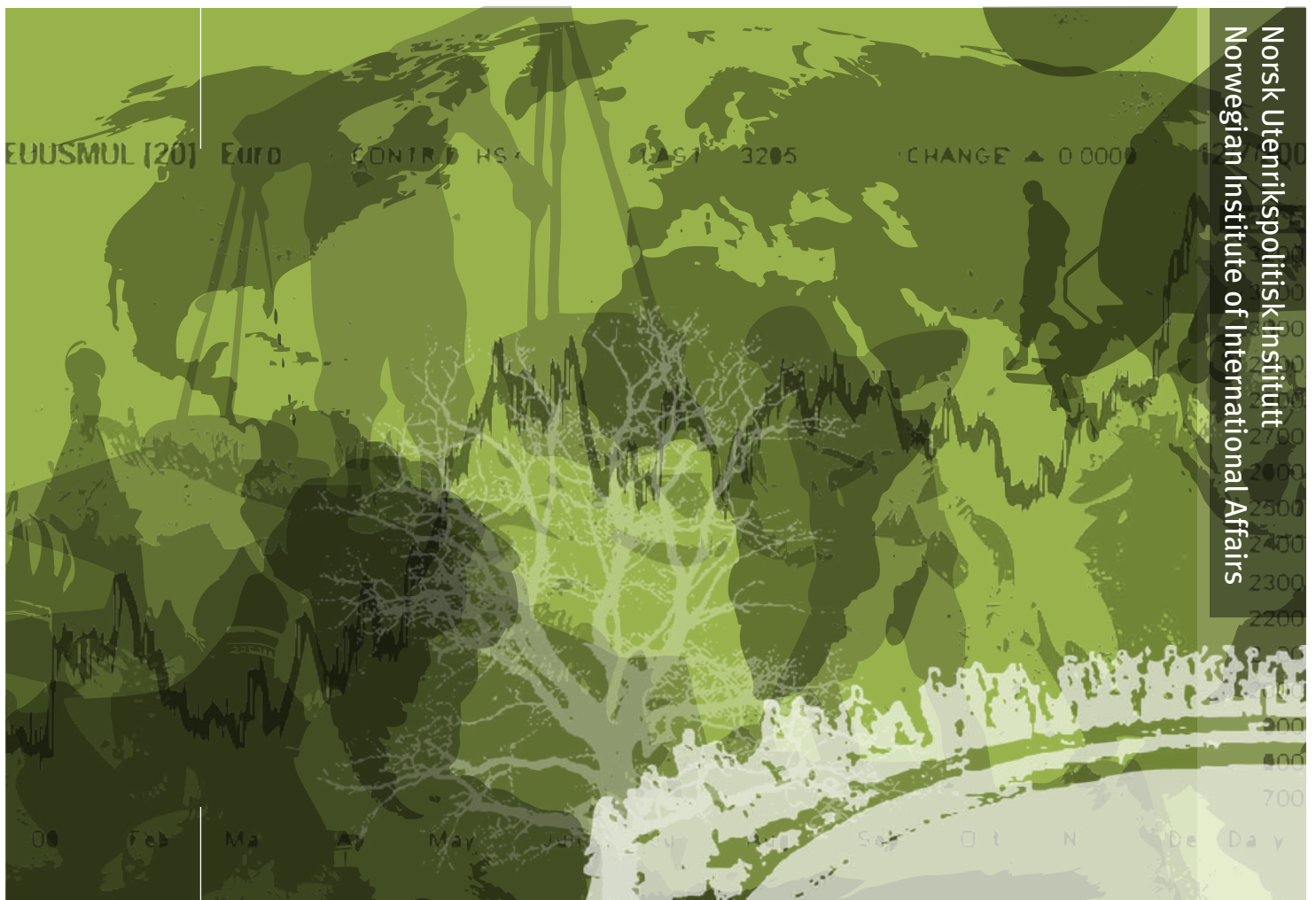


# Whither Commodity-Based Trade?

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## Abstract

Market access for livestock products from Africa has traditionally been limited by the presence of certain infectious diseases that pose risks to animal and human health. However, an increasingly discussed option for increasing market access for African meat exports is the concept of commodity-based trade (CBT) that focuses on the health and safety attributes of the product rather than the disease status of the country of origin. While this concept is gaining traction in international policy circles, there have been few analyses on the potential economic impacts and unintended consequences of such an approach. This paper examines the principles behind a dramatic shift in approach to trading opportunities that CBT might bring, exploring both technical and economic considerations.

*Keywords:* SPS; Livestock; International Trade; Animal Diseases

*JEL Codes:* O19, Q13, Q17

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# 1. Introduction

While livestock development has served as a model for smallholder market engagement in Asia (particularly in the poultry and pig sectors), access to regional and international markets by smallholder farmers in Africa has been limited. An important reason for this is the presence of certain endemic infectious diseases, such as foot-and-mouth disease (FMD), Rift Valley fever (RVF), and African swine fever, that pose risks to animal and human health. Such diseases have been largely eradicated in developed country markets, but their persistence in many countries of the developing world has limited access to more lucrative markets in the developed world.

An increasingly discussed option for increasing market access for African meat exports is the concept of commodity-based trade (CBT) (Thompson et al., 2004). Commodity-based approaches focus on the attributes of the product (quality, food safety) rather than the disease status of the place of origin. Advocates of CBT argue that deboned and properly matured beef, for example, poses virtually no threat of transmission of diseases such as FMD. As a result, the source of an animal is considered by them to be independent of the risk of disease from meat. A growing body of evidence has further led to increased dialogue in international standards-setting bodies on CBT as a means to increase market access in livestock products.

While commodity-based approaches could pave the way for increased trade from Africa, a number of research gaps remain. First, a broader motivation for CBT for livestock products and more exact definition of what is entailed through the approach is required. Second, the economics of the approach and its potential opportunities and constraints have not been thoroughly explored. In particular, will African countries, for whom CBT was hoped to benefit, be the major winners? If not, what further constrains Africa's market access? This paper seeks to address these issues.



## 2. Overview of commodity-based approaches to trade in livestock products

The overarching issue excluding livestock enterprises from the open international trade enjoyed in the horticulture sector is animal disease. There has been a long history of export of non-livestock products from developing countries to the West, and many diverse evaluations as to the viability of these, their role in the global economy, and their impact on processes of poverty reduction (see for example McCulloch and Ota, 2002). They have been mainly in flowers (notably Colombia, Kenya and Ecuador, the world leaders), vegetables and fruits (with many players from Central America, eastern and southern Africa, among other regions). The affluent West constantly seeks year-round supplies of vegetables, fruits, and flowers, so the market has been very much demand driven. With this demand, farmers and private sector companies have been quick to respond, and the opportunity to establish businesses which involve small scale farmers, offer substantial employment opportunities and contribute to struggling economies have been generally welcomed by developing countries and international donors alike.

Arguably, however, this principle is not directly transferable to livestock products, as meat products, unlike flowers and vegetables, are available all year round in the West, and this factor is considered to have contributed substantially to the slower assimilation of livestock products into the international agri-foods markets. However, even if 'seasonality' existed for animal products, the overriding mitigating factor has been the presence of endemic FMD in certain countries. It is probably the most infectious of all diseases known: most developed countries have eradicated it, and reintroductions of the disease have cost them dearly in terms of the disruptions caused. International standards concerning animal health and trade in animal products fall under the aegis of the World Organisation for Animal Health (the Office International des Epizooties, OIE), with its rules and standards laid out in the Terrestrial Animal Health Code (TAHC) (OIE 2007). When it comes to trade, the OIE assigns particular importance to four diseases: FMD, rinderpest, contagious bovine pleuropneumonia (CBPP), and bovine spongiform encephalopathy (BSE). For each of these diseases, the OIE provides a mechanism by which member countries may apply for recognition of "freedom" from the disease – either on a country-

wide or zonal (regional) basis. Thus countries are classified as being (1) free from FMD (without vaccination), (2) free from FMD “with vaccination”, (3) having a defined zone recognised as free from FMD without vaccination or (4) having a zone free from FMD with vaccination. Thus, the status of countries with regard to these diseases, and consequently the risk associated with products emerging from it, is currently judged on a geographical basis, rather than on the safety of the derived commodities.

But that is not the end of the story. The TAHC also recognises certain non-geographical entities with regard to livestock product trade, notably compartments. A compartment refers to one or more establishments under a common biosecurity management system containing an animal subpopulation with a distinct health status with respect to a specific disease or specific diseases for which required surveillance, control, and biosecurity measures have been applied for the purpose of international trade (Scott et al., 2006). It appears that compartments are still open to a degree of interpretation, but a common theme emerging is the need for strict biosecurity, and the need to consider freedom of certain diseases within a compartment. Thus, although not explicitly geographical in nature, the compartment retains many of the characteristics of a disease free zone. There also remains a question as to whether compartments can be applied in the case of FMD (Thomson, 2008). Certainly it would appear from the description provided by Scott et al (2006) that a compartment could not be established in an area in which FMD exists, unless each establishment in the compartment could demonstrate freedom from FMD, and had adequate biosecurity measures that met the requirements of the veterinary authorities. This in reality excludes the concept of smallholder contract farming, one of the mainstays of the successes in horticulture exports to Europe.

The CBT approach is based on the principle that there is a stark difference between live animals and commodities derived from them in terms of the risks of spreading certain infectious diseases. While trade in livestock commodities has been with us for many years (particularly in the form of tinned products such as corned beef), the broader concept of CBT in livestock products emerged relatively recently as an approach to facilitate the potential participation of developing countries in international trade in livestock products, despite the presence of certain transboundary animal diseases in their country. Emerging from the group working at AU/IBAR in Nairobi, Kenya on rinderpest control, the initial advocates of a commodity approach to trade in livestock products were Thomson *et al.* (2004), who laid out in general terms the advantages of a commodity-based approach to trading standards.



The basis of the approach is to consider primarily the inherent safety of a commodity that emerges from a given market chain process, rather than primarily the disease status of the country from which the commodity has been derived. While advocating a concept, they did not at the time present how this approach could be translated into practice for specific products from specific regions of the developing world in which substantive trading opportunities with specific trading partners have been identified, although recently some of these authors have speculated on the procedures that might be appropriate for de-boned beef (Thomson et al., 2009).

In the current literature on the subject, the term CBT is applied very loosely (Thomson et al., 2004). There is no published definition; the concept revolves around the principle of judging a meat commodity on the risk it poses to human and animal health in its destination market regardless of where it is sourced. As consideration of the standards associated with different meat commodities becomes increasingly central to this concept, it will be important to define commodities in much greater detail if we are to understand the risks associated with each one, and develop standards appropriate for third party certification of each commodity that achieve an appropriate level of risk.

The CBT concept was born with FMD as the central tenet. Important to the concept is that FMD virus is inactivated in muscle tissues as a result of the pH changes associated with *rigor mortis* (Henderson and Brooksby, 1948; Metcalf et al., 1996). Ryan et al (2008) have recently reviewed available data on the survival of FMD virus in animal products derived from FMD-infected animals. We understand that there are further studies underway on the survival of FMD virus in products that have undergone different categories of processing.

Taking FMD as the central tenet and starting point for exploring CBT opportunities, we suggest that there are many categories of commodity that might be considered. These would include a series of fresh or frozen, matured and de-boned meat products (notably beef, sheep and goat meat and pork). It is important to recognise that each of these must be regarded as separate commodities in terms of the behaviour of FMD virus (see Ryan et al., 2008). With regard to fresh or frozen, de-boned and matured beef, our draft definitions below draw on concepts that have been proposed by Thomson et al (2009) and the study of Rich et al (2009) in Ethiopia. Inevitably, therefore, the different categories proposed are speculative, and they do not have clear scientific indicators that characterise them beyond those given.

- i. *Beef carcasses, meat and other products emerging from animals derived from OIE-recognised FMD-free countries or zones: in Af-*

rica this applies to the OIE recognised FMD-free zones of Botswana, Namibia, South Africa, and Swaziland, with EU specifications requiring these products must be de-boned and matured.

- ii. *Beef meat from de-boned and mature carcasses derived from FMD-vaccinated animals within OIE-recognised FMD-free vaccination zones at the periphery of FMD free zones:* In Africa this applies principally to Botswana and Namibia; both countries could increase their exports to the EU significantly with this option. This category also applies to Uruguay, Argentina, Colombia and most regions of Brazil.
- iii. *De-boned and matured beef from vaccinated and FMD-free animals derived from a certified quarantine station undergoing testing for transboundary diseases from a certified export quality abattoir, and subject to certified HACCP procedures from source to destination:* This category could apply to many regions in Africa, depending on the level of FMD risk, requisite investment and infrastructure for testing and biosecurity throughout the certification system, and the competitiveness of the products emerging in pre-determined destination markets. This category has many of the attributes of a compartment, save the fact that animals could be derived from areas in which FMD and other infectious diseases are endemic.
- iv. *De-boned and matured beef from animals derived from a compartment, zone or country not proven free from FMD, processed through an export-certified abattoir and subject to certified HACCP procedures from lairage to destination market:* This conceptual category opens the possibility to the widest potential geographical area of the continent, increasing the risk of deriving source animals from FMD-endemic areas, but minimising risk from pre-slaughter to destination market, contingent on certified export status and HACCP procedures.

### 3. The current and potential destinations for livestock and CBT products sourced from Africa

Currently, there is a large export of live animals (cattle, sheep, goats and camels) from the greater Horn of Africa to the Middle East. These generally pass through Port Sudan, Djibouti, and Berbera. In addition, livestock commodities do legally emerge from Africa destined for international markets. The first group of these comprises de-boned beef, sheep meat, and game meat sourced from OIE-recognised FMD-free zones in southern Africa (those in Botswana, Namibia, South Africa and Swaziland), destined for Europe under the post-Cotonou Economic Partnership Agreement (EPA) arrangements with the EU. A point of contention among southern African suppliers is that exports from their recognized FMD-free with vaccination zones are not allowed by the EU, despite the fact that South American producers freely export beef products from such zones. This illustrates one of the many inconsistencies in the rules. The global standards are set by the OIE, and by these standards Botswana and Namibia should theoretically be able to export de-boned beef from zones that are FMD-free with vaccination. However, the EU, which determines its own standards, does not permit trade from these zones in Botswana and Namibia. It is understood that this may be due to the EU having adequate stocks of effective vaccine against the FMD virus serotypes present in South America, but not against the Southern African Territories (SAT) serotypes present in the endemic areas of southern Africa. Clearly, the EU is giving itself an extra layer of protection, which is arguably beyond what it should impose under the Sanitary and Phytosanitary (SPS) Agreement of the WTO, and could be interpreted as a non-tariff barrier to trade.

The second group is processed and unprocessed pork meat, sheep and goat carcasses, and some de-boned beef from Kenya to certain Middle East destinations. These products are certified by the Kenya Bureau of Standards (KEBS) and the Department of Veterinary Services, in some cases supported by ISO 22000 certification (which includes both Good Agricultural Practice – GAP, and HACCP certification) of the private companies concerned. There may well be other companies or agencies exporting to countries of the Middle East under similar conditions.

The potential attractive international markets for CBT, at least in theory, are those beyond the Middle East, where it is assumed that (a) the prices will be higher and (b) there will be a more demanding set of standards and requirements relating to CBT, based on the application of HACCP principles. These include the EU, Russia, the non-EU countries of Europe (such as Norway and Switzerland, both already importing niche products from southern African countries), China, and the USA. In addition there are some African countries that may offer potential markets, including South Africa.

An important distinction in the CBT story is that between *commodities* and *products*. The OIE Terrestrial Animal Health Code (OIE 2007) defines a commodity as “animals, products of animal origin intended for human consumption, for animal feeding, for pharmaceutical or surgical use or for agricultural or industrial use, semen, embryos/ova, biological products and pathological material”. We generally concur with this broad definition. By commodities, we refer to bulk goods or goods that are (generally) produced and sold in relatively high volumes, and/or are relatively undifferentiated into a specific commodity class (e.g., fresh chilled boneless beef). For products, we refer to goods that are branded, packaged, and produced to specifications for a specific buyer, often (but not exclusively) targeting specific market niches. Moreover, products obtain value over and above the commodity from which they were derived through various attributes (such as flavour, organic production, region of origin, or animal welfare practices, for example) or marketing tactics associated with that product (e.g., branding, packaging, promotion). This value is obtained and maintained through strong supply chain management that ensures the continued consumer perceptions of that product (and their willingness to pay higher premiums). As we will argue later, the potential (or necessity) for CBT differs between commodities and products, being high for the former and low for the latter. Indeed, in many cases, market access for products often relies less on commodity-based standards and more on the ability of suppliers to meet private standards from supermarkets and other buyers.

## 4. Potential impacts on supplying countries in the developing world

Proponents of commodity-based trade have cited the multiplicity of potential benefits, although many of the specifics are relatively unclear. For example, Thomson (2007) makes the following comment about the positive impacts of CBT:

“Adoption of CBT would preferentially benefit poor livestock producers in DCs<sup>1</sup> because lessening the requirement for proof of geographic freedom from TADs<sup>2</sup> would increase market access for supply chains that are presently poorly developed because of the presence of TADs but which have potential for significant growth. This, it is argued, would provide the economic incentive for investment in the supply chains of poor countries which is rarely the case presently.” (Thomson 2007: 7)

We would argue that the impact of CBT on the developing world rests largely on the form in which it is ultimately agreed to by international standards setting bodies. For the purposes of this section, we will consider CBT from the principles elucidated earlier (i.e. conditions (i)-(iii)). Such a scenario would open up markets for livestock products emerging from (a) FMD-free areas with vaccination (i.e. zones in which all animals are duly vaccinated against FMD, and the zone is OIE-recognised as FMD-free), and (b) countries, regardless of the presence of an FMD-free zone, which subject cattle to a process of quarantine and testing, and provides an accepted export certification system for de-boned and matured meat products based on HACCP principles.

Consequently, the above definition significantly narrows the potential scope of CBT impacts. Furthermore, in assessing the impact of CBT, it is important to consider that other costs of compliance over and beyond disease risk will likely continue to remain important. For example, animal welfare and environmental regulations are becoming increasingly important in the EU, with fears that EU governments may impose such production standards on exporters (USDA-FAS 2008c). Matthews (2008) notes that even if disease freedom (or a commodity-based freedom) is obtained, countries exporting to the EU under the

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<sup>1</sup> Developing countries.

<sup>2</sup> Transboundary animal diseases.

beef protocol must still comply with EU regulations on animal welfare, provide animal health certificates issued by a competent authority, abide by strict regulations on hormones and residues, and adopt rigorous traceability programs. These costs of compliance are not trivial and are not likely to decline even under commodity based trade. ODI (2007a) estimates that Botswana's traceability program cost P 166 million (roughly US\$30 million) to establish, with annual maintenance costs of P 15 million. In Namibia, PWC (2005) estimates that EU compliance costs add about US\$5.50 per carcass exported to the EU.

Moreover, we again need to keep in mind the difference between products and commodities, as discussed earlier. CBT will have much different and broader impacts on commodities than on products, as one of the main market access barriers for commodity beef is standards related to disease freedom. A liberalization of such standards for commodity beef will expand market access *for those producers that can competitively supply commodity beef*. Given that commodity beef markets are heavily biased towards high-volume suppliers, this would benefit countries with an appropriate scale in production, such as Brazil or India. Ethiopia or Sudan are probably the only countries in Africa that may also have sufficient scale, though its ability to ramp up appropriate volumes for exports depends largely on its ability to meet condition (iii) of the CBT principles cited earlier.

For product suppliers, certainly CBT will open up production areas that have been closed off for exports in the past, and as we will discuss, countries like Namibia could benefit significantly over time. On the other hand, while CBT is a component of market access for product suppliers, it is less important than the ability of product suppliers to meet private sector and supermarket standards (which may be even more stringent), not to mention the ability to meet consumer demand in appropriately targeted market niches. This requires investments in organization, marketing, and supply chain management, as well as appropriate private sector champions, over and beyond any slight easing of international public regulatory standards.

For the purposes of this analysis, we only consider the impacts of CBT itself, holding other types of market constraints constant. In the context characterized above, we can identify at least six countries in which there may be benefits in the short- to medium-term: Namibia, Botswana, Ethiopia, Uganda, Brazil, and India.

#### 4.1. Namibia

Namibia stands to be a potential beneficiary from CBT as a function of its potential to access increased supplies of animals, those currently excluded on geographical grounds. FAOSTAT data reveal that Namibia maintained a cattle herd of about 2.5 million head, roughly half of which reside in the Northern Communal Areas (NCA). At present, Namibia is divided into two regions by the Veterinary Cordon Fence (VCF, or “Red Line”). The OIE has designated the region south of the Red Line as FMD-free without vaccination, and animals in this region are eligible to be slaughtered and exported directly to South Africa, the EU, and Norway (the latter two required to be slaughtered in EU-certified plants, with only boneless cuts allowed) (ODI 2007b). By contrast, animals in the NCA (north of the “red line”) bound for export to South Africa are required to undergo a 21-day quarantine period prior to slaughter, with meat (boneless cuts only) derived from such animals mandated to adhere to a 21-day maturation period before shipment to South Africa (PWC, 2005).

Not surprisingly, given the communal production systems adopted in the NCA and limited market access opportunities for its meat products, incentives for broad-based commercialization have been relatively limited. Indeed, ODI (2007b) reports that only about 5 percent of cattle in the NCA are slaughtered per year, half of which are in slaughterhouses owned by the Namibian Meat Board (Meatco) and the other half in the informal sector. Moreover, ODI (2007b) further notes that slaughter capacity in Meatco abattoirs is significantly underutilized – total slaughter capacity is 21,300 animals, with the two Meatco abattoirs operating at 21 percent and 60 percent of capacity in 2005. The Namibian Meat Board spends approximately N\$10 million (roughly US\$1.1 million) per year subsidizing abattoir operations in the NCA and an additional N\$4 million (US\$444,000) in capacity building among NCA farmers (ODI 2007b), yet net losses from NCA-derived animals remain quite high (nearly US\$75 per carcass) (PWC, 2005).

How might a CBT world influence the Namibian beef sector? Given the principles above, the short-term impact may be limited, assuming trading patterns as they are today (we will discuss such changes later). As long as the VCF is maintained and the NCA remains recognized as FMD-endemic, Namibia would still need to maintain its current quarantine and vaccination program to comply with the CBT definition as given above. The only difference is that such animals, after undergoing similar quarantine and vaccination, would be eligible for export to other markets, including the EU, provided that NCA were appropriately upgraded to international export standards. Given current slaughter capacity levels in the NCA handled by Meatco, potential export

volumes under commodity-based trade could rise by over 30 percent. Quality considerations would likely keep such products aimed at the South African market, although an increase in throughput would reduce the unit costs (and thus the unit losses) of NCA-derived meat. However, this could potentially free up exports of meat from south of the VCF that currently goes to South Africa to instead be exported to the EU and/or Norway, thus increasing the overall export value of Namibian beef.

Two caveats need to be highlighted. First, the tariff savings under EPA for Namibia (reported by Meyn (2008) as €2.17 million based on 2005 level exports) would offset much of the expense of support to the NCA abattoirs and allow for increased Meatco investment in the sector, which could be used to upgrade NCA abattoirs to international export standards or enhance market development, both of which might increase exports. Second, as noted earlier, there are proposals in place to move the VCF to the Angolan border. If such a move would allow the NCA to be certified by the OIE as FMD-free, it would double the effective export capacity of the Namibian beef sector overnight, as animals could be freely moved from North to South. This in itself could have more significant impacts on the Namibian meat industry. However, even in this scenario, slaughter capacity, particularly that which meets international standards, would need to be enhanced significantly.

#### **4.2. Botswana**

Botswana is another potential beneficiary of CBT as a supplier. According to ODI (2007a), Botswana maintains a cattle herd of about 2.5 million animals and slaughters about 10 percent each year. Of this 250,000 animals, an average of 142,000 animals are slaughtered in abattoirs operated by the Botswana Meat Commission (BMC) which maintains an export monopoly on beef exports. Roughly 80 percent (114,000 animals) of BMC output is exported, with about 55 percent of BMC exports sent to the EU (ODI 2007a).

In the short-term, and again assuming no changes in current trading patterns, a CBT world would increase the supply base from which Botswana could source animals. Approximately 180,000 animals are present in the vaccination zones, approximately 7 percent of Botswana's cattle herd (Cabrera et al. 2008). However, while more animals could potentially be sourced under CBT, a more serious issue at present in Botswana is the BMC's policy of buying from producers at prices that are below EU export parity prices, which limits both incentives for producers to sell to the BMC and militates against longer-term activities that would expand livestock production in Botswana,



such as a move towards feedlot production of weaner cattle (ODI 2007a). Indeed, a larger problem is the significant excess capacity in BMC abattoirs (about 46 percent of capacity (ODI 2007a)). Thus, given relatively high domestic demand and better prices in the domestic market, it is unclear whether CBT would make much of a difference in the current policy environment. On the other hand, a more liberalized policy regime that supported weaner production could have significant – and more rapid -- impacts on supply – ODI (2007a) reports that offtakes could increase from 10 percent to 23 percent, increasing total available animals for slaughter to 575,000 animals, more than three and a half times the amount of animals that would result from opening up the vaccination zones under CBT.

### **4.3. Ethiopia**

With over 43 million head of cattle, Ethiopia has the largest herd in Africa. Recently, Ethiopia set a target to increase exports of meat products to 30,000 tons by 2008 and eventually to 80,000 tons, most of which will need to be derived from cattle. However, Ethiopia has many endemic livestock diseases, including FMD, that limit market access. Nonetheless, there is increased discussion in policy circles about developing appropriate certification systems to facilitate meat exports, particularly beef (Rich, Perry, and Kaitibie 2009). While proposed certification systems would both comply with the minimal disease risk principles advocated in CBT circles and credibly deliver disease-free products that meet current trading standards, they might also limit competitiveness in international markets by virtue of high feeding costs associated with improving quality (Rich, Perry, and Kaitibie 2009). Indeed, with or without certification systems, Ethiopia remains in the “murky middle” from the standpoint of competitiveness in third markets. At present, Ethiopia is neither cost-competitive with low-value suppliers to African markets such as India and Brazil nor is it competitive (with an SPS-certified, higher quality product) in higher value markets in the Middle East (Rich, Perry, and Kaitibie, 2009). In a CBT world, however, markets such as the European Union could theoretically open up for Ethiopia, given duty-free, quota-free access under Economic Partnership Agreements. However, this should be balanced against rising demand in domestic markets as well.

### **4.4. Uganda**

Uganda maintains one of the larger stocks of cattle in Africa: FAOSTAT figures reveal that Uganda had nearly 7.2 million head of cattle and produced 106,000 tons of beef in 2007, ranking it 10<sup>th</sup> in cattle production and 13<sup>th</sup> in beef production in Africa. In light of this potential, there has been some interest in utilizing Uganda as a supply

base for beef exports. In 2007, Notura, a Norwegian meat cooperative, conducted a feasibility study on the prospects for exports from Uganda. A motivation for this study was the recognition within Norway that domestic production is unable to meet domestic demand, with new supply platforms required to increase the supply of meat in the country. Notura particularly focused on a less-developed country in identifying possible supply bases, and the results of an earlier study in 2002 highlighted the potential of Uganda to meet such demand. Results from Notura (2007) showed that traditional markets would not be competitive economically in this system, while higher value Ugandan markets, regional markets, and Middle East markets would also realize relatively low returns. On the other hand, significant profitable opportunities are seen in both the EU and EFTA markets. The adoption of CBT standards would likely expedite the timetable in which Ugandan exports would be eligible for EU markets, since complete zonal freedom from disease would not be required, so long as quarantine and testing requirements were met. The volumes considered under this system range between 9,000-13,000 tons once fully operational, which is approximately the size of current exports by Namibia or Botswana into the EU.

#### **4.5. Brazil**

Brazil stands to be a major beneficiary from CBT, although it is likely that the expansion of Brazil beef exports would come about even without CBT. Already, Brazil has achieved the FMD-free with vaccination status in all or part of 18 of its states and plans to have complete vaccination coverage by 2011 (USDA-FAS 2008a). Expanding production to the remaining FMD-endemic zones would increase Brazil's production capacity by over 35 million head of cattle, based on 2005 government census figures on livestock numbers.

#### **4.6. India**

A final potential beneficiary under CBT considered here is India. Given India's huge cattle and buffalo stocks and rapidly growing exports, commodity-based trade programs could greatly enhance India's market access for buffalo meat. At present, India is engaged in an FMD-control program that is progressively increasing the number of states in which vaccination is being practiced (Venkataramanan et al., 2007). Moreover, there has been the emergence of increasingly sophisticated export-oriented slaughterhouses in which traceability and certification programs are practiced. An advantage that India maintains, as elaborated earlier, are its large stocks of animals that could be potentially mobilized for export. While much of India's exports are in lower-quality frozen buffalo meat products, the opening up of high-

value markets under CBT might, paradoxically, enhance India's trade with lower-value markets. This could occur if countries such as Brazil divert product exports that are currently going to low-value markets towards higher-value destinations under CBT, opening up opportunities in low-value markets for India.



## 5. Impacts on current and potential import markets

While CBT could enhance the attractiveness of expanding domestic production in beneficiary markets (owing to the potential increase in products and/or markets served), this will depend in large part on the trade opportunities engendered by CBT. In this section, we examine the impacts of CBT on importing markets and identify which suppliers could benefit from greater access to these markets. For the purposes of this analysis, we consider the following markets: Europe (EU and EFTA markets), the USA, Middle East, Russia, China, and Africa. While Japan and Korea are major importers of beef, we do not consider them in the analysis because it is unlikely in the short- or medium-term that either country would accept the principles of CBT, particularly given their “zero-risk” approach to food safety standards at present (USITC 2001).

### 5.1. Europe (European Union, EFTA, and Russia)

As noted earlier, the EU is expected to be an increasing net importer of beef products. According to Agritrade (2008), imports of beef are expected to rise from 592,000 tons in 2008 to 743,000 in 2014. Supply shocks as a result of import bans on Brazilian beef in 2008 caused prices to rise by up to 30 percent in the EU (based on informant interviews, April 2008), but the overall trend is for prices in the EU to decline as CAP reforms continue. An important trend in the EU on the consumption side is a shift towards higher-value, differentiated beef products and away from lower-quality commodity cuts. Indeed, as noted by Agritrade (2008), this trend provides opportunities for suppliers to target high-value niche products, but also creates a situation in which the EU has a surplus in low-value beef products that could directly compete with low-value production elsewhere in the world (e.g., Africa).

On the one hand, increased product differentiation combined with CBT regimes clearly provides opportunities for developing country suppliers, provided they can effectively market their production to appropriate niches and can develop long-term supply chain relationships. Indeed, Agritrade (2008) and ODI (2007a, b) note that Namibia is increasingly targeting luxury markets in the EU. Such markets have the advantage of being much less sensitive to prices than markets for commodity grades of beef, where suppliers from southern Africa in

particular tend to be much less competitive than those from Latin America. They also provide value-adding opportunities that developing countries could capture, generating gains in terms of local employment for instance.

On the other hand, the high prices and preferential access provided by the European market have shielded southern African producers from third-country competitors, although that protection is rapidly eroding. Brazil and Argentina continue to supply EU markets competitively, despite paying extremely high (50-100 percent) over-quota duties on exports (Meyn 2008). For example, USDA-FAS (2005) reports that Brazilian and Argentine rib-eye cuts are priced between 10-50 percent cheaper than similar EU-sourced products, despite paying the over-quota duty. Tariff protection in the European Union is further constructed in such a manner that is biased towards the import of higher-value products from South America and militates against value-adding efforts by African suppliers. Meat tariffs in the European Union are compound tariffs that combine a percentage *ad valorem* tariff with a specific duty denominated in Euro per 100 kg. The implication of such tariffs is that the effective percentage of duty paid is lower for higher-value products. The irony of this for African suppliers is that because of duty-reduced (and now duty-free) access under the Cotonou Protocol, European importers typically demand *lower*-value cuts from Africa relative to those sourced from Brazil or Argentina (Melchior 2005).

Increasing the number of cattle contributing from both Namibia and Botswana would serve to lower unit production costs, but the costs of moving the VCF to the Angolan border could be sizable, while policy rigidities in Botswana are more responsible for limited supplies than anything else. By contrast, the increased scale that Brazil or India could achieve through CBT would likely dwarf any production increases that Botswana or Namibia could generate at full capacity, limiting the viability of southern African meat in bulk commodity-grade markets.

Could other developing country suppliers benefit from access to the EU through CBT? Two markets to potentially consider would be Ethiopia and India. Unlike Botswana or Namibia, Ethiopia has the scale to compete on volumes with third-country competitors in the European market. While its ability to access EU markets under CBT would depend heavily on its ability to develop an acceptable quarantine and processing system, Ethiopia has an advantage over Brazil and Argentina in its duty-free, quota-free access to Europe. As noted earlier, while the analysis of Rich, Perry, and Kaitibie (2009) found that Ethiopia's conceptual certification system did not produce competitive

products vis-à-vis Brazil in the Middle East, duty-free access to the European market at such prices (approximately US\$3,500/ton f.o.b. Addis Ababa for boneless meat) would be significantly cheaper than similar products from Brazil (over US\$7,000/ton c.i.f. Europe in 2007, prior to the import ban), even after adjusting for transportation costs. Similarly, CBT could benefit India in the EU, provided markets for the Indian product (buffalo meat) could be established. At the same time, India is disadvantaged compared to Ethiopia in that it does not have duty-free access to the EU, nor are its traceability systems suitably established to target this market in the short-run.

EFTA markets are especially high-value, with returns for Namibian beef in Norway that are 5-6 times greater than returns in EU markets (PWC 2005). Markets such as Norway are increasingly deficit in meat production, suggesting the need for increased imports, although market access barriers in such markets are extremely high. Tariffs on frozen beef, for example, are set at 344 percent plus €66.4-119.01 per kg, depending on the product (PWC 2005). Both Namibia and Botswana maintain a shared 3,500 ton duty-free quota into Norway which has usually not been completely filled, due to even more stringent food safety and SPS requirements than the EU on hazards such as *Salmonella* sp. (ODI 2007a, b). Nonetheless, as revealed in figures 5-1 and 5-2, Namibia and Botswana comprise the overwhelming (and rising) majority of exports to Norway in fresh beef (combined market share of 91 percent in 2008) and a sizable share in frozen beef (58 percent). While CBT might enhance the ability of other developing countries to meet standards in EFTA countries, a more crucial issue is whether developing countries could obtain similar types of preferential access to such markets to export meat competitively, and whether such increased market access would be politically feasible in EFTA markets, such as Norway<sup>3</sup>.

USITC (2008) notes that Russia is the world's second largest importer of beef, although projections by FAPRI (2009) show only modest increases in imports between 2008 (998,000 tons) and 2018 (1.04 million tons). The majority of imports by Russia are in frozen boneless cuts of beef that are increasingly supplied by Brazil and Argentina and which have displaced EU supplies (USITC 2008). While Russia is an important growth market, it is primarily a low-value, volume market that advantages low-cost producers such as Brazil. At the same time, a CBT approach could benefit developing countries such as India, which has the capacity to supply large volumes at competitive prices. Indeed, given average 2007 export unit values for India of US\$2,121/ton for fresh boneless beef and US\$1,669/ton for frozen boneless beef (UN COMTRADE) would be price competitive in Rus-

<sup>3</sup> For example, see <http://www.isgnweb.org/Publications/02-009.htm>

sia, even when the 30 percent over-quota duty is applied, assuming India could meet appropriate standards operating under CBT.

## **5.2. USA**

The United States is currently a net importer of beef products, with most imports comprising lean, grass-fed beef from Australia and New Zealand used in the manufacture of ground beef (USDA-ERS 1997; USITC 2008). At the same time, recent trends over the past five years show a decline in beef imports. According to USITC (2008), these were due to a combination of exogenous trade shocks (BSE in Canada and erratic supplies of processed beef from Argentina), production shocks that have reduced available beef from Australia and New Zealand, diversion of Australian/New Zealand beef exports away from the United States and towards markets in Asia, and the relative weakness of the U.S. dollar. FAPRI (2009) projects that the United States will increase net imports from an estimated 275,000 tons in 2008 to 535,000 tons in 2014, with imports then rapidly falling to 225,000 tons by 2018. Similarly, USMEF (2008a) sees US exports surging faster than USDA projections, with a projected increase in volume terms of 88 percent between 2008 and 2017 due to enhanced exports to the Japanese and Korean markets. Both markets were disrupted in late-2003 by the discovery of BSE in the United States.

The United States is unlikely to be a major export market for developing countries under CBT, particularly given the large domestic production market in the United States. AGOA provides preferential access for African suppliers, but only for certain products. For instance, AGOA countries have duty-free access to the United States for fresh and frozen beef within the “all other countries” quota (64,805 tons), but are subject to the same 26.4 percent over-quota tariff as all other trading partners. On the other hand, AGOA provides duty-free access for processed beef products and so there are potential niche markets for African suppliers, provided they can meet appropriate risk assessment protocols. For example, Farmers Choice has received approval to export processed frankfurters (but only from its commercial facility subject to certified biosecurity, not sourced from its outgrowers) to the United States (though has decided against export for now, given the logistical costs). Similarly, Namibia has actively sought access into the U.S. market for high-value beef products, though access to date has remained stymied by USDA risk assessment protocols.

## **5.3. Middle East**

The Middle East (and North Africa) is an increasingly important market for beef imports. We can distinguish between two different types



of markets in the region. On the one hand, there is a large and rapidly growing import segment of mainly low-value frozen meat products that are sold in North Africa (particularly Algeria and Egypt) and Saudi Arabia, and which has a relatively large market among certain expatriate populations in the Persian Gulf (particularly among nationals from the Indian subcontinent). The second market segment is a smaller, high-value market that targets wealthy local and expatriate populations that primarily reside in the Persian Gulf countries (United Arab Emirates, Qatar, Bahrain, Kuwait, and Oman). USMEF (2008c) notes strong growth in the foodservice and hotel sectors in Middle Eastern markets, given rapid expansion of fast food restaurants, hotels, and resorts in the region.

At the same time, the volume markets in the Middle East are in low-value frozen beef that have been dominated by imports from Brazil and India. Rich (2009) reports that Algeria imported over \$158 million worth of frozen beef in 2006, 69 percent of which came from Brazil, while Egypt imported over \$277 million worth in the same year that was sourced overwhelmingly (90 percent) from Brazil as well. Table 1 reports average unit values for selected Middle Eastern markets and reveals that prices for frozen products (the majority of imports of most of these markets) are quite low, reflecting limiting purchasing power in many of these markets.

By contrast, prices in higher-value Gulf markets tend to be relatively high, although there is wide variance in such prices depending on the source of imports. In table 2, while overall average import unit values for Bahrain, Qatar, and Saudi Arabia are high, prices from developing country suppliers to those markets tend to be significantly lower. Rich, Perry, and Kaitibie (2009) further remark that the volumes of fresh boneless beef imports in these markets is relatively small (18,205 tons), with high-value, niche grain-fed products (predominantly those from the United States and Australia) just 11 percent of the total market. Moreover, there remains significant penetration by low-cost suppliers such as Brazil and India in the fresh boneless sector as well.

The Middle East market presents some opportunities for developing country suppliers, but these should not be overstated. At present, export standards into the Middle East tend to be lower than those in the EU and elsewhere, although ODI (2007a) notes that EU standards are increasingly being applied by Middle Eastern trading partners. Where there is significant growth – low-value, volume exports of frozen beef – developing country suppliers in Africa are unlikely to be cost-competitive, suggesting continued (and increasing) commodity imports from Brazil and India in this segment. Like the United States, many of the potential segments that could be targeted – whether under

CBT or not – are niche markets, with the sizes of potential opportunities likely to be relatively limited in the beef sector. Companies such as Farmers Choice, for example, have been successful in the export of pork products to the Middle East that target expatriate populations (Perry et al. 2005). While such exports are lucrative, they are also small (for Farmer's Choice, about 600 tons per year) and put greater emphasis instead on marketing and appropriate supply-chain management to limit food safety problems and disease risk.

#### **5.4. China**

The Chinese market holds tremendous potential over the next decade. Based on FAPRI (2009) predictions, China will switch from being a small net exporter of beef to becoming a sizable net importer, which projected imports of 375,000 tons by 2018. At present, the Chinese market for beef is relatively small, with per capita consumption in 2007 estimated at 5.9 kg. This is nonetheless a 31 percent rise from 2003 figures (USITC 2008). USMEF (2008b) reports that consumption of beef has been growing at faster rates than other meats. Most (90 percent) of the estimated 7.8 million tons of beef consumed in China is of low-value cuts, with 10 percent medium- and high-quality cuts that predominately targets the restaurant and hotel sector (USITC 2008). This high-value sector reportedly demands marbled, grain-fed cuts that potentially give advantages to suppliers such as the United States (USMEF 2008b).

Most imports are in the form of frozen boneless beef and offals. Australia is the main supplier of beef to China, although Brazil is making inroads in the market after concluding a deal with the Chinese government in 2007 to allow Brazilian imports that originate from four specified states (Rio Grande do Sul, Santa Catarina, Acre, and Rondonia) (USDA-FAS 2008b). As noted by USDA-FAS (2008b), South American imports are quite cost-competitive in China, with prices that are one-half of U.S. imports. Again, a CBT scenario would be unlikely to change that dynamic and thus significantly advantage commodity suppliers such as Brazil and India that could produce large volumes at low prices.

#### **5.5. Africa**

Africa itself is a growing market for beef products. Recent analysis in Rich (2009) highlighted strong import growth in a number of markets, particularly Algeria, Angola, Egypt, Ghana, Libya, Mauritius, Morocco, Senegal, South Africa, and Tunisia. As noted earlier in the report, most African countries are net importers of beef, and as incomes and urbanization increase, demand for beef products is certain to rise.

A large proportion of African imports at present come from three sources: the European Union (in the form of surplus, low-quality cuts), Brazil, and India (see Rich (2009) for an assessment of market shares in selected African markets). CBT is likely to influence African import markets, though not necessarily positively for African suppliers. First, as the EU market opens up to an increased diversity of suppliers, there will likely be more pressure on outlets for EU supplies of low-quality meat. As noted earlier and argued by Agritrade (2008), the EU has a surplus in low-quality meat, given increased competition among suppliers for more lucrative (and more demanded) high-quality segments. This surplus, while falling, will need to be marketed in some manner, and as the EU finds itself less competitive in third-markets that formerly bought such products (e.g. Russia), it might force some of the EU's low-quality surplus onto African markets, placing increased pressure on domestic production in Africa (Agritrade 2008). Second, CBT is likely to further expand exports from both Brazil and India, which will target their own increased low-quality surpluses onto low-value markets such as Africa. While this potentially benefits consumers in African markets, domestic production in nearly all markets, including those from existing exporters, will come under pressure. Such pressure is likely to intensify as tariffs decline under WTO multilateral negotiations. Indeed, the common 40 percent tariff that SADC countries (including Botswana and Namibia) enjoy provides added protection against South American imports and allows for Botswana and Namibia to export beef competitively to relatively lucrative markets in South Africa (though less lucrative than those in the EU). In the absence of such protection, it is unlikely – with or without CBT – that such trade would be competitive vis-à-vis South American suppliers.



## 6. Discussion

It can be seen that based on the evolving supply and demand dynamics, and the prospects for new trading opportunities which have been highlighted here, a number of key issues emerge that will influence the scope, impact, and success of CBT in promoting improved market access for developing country suppliers. We identify four important narratives, and discuss them below. They are: the role of preferential trading agreements; competitiveness; product differentiation; and poverty impacts.

### 6.1. Trade and preferential access

An important component that underpins the success of CBT is the existence of preferential trading arrangements, particularly from the EU and Norway. Tariffs on beef imports into the EU are extremely high, with over-quota duties in *ad valorem* terms exceeding 100 percent for frozen beef products, given their relative low value and given that the EU tariff regime uses compound tariffs (*ad valorem* plus specific rate per quintal) that are biased against lower-priced imports (Meyn 2008; USITC 2001). By contrast, recently agreed EPAs provide duty-free, quota-free access for many African suppliers as of 2008. Prior to 2008, southern African suppliers had a preferential quota (by country) that reduced the in-quota tariff by up to 92 percent of the most favoured nation (MFN) rate (ODI 2007a). However, Agritrade (2008) found that quotas given to African suppliers were almost never filled, with fill rates in the 60-70 percent range for Botswana and Namibia.

At the same time, preferential trading arrangements underpin the very feasibility of broad-based exports from Botswana and Namibia, as well as the future potential from other African suppliers. Iimi (2007) estimates trade preference margins (defined as the percentage difference in the price received in a protected market to the free market world price) for Botswana ranging from a low of 318 percent in 1996 to a high of 607 percent in 2002. For Namibia, similar preference margins ranged from 145 percent in 1996 to 611 percent in 2004 (Iimi 2007). The existence of high prices in both the EU and Norwegian markets allows Namibia to cross-subsidize exports to South Africa that operate at a loss (PWC 2005). Even potential (and as yet unrealized) high-value returns in the South Africa market are one-fifth the returns of EU markets and less than 4 percent of the returns from exporting to Norway (PWC 2005).

The magnitude of such protection can be viewed in figures 3 and 4, which shows EU imports of selected boneless beef cuts from Botswana, Namibia, Brazil, and Argentina. The unit values include the duty paid by each supplier. Despite Brazil and Argentina paying the full duty for most exports (an exception is on Hilton Quota cuts which enter the EU duty free<sup>4</sup>), Brazilian and Argentine imports are at least as competitive on average as imports from Namibia and Botswana. Moreover, the import figures distort the average unit value somewhat, as Hilton Quota imports from Brazil and Argentina tend to be the highest-value cuts, while higher prices in 2008 in Brazil reflect the impact of EU import bans from most Brazilian abattoirs.

A development which could greatly influence the ability of African suppliers to compete vis-à-vis Latin American and other competitors is a series of preferential trade agreements that are being discussed between the EU and the countries of Mercosur (Agritrade 2008). While details on the proposed negotiations are limited, significant reductions in tariff barriers imposed on Brazilian, Argentine, and Uruguayan beef imports would have major negative impacts on African suppliers and likely cease all but the highest-value niche exports.

Preferential trading arrangements will further influence the ability of emerging African suppliers to compete in global markets. Given the existence of EPAs and continued market restrictions imposed on Latin American producers, suppliers from Ethiopia and Uganda could likely penetrate the European market if they could meet the other costs of compliance required for imports. Indeed, as noted earlier, Ethiopian products, by virtue of Ethiopia qualifying as a least-developing country and consequently having duty-free access under the EU “Everything but Arms” initiative, potentially enter the EU at a sizable discount. However, in the absence of protected markets in the European Union and EFTA markets, African suppliers are at a considerable cost-disadvantage in third markets, with only niche markets likely available in the short- to medium-term. Such market niches are highly competitive with existing suppliers already established with strong brand presences (e.g., New Zealand, USA, and Australia). By contrast, CBT could enhance the advantages that Brazil and India already have, by virtue of their high volume, low-cost production that allows for the diversification of exports based on market needs.

Furthermore, as noted earlier, high tariff walls have further cushioned suppliers such as Botswana and Namibia against competition from South America and India in internal SADC markets, particularly South Africa. Both Botswana and Namibia are protected by an external SADC tariff of 40 percent, with Botswana further protected by a

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<sup>4</sup> The Hilton Quota is 28,000 tons for Argentina and 5,000 tons for Brazil.

ban on South Africa beef imports (ODI 2007a). This protects both producers from Brazilian and other imports in EU and home markets alike. Should global tariffs gradually liberalize under WTO negotiations and should Brazil and India reap the benefits of economies of scale from CBT, the competitiveness of Botswana and Namibia in their own SADC markets could be compromised. Again, this illustrates the precarious nature that southern African producers find themselves, and is a much more serious determinant of long-term competitiveness than CBT.

## 6.2. Competitiveness

Related to the issue of preferences is the general competitiveness of suppliers in African countries vis-à-vis competitors. Data from FAOSTAT reveal that India has extremely low producer prices for buffalo meat (less than US\$0.40/kg), which is further supported by USDA-FAS (2008d), who report that the retail price of buffalo meat in India was between Rs. 40-50/kg (US\$0.80-\$1.00/kg). FAOSTAT data on cattle prices further showed that producer prices for Brazil and Argentina are both relatively low compared to African countries in the sample, with Brazilian prices lower than about three-quarters of the sample (table 3).

Nin Pratt and Perry (2005) calculated coefficients of revealed trade advantage for a series of developing countries to assess which countries, given current market conditions and policies, have a comparative advantage in different types of meat production. In the case of beef, strong comparative advantage was reported for countries in South America (Brazil, Uruguay, Argentina, and Paraguay) and India. In addition, Southern African countries such as Botswana, Namibia, and Zimbabwe also had a comparative advantage, though this is partly due to their preferential access arrangements as noted earlier. On the other hand, countries in Northern and Western Africa had strong comparative disadvantages in beef.

Deblitz (2004) reported results from a global benchmarking study of beef production costs in a sample of 29 farms in 15 countries, including Argentina, Brazil, Uruguay, Namibia, and Pakistan. They found that farms in Argentina, Uruguay, and Pakistan each had production costs of US\$100-150 per 100 kg carcass weight, while costs in Brazil and Namibia ranged between US\$200-300 per 100 kg carcass weight. Farms in Uruguay, Argentina, and Pakistan were found to be profitable in the medium-term (i.e., covering costs plus depreciation), while farms in Brazil covered their cash costs only (Deblitz 2004). By contrast, sampled farms in Namibia were not profitable, with cash costs in excess of the price received. Such low costs are likely to facilitate fur-

ther expansion of beef production in Latin America, though most gains would be achieved through enhanced productivity (Deblitz 2004). An expansion of trade through commodity-based trade is likely to disproportionately enhance exports from those countries with already-existing low cost, profitable supply bases. While this does not preclude exports from Africa *per se*, again it emphasizes the distinction between products and commodities, and Africa would tend to be more competitive in products that are less sensitive to price and specific to identified market niches.

### 6.3. Product differentiation

The preferential trade and competitiveness narratives suggest that the long-term viability and success of CBT for African producers rests in the ability to target and capture specific niche markets. The benefits to Africa, at least in the short-run, will come predominately from trade in *products*, not from commodities. There is evidence that these efforts are already taking place. Agritrade (2008) remark that Namibia re-oriented its marketing strategy in 2007 to target “luxury” markets in the EU, with increased emphasis on labelling and marketing activities. Indeed, Namibia has already succeeded in branding its products sold to South Africa under the FAN (Farm Assured Namibian) Meat program, in which its compliance with EU standards is used to enhance its marketing position in the South African market (ODI 2007b). The proposed export marketing program in Uganda for beef exports puts emphasis on developing a “Unique Selling Proposition” aimed at differentiating product offerings in target markets (Nortura 2007).

Product differentiation has many benefits: it provides producers with market power and the prospects of additional value-adding opportunities and higher margins that could be captured in domestic markets. As noted in the poverty narrative, this can lead to benefits in upstream and downstream markets alike in terms of employment and national income, though as a development strategy, these benefits may not necessarily be broad-based. Moreover, the ability to capture these benefits relies on putting into place specific conditions that sustain the business model for a particular product. Unlike horticulture, beef does not have the inherent out-of-season advantages that could benefit developing country suppliers – these have to come from the careful design of a market niche and the organization of a supply chain to meet that niche. This organization is much more critical than CBT itself, and will require a combination of private sector champions, government policies that facilitate (rather than impede) business development and support the livestock sector (cf. distortionary policies in Botswana), and donor support to broker relationships and assist with needed infrastructure.



#### **6.4. Poverty impacts**

What are the poverty impacts that a CBT world might bring? Again, it will depend crucially on the context in which it takes place, as other research has noted (Perry and Rich, 2007; Perry and Grace, 2009). For commodity beneficiaries, such as Brazil and India, CBT will provide greater opportunities for producers – smallholders and larger commercial producers alike – with access to international markets. Downstream, one could envision greater employment in domestic abattoirs and service providers in the livestock value chain. In product beneficiary countries, commodity-based trade will have similar, but possibly more modest impacts, but these should not be overlooked. For instance, the establishment of appropriate systems to ensure disease freedom under commodity-based trade will have important employment creation effects. In order to bring the proposed Ethiopia SPS system up to export scale (e.g., 10,000 tons of boneless beef exports), over 14,000 jobs directly associated with the system would be created, with added wages of nearly US\$650,000 (based on data from ILRI 2008).



## 7. Conclusions

At its core, the argument in favor of CBT has rested on the links between international market access for livestock products and the processes of sustainable and inclusive growth, which correspondingly requires an understanding of the potential markets for such commodities and products and the key factors influencing competitiveness and impact. On a geographical basis, the benefits of CBT are much more likely to be felt in countries such as Argentina, Brazil, and India than in countries of Africa. Opportunities exist for southern Africa, but are predicated largely on continued preferential access that may or may not be sustainable in the long term. While there are numerous opportunities for some African countries in niche markets, it is also important to balance that potential with the sound exploitation of one's livestock resources and a pragmatic understanding of the challenges in marketing and competitiveness.



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**Table 1**  
**Import unit values for beef products in selected Middle Eastern markets**

Market (date of reporting)	Fresh carcasses	Fresh bone-in beef	Fresh boneless meat	Frozen carcasses	Frozen bone-in beef	Frozen boneless meat
Algeria (2006)	3,670	4,220	4,247	1,982*	1,955*	2,398
Egypt (2006)	NA	NA	1,356	2,167	1,797	1,847
Israel (2006)	NA	NA	NA	2,276	3,323	2,620
Jordan (2006)	1,551	3,091	2,328	NA	1,763	1,552
Lebanon (2004)	1,999	2,860	2,598	NA	2,967	1,904
S. Arabia (2006)	3,234	4,078	3,151	1,749	2,102	2,011

Source: ILRI (2008), based on UN COMTRADE data. \* 2005 figures

**Table 2**  
**Average import unit values for fresh boneless beef to selected Middle Eastern markets by selected sources, most recent year (US\$ per ton)**

Market	All sources	Brazil	India	Pakistan
Bahrain (2007)	5,254	3,203	2,223	4,417
Qatar (2006)	5,084	2,796	2,301	NA
Saudi Arabia (2006)	3,151	3,009	3,061	NA

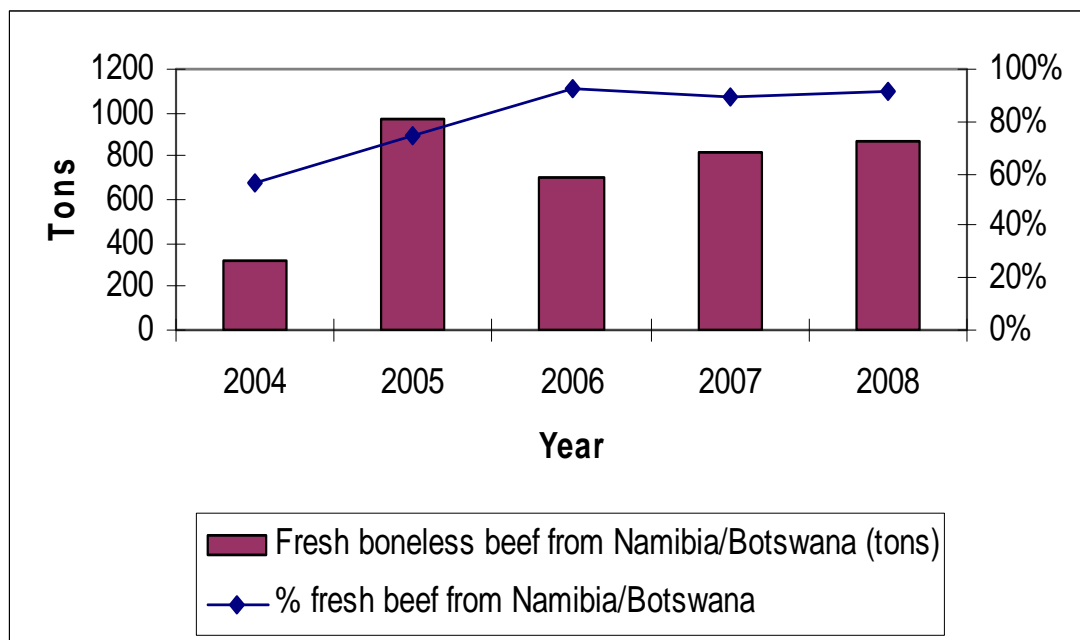
Source: ILRI (2008), based on data from UN COMTRADE. Note that 2006 figures for Bahrain are USD 5,116 (all sources), USD 3,526 (Brazil), USD 1,407 (India) and USD 3,491 (Pakistan). NA: not applicable

**Table 3**  
**Producer prices for buffalo and cattle meat in Argentina, Brazil,**  
**India, and selected African countries, 2002-2006 (US\$/ton)**

<i>Country</i>	<i>Product</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>
<b>India</b>	<b>Buffalo meat</b>	<b>305</b>	<b>325</b>	<b>344</b>	<b>360</b>	<b>373</b>
Ethiopia	Cattle meat	474	542	563	603	635
Guinea	Cattle meat	1,293	1,432	1,423	941	939
Mauritius	Cattle meat	1,112	1,267	1,288	1,408	1,318
Rwanda	Cattle meat	1,358	1,238	1,265	1,361	1,489
<b>Brazil</b>	<b>Cattle meat</b>	<b>908</b>	<b>957</b>	<b>1,083</b>	<b>1,359</b>	<b>1,549</b>
Togo	Cattle meat	1,205	1,435	1,616	1,645	1,662
Malawi	Cattle meat	1,121	963	953	956	1,813
Cameroon	Cattle meat	2,027	1,683	1,770	1,739	1,831
Namibia	Cattle meat	1,226	1,436	1,778	1,853	1,908
Burkina Faso	Cattle meat	2,063	1,705	2,006	1,952	2,019
Ghana	Cattle meat	1,050	1,317	1,631	1,892	2,146
<b>Argentina</b>	<b>Cattle meat</b>	<b>1,056</b>	<b>1,395</b>	<b>1,706</b>	<b>2,094</b>	<b>2,252</b>
Mali	Cattle meat	1,791	2,134	2,274	2,279	2,458
South Africa	Cattle meat	1,117	1,677	2,163	2,340	2,797
Sudan	Cattle meat	1,705	1,948	2,260	2,521	3,029
Algeria	Cattle meat	2,073	2,220	2,543	2,772	3,048
Niger	Cattle meat	2,181	2,605	2,925	3,030	3,090
Gambia	Cattle meat	2,761	2,554	2,792	3,229	3,207
Tunisia	Cattle meat	3,306	3,306	3,401	3,263	3,269
Burundi	Cattle meat	2,435	1,599	2,705	3,073	3,316
Kenya	Cattle meat	1,545	1,859	1,895	1,986	3,357
Egypt	Cattle meat	3,016	2,678	2,873	3,258	3,519
Côte d'Ivoire	Cattle meat	2,439	2,925	3,222	3,363	3,575
Zimbabwe	Cattle meat	2,392	1,635	874	724	3,908
Egypt	Buffalo meat	3,381	2,999	3,213	3,733	4,032
Congo	Cattle meat	3,221	3,862	4,465	4,637	5,383
Nigeria	Cattle meat	2,865	3,490	4,556	5,413	6,010
Eritrea	Cattle meat	2,905	3,926	5,359	5,349	6,135
Morocco	Cattle meat	4,891	5,995	6,770	6,069	6,872
Madagascar	Cattle meat	1,614	2,019	1,309	1,522	7,929
Equatorial Guinea	Cattle meat	6,310	7,623	8,119	8,363	10,091

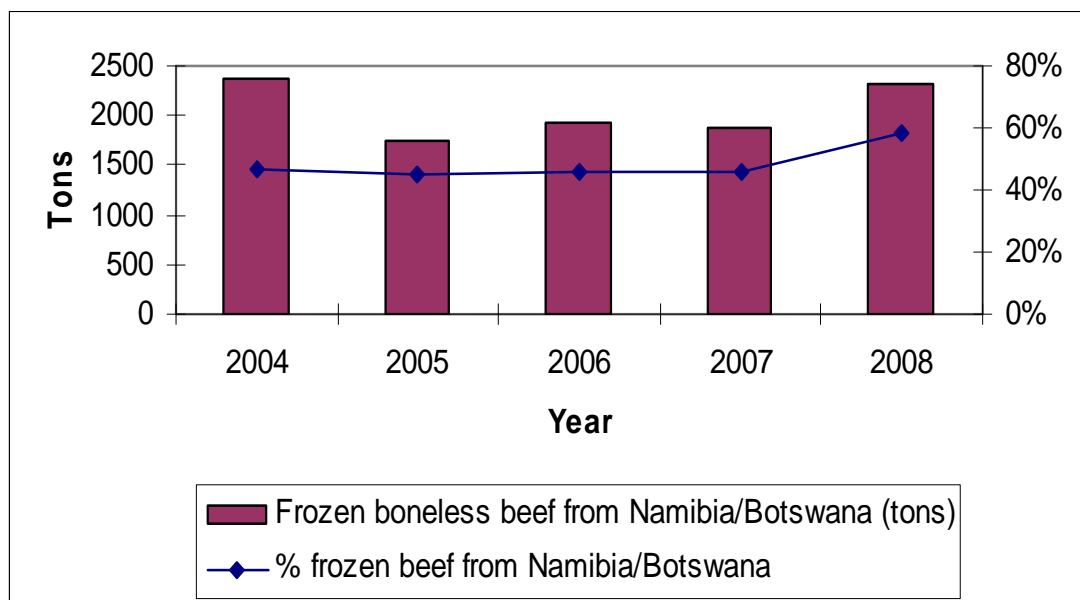
Source: FAOSTAT

**Figure 1**  
**Imports of fresh boneless beef (HS 020130) by Norway from Botswana and Namibia, 2004-2008**



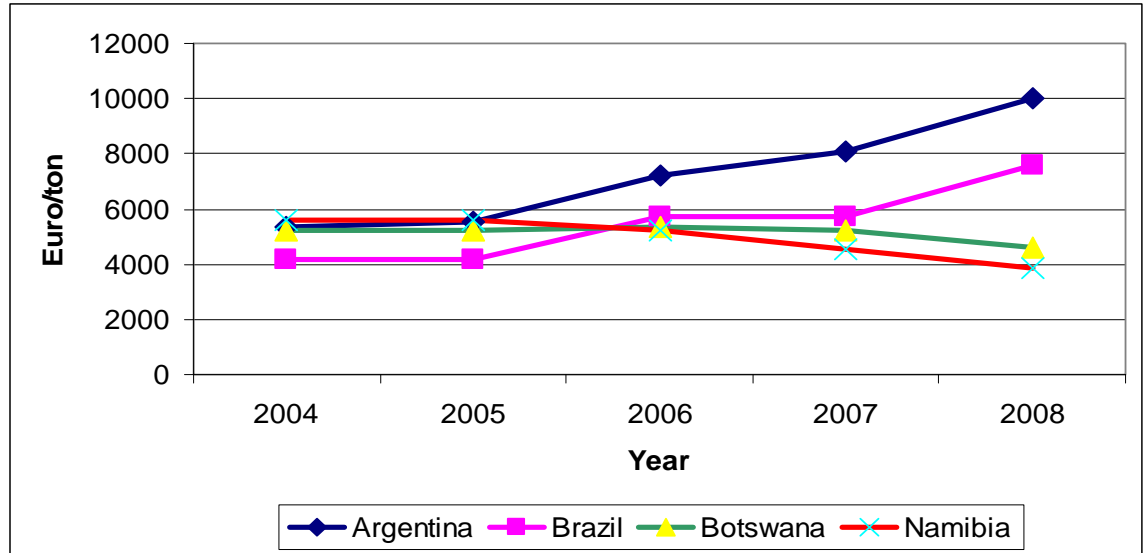
Source: UN COMTRADE

**Figure 2**  
**Imports of frozen boneless beef (HS 020230) by Norway from Botswana and Namibia, 2004-2008**



Source: UN COMTRADE

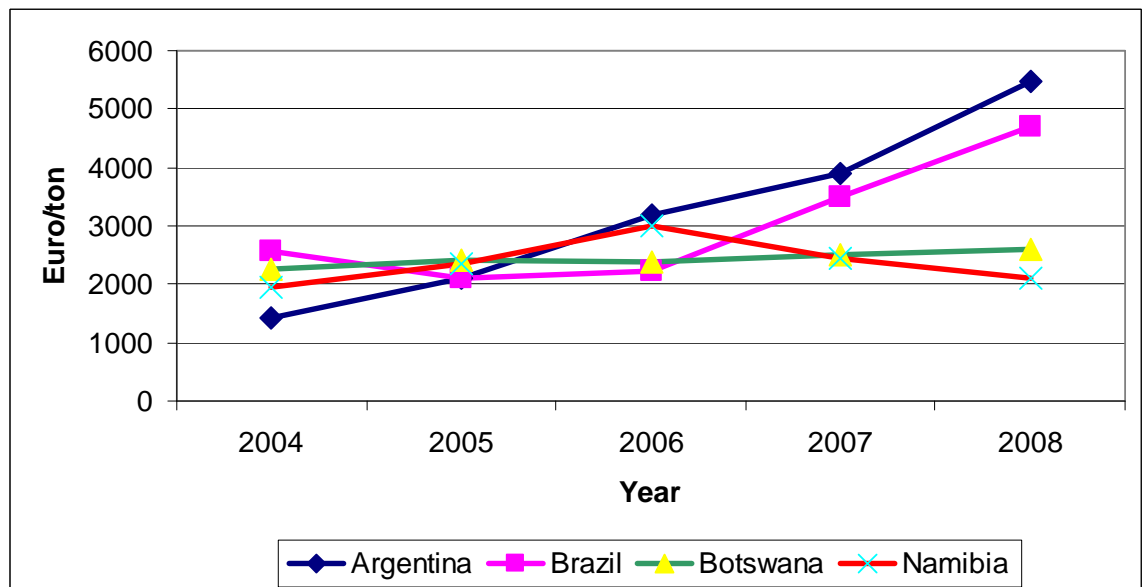
**Figure 3**  
**Import unit values of fresh boneless beef (HS 02013000) by the EU-27 from selected countries, 2004-2008**



Source: EU EUROSTAT

(<http://epp.eurostat.ec.europa.eu/newxtweb/submitdimselect.do>)

**Figure 4**  
**Imports of frozen boneless beef (HS 02023090) by the EU-27 from selected countries, 2004-2008**



Source: EU EUROSTAT

(<http://epp.eurostat.ec.europa.eu/newxtweb/submitdimselect.do>)