adopted a maximum level (ML) of 150 mg/kg for sulphites (including sulphur dioxide) in food category 12.2.1 'Herbs and spices' of the Codex General Standard for Food Additives (GSFA).

Melamine contamination impacting China's milk and powder exports. In 2008, China's powdered milk was found to contain melamine involving intentional adulteration (Huang, 2014). Forty seven countries received melamine-contaminated products, and trade was disrupted as countries adopted their own MLs – sometimes at zero – for melamine in the absence of a science-based international standard. A WHO-FAO Expert Meeting was convened in December 2008 and provided guidance to the Codex Committee on Contaminants in Foods (CCCF) when it met in March 2009. That same year, the Committee approved a proposal to establish and the CAC finalised MLs for non-intentional and unavoidable presence in July 2010.

Guidance document for microbial hazards concerning melon exports by Honduras. In 2008, nearly 60 people in North America became ill from a salmonella outbreak after consuming melons (cantaloupe), including 50 consumers in the United States and 9 in Canada. The United States Food and Drug Administration (USFDA) issued a public health alert in 2008 regarding imports of melons and subsequently traced the outbreak to a production and packing firm located in Honduras. Honduras, a lower-income developing country needed a set of guidelines to implement effective mitigation practices to reduce the risk of melons becoming unsafe for human consumption. In 2010, the Codex Committee on Food Hygiene (CCFH), noting the global public health significance of microbiological hazards in melons, agreed to start work on a guidance document. CAC approved

Laboratory work on maximum limits is important for food safety compliance.

the new work in 2011. A CCFH inter-session work group drafted the proposed guidance, which was taken up by the CCFH in 2011 and sent to the 2012 Commission session at Step 5/8, where it was adopted, less than two years after it was proposed.

Cadmium MLs in chocolate. Chocolate and cocoa products can contain cadmium, a toxic heavy metal present in the soil of cocoa plantations. While high levels of cadmium contamination have been classified as a human carcinogen, cadmium is a naturally occurring substance in the environment because of volcanic activity, forest fires and weathering. In 2012, the CCCF asked the Joint FAO/WHO Expert Committee on Food Additives (JECFA) to conduct an exposure assessment of cadmium for cocoa and cocoa products (i.e. chocolate). The study, reported to the CCCF in 2014,[3] concluded that the total cadmium exposure for high consumers of cocoa and cocoa products was not considered to be of concern (WHO, 2013). Nevertheless, in 2014, the Committee began work on an ML, noting that the lack of an ML for cadmium in chocolate products could threaten exports of some countries.

Consensus could not be reached at the 2015 and 2016 CCCF meetings. In 2017, the CCCF established a working group led by Ecuador, Ghana and Brazil, which categorised chocolate and cocoa-derived products by the percentage content of cocoa solids. At the 2019 CCCF meeting, there was general support for an ML of 0.3mg/kg for chocolate containing less than 30 per cent cocoa solids. The EU and Norway advocated for a lower ML of 0.1mg/kg to 'ensure sufficient protection, in particular for children' consistent with the EU's risk assessment. See https://ec.europa.eu/food/sites/food/files/safety/docs/codex_cac_42_cl_2019-46-cccf.pdf, p. 1. However, given that CCCF had reached agreement on the standards based on the percentage content of cocoa solids, the committee sent the proposed ML to the CAC with the recommendation for adoption at Step 5/8. The Committee Chair said a compromise had been reached by the CCCF even though it may result in a higher rejection rate of exports from some Latin American and Caribbean countries.

> "When Codex accelerates work to adopt a standard, the trade flow gains realised by individual developing countries can be economically significant."

The draft ML stalled in Codex's main decision body (CAC). This time, some African countries expressed concerns that the draft ML was not sufficiently stringent along the lines of the MLs advocated by the EU and Norway (i.e. an ML less than 0.3mg/kg), and could jeopardise their exports that have been able to meet the high cadmium in chocolate standards (i.e. cadmium MLs less than 0.3mg/kg) required in the EU market. The CAC adopted the ML at Step 5, but accelerated adoption, by leaving out steps 6 and 7, of the final standard was rejected and it remains on the CCCF agenda.

In the absence of a codex standard, importers can set their own (more stringent) standards provided they are based on a scientific risk assessment. Developing countries potentially affected by the delay in establishing an international Codex standard for cadmium in chocolate are Ecuador ($30 million in chocolate exports in 2018), Colombia ($70 million), Brazil ($111 million), Ghana ($43 million), Egypt ($170 million), Cote d'Ivoire ($140 million) and Malaysia ($308 million).

Aflatoxin MLs in ready-to-eat peanuts.
The CCCF has worked on an ML for aflatoxin in ready-to-eat peanuts since 2014. Despite a JECFA assessment, the Committee has not been able to reach consensus on the appropriate ML. The ML remains held up at step 4 in the CCCF. As in the case of cadmium, disagreement over an international standard for aflatoxin in ready-to-eat peanuts can lead to situations where importers can set their own (more stringent) standard if they have a scientific basis for this. Low-income developing countries affected by this delay include Nicaragua ($110 million in peanut exports in 2018), Senegal ($190 million), Malawi ($17 million), South Sudan ($52 million), Myanmar ($113 million), India ($447 million) and Paraguay ($10 million).

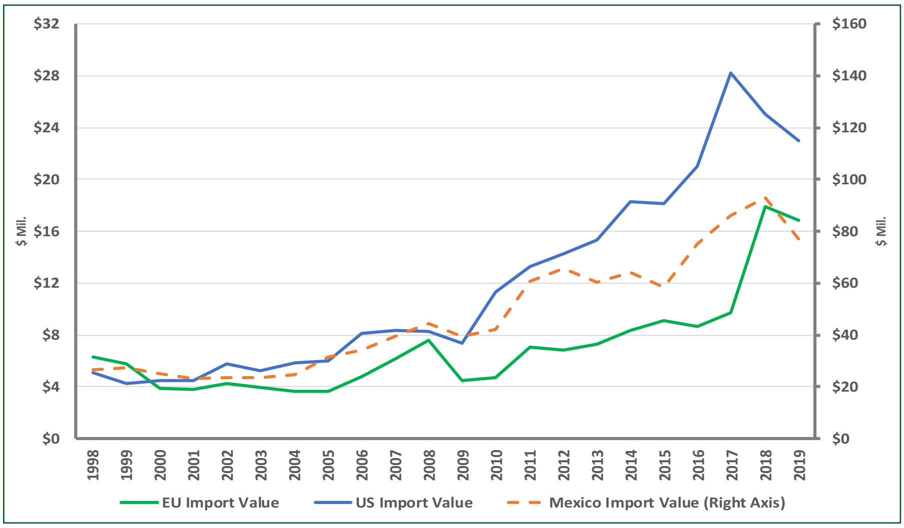
Trade flow impacts of Codex standards

Cinnamon exports by Sri Lanka. Sri Lanka is the third largest producer and largest exporter of Ceylon cinnamon. From 2000–2016 the value of Sri Lankan cinnamon production has increased over five-fold from $32 million in 2000 to nearly $160 million in 2016 (FAOSTAT, 2020). Seventy-four per cent of Sri Lanka's cinnamon production is exported to the global market. Top destination markets include Mexico, the United States and the EU.

Following the accelerated establishment of a Codex standard for SO_2, in late 2006, the EU adopted the ML and aligned its import requirements with the international standard. The trade effects of this swift development of a Codex standard are illustrated in Figure 2, for EU-28 (left axis), United States (US) (left axis), and Mexico (right-axis) imports of cinnamon from Sri Lanka. Since 2007, Sri Lanka's cinnamon exports to EU-28 members increased significantly with an annual average growth rate of over 10 per cent. Sri Lanka was also able to increase its exports to other countries: cinnamon exports to Mexico and the US increased by a factor of nearly 2.5 and 3.25, respectively, over the 2005–2006 to 2019 period (comparison EU: 3.5). Increases in the value of cinnamon imports are not simply due to a price effect. The average annual growth rate in the volume of cinnamon imports from Sri Lanka for the EU-28, US and Mexico are 5.4 per cent, 5.5 per cent and 2.1 per cent, respectively.

Melamine contamination affecting China's milk and powder exports. The most direct trade outcomes around the period of the melamine incident can be observed in HS products 040120 (milk and cream not concentrated) and 040210 (milk powders in solid form including for infant use) (Figure 3). Beginning in 2008, corresponding to the detection of melamine in China's milk and milk powder supply, China's global milk/cream (040120) exports fell from nearly $30 million in 2007 to $15 million by 2010. China's milk powder exports in solid form (040210) fell from $26 million in 2008 to less than $5 million by 2010. However, following the adoption of the Codex standard for melamine and stricter domestic regulations governing its production practices, China's fluid milk (040120) exports recovered, increasing to $25 million in 2018. The recovery of China's milk powder exports has been much more volatile, perhaps owing to the fact that food safety scares involving infant milk powder can impact exports well beyond the establishment of a Codex standard.

Figure 2: Cinnamon exports by Sri Lanka to the EU, United States and Mexico, 1998–2019

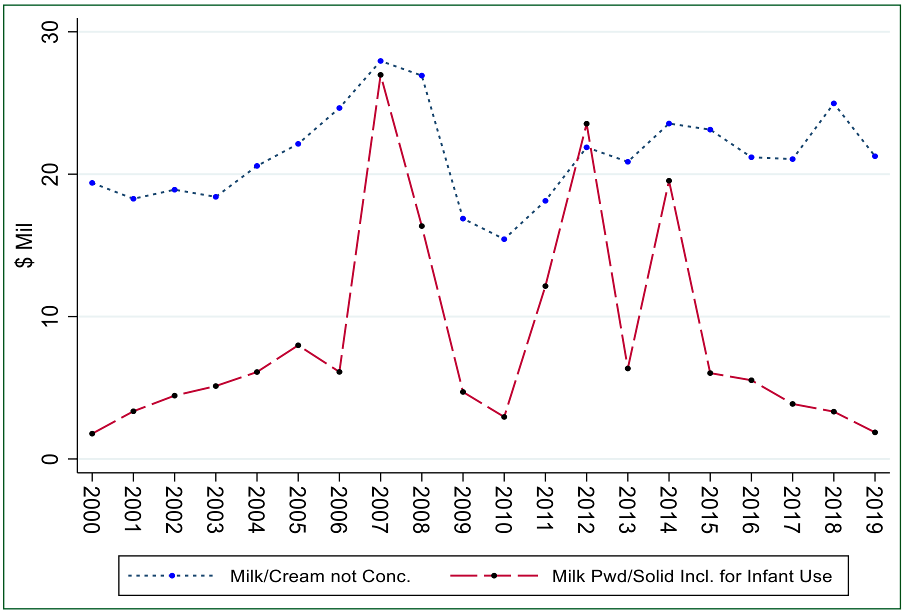


Source: Authors' calculations from Trade Data Monitor.

Melon exports by Honduras. The trade impacts of the adoption of the Codex guidance document for Honduran melon exports are illustrated for cantaloupe and honeydew (HS 080719), and watermelon (HS 080711) exports to Honduras's three largest trading partners: US, Canada and EU (Figure 4). Prior to 2015, Honduras was a relatively small player in the US market for melons with exports never exceeding $40 million in either product category. However, in 2016, three years after the 2012 adoption of the Codex guidelines, Honduran exports of melons and watermelons increased by an order of magnitude, from $34 and $0.70 million in 2015 to $90 and $36 million in 2019, respectively, representing a 3- and 30-fold increase in just 4 years.

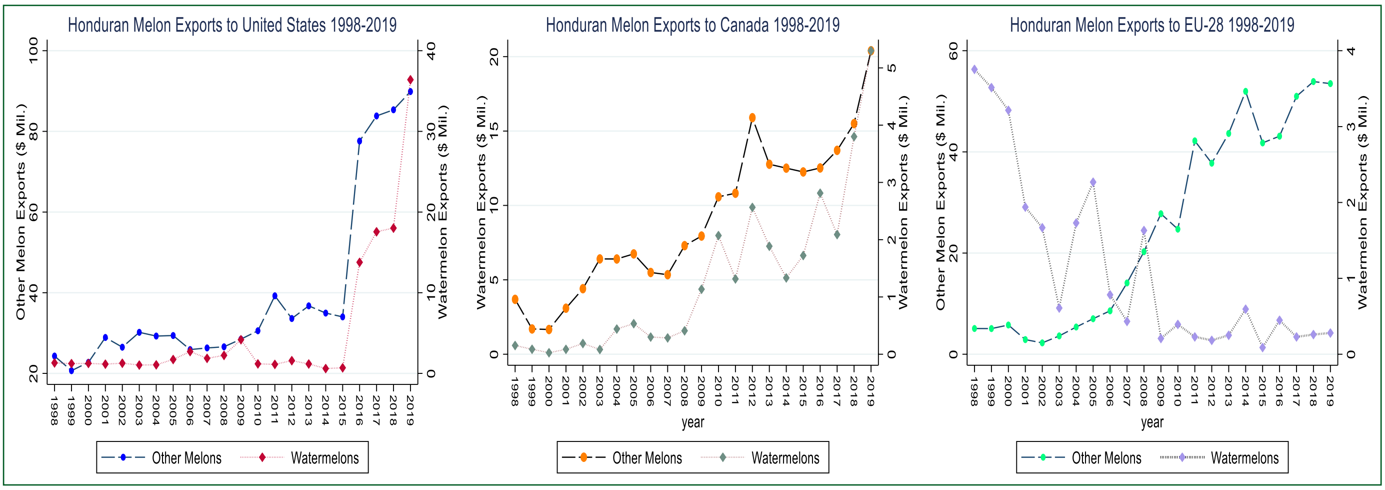
While the adoption of a Codex international guidance document facilitated exports of melons to the US, Figure 4 also illustrates that Honduras was able to increase its exports to Canada and the EU. For example, after a brief lull in exports to Canada during the 2013–2017

Figure 3: Exports by China of milk and milk powder including for infant use



Note: Milk/Cream not conc. falls under HS code 040120 and Milk Powder in solid form including for infant use (Milk Pwd/Solid Incl. for Infant Use) falls under HS code 040210.
Source: Authors' calculations from Trade Data Monitor (TDM).

Figure 4: Honduran melon exports, 1998–2019



Source: Authors' calculations from Trade Data Monitor.

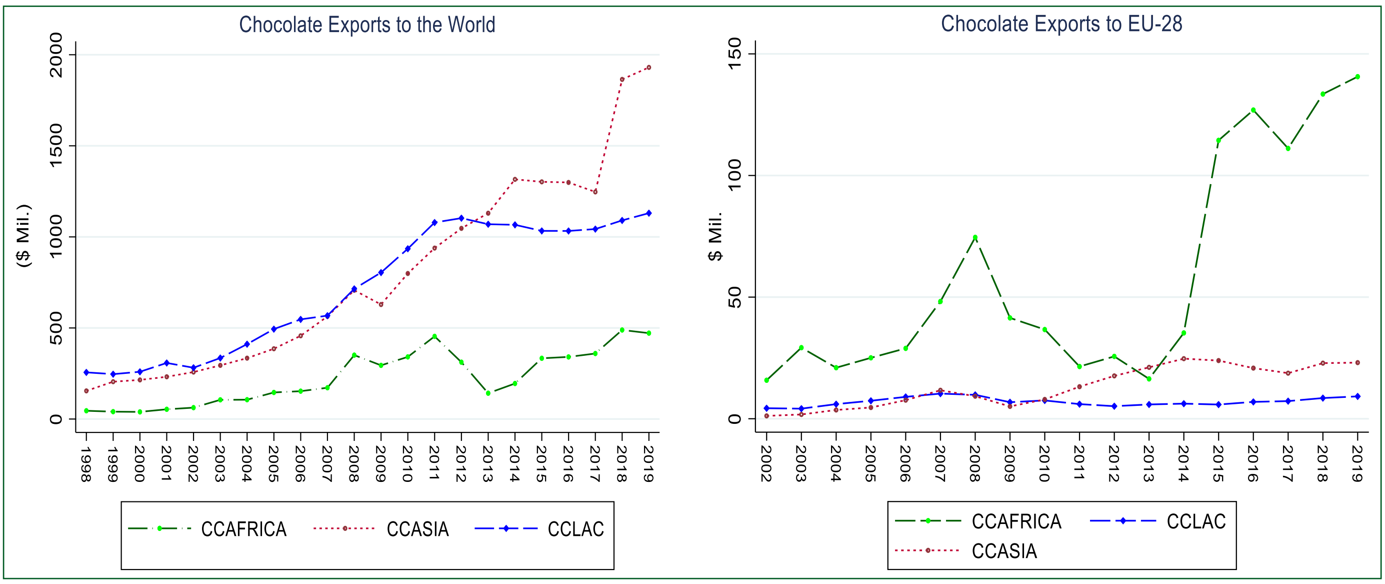
period, Honduran exports of melons and watermelons increased from $12 to over $20 million and from $1.2 to over $5 million, respectively. Similarly, since 2010, Honduras has more than doubled its melon exports to the EU from $24 to $54 million. Codex's action to develop a 'best practices' guidance document for mitigating microbial hazards throughout the production, handling and marketing chain was likely an important catalyst for export growth to the US, Canada and the EU.

Chocolate exports by Africa, Latin America and Caribbean and Asia. As described above, in the Codex discussions of a ML for cadmium in chocolate, there is a dichotomy of interests between some African countries in Codex (collectively referred to as CCAFRICA) and the group of Latin American and Caribbean countries (CCLAC). In 2015 the EU adopted tighter national MLs for cadmium, set at levels roughly one-third of the MLs being discussed in Codex. This is of relevance as the EU is not only CCAFRICA's primary market for cocoa beans but also for chocolate exports. In 2019, CCAFRICA exported cocoa beans worth $4.2 billion to the EU compared to CCLAC exports of almost $500 million.

Figure 5 illustrates this dichotomy concerning the EU's MLs on cadmium impacting chocolate exports. The left panel traces chocolate exports to the world as a measure of each Codex regions' capacity to export to the international market, and, the right panel, to the EU-28 for Codex regions Africa (CCAFRICA), Asia (CCASIA), and Latin American and Caribbean countries (CCLAC). A list of individual countries belonging to the official Codex regions can be found at: http://www.fao.org/fao-who-codexalimentarius/committees/codex-regions/en/. For clarity and context, CCEURO (other non-EU-28 countries such as Switzerland) and CCNASWP (North American and South West Pacific) are the largest chocolate exporting Codex regions to EU-28 with a combined total of nearly $4 billion in 2019. Other Codex regions such as the Near East group (CCNEA) have very little chocolate exports to the world and EU-28.

The left graphic in Figure 5 demonstrates that CCASIA and CCLAC are the

Figure 5: Codex region chocolate exports to the world and EU-28, 1998–2019



Note: Authors' calculations from Trade Data Monitor.

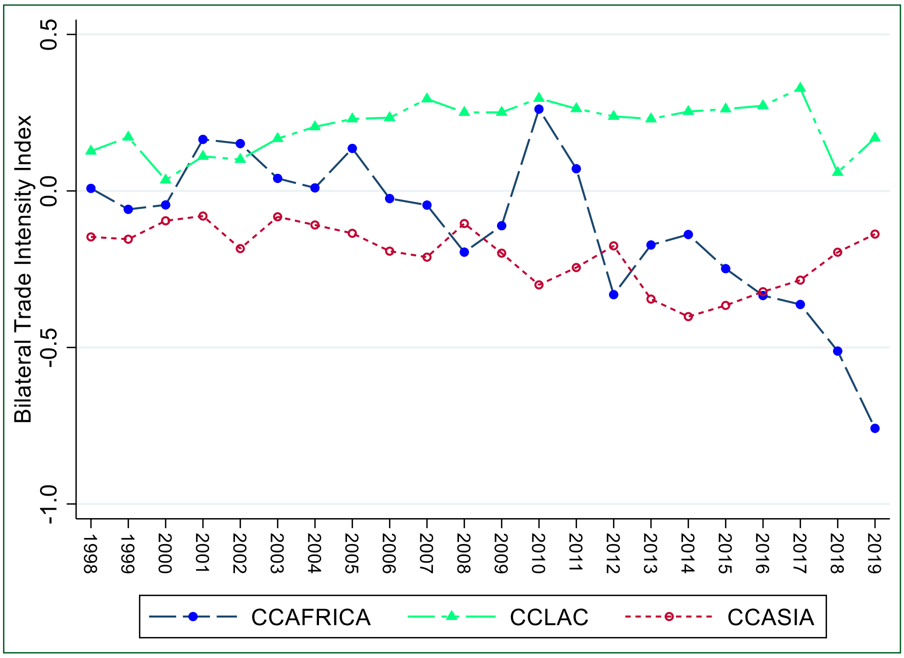
largest developing country chocolate exporters with global exports of nearly $2.0 and $1.2 billion in 2019, respectively. CCAFRICA is a relatively smaller player in global trade of chocolate. However, it is interesting to note that while CCAFRICA's global chocolate exports are roughly one-half and one-quarter those of CCLAC and CCASIA to the world market, respectively, the reverse is true when we plot these regions' chocolate exports to the EU-28 (right graphic, Figure 5). Since 2015, CCAFRICA's chocolate exports to the EU have exceeded both CCLAC and CCASIA by a factor of four. The contrasting picture of CCAFRICA and CCLAC's chocolate exports globally and to the EU-28 may be one explanation why Codex standard-setting for cadmium in chocolate seems to be so complicated.

Peanut exports by Africa, Latin America and Caribbean and Asia. There is not yet an internationally agreed upon international standard for aflatoxin in ready-to-eat peanuts. The trade impact of stricter aflatoxin MLs on ready-to-eat peanuts was measured through analysing developing country exports to the EU, which in 2010, adopted its own, lower than Codex-proposed (10-15μg/kg) aflatoxin MLs, of 4μg/kg for both uses of nuts: ready-to-eat peanuts and those for further processing. To the best of our knowledge, these tolerances reflect the most recent adoption of MLs by the EU.

In Figure 6, we use the symmetric bilateral trade intensity index to summarise the trade impacts of a large number of Codex region peanut exporters. Positive (negative) values of the index reflect a more intense (weak) trade relationship vis-à-vis competing exporters in the rest-of-world market (see Box 1 for details). First, with the exception of 2010 and some earlier years in the sample (2001–2005), CCASIA and CCAFRICA regional peanut symmetric bilateral trade intensity indices with the EU are universally negative suggesting a weaker than expected trade relationship compared to rest-of-world exports to the EU. In particular, CCAFRICA's symmetric bilateral trade intensity index has declined precipitously since 2010, which coincides with the EU's policy amendment setting stricter MLs for aflatoxins, with symmetric bilateral trade intensity index scores falling below –0.50 in 2018 and 2019. By 2019, CCAFRICA's peanut symmetric bilateral trade intensity index with the EU was the lowest of all Codex regions.

Second, CCASIA's symmetric bilateral trade intensity index with the EU is also negative suggesting a weaker than expected trade relationship. However, CCASIA's index began trending higher in 2015 which may

Figure 6: Symmetric bilateral trade intensity index for Africa, Latin America & Caribbean, and Asian peanut exports to the EU, 1998–2019



Source: Authors' calculations from BACI and Trade Data Monitor.

Box 1: The Symmetric Bilateral Trade Intensity Index

Formally, the bilateral trade intensity index (BTTI) identifies destination countries in which an origin country's exports are concentrated. Let i (j) denote the exporting (importing) country, and w the rest-of-world (RoW) market. Letting X denote the value of exports, the BTTI is defined as:

$$BTTI = \frac{X_{ij}/X_{iw}}{X_{wj}/X_{ww}}$$

The numerator in the BTTI is the share of i's exports sent to j. The denominator is the share of world (w) exports sent to j. Thus, the BTTI normalises the share of i's exports to j (the numerator) by the relative importance of the RoW's exports to j (the denominator). Because both numerator and denominator are shares – one in terms of the partner country (numerator) and one in terms of the world market (denominator) – the value of the BTTI ranges from zero to infinity.

More intuitively appealing, is the symmetric BTTI (SBTTI), which scales the BTTI on the domain {–1,+1} as follows:

$$-1 < SBTTI = \frac{BTTI - 1}{BTTI + 1} > +1.$$

Positive values of the SBTTI reflect a more intense trade relationship; a neutral trade relationship (i.e. neither intense nor weak) exists when the index approaches zero; and a relatively weak trade relationship vis-à-vis the world market exists when the SBTTI approaches a negative one.

There is not yet an agreed international standard for aflatoxin in ready-to-eat peanuts.

suggest some of its producers and exporting firms are adjusting to meet the stricter EU aflatoxin standards. Finally, while CCLAC's trade has been impacted significantly by EU standards on cadmium (Figure 5) the reverse is true for its peanut exports (Figure 6). CCLAC's symmetric bilateral trade intensity index with the EU has remained positive and stable through time suggesting a stronger than expected symmetric bilateral trade intensity with the EU relative to competing suppliers and evidence that CCLAC is capable of meeting the stricter aflatoxin standards imposed by the EU.

Collectively, the contrasting trade outcomes for peanuts and chocolate exports from Africa and LAC to the EU may explain the dichotomy of interests and prolongation of standard-setting at the Codex level. However, in contrast to standards that were accelerated in the Codex process, delayed adoption of international standards can lead to export losses for at least some countries and regions.

The important role of Codex

This article investigated five case studies associated with accelerated and delayed adoption of food safety standards by Codex. While the Codex process worked well in the adoption of sulphur dioxide and melamine standards, and a guidance document for melons, delays in the adoption of cadmium in chocolate and aflatoxin standards on ready-to-peanuts have resulted in significant export impacts among developing countries and Codex regions. When Codex standards are delayed, countries can progress with nationally legislated standards. Non-harmonised standards may lead to higher compliance and trade costs and market access difficulties, in particular, for countries with less developed regulatory food safety systems and less technical capacity to comply with different country-specific standards. Trade flow losses among African peanut exporters to the EU are economically large, whereas for Latin America and Caribbean peanut exports, the impact has resulted in stronger than expected export growth. Conversely, for cadmium in chocolate, export losses were felt more significantly in the Latin America and Caribbean region, whereas African nations have realised economically important trade flow gains as a result of stricter standards adopted by the EU in 2015.

When Codex fails to adopt a standard, developing countries that rely on these standards lack reference points for food safety standards, which diminishes their ability to export, monitor imports, and protect their own consumers. When Codex accelerates work to adopt a standard, the trade flow gains realised by individual developing countries can be economically significant. However, a complete generalisation for all developing countries is challenging because members differ with respect to the importance of the underlying commodity in their export bundle, and existing technology and infrastructure to meet new standards. Notwithstanding, the implication of our findings is clear: international standards developed through the Codex process can promote agricultural exports from low-income countries and consequently may serve as a development tool.

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Endnotes

1 Information about the work of CAC, all committees and meeting protocols can be found online: http://www.fao.org/fao-who-codexalimentarius/en/

2 In order to improve the readability of the article, references to the respective Committee reports have been removed.

3 This length of time needed for JECFA to conduct an exposure assessment is tied to its schedule, the time needed to call for experts and data, the time needed to analyse and report on the data, and to the schedule of the Contaminants Committee. Neither JECFA nor Codex Committees are in session continuously, but rather meet periodically. The Committee requested the assessment at its 26 March 2012, meeting. The next JECFA meeting (76th) was scheduled for June 2012, which did not provide enough time for analysis. Thus, it was taken up at the 77th JECFA meeting in June 2013. However, that date was past the 8 April 2013 Contaminants Committee meeting so the matter was taken up by the CCCF in March 2014.

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Summary

Codex in Motion: Food Safety Standard Setting and Impacts on Developing Countries' Agricultural Exports

The Codex Alimentarius, or 'food code', was established to set international standards to ensure the safety and quality of food and agricultural products while at the same time creating a level playing field for international trade. However, less is known about the duration of the standards setting process in the Codex committees, and the extent to which trade is impacted when standards are delayed versus cases in which the adoption of standards was accelerated. This article reviews and evaluates three case studies in which Codex standards were rapidly adopted: Sulphur Dioxide (SO_2) levels in cinnamon; melamine standards for milk and powder; and Codex guidance procedures in the case of melons. Two recent cases in which Codex standards have been held up are also considered: maximum levels of aflatoxins in ready-to-eat peanuts; and cadmium in chocolate. We find evidence that accelerated adoption of Codex standards is an important catalyst facilitating exports by some developing countries. Delays and non-adoption of Codex standards, on the other hand, can lead to significant export underperformance in certain countries and regions. Thus, Codex members would do well to reflect on the positive trade flow benefits that can be realised among developing countries who depend on international standards for export earnings.

Le Codex en mouvement : établissement de normes de sécurité sanitaire des aliments et effets sur les exportations agricoles des pays en développement

Le Codex Alimentarius, ou « code alimentaire », a été établi pour établir des normes internationales visant à garantir la sécurité et la qualité des produits alimentaires et agricoles tout en créant des conditions équitables pour le commerce international. Cependant, on en sait moins sur la durée du processus d'élaboration des normes dans les comités du Codex et sur la mesure dans laquelle le commerce est affecté lorsque les normes sont retardées par rapport aux cas d'adoption accélérée. Cet article passe en revue et évalue trois études de cas dans lesquelles les normes Codex ont été adoptées rapidement : les niveaux de dioxyde de soufre (SO_2) dans la cannelle; normes sur la mélamine dans le lait et la poudre; et les procédures d'orientation du Codex dans le cas des melons. Deux cas récents dans lesquels les normes Codex ont été bloquées sont également considérés : la teneur maximale en aflatoxines dans les arachides prêtes à consommer; et celle de cadmium dans le chocolat. Nous constatons que l'adoption accélérée des normes Codex est un catalyseur important facilitant les exportations de certains pays en développement. Les retards et la non-adoption des normes Codex, par contre, peuvent conduire à une sous-performance des exportations dans certains pays et régions. Ainsi, les membres du Codex feraient bien de réfléchir aux avantages positifs en termes de flux commerciaux qui peuvent être obtenus dans les pays en développement qui dépendent des normes internationales pour leurs recettes d'exportation.

Codex in Bewegung: Festlegung von Lebensmittelsicherheits-standards und Auswirkungen auf die Agrarexporte von Entwicklungsländern

Der Codex Alimentarius, oder "Lebensmittelkodex" wurde ins Leben gerufen, um internationale Standards zur Gewährleistung der Sicherheit und Qualität von Lebensmitteln und landwirtschaftlichen Produkten festzulegen und um damit auch gleiche Wettbewerbsbedingungen für den internationalen Handel zu schaffen. Es ist jedoch wenig bekannt über die Dauer des Verfahrens zur Standardsetzung in den Codex-Ausschüssen. Ebenso wenig bekannt ist das Ausmaß der Beeinträchtigung des Handels, wenn Standards sich verzögern oder in Fällen, in denen die Annahme von Standards beschleunigt wurde. In diesem Artikel werden drei Fallstudien untersucht und bewertet, in denen Codex-Standards schnell angenommen wurden: Schwefeldioxid (SO_2)-Gehalte in Zimt, Melaminstandards für Milch und Milchpulver und Codex-Richtlinienverfahren im Fall von Melonen. Zwei neuere Fälle, in denen Codex-Standards sich verzögert haben, werden ebenfalls betrachtet: die Höchstgehalte von Aflatoxinen in verzehrfertigen Erdnüssen und Kadmium in Schokolade. Wir haben Hinweise darauf gefunden, dass die beschleunigte Annahme der Codex-Standards ein wichtiger Katalysator ist, der die Exporte einiger Entwicklungsländer erleichtert. Verzögerungen und die Nichtannahme von Codex-Standards hingegen können in bestimmten Ländern und Regionen zu einer erheblichen Beeinträchtigung der Exportleistung führen. Daher würden die Codex-Mitglieder gut daran tun, diese Vorteile in Bezug auf die Handelsströme zu reflektieren. Die Vorteile könnten den Entwicklungsländern zugutekommen, die für ihre Exporteinnahmen von internationalen Standards abhängig sind.