

Success criteria for commodity exchanges¹

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1. Commodity exchanges and why they matter

The starting point for this article is the concept of a commodity exchange. A working definition is a physical or – more likely – electronic marketplace for buying, selling and trading commodities, whether ‘hard’ commodities, which typically are natural resources that must be mined or extracted (gold, rubber, oil, etc.), or ‘soft’ commodities, which are mainly agricultural products or livestock (coffee, corn, cotton, sugar, soybeans, etc.). The purpose of the exchange is to provide an organised and reliable marketplace where exchange members can trade commodities on behalf of their clients, which can range from farmers to speculators. Some exchanges trade commodities for spot or forward delivery, whilst others provide futures and options, where deliveries are rare or settlement is in cash (Gross 2014). Most exchanges operate under a national regulatory framework approved by government. Exchanges matter because they act as intermediaries, removing credit risk between their members by interposing themselves between buyers and sellers.

There are currently almost a hundred major commodity markets worldwide that facilitate one or another kind of derivative trade in nearly a hundred primary commodities, but significantly fewer regulated commodity exchanges (Belozertsev *et al.* 2011; and author’s research). In the majority of cases, however, commodities (especially soft) now form only a part of the business of an exchange: the majority of contracts traded are financials, such as shares or interest rate, currency or other financial derivatives. Yet, despite their relative insignificance for large integrated exchanges, the importance of commodity derivatives to commodities trade worldwide, and the potential commercial opportunities offered by exchanges, is evident from the fact of the steady growth in the number of commodity exchanges and exchange-traded commodity contracts (UNCTAD 2006; Gross 2014; Jyothi & Rao 2017), as well as in over-the-counter contracts that frequently rely upon exchange prices.

Radetzki (2013) identifies several aspects of commodity exchange development that have militated in favour of their increasing dominance in price-setting, including in many emerging markets, whether as standalone institutions or as part of integrated exchanges.

1. There is a strict standardisation of contract terms, e.g. volumes, qualities, delivery times, margins and payment terms;
2. Futures transactions exhibit a high degree of transferability (i.e. liquidity); and

¹ A note from the Editor: Occasionally, *AfJARE* publishes articles that do not necessarily follow the format of a typical research paper but have the potential to provide some insights into a subject or topic that has not received sufficient attention in the journal, and therefore giving an opportunity for members to share their unique knowledge with us. This article is one of those, and is published partly to expose members to this fact and hopefully create enough interest for deeper analysis.

3. The existence of a clearing house, established and financially guaranteed by its members, operates to minimise risk in dealing with counterparties in derivative trading on an exchange (Radetzki 2013:269).

2. What makes for a successful commodity exchange?

Establishing a commodity exchange is not cheap, nor is launching a new contract (Jayne *et al.* 2014). On the other hand, a number of governments, such as those of Ethiopia and India, have at varying times placed considerable trust in exchanges to deliver part, at least, of their agricultural policy agendas (Gabre-Madhin 2012; Bhagwat & Maravi 2015). Whether a commodity exchange succeeds or not is therefore an important question. Prerequisites for success, as well as potential obstacles and pitfalls, have been well documented in the literature (Black 1986; Brorsen & N'Zue 2001; Rashid 2015). Several key factors have been identified as necessary for a successful commodity contract.

- An adequately large supply and demand for a fairly standardised commodity;
- Relatively transparent determination of prices;
- Wide price fluctuations;
- A well-functioning spot market;
- Widespread perception of the absence of distortions in price setting (e.g. by collusion); and
- Differentiated market participants (e.g. traders, brokers, bankers, producers, and manufacturers), who can create the necessary liquidity, adequate IT and physical infrastructure for trading, grading, storage, transport, and appropriate legal and regulatory systems by working together with the exchange.

This list of prerequisites for success is fairly comprehensive, but there may be exceptions. Before all this, however, there ought to be a prior question: *What criteria could, are and should be used to determine the success of an exchange or the contracts it launches?* These criteria, in turn, might influence the balance between the answers in the list of necessary factors for success.

There are three different potential interest groups with different perspectives on the success of a commodity exchange.

3. Public policy success criteria for exchanges

From the standpoint of policy makers who approve of them in principle, notably international agencies such as the World Bank, which have actively supported them since the early 1990s (Claessens & Duncan 1993), commodity exchanges are explicitly designed to address a wide range of challenges facing African food markets (Gabre-Madhin & Goggin 2005) and likewise are part and parcel of a programme for agricultural liberalisation in India (Bhagwat & Maravi 2015:12). By offering a platform to competitively match a broad range of buyers and sellers, those supporting them contend that commodity exchanges can reduce inefficiencies of agricultural marketing by streamlining trading, delivery and payment systems and by providing more accurate price information to all, thus stimulating market transparency and price discovery and thereby attenuating (speculative) bubbles and price volatility. This, in turn, is expected to lower the potential for collusion among market actors (Gabre-Madhin & Goggin 2005; Poulton *et al.* 2006; UNCTAD 2009; Rashid *et al.* 2010; Sitko & Jayne 2012). For their supporters in government, and notably in international agencies such as the World Bank that have promoted them, commodity exchanges can also reduce transaction costs by expanding the range of potential trading partners, providing industry-approved inspection and quality certification services, and providing contract enforcement and arbitration services to protect against default (Gabre-Madhin & Goggin 2005; Sitko & Jayne 2012). With respect to value chain finance specifically, a commodity exchange can run a warehouse receipt system, enabling

farmers and co-operatives to have liquid collateral against which banks and other financial institutions banks can lend (Gross 2014). Viewed from a national perspective, the benefit of a functioning commodity exchange, apart from any prestige it might confer upon a developing country, is mainly twofold. Firstly, the exchange supports and improves the nation's trading in physical commodities. Secondly, the exchange provides useful price information to market participants – not only to those who are currently trading on the exchange, but also to OTC and spot market traders. Moreover, the exchange is part of a regulatory, governance and legal system that creates and enforces property rights, contracts and other aspects of a developing economy that governments favour. Finally, it has been contended that, far from destabilising prices, commodity exchanges stabilise markets around equilibrium levels and avoid misallocations of scarce resources at the cost of higher price variability compared to traditional, expensive, difficult-to-administer governmental price-support programmes (Zimmermann & Haase 2016). All of this can increase margins for farmers, in turn raising agricultural productivity.

It should be recognised that commodity exchanges are not without their critics, some of whom broadly take the view that food and energy prices should not be left to the market to decide (Clapp 2017). Others, who support market mechanisms in general, have alleged however that commodity exchanges have raised transaction costs, possibly generated greater price fluctuations, failed to provide adequate and efficient warehouses and demonstrated a lack of transparency in their operation, including conflicts of interest by brokers, such as allegedly in Zimbabwe (Rashid 2015). In developing countries, aside from criticisms they have also suffered from a lack of economies of scale, resulting in joining costs being too high, especially for local institutions (Jayne *et al.* 2014). Poor decision-making by management, resulting in overly complex or poorly specified contracts or high operating costs, can also result in the failure of exchanges and the contracts they launch (Mbeng Mezui *et al.* 2013; Bjerga & Davison 2015). Critics have either concluded pessimistically that commodity exchanges in developing countries are not fit for purpose (Robbins 2016:22), or have more optimistically drawn up an action plan to remedy perceived deficiencies (Ahmed 2017:24).

All of this amounts to a contribution, albeit one with a mixed message that may be hard to determine exactly, let alone be used to determine proper policies at the level of government, to agricultural production efficiency in a country. There can be little doubt that many governments view this potential outcome favourably, even if they are often derailed by short-term political considerations such as a demand for low food prices, restrictions on exports at times of shortage, problems with local supply, or other, significant obstacles to their efficient operation, especially in developing countries. Many of these criticisms of commodity exchanges have also permeated through to government, especially when transparent prices are themselves a cause for concern, either for broadly political reasons or for less savoury matters of local political interest. Sometimes this leads to a chequered history of restrictive legislation, as in India, or even shutting down commodity derivative trading in individual commodities, as was the case with rice futures in Thailand in 2016. In a globalised economy, however, none of these measures could be expected to affect world prices significantly.

The inconsistencies and changes in many governments' policies on derivatives may derive in part from a key problem: *the actual net benefits derived from an exchange have rarely been quantified by government.* Everything is either anecdotal or the evidence is mixed, even for the impact of commodity exchanges' contracts on something as empirical as volatility. IFPRI analysts have suggested that, if a commodity exchange adds value to the market, it should be reflected in price behaviour through an improvement in the price transmission and integration across space and time, particularly between international and local markets. But their study of the Ethiopian commodity exchange, ECX, using an MGARCH model, demonstrated little such improvement (Hernandez *et al.* 2017). Similarly, studies of commodity price volatility in Thailand before and after the introduction of commodity futures demonstrate little correlation between futures volumes and underlying spot market price volatility (Pinjisakikool 2009), whilst a similarly mixed message has emerged from

several Indian studies (Ul-haq & Rao 2014; Jyothi & Rao 2017). Moreover, commodity exchange development is uneven and it is known that contracts are not always traded by their target market: for example, NCDEX, the largest farm commodity exchange in India, has around 163 000 farmers registered, but only 33 000 have traded, which amounts to a level of participation (20%, which is not necessarily at any one time) that has been described as ‘dismal’, given that around half of the workforce is still in agriculture (Pattanayak 2017). The conclusion must therefore be that traded volumes and open interest alone are clearly insufficient public policy measures by which to judge the success of a commodity exchange. Only a systematic study of the value chain can indicate the effect of the exchange on the public policy indicators that matter, such as transparency and shifts of profitability up the value chain towards farmers themselves.

Because it is impossible to trace through accurately on the basis of the evidence how a commodity exchange delivers these kinds of public policy advantages, there are, perhaps very regrettably and despite the considerable investment made by the public sector in exchanges generally, no documents publicly available on what quantitative success criteria governments have or ought to use for commodity exchanges. The suspicion remains that governments, especially in developing countries, have at varying times favoured commodity exchanges in much the same way that they did national airlines in a previous era, as testimony to development success in their own right, irrespective of any analysis of their actual contribution to the agricultural sector (Bjerga & Davison 2015).

4. Private sector criteria – a company like any other

The second and conflicting perspective is that of the shareholders of the exchange. When established, the majority of commodity exchanges were mutual institutions, operated without profit for the benefit of their members, which were largely commodities trading firms, some with long-vanished names associated with defaults on exchanges such as Woodhouse *et al.* (1991) and Refco (2005). Since that time, however, a majority of commodity exchanges have become independent private or listed companies with independent shareholders. In allowing private sector exchanges, and further in permitting them to demutualise, government is implicitly supporting an ideology of free trade: from this perspective, greater competition between commodity exchanges and the profit motive of members or the exchange itself are the best way to ensure the achievement of the government’s own objectives for the sector. Rarely, however, are public sector objectives achieved without effective regulation (Dentoni & Dries 2015).

For any profit-making company, it is important to distinguish success criteria from both the *evidence* of success and the *reasons* for success. Purely evidential matters will probably include at least satisfaction expressed by regulators and government, retention and renewal of licences to operate, favourable press comments, ease of staff recruitment and good retention rates, no scandals, rising volumes and open interest numbers, and growing market share. Evidence of events such as takeovers with clearly demonstrated synergies or the launch of successful new contracts (however defined by the exchange) can also be considered under this heading. None of these can be considered success criteria themselves. Likewise, the reasons for success, whether competent management, supportive government, or the efficient delivery of the exchange’s services, are not criteria for success. It is true that “exchanges can be privately profitable when market actors are willing to pay for three important services: (i) improving price discovery, (ii) increasing market liquidity, and (iii) helping price risk management” (Rashid 2015:2), but this is almost – but not quite – an inevitability, not a set of performance criteria.

Large and growing volumes and open interest numbers were success criteria in themselves prior to demutualisation, when costs were controlled only by the administrative intervention of the member firms of the exchange. After demutualisation, however, conventional financial criteria for the success of the company apply. These have been suggested to be: i) conduct trade and ii) generate enough

revenue to profitably pay for their operations (Rashid 2015:4). Profits allow for dividends and feed-through into share price performance: studies have used the response of share prices to analyse e.g. whether, although stock exchanges are heavily regulated, mergers create value for their shareholders (Hasan *et al.* 2012:473). One problem with this measure is that any share price is heavily influenced by macroeconomic factors that affect the entire share market. Another is that the short-term response of share prices may be contradicted by longer term price movements. Finally, share price changes exclude dividends, which can only be theoretically defensible if they are held to include expectations of future dividend movement. A much clearer objective for shareholders is total shareholder return (TSR) – the combination of dividends and capital appreciation. This is virtually a tautology: why would shareholders in a private sector environment want anything else, unless they are motivated by wider stakeholder concerns? In that case, they might turn to other criteria, such as the balanced scorecard, or an admixture of TSR and corporate social responsibility (CSR). These are the complex issues associated with the unconsidered use of total shareholder return (TSR) as a metric to represent the gains (or otherwise) in shareholder wealth and in contexts such as long-term incentive compensation and proxy voting by shareholders (including “say on pay”). Not all TSRs are created equal. Other measures, such as economic profit (EP), return on invested capital (ROIC) and future value (FV) need to be introduced to effectively interpret the quality of TSR. “Simple performance metrics are always attractive. But the fact that a performance measure is simple does not make it useful, especially if it is represented as measuring something it does not really measure and then used to justify outcomes advantageous to the measurer” (Burgman & Van Clieaf 2012:26).

Even if they are entirely financially focused, shareholders face a further issue in comparative analysis. When markets as a whole are doing well, the value of exchanges rises along with the market. Whilst for many companies a more sophisticated approach based on “arguing for alpha” is entirely plausible, the problem for shareholders in commodity exchanges is that only rarely are they presented with direct competitors. They are forced to make investment decisions in a fog.

5. Management success criteria for exchanges

The third perspective is that of the exchange management themselves. Prior to demutualisation, these objectives may be fundamentally organisational – typical success criteria for public organisations, co-operatives, associations and even charities. Primarily, apart from the survival of the exchange, management uses ‘empire-building’ criteria, namely growth of turnover, open interest and successful contract launch, as measures of success, especially as exchanges are usually funded by a levy on each contract traded (Roche 1992). More recently, this has also applied to exchanges in developing countries. For example, in the early years of ECX, management pointed to the fact that ECX linked 2.4 million smallholders through co-operatives, that ECX trade volume increased from a modest 138 000 tons in the first year to 508 000 tons in the third year, and that, in February 2011, ECX celebrated 1 000 days of ECX, US\$1.0 billion in trades, and zero defaults (Gabre-Madhin 2012). ECX was further described as relatively *successful*, having reached a total trade of US\$ 8 billion from its inception in 2008 to early 2013 (Mbeng Mezui *et al.* 2013:22). These success criteria were appealing to ECX management, policy makers and development partners and the media alike). Several academic contributions themselves also implicitly use very broad policy criteria for success. Hence Sitko and Jayne (2012), in analysing why African commodity exchanges are ‘languishing’, provide evidence in terms of low comparative contract volumes between ZIMACE and SAFEX, the former admittedly not demutualised. ‘Languishing’, then, means low trading volumes and, presumably, success would mean larger trading volumes. Likewise, in an analysis of the ‘performance’ of Indian commodity exchanges (Bhagwat & Maravi 2015), the statistics provided are of volume growth over time as evidence of success.

It should be recognised, however, that mere traded volume is a poor indicator of success from a public policy standpoint – for four reasons. First, traded volume may reflect day trades or even market

crosses (simultaneous buying and selling), which do not permit hedging or trading by farmers. A variant on the quantitative measure of success is the level of open interest, which can be interpreted as a measure of 'involvement' or 'commitment' to the exchange by its trading members. Evidently, management criteria are closely linked to the first set, those of government and the development community generally. It would be premature, however, to conclude that they are identical. Most obviously, exchange statistics on trade volume do not differentiate speculators from the end users, whose use of the exchange government wishes to promote.

A second set of management success criteria relate to the size of membership. This can be viewed as a form of diversification strategy and risk management: the loss of any one member will be less significant for the exchange. Similarly, however, these criteria may not much relate to public policy objectives, as members may be catering mainly to speculators, not actual spot market participants.

A problem with both of these approaches to 'success', moreover, is how to account for mergers between commodity exchanges. A second problem is that all exchange members are not created equal – small members may trade infrequently, if at all.

Thirdly, and conversely, exchange trade volumes do not reflect any risk of their future reduction or disappearance. If one member is undertaking a significant percentage of the exchange's trades and is operating under financial stress or some other threat to its existence – and the evidence suggests that member bankruptcies and disappearance are by no means unknown – then historical and even recently traded volumes may not be an accurate guide to the future success of the exchange.

Such quantitative criteria for management were success criteria in their own right before demutualisation, but for a public company, these constitute indicators of success, not the real thing. They can also put out conflicting signals.

Finally, therefore, exchange management may now share shareholders' objectives by implementing financial criteria for success, and demutualisation provides the opportunity to fix on a set of obvious success criteria that are much easier to study: profitability. These measures, whether taken at the gross or net level, and whether before or after tax, have the advantage that they are publicly available and recorded annually. They are, however, subject to a raft of problems connected with accounting standards, time frames, and the lack of a firm basis in the cashflows that will eventually determine the survival of the firm and its ability to deliver shareholder value. Most analysts have therefore long agreed that accounting profit is woefully inadequate as a valuation measure (e.g. Rojo-Ramírez 2014).

Analysts recognise instead that the best, long-term performance criteria for management to deliver TSR for shareholders is for the return on their investments, whether measured as return on capital employed (ROCE), return on equity (ROE), or return on invested capital (ROIC). Traditionally, the yardsticks used to measure the efficiency and profitability of a business organisation were accounting-based measures like ROI, ROE and ROCE – all of which must exceed the target cost of capital levels – earnings per share (EPS), gross and net profit. In addition, value-added concepts such as economic value added (EVA_{tm}) have in the past gained considerable traction as firm performance criteria (Chauhan & Patel 2013:5).

All of these measures are generally recognised as being improvements on one year's profitability, but they have the disadvantage that they are scale-independent. There are many refinements on this theme, notably including risk, but the real problem for all firms comes in operationalising these requirements. In practice, management usually seeks to implement the objective of returns to equity exceeding the cost of equity by conducting net present value (NPV) analyses, which have the benefit that, in considering NPV as well as the internal rate of return (IRR), scale is reintroduced into decision-making. It is also important to recognise that, whether considering NPV, IRR or even

accounting profit, it is after-tax cashflows that should be considered. Hence, any tax incentives from which an exchange may benefit are relevant. In Rwanda, for example, there is an ‘investment allowance’, which allows for the expensing of initial investment, whilst newly listed companies on the Rwanda Stock Exchange are also granted a partial tax holiday, depending on the percentage of shares listed (Zangrandi *et al.* 2012). Finally, and from government’s policy perspective perhaps most importantly, there is no reason not to include any subsidy provided by the public sector within an NPV/IRR analysis.

This is theoretically satisfactory, but there are formidable and possibly insurmountable difficulties in using NPV and IRR criteria to evaluate success for an exchange. First, shareholders themselves are virtually incapable of performing effective NPV analysis on any company, as they usually lack access to forecast data, or the business plan based on them; exchanges are certainly no exception to this. Management never reveals its NPV analyses to shareholders, no more with exchanges than any other business. Second, in common with many companies, exchanges face significant fixed costs. Launching new contracts, especially on electronic platforms, is relatively inexpensive. The NPV for any contract, viewed – as it should be – as a marginal cost and benefit calculation, is highly likely to be positive. Why not, therefore, launch as many new contracts as the exchange has resources to manage? The reason why not lies in the reputational risk that failed contracts create, which is difficult to replicate in terms of NPV, IRR or any other direct financial criterion.

Theory collides with practice, then, which suggests that exchange management faces an almost impossibly difficult task in reconciling conflicting objectives and performance measurement criteria: as Rod Gravelet-Blondin, former commodities director at the Johannesburg Stock Exchange, is reported to have said at the Association of Futures Markets Conference in 2017: “It is important not to lose the focus of our role, which is to provide risk management tools for real economy products.” What happens in practice?

6. Empirical analysis

To answer the question of which criteria are *actually* used by commodity exchanges, a questionnaire (Appendix) was sent to commodity exchanges. Approaching exchanges themselves for answers, whilst it might appear logical, has certain difficulties. First, in many cases, commodities form only a small proportion of the turnover of an integrated exchange. Second, and a related point, no two commodity exchanges are the same (Gross 2014:1). They differ enormously amongst themselves, both in respect to size, the commodities they trade, and the political and economic environments in which they operate. A response from a major exchange might therefore not be appropriate for a smaller, purely commodity exchange. Third, the ownership of commodity exchanges is not uniform. It may be expected that privately or publicly owned exchanges would be largely directed towards various forms of profitability and therefore choose their success criteria accordingly, whilst those exchanges left under public or mutual ownership would choose different criteria. All the exchanges that responded were in the private sector, however. Finally, there are simply not that many exchanges that offer spot and derivative commodity contracts – no more than a few dozen all told. Exchanges continually open, close and merge. All these factors taken together mean that a purely statistical analysis of responses would be almost meaningless. The most that can be hoped for is a judicious evaluation of the responses, which came from exchanges worldwide, to arrive at a generalised conclusion.

The table below (reproduced in more detail in the Appendix) lists ten performance measures, with the responses of nine commodity exchanges as to their use.

Measure	Exchange respondent								
	1	2	3	4	5	6	7	8	9
Turnover	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Open interest	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Other public policy	No	Yes	No	No	No	No	No	No	No
New contracts	No	No	No	Yes	No	Yes	No	Yes	No
Net operating profit	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Return on assets	Yes	No	No	Yes	Yes	Yes	No	Yes	No
Net profit	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes
Return on equity	Yes	Yes	No	Yes	Yes	No	No	No	No
Budget achievement	No	Yes	No	Yes	Yes	No	No	Yes	No
Other measures	No	Yes	Yes	No	No	Yes	Yes	Yes	No

This empirical evidence shows that the exchange management have already made their decision: *their exchanges are run overwhelmingly as profit-making institutions using conventional financial criteria*. At the management level, exchanges balance the different criteria internally with their own performance management systems, which vary between exchanges.

Most exchanges that responded used conventional financial criteria, with just one using quantitative measures of performance other than total volume and open interest, and even their use was not universal. The picture that emerges clearly from the empirical evidence is of mature private sector institutions grappling with the same kinds of problems as other firms, such as how to balance between profitability and diversification, and responding by pursuing goals of profit measured in the same way that other firms do, with some variation in their use of individual measures that may be accounted for by geographic location or regulatory influence, e.g. on new contracts.

The exchange responses also show that parameters such as return on assets, return on equity, etc. are not necessarily used by an exchange to measure its own performance (although analysts will use them if publicly available to assess the exchange's growth, valuation, etc.). The legacy criterion of turnover is well explained by the close correlation between exchange turnover and profitability: exchange fees are predominantly per contract.

The exchanges were also specifically asked whether separate rules applied to their commodities contracts or divisions. The answers were uniformly negative. "No special rules, revenues are ascribed as earned, costs ascribed based on resource consumption model, and profitability compared to other product categories" was one response.

7. Towards a synthesis of criteria

If either government itself were to take on responsibility for launching and funding exchanges, as has happened in Africa since the creation of ECX in 2006, or if exchanges can clearly define and separate their socially responsible activities and enable investment in them whilst remaining profit-making institutions, a productive way forward for both public objectives and shareholder interests can be created. Evidently, exchanges are subject to the objectives of multiple stakeholders. In this they are akin to state-run enterprises, despite their mostly private-sector status. In some cases, this is reflected by actual government ownership, either a majority or at least a minority stake. In other cases it is expressed by regulatory measures and by sotto voce instructions from the regulator, or even from government itself. This is especially the case in respect of agricultural derivatives, where government may seek to encourage or even insist that an exchange launch, promote or continue to maintain a market that, in strictly financial terms, is not commercially viable, i.e. that its launch, or continuation, generates a negative NPV for the exchange and would have a negative effect on the financial criteria used by the exchange. Government may offer subsidies in the short term, as in the case of Malawi, but the intention is to withdraw them eventually with the advent of higher trading volumes (Dentoni

& Dries 2015:25). This would not necessarily encourage the exchange to invest in further agricultural derivatives contracts, however, as it omits the NPV calculation of the contract in its entirety, i.e. including marginal launch costs, which exchanges have indicated are usually around \$1m or somewhat more. Currently, however, there is no transparency, and very little available research, on the marginal cost of launching contracts – more transparency would assist government in its own decision-making process.

8. Conclusion

Commodity exchanges have become important, even vital, ingredients in the developing of agricultural marketing systems worldwide. Although, for the most part, they now are profit-making institutions, and those that are not are being encouraged by government to demutualise, commodity exchanges continue to rely on quantitative measures of performance that are more appropriate to mutually owned or public sector institutions. They could instead draw on conventional finance literature to derive criteria for the success of both individual contracts and themselves overall. Adopting these criteria, in turn, may result in refining prerequisites for and obstacles to the success of commodity exchanges and the contracts they launch, as well as influencing government policy of support and SRI investment in commodity exchanges.

However, as they do so, the fundamental tension between government and private sector measures of success for commodity exchanges will become ever more apparent. What government wants profit-making exchanges to achieve, primarily in the soft commodity space, is small-scale and unprofitable and would not generate positive NPVs, and hence satisfactory returns for shareholders. If, on the other hand, shareholders' goals are exclusively to dictate exchange policy, commodities in general, but soft commodities in particular, would receive even less attention from exchanges than they do now. Exchange management is therefore frequently caught between two conflicting sets of measures of success, ending up pursuing neither. The need is for government and donors to articulate their requirements more clearly, and to back them up not only by way of regulatory clarity, but also financial incentives such as subsidies, which can be included by exchanges in the NPV analysis. If government and donors are serious about the success of commodity exchanges, a financial bridge will need to be built so that profit-making exchanges are not entirely deflected into financial contracts, but instead have sufficient incentive to launch and maintain commodities contracts in order to fulfil the social function that government calls on them to perform.

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Appendix: Exchange responses to questionnaire**Table 1: Turnover**

1	NOT USED
2	Total volume of contracts traded
3	Number of contracts traded (two-sided)
4	Total volume of contract traded
5	Measured based on set targets of growth
6	Average daily traded volume in local currency
7	Absolute and percentage growth (annual)
8	Volume and value growth (annual and quarterly)
9	Value

Table 2: Open interest

1	NOT USED
2	Total open interest
3	Total open interest
4	NOT USED
5	NOT USED
6	Total open interest (quarterly)
7	NOT USED
8	Volume and value growth (annual and quarterly)
9	Lots and units of the commodity

Table 3: Other public policy measures

1	NONE
2	Total revenues
3	NONE
4	NONE
5	NONE
6	NONE
7	NONE
8	NONE
9	NONE

Table 4: Introduction of new contracts

1	NOT USED
2	NOT USED
3	NOT USED
4	4 US\$ (Annual)
5	NOT USED
6	Used (Annual)
7	NOT USED
8	Both whether done and success (Annual)
9	NOT USED

Table 5: Net operating profit

1	% growth (Annual, IFRS, independently audited)
2	NOT USED
3	Annual
4	NOT USED
5	Measured based on set targets of growth
6	Annual
7	Annual, quarterly and monthly
8	Absolute and growth (Monthly)
9	Quarterly

Table 6: Return on assets

1	% growth (Annual, IFRS, independently audited)
2	NOT USED
3	NOT USED
4	Annual
5	Measured based on set targets of growth
6	Annual
7	NOT USED
8	Absolute and growth (Quarterly)
9	NOT USED

Table 7: Net profit

1	% growth (annual, IFRS, independently audited)
2	NOT USED
3	NOT USED
4	Net profit (monthly)
5	NOT USED
6	Annual
7	Annual, quarterly and monthly
8	Absolute and growth (monthly)
9	Quarterly

Table 8: Return on equity (ROE) [hurdle rate]

1	% growth, measured in IFRS terms and verified by independent audit firm
2	Used for analysis of return on discrete investments, not for the exchange in total
3	NOT USED
4	ROE (annual)
5	Measured based on set targets of growth
6	NOT USED
7	NOT USED
8	NOT USED
9	NOT USED

Table 9: Achievement of budget

1	NOT USED
2	Budget vs. actual variance analysis
3	NOT USED
4	Achievement of budget (quarterly)
5	Measured based on set targets
6	NOT USED
7	NOT USED
8	Absolute, and percentage reduction (monthly)
9	NOT USED

Table 10: Other measures

1	NONE
2	'Product profitability' – revenues generated versus resources consumed per resource consumption model
3	Markets share as compared to the competing exchange
4	NONE
5	NONE
6	Income from subsidiaries
7	Collected exchange fees, number of registered members, additional revenue earned by exporters/amount saved by importers due to competition among buyers/sellers
8	New membership, new clients, participation %, distribution of volume, net yield
9	NONE