THE BUSINESS OF SAFE FOOD:
AN ASSESSMENT OF THE GLOBAL FOOD SAFETY CERTIFICATION INDUSTRY

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*** Preliminary Draft. Do not copy or cite. ***


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ABSTRACT
Business and consumer demand for private, third-party, and public systems that audit and certify food safety is growing both domestically and internationally. As it has been proposed that third-party certification systems be used to help assure the safety of imported food products governed by FSMA, demand for these standards is likely to further increase. It is unknown, however, to what extent the food safety certification industry has the capacity to accommodate this expanding demand. This is particularly true of regions where third-party firms which provide audits to food safety standards (certification bodies), do not have a large presence.

This study offers a first, in-depth, and comprehensive effort at assessing the industrial organization of global food safety certification industry. Using a unique dataset developed for this study, we inventory the food safety certification industry and the firms that certify individual farms, food processors, and food manufacturers to a broad range of national and international food safety standards. An assessment of the geographic distribution of certification bodies is then undertaken to identify areas in potential need of additional food safety certification capacity. Implications of these findings are considered.
**INTRODUCTION**

Private and third-party certification programs increasingly are being relied upon as part of food safety assurance systems. Indeed, these standards are now being used to complement regulatory oversight of food safety. As an important current example, in implementing the Food Safety Modernization Act, the FDA is considering using existing food safety standards to help in meeting their expanded regulatory authority over the US food system. Specifically, it is proposed that standards which would be subject to third-party audit would be (among the) tools used to provide assurance of the safety of domestic products and imported food and feed products.

The personal and economic costs of failures in our food safety system are staggering. The USDA Economic Research Service estimates that the 20% of U.S. foodborne illnesses for which a pathogen cause can be identified imposes a burden of at least $15.2 billion on U.S. consumers each year (USDA ERS, 2014). Despite their increasingly crucial importance in helping assure the safety of our food system, the empirical data and analysis on how food safety certification systems operate is very thin. Given its current and critical role in assuring food safety, an improved understanding of the structure, conduct, and performance of the global food safety certification industry is needed.

This study offers a first, in-depth, and comprehensive effort at assessing the industrial organization of global food safety certification industry—the business of safe food. Using a unique dataset developed for this study, we inventory the food safety certification industry and the firms that certify individual farms, food processors, and food manufacturers to a broad range of national and international food safety standards. Measures of industry and geographic
concentration are then used to assess the concentration of this industry. We conclude by considering the food safety and policy implications of these results.

**Evidence on the Competitive Environment of Food Safety Certification**

Research on the industrial organization of the food certification industry is important because of the impact of competition and potential conflict of interest on the performance of this sector. Potential conflicts of interest are prevalent in the food safety certification industry and may negatively impact the quality of inspections. Food standard auditing firms often also sell consulting services to assist firms in preparing for their audits (Weise 2010). Given the highly competitive nature of the auditing industry, there is significant incentive to cut costs by reducing the time/effort dedicated to each audit. Producers purchasing both consulting and auditing services from the same firm then may be subjected to a less stringent audit. This problem is compounded when the pricing strategies of the auditing industry are considered. Reviews of other auditing industries have reported that ‘low introductory pricing’ strategies are initially used to secure new clients (often with prices below their own costs). Auditing firms recoup their investment in a client relationship only after getting their auditing contract renewed. Thus, there is then a second disincentive for an auditor to honestly/stringently review their client.

Studies which examine the food safety certification industry typically fall into one of several categories. One group of studies offer very in-depth analyses of specific certification systems. Albersmeier et al. (2009) examined the reliability of audits to the German meat industry standard QS. The impact of competitiveness between third-party certifiers on EurepGAP’s (renamed GLOBALGAP in 2007) certification of fruit and vegetable production contracts was evaluated by Anders et al. (2007, 2010). Their findings suggest that the objectiveness of private third-party certifiers may be affected by the competitive structure of the certification market.
Froese and Proelss (2012, 2013) assessed the extent to which certified fish stocks met the requirements of the Marine Stewardship Council (MSC) and Friends of the Sea (FOS).

A second clustering of studies offer overviews and theoretical examinations of certification in markets with various types and extents of imperfect competition and information (Crespi and Marette 2001; Marette and Crespi 2003; Jahn et al. 2005; Caswell and Anders 2011). Third, there is a limited literature which analyzes the adoption of food safety assurance systems for a particular region or industry sector. By way of example, Ollinger et al. (2011) examined the association between audits, plant size, firm structure, and food safety technology use in U.S. meat and poultry processing plants. These authors found that larger plants, plants which are members of multi-plant firms, and plants with auditors hired by buyers of the plant’s products or by the plant itself, used significantly higher levels of food safety technology.

**Organization of Food Safety Certification Systems**

Food safety certification systems are typically organized in four administrative levels. Figure 1 presents a commonly adopted organizational structure of a standard. The first level is the Standard Setting Body that develops the standard. The second level is an Accreditation Body or set of Accreditation Bodies that are authorized by the Standard Setting Body to identify a Certification Body or Bodies that are qualified to certify to the standard. The Certification Body or Bodies are the parties that conduct audits of companies to assess whether the company complies with the standard and has earned the certification. These certified companies are the fourth level of the system. There are multiple formats in use for how these levels are organized. For example, standard setting and accreditation may be undertaken by the same organization or may be separate.
This paper focuses specifically on the third-party food safety certification industry. Under third-party certification, the standard setting body may be a private firm, a third party (not the buyer, seller, or government), or a government; similarly accreditation may be private, by a third party, or by government. What really distinguishes this certification scheme from alternative forms of certification is that, beyond the auditing transaction, certifying bodies are unaffiliated with the firm seeking certification. A general description of third party certification is the act of an independent organization, called a certification body or third party auditor, which reviews the (farm) production or manufacturing process of a product from a facility that wants to be certified. The Third Party audit typically includes paperwork reviews, testing, and facility inspections. Beyond the auditing transaction, the Certification Body is unaffiliated with the firm or facility seeking certification and independently determines whether or not the final product or process complies with the specific standards for safety, quality, or performance necessary to be accredited by the authority from which it is seeking certification.

For example, in the United States under the draft language of the Import Rule that will be implemented under the FDA Food Safety Modernization Act (FSMA), it is proposed that the FDA is the Standard Setting Body that establishes the standard to which a foreign food facility would be seeking to be accredited. Third Party Certification refers to the ability of the FDA to accredit qualified third party auditors to certify that foreign food facilities are complying with US food safety standards (FDA 2014). Under the proposed regulatory framework, the FDA would recognize Accreditation Bodies who would, in turn, recognize Certification Bodies (third party auditors) who would audit individual firms and issue certifications. As is currently proposed, foreign cooperatives, government agencies, and private third parties would be eligible to be
Accreditation Bodies, but selection criteria and requirements for certification bodies have yet to be established. Requirements for a firm to become a Certification Body (CB) are established by either the Standard Setting Body or the Accreditation Body. In most instances, these requirements are relatively minimal and require that the CBs themselves conform to standards such as “Requirements for bodies providing audit and certification management systems” (ISO/IEC 17021) and/or “Guidelines for auditing management systems” (ISO 19011), other standards and guidelines related to the activities they are certifying, and have some relevant expertise in the industry of focus.

Certification bodies are responsible for ensuring the satisfactory training and performance of their auditors. There is no industry standard for food safety auditor education or training. Even CBs certified to ISO 17021 must simply demonstrate that they maintain updated records of the qualification, training, affiliations, and professional status and experience those of administering and providing oversight of certification activities (ISO 17021:2006; clause 7.4). Further, this standard requires that procedures are documented concerning the qualification and monitoring of all bodies that provide outsourced certification services and records must be maintained of the competence of external auditors and technical experts (CISO 17021: 2006; clause 7.5). Responsible certification bodies will ensure that their auditors are competent in their knowledge of industry and specific standard(s) for which they are providing auditing services, and are current with any relevant regulatory requirements. Some certification bodies may hold their auditors to higher standards (i.e. advanced subject knowledge, auditor training), and/or provide opportunities for their ongoing professional development (IAF, 2015).

There is no general credentialing system or training program for auditors, unsurprisingly the quality of audits and the competence of auditors have been found to vary widely. In
verifying the status of certified fish stocks, for example, Froese and Proelss (2012) found that 31% of stocks certified to the Marine Stewardship Council, and 19% of stocks certified to Friends of the Sea standards, were overfished. Conflicts of interest between the for-profit motivation of the certifying bodies\(^1\), the desire for market presence and share on the part of standards setting organizations, and the complexity of the assessment procedure were identified as potential causes of these failures. This issue is further complicated by the prevalence of outsourcing and the use of external auditors and technical experts in this industry.

Firm size has also been found to be important. Smaller companies tend to specialize in offering auditing services to a single standard or industry. In contrast, large companies are known to provide auditing services for a range of standards and often offer complementary services. Citing an interview with an auditing industry executive, Ollinger et al. (2011) report that there are relatively few (~6) large, international food auditing companies, and hundreds of smaller firms in this industry.

A Primer on Considering Certification Industry Capacity

Our approach to the business of food safety, and in particular to the business of third party certification, is based in measurement of the current capacity or market size of the third party certification system. Capacity is a broad term and systems have multiple levels at which capacity is measured. The most popular specification of levels used consist of the global, institutional, sectoral, organizational, and individual levels (see, e.g., Pearson 2011). Global Capacity refers to the availability of resources and the efficiency and effectiveness with which societies deploy these resources to identify and pursue their development goals on a global scale (Smithers,

\(^1\) For example, certification bodies with a high rate of clients who failed their assessment will be challenged to attract and keep clients.
2011). The Institutional Capacity level consists of laws, policies, and systems. This level exists subnationally, nationally, regionally, and globally (Pearson, 2011). Sectoral capacity reflects the network capacity within a specific industrial sector. Organization capacity is at the level of the business or other organizational unit and is the specific ability of an entity (person or organization) or resource, measured in quantity and level of quality, over an extended period. Finally, individual capacity refers to the competencies, skills, knowledge and the abilities to use them. Attitudes, values, and culture can all be considered elements of an individual’s overall capacity.

Applied to food safety certification, capacity can be analyzed at five levels (see Figure 2). Firm Capacity, Certification Body Capacity (including individual and aggregate CB capacity subsections), Accreditation Body Capacity (with the individual and aggregate subsections), Standard Setting Body Capacity, and Country/Global Capacity (also including LDCs and Non LDCs subsections). Our analysis focuses on Certification Body Capacity.

[Insert Figure 2 Here.]

Examples of Key Food Safety Certifications

The food safety certification industry is dominated by a handful of widely applicable (general) standards; less widely adopted standards certify niche industries, products, or regions. Key food safety certifications are introduced below.

Global G.A.P.: GlobalG.A.P. is one of the “most widely accepted private sector food safety certifications in the world”. This standard seeks to assure safe and sustainable agricultural production, and has become an internationally recognized standard for farm production. The scope of this standard covers food safety and traceability, environment, workers’ health, safety
and welfare, animal welfare, and includes Integrated Crop Management (ICM), Integrated Pest Control (IPC), Quality Management System (QMS), and Hazard Analysis and Critical Control Points (HACCP)” (GlobalG.A.P., 2015).

This standard setting body provides “support and training to more than 1,700 trained inspectors and auditors working for almost 140 accredited certification bodies certifying 415 agricultural products for than 140,000 certified producers in 118 countries” (GlobalG.A.P., 2015). Global G.A.P. uses accreditation bodies as an intermediary between themselves and their certification bodies.

**ISO 22000:** ISO 22000 is a family of standards that address food safety management. This family consists of a single standard which can be certified to (ISO 22000:2005) which details requirements farms, food manufacturing, and foodservice firms should adhere to demonstrate their ability to control food and feed safety hazards. Other members of this standards family consist of documents which provide guidance in implementing this standard to firms in agri-food firms (i.e. farms, caterers, food packaging manufacturers). This standard was developed to be compatible with other ISO management standards such as ISO 9001 (quality management system standard), ISO 14001 (environmental management system standard), and ISO 28000 (supply chain security management system standard). ISO 140001 was released in 2007 and has experienced double-digit increases in annual adoption rates since this time. As of 2013, this standard has been adopted by 26,847 companies in 142 countries (ISO, 2013).

**British Retail Consortium (BRC):** BRC is a standard developed in the U.K. designed to help ensure food safety in “any food processing operation where open food is handled, processed or packed, such as fresh produce pack houses, slaughterhouses, processed foods, canneries and ready to eat products” (BRC, 2015). The standard is divided into seven sections which address
areas of: senior management commitment and continual improvement, the food safety plan (HACCP), food safety and quality management system, site standards, product control, process control, and personnel (BRC, 2015). Over 15,000 suppliers are certified to BRC, and the standard has certification bodies in 100 countries (BRC, 2015).

**DATA AND METHODS**

Two key components of the food safety certification industry are considered in this analysis: food safety standards, and the certification bodies who provide third-party verification (audits) that individual agribusinesses are in compliance with the requirements of a given standard. The process by which information regarding each of these types of organizations is independently described below.

**Food Safety Standards**

An extensive array of standards have been developed to provide assurance about various aspects of food safety. The intended audience of these standards may be either businesses or consumers; in the latter case, the standards often include some form of labelling scheme. Certifications may also vary in their stringency, application to specific food products, to specific processing settings, to specific packaging types, and in the geographic area in which the certification is promoted and adopted. The permutations and combinations of these attributes are numerous. Not surprisingly then, in an era of increasing demand for food safety, the number of food safety certifications is large and has been significantly increasing in recent years.

At present there is no oversight of this certification industry; an organization or an individual firm who wishes to establish a food safety certification can do so. As such, an

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2 Due both to increasing consumer awareness of food safety issues and increased potential firm liability for food safety incidents.
inventory of the current number and scope of food safety standards is not available. A necessary contribution of this study then, is to develop a resource that identifies and details the scope of application (product, process, and geographic coverage) of food safety standards used internationally.

Widely adopted food safety standards are well known. Through consultation with food safety and food standards experts, an initial list of food safety standards was developed. This list was then complimented by an internet search using an extensive variety of terms, to identify additional food safety standards. This search process was repeated by two independent researchers in different search engines to help ensure completeness of the standards list. Finally, while collecting information about individual certification bodies (described below), the roster of standards claimed to be within the consulting or auditing activities of an individual firm were reviewed and any food safety standards which were not previously identified were added to this inventory. This final step was particularly useful in identifying standards that are based and used in non-English speaking regions. Through this process, a total of 289 food safety standards were identified.

Certification Bodies

Certification bodies (CBs) are organizations which serve as third-party auditors that assure that individual users of a given standard are in compliance with its requirements. While a majority are privately held firms, non-governmental organizations and government departments, also serve as certification bodies. The U.S. organic standard provides an interesting example of this; the specific organizations which serve as auditors to this standard vary state to state (and
internationally) and include a variety of State departments of agriculture, and private companies (e.g. Caswell and Boys, 2013; Boys and Hooker, 2015).

The organizations which serve as certification bodies were identified through a multi-step process. Information regarding firms authorized to certify companies to a particular standard are frequently posted on websites or other publically available documentation for each standard. This is particularly true for well-established food safety standards. Some accreditation bodies also post information about organizations who they have authorized to serve as certification bodies standards they serve; when available, this information was also reviewed to identify additional organizations who serve as certification bodies to the food safety certification industry. Finally, internet searches of individual standard names were completed. For both this process and searches conducted to identify food safety standards, extensive use of translation software embedded in internet search engines and other translation resources were used to help ensure complete and accurate data collection. Through this process, 300 certification bodies were identified.

Once the list of CBs was amassed, a stepwise process was used to construct a database of information about each organization. As a starting point, business characteristics such as the location of the organization’s headquarters, the year it was founded, measures of its size (annual revenue, number of employees), and the primary NAICS industries in which the firm operates were collected. Also, and particularly important to this study, a list of the standards which the CB is authorized to certify firms to and the specific countries in which each CB operates were also identified. A list of all firm attributes which were collected are summarized in Table A.1. Details of each organization were obtained from a database of business information.
When information from this source was incomplete or not available for a particular company, information was obtained from the CBs website, corporate annual reports, or other public sources. Careful review of these latter sources was particularly needed to identify the scope of each CBs certification activities and geographic area of operation.

**Analysis**

Using this database, we conduct a preliminary analysis of structure of the international food safety certification system. Descriptive statistics concerning certification bodies in our sample are first presented. Following this, a geographic overview of where CBs are located, and to what extent they are present in markets that have significant agricultural production and exports is offered.

In assessing the extent of CB capacity in a given country, ideally the number of CBs would be evaluated relative to the total number of firms who might need their services; for this purpose then, the total number of firms engaged in the agricultural sector would be needed. Further, to assess the extent to which CBs may impact agricultural export capacity in certain countries, the number of agricultural firms currently or potentially engaged in export activities would be needed. While some information of this type is available, this data is not consistently collected. Definitions of firms also vary significantly across countries; firm enumeration is particularly complicated in countries where there is a significant presence of state owned

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3 This firm is a Dun & Bradstreet company and serves as an interface for business records available through Dun & Bradstreet’s global database.

4 Ideally, and for a more refined analysis, the number of firms engaged in agricultural sub-sectors (i.e. farm production manufacturing and processing, transportation/logistics etc. would be required.)
enterprises, and where firms located in rural areas and/or the agricultural sector are not counted as part of the formal sector⁵.

In the absence of firm count information, alternative measures are used. The number of CBs that offer food safety certification services relative to the economic size of the agricultural sector, provides preliminary insight into the capacity of the certification industry for a given country. The World Bank national accounts data and OECD National Accounts data files offer estimates of a value-added measure of the size of the agricultural sector in several countries. This data, as available through the World Bank’s World Development Indicators (WDI) for 2012, was used in this calculation. Given the prospect that FSMA may require a food safety certification as a prerequisite to exporting, the availability of CBs relative to a country’s agricultural exports is also important. For the denominator for this calculation, the total value of each country’s agricultural exports for was obtained from UN Comtrade.

**RESULTS**

On the whole, firms engaged in food safety certification are quite diverse. The size of the CBs varied considerably. Among the 72% of firms for which information was available, sales revenue in 2013⁶ varied from $14,710 to $964.2 million, and averaged $29.74 million. The number of employees varied from one to 79,268 and averaged 1,217 among the 81% of reporting firms. Firms included in this sample had very different histories. The earliest entrant, Bureau Veritas Certification was established in 1828 in what is now Belgium as an information office for Maritime Insurance (Bureau Veritas, 2015). The most recent were firms established in Denmark, India, Switzerland, and the United States in 2013. Figure 2 depicts the dates of

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⁵ By way of example, in many countries, farming operations are not required to register as businesses; by default these firms they are considered part of the informal economy. As such there is no census of the number of these establishments available.

⁶ The most recent year for which this information is available.
establishment of firms who, as of 2014, were still in operation. On average these firms have been in operation 23 years (were established in 1992).

[Insert Figure 3 about here.]

Certification bodies were also found to quite diverse in the number and types of certification authority they held. Certification bodies in the sample offered certification for between one and 46, and on average 12 different standards. Certification activities of these firms, however, were not limited to food safety. These firms also certified companies to an extensive variety of food nutrient or content standards (e.g. Gluten-Free), production process standards (e.g. one or more organic standards), environmental standards (e.g. ISO 14000 (environmental management), Ecocert), social standards (i.e. FairTrade, ISO 26000 (social responsibility)), and a variety of other standards (e.g. TourCert (sustainable tourism); ISO 31000 (risk management); GTP (Good Trading Practice).

[Insert Figure 4 about here.]

It is important to emphasize, that firms whose business activities include third-party food safety audits are typically, and perhaps dominantly, engaged in other business activities such as providing laboratory testing services and consulting services. The variety in business activities is partially demonstrated through the self-reported primary business activities of the certification bodies in our sample are presented in Figure 3. As can be seen here, a majority of CBs identify themselves primarily in an industry other than certification. Publicly available records for these firms do not separately identify revenue or employees dedicated to particular lines of business. As will be relevant later in this discussion, there is a similar lack of information to separately distinguish revenues derived from different countries. This important limitation needs to be considered in reviewing these results.
**Geographic Distribution of Certification Bodies**

Certification bodies engaged in food safety audits are widely disbursed. The 300 CBs reflected in our sample reported business activity in 201 countries. The relative concentration of these CBs, by country, are presented in Figure 5. Looked at in isolation, these results suggest that, while there certainly a larger presence of CBs operating in developed countries, there is at least some CB capacity in almost every country.

[Insert Figure 5 about here.]

Recognizing, however, that the agricultural sector varies considerably by size across countries, a more useful measure would consider the number of active CBs relative to the size of a given market. This information is presented in Figure 6. It is clear from this data presentation that a majority of the areas which appeared to have a concentrated number of food safety CBs, in reality have relatively low levels of CB capacity, when compared to the value added output of their agricultural sector. Indeed, some countries for which it was previously thought there was insufficient CB presence (i.e. many developing countries), have comparatively high number of firms working in their jurisdiction.

It is worth noting that, while certifying agents may report activity in a particular area, the reality of to what extent they have capacity on the ground there is unknown. Particularly in Africa, CBs frequently reported having offices which were charged with serving clients in upwards of five countries (frequency three to seven). The size of staff in those field offices is unknown but antidiotally has been reported to be quite small. Serving such a broad geographic area would be challenging anywhere, but particularly so in a region challenged with poor transportation and communications infrastructure, and home to very diverse languages and cultures.
It has been proposed in FSMA that certification to an international food safety standard may be required prior to export to the U.S. As such, the capacity of CBs relative to the value of agricultural exports for a given country is of considerable importance. Figure 7 provides some initial insight into this issue.

In examining this Figure, several unexpected results are evident. Several African and Middle-East nations which might have been expected to have a low food safety certification capacity instead appear to have among the highest global capacity. While this result is due to the relatively low value of agricultural exports stemming from these countries, this observation does have important implications for where certification capacity bottlenecks are likely to emerge. It is worth noting, however, that data source used for agricultural export information did not include observations for several African and Middle-Eastern countries for the examined year (2012). This general finding may have been overturned should more complete data been available.

Importantly, these results do not indicate that there is an overabundance of food safety certification capacity within major U.S. trading partners. Food firms in European countries already have a long history of food safety standard use. As such, regardless which certification is ultimately adopted by FMSA, it is anticipated that meeting this requirement will not be particularly onerous and will not require significant scaling up of certification body activity.

These results may also be misleading in the case of markets which may have a good presence of food safety certification companies, but whose current human resource capacity and expertise with the standards which may be adopted as FSMA requirements is relatively limited
(i.e. China, several south-east Asian countries). It is anticipated that if these nations are to maintain their volume of exports to the U.S. market, a scaling up of their food safety certification capacity will be needed.

**CONCLUSIONS**

This study offers a preliminary assessment of the capacity of the global food safety certification system. These results indicate strong geographic trends in the presence certification bodies which provide third-party auditing to food safety standards. When the size of the certification industry is evaluated relative to the size or current exports of the agricultural sector across countries, insight can be gained regarding which countries are, or in the future, could be particularly challenged to meet food safety certification requirements.

The basis of this analysis is a novel dataset which inventories a sample firms currently auditing companies to a variety of food safety standards. While a considerable effort was made to include a large and diverse number of certification bodies in this sample, smaller companies, particularly those operating in non-English dominated markets and/or those who do not have an internet presence may not proportionately represented in this CB inventory. Further, some information sought about CBs (i.e. their annual revenue, other lines of business) was not always available through the considered data sources. This is particularly true for CBs that are not headquartered in the United States. Moving forward, effort will be made to obtain this information and to extend coverage of CBs which are small and/or not based in developed country markets.
REFERENCES


ACKNOWLEDGEMENTS

The authors would like to thank Armando Boniche for developing the maps included in this manuscript.
Figure 1. Simplified organization of key bodies involved with firm food safety certification oversight
Figure 2. Types of Capacity in Food Safety Certification Systems

- **Firm Capacity**
  - Individual firms have the labor, tools, and knowledge to follow FSMA import rules and pass certification.

- **Certification Body Capacity**
  - Aggregate
    - capacity to successfully give audits in a timely and efficient manner
  - Individual
    - capacity to produce audits in terms of labor, knowledge of produce, and duration of an individual audit

- **Accreditation Body Capacity**
  - Aggregate
    - capacity to accredit enough CBs to efficiently run FSMA third party certification
  - Individual
    - capacity to be knowledgeable in FSMA accreditation process and accredit CBs to carry out third party audits (capacity in labor, technology, FSMA knowledge, and CB audits)

- **Standard Setting Body Capacity**
  - Non LDCs and LDCs
    - capacity for the FDA to implement rules and regulations to keep global third party certification sustainable and efficient, specifically implement rules and regulations on to ABs for successful CB accreditation

- **Global Capacity**
  - Non LDCs and LDCs
    - capacity of a country to have a functioning market with the laws, and legal structure to comply to FSMA import rules.
Figure 3. Annual additions and cumulative total of CBs in the sample
Figure 4. Primary NAICS industry of CBs in the sample
Figure 5. Number of certification bodies, by country
Figure 6. Number of certification bodies relative to total agricultural output, by country
Figure 7. Number of certification bodies relative to total agricultural exports, by country
Appendix A.

Table A.1. Information included in profiles for each certification body

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<th>Details</th>
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<td>Certification Body ID</td>
<td>Assigned by researchers</td>
</tr>
<tr>
<td>Address of Headquarters</td>
<td>City, State/Province, Country</td>
</tr>
<tr>
<td>Year established</td>
<td>Year observation noted</td>
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<tr>
<td>Number of employees</td>
<td>Year observation noted</td>
</tr>
<tr>
<td>Public/Private</td>
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<td>If Public: Ticker Name</td>
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<tr>
<td>Total Sales Revenue</td>
<td>Year observation noted</td>
</tr>
<tr>
<td>Net Income</td>
<td>Year observation noted</td>
</tr>
<tr>
<td>Net Annual Profit, and year</td>
<td>Year observation noted</td>
</tr>
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<td>As identified by the company; primary, secondary, tertiary industries as identified</td>
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<tr>
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<td>As identified by the company; primary, secondary, tertiary industries as identified</td>
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<tr>
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<tr>
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<td>City and Country of key branch offices. Up to 5 sites recorded.</td>
</tr>
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<td>Information source(s)</td>
<td>Source(s) from which CB information was obtained.</td>
</tr>
<tr>
<td>Certification(s)</td>
<td>Certification(s) offered by the CB</td>
</tr>
<tr>
<td>Geographic market(s)</td>
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