The University of Adelaide

Global Food Studies

Developing Smallholder Inclusive Food Value Chain Models for Local and Global Markets: Initial Literature Review and Project Design

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1. Background

In many economies, market forces have resulted in the development of food value chains (Swinnen and Maertens 2007; Reardon *et al.* 2009). An increasing number of food producers are now directly connected with modern retail outlets such as supermarkets, hypermarkets and food processors. Many of these chains also operate across international borders. There has also been a shift from public to private standards; from spot market relations to vertical coordination and a shift from local sourcing to sourcing via national, regional and global networks (Reardon *et al.* 2009) Their origins lie in the changing demands of consumers, the growth of new forms of modern food retailing and processing and the emergence of specialist providers of services relevant to these chains. They can provide safe and secure delivery of food consistent with trade patterns according to comparative advantage.

The dilemma is that previous research has shown that these new business models often exclude smallholders. Smallholders supply up to 80% of food in Asian and sub-Saharan Africa (FAO 2012). Various factors limiting smallholder's market access. These include high transaction costs of dealing with a large number of heterogeneous sellers, smallholders' inabilities to meet new market requirements as a result of lacking the necessary skills, technology, financing, and/or inadequate infrastructure due to chronic underinvestment (Reardon *et al.* 2009). Smallholders' limited ability to meet industry standards can be simply explained by three main reasons, namely 'scale-information-reputation' (Narrod *et al.* 2009). Yet, many empirical studies suggest that farmers who are able to participate are found to have significantly higher incomes (Simmons *et al.* 2005; Miyata *et al.* 2009; Ito *et al.* 2012; Briones 2015).

The challenge is to resolve the constraints to smallholder participation. Investment in smallholder agriculture is important not only due to smallholder agriculture's role in achieving food security and poverty reduction, but also its position as part of the socio-economic-ecological landscape in most countries (HLPE 2013). Furthermore, women smallholders, in particular, account for more than 40% of the agricultural labour force in developing economies (FAO 2012). Their participation is especially important to optimise the value of available human resources for business development, poverty reduction and food security. Often challenges facing smallholders relate to household characteristics (e.g. age, education, assets). Local community infrastructure and policy at economy level also matters. Other issues relate to increasing pressures on global food value chains, for example, public and private food safety and quality standards due to increased international trade of food, and as a result, Sanitary and Phytosanitary (SPS) standards being imposed by trading partners. An empirical study suggests that SPS and Technical Barriers to Trade (TBT) significantly reduce developing countries' exports to OECD countries (Disdier *et al.* 2008). Governments in many developing countries have tried to support local farmers, who are most likely 'standard takers' in these changing food chains by protectionist policy measures(Konefal *et al.* 2005). The long-run challenge, however, is to develop the competitiveness of local producers.

Given the above background, the objectives of this paper are twofold. First, it reviews existing literature on challenges and opportunities facing smallholders' inclusiveness in global food value chains. Furthermore, the paper reviews some successful implementation of smallholder-inclusive business models from developing world. Second, this paper proposes a framework for collecting relevant information on challenges facing smallholders who seek to join local and global food value chains.

2. A review of smallholder inclusive business models

2.1. Definition of smallholder-inclusive business models

The transaction cost approach has been widely used to define rationale for vertical coordination in value chains (Frank and Henderson 1992; Humphrey and Schmitz 2001; Jia and Huang 2011). The transaction cost theory was developed in 1970s by Williamson expanding Coase's original idea on transaction inefficiencies and potential organisational responses (Coase 1937; Williamson 1971). Missing markets, lack of access to information and moral hazard have driven value chain participants to form vertical coordination in order to manage risks and reduce transaction costs. Transaction characteristics such as specificity (correlated with the bilateral dependency of market players), uncertainty and complexity should favour to vertically integrated production and the implementation of traceability (Banterle and Stranieri 2008; Bresnahan and Levin 2012).

Relationships between smallholder farmers and other market participants may vary between sectors. For example, a sector with perishable products that requires specific transportation (i.e. cold chains) such as dairy tends to have a higher propensity of engaging in formal contractual agreements compared with other commodities such as meat product, aquaculture, cash crops and fruits (Jia and Huang 2011; Fałkowski 2012; Olwande *et al.* 2015). Other variables related to transaction costs such as length of production stage, number of tasks at one stage, etc. may also affect farmer's involvement in contractual agreements.

Nevertheless, contract farming is only one of the options to manage risks and reduce transaction costs from farmer's perspectives. A smallholder farm household may implement different business strategies to reduce risks as well as obtain profits. Although the smallholder's interactions with other value chain participants are critical part of their business model, their business model would also capture their decision to manage resources at the farm.

A search of literature suggests that the term 'smallholder-inclusive business models' has only been used relatively recently. In the context of this project, the term refers to the business aspects of smallholder agriculture. The HLPE (2013) explains that the definition of 'smallholder agriculture' "cannot be rigid or one size fits all" depending on the regional, national and local contexts. A smallholding is "small" because resources are scarce; while the term agriculture includes crop raising, animal husbandry, forestry and artisanal fisheries (HLPE 2013) although generally according to the FAO smallholder farmers are defined as those marginal and sub-marginal farm households that own or/and cultivate less than 2 hectare of land.

The FAO (2012a, page 1) defines that the term "business model" as the rationale for how a company creates and structures its relationship to capture value. A similar but more detailed definition of a business model is 'the way in which a company structures its resources, partnerships and customer relationships to create, capture and distribute value (Cotula and Leonard 2010). The term 'company' is defined as an entity working in the agricultural value chains (FAO 2012). The importance of considering smallholder's business model is due to increasing demand for food production that are safer and of better quality. This requires the private sector to work directly with the smallholder supply base to ensure consistent supply. Hence, in most cases smallholders are seen as

'suppliers'. A closer look at various case studies in developing countries, however, suggests that smallholders may play different roles in the supply chains.

2.2. Inclusiveness and types of business models

'Smallholder-inclusive-business models' are not always initiated by smallholders. The term also refers to collaborative business models that provide opportunities for smallholders to form partnerships with other smallholders and/or commercial enterprises. According to Cotula and Leonard (2010) there are at least four categories of inclusive business models: (i) management contracts (eg tenant farming, sharecropping, etc); (ii) joint venture; (iii) farmer-owned business; and (iv) contract farming (eg the nucleus estate model, etc). Comparisons between these four types of business models are presented in Table 1.

[INSERT TABLE 1 HERE]

The structure and complexities of business models vary between sectors and between countries. In contract farming cases for example, some factors that shape and transform the structure of contract farming include the crops or products, the objectives and resources of the contractor, and the experience of the farmers (Eaton and Shepherd 2001; Sriboonchitta and Wiboonpoongse 2008). For example a multipartite model involves complex interactions between contractors (i.e processing firms), farmers groups, extension officers and academic sharing resources such as input, financial support, knowledge and market information; while an informal model only involves a few market agents with verbal or even no contract. The structure of contract arrangements has different implications on the pricing and performance of the business models.

There have been an increased number of studies that review successful business models in developing countries. The key feature of the business model involves four key parameters: ownership, voice, risk and reward (Cotula and Leonard 2010). Obviously, these four criteria are interrelated. Using information collected by previous studies (Cotula and Leonard 2010; FAO 2012), Table 2 briefly defines and Table 3 simplifies business model profiles according to the four criteria for inclusiveness.

[INSERT TABLE 2 HERE]

[INSERT TABLE 3 HERE]

In terms of land tenure, in most business models land rights generally remain with smallholders. Obviously, the challenge is that many smallholders are landless or have no or limited access to land rights. The later can be a case where the government formally owns all land and only occasionally re-distributes the land rights, for example in Kenya (Bellemare and Barrett 2006).

In regard to their position in decision making i.e. 'voice', smallholders have more bargaining power in farmer-owned organisation which may adopt a "one member one vote" scheme than in any other business models. Their voice in contract farming for example may depend on their equity share and farm size. As landholders, smallholders do not make business decisions in management contract types.

In regard to risks, risks are affecting smallholders at the different levels such as community, regional, national and international levels. Many of the risks are not only

factors of 'vulnerability' but also are viewed as constraints to investments (HLPE 2013). Different business models address risk management differently. Smallholders participating in a joint venture, for example, share their production risks with their venture partners. In contrast, in contract farming and farmer-owned organisations, smallholders bear all production risks although they may get access to resources such as technical assistance and subsidised farm insurance that may lower their risks.

Economic benefits from each business models are empirical matter. In contract farming, smallholders are paid based on the price negotiated; in management contract, profits are shared based on negotiated sharing; in joint venture, smallholders' dividends are proportional to their ownership (i.e. number of shares); and in farmer-owned organisation, members share their costs and benefits.

The general consensus on the 'best business models' for smallholders is that there is no "one-size-fits-all" (FAO 2012). Most successful business models are formed based on the local cultural contexts and the marketing needs of members that might differ from one region to another; from one sector to another. Furthermore, as suggested by Cotula and Leonard (2010), the emphasis on partnerships involving commercial agribusiness companies does not necessarily imply that smallholder farmers need to partner up with commercial entities in order to succeed. Nevertheless there are some factors that seem to appear in most successful business models as listed in Table 4.

[INSERT TABLE 4 HERE]

There has been a gradual shift from domestically oriented to globally integrated food supply chains and from state-controlled systems to private governance in the agrifood system (Swinnen and Maertens 2007). Within the context of smallholder agricultural, interestingly, most of the investments are made by smallholder families themselves (FAO 2012a; HLPE 2013). Smallholders invest in labour (leading to improvement in farm performance) but also make investments in: (i) the accumulation of experience and knowledge; (ii) collective action; (iii) contributing to the making of appropriate governance rules (Ostrom 1990). Hence, the concept of capital in smallholder agriculture should cover from financial, human and social capital.

Nevertheless, the role of public institutions remains to be important in many developing countries and in many cases these public institutions partner up with the private sector in a so-called 'tripartite model'. In Thailand for example, the business model in particular contract farming has been characterised by a high degree of government involvement especially in the early stage in monitoring, facilitating and encouraging stakeholders in contractual agreements (Sriboonchitta and Wiboonpoongse 2008). The private sector's involvement has increased as farmers gained skills and had ability to negotiate contracts. In some sectors, for examples potatoes in the North and shrimp in the South contract farming is approaching maturity and growers are able to switch between open and contract markets (Sriboonchitta and Wiboonpoongse 2008). Public investments in improving smallholder's market access range from investments in R&D, infrastructure development to tax reduction or tax exempt policy.

Lessons from various smallholder-inclusive business models in many countries also highlight the significance of (horizontal) coordination between farmers or collective actions, which then allow smallholders to improve their negotiation capacity and, therefore, improve their welfare. Cocoa farmer union Kuapa Kokoo in Ghana, for example, has successfully expanded its operations by exporting to the EU market and

support its members to have additional income generating activities due to its ability to organise its members' participation (Tagoe 2010).

3. A proposed framework

3.1. Methods

This section proposes an analytic framework with particular attention to conducting an inventory study and in-depth interviews to characterise various business models operating in dairy, meat, fish and horticulture sectors in six economies, namely Indonesia, China, Vietnam, the Philippines, Laos and Cambodia.

1. Sectoral-level Structure-Conduct-Performance (SCP) analysis

One useful framework to evaluate the sectoral performance is the Structure-Conduct-Performance (SCP) analysis. The SCP approach can be used to describe and analyse market dynamics: (i) market structure consists of the relatively stable features that affect competition (e.g. the number of buyers and sellers; barriers to entry, etc); ii) market conduct refers to the behaviours of market participants to affect or adjust to the market dynamics; and iii) market performance explains how the market meets certain social and private objectives (USAID 2008). The SCP approach has been frequently used in the literature on agricultural and food sectors (Viaene and Gellynck 1995; Setiawan *et al.* 2013).

Detailed sectoral analysis may include a value chain (VC) framework. Porter's (1985) framework argues that identifying the sources of competitive advantage requires separating a firm into a series of activities and the competitive advantage can be found in one (or more) of such activities. The VC analysis has several objectives: i) to systematically maps the actors in the VCs; ii) to identify the distribution of benefits of actors in the chain; ii) to examine the role of upgrading within the chain; and iii) to identify the role of governance (MP4 2008). The governance aspect of VCs has increasingly been of many studies' interest trying to understand how 'key players' drive the chains.

2. Case studies of business models

Case studies of business models should capture the general features of the market players being involved. Cases studies should be selected in such a way to maximize variations on dimensions that are potential importance for explaining the focus variable (Klaus *et al.* 2005). Within the context of this study, the focus variable should be the success of business models that might be affected by various factors such as the production scale, legal status, provision of services to smallholders, level of vertical integration and costs. The transaction cost approach is useful to further explore transaction characteristics such as asset specificity, uncertainty and frequency (Banterle and Stranieri 2008).

One initial step of conducting a case study is preparatory desk research or an inventory study (Klaus *et al.* 2005; PPWE Chinese Taipei 2014). An example is an APEC-funded project on the link between women and use of innovation conducted by the PPWE Chinese Taipei (2014). The project was divided into three phases, namely (i) a baseline

survey; (ii) in-depth interviews and (iii) a case study (PPWE Chinese Taipei 2014). A baseline study consisted of three steps including desktop-based research, follow-ups with short phone interviews and completing a summary report. This phase focused on finding potential targets for the case study. Programs or cases listed in the inventory were then selected based some criteria that are collectively determined. In the second phase, project team members then conducted in-depth interviews with representatives from each selected program. Interviewees attended a training and workshop that covered topics such as the use of semi-structured interview, conducting interviews with key informant, ethics, etc. Data from in-depth interviews were then categorized by differing themes and analysed using discourse analysis. This inventory study approach allows different project participants to capture initial information that will be valuable to the design and delivery of the core survey.

Given the importance of relational aspects, one significant challenge facing case studies of business models is to collect relevant data from different participants in the models to assess relationships between market players. One implication of such an approach is that such studies tend to get a smaller number of participants within the same respondent category than studies which only use farm-level data. Hence, results from those case studies need to be interpreted with caution.

One possible approach is to collect data from at least two players in the business models, for example i) the initiator of the business model or the manager of the new business model; and ii) smallholder members. Their relationship may reflect a principal-agent model (Resende-Filho 2007). Managers should be able to respond to questions regarding the business' production scale, legal status, level of vertical integration and costs (including monitoring, production and operational costs) whilst smallholders can provide information about their access to services, welfare effects, and challenges. Interviewing both managers and smallholders is important to capture the two-way nature of contracting relationships (Rupert 1997).

3. A comparative methodology

Studies on inclusive business models are normally centered at the comparative analysis of case studies across sectors and across countries. The key aspect of the analysis normally lies on *success factors* in differing business models. A useful conceptual framework to conduct such an analysis, for example, is 'the matrix linkages'. This framework puts an emphasis on innovations being made in the business model. Matrix linkages can be defined as linkages with the greatest potential to generate innovations in the chain (Santacoloma *et al.* 2005). The innovations can be applied at different levels of production process and either at local, national or international market. Analysis using this concept requires identification of agribusiness linkages and how the linkages interact with smallholders (i.e. provision of services) as one of the first steps. The second step is to identify government institutions, the private sector and other agents in the supply chain that is needed to enable the long-term development of matrix linkages as well as identification of constraints and barriers of linkage development.

Results from comparative studies are normally presented in a schematic presentation such as a table. A comparative analysis between case studies in different countries and/or different sectors is challenging in the absence of measurable and common indicators. One way is to collect both qualitative and quantitative data. The use of more

quantitative measures allows easier comparisons between case studies but admittedly may not provide information as comprehensive as qualitative studies.

Quantitative measures may capture information on:

- The performance of business models. The following five aspects are relevant to describe the performance: (i) market share; (ii) satisfaction of the final consumers; (iii) price data at different stages of the value chains; (iv) labour index i.e. the number of people employed by each business model; and (v) efficiency as indicated by price stability, response to customers and quality management (Cadilhon *et al.* 2006).
- 'Economic' performance measures can be extended to social (for example employee welfare and consumer safety) and environmental performances (for example environmental protection) depending on the objective of the study (Vasileiou and Morris 2006).
- Rating-scale format can also be used to explore transaction characteristics (asset specificity, uncertainty and frequency) that vary between sectors (Banterle and Stranieri 2008).

Depending on sample size, multivariate analysis such as factor analysis can be used to reduce variables on the conduct and performance of the business models into a smaller number of factors. A regression analysis can be used to further explore the association between the structure and conduct and performance of the business models.

3.2. Research flow

Taking lessons from previous studies, this project proposes the following research flow. Two workshops will be conducted in December 2015 and June 2016.

Phase 1: Initial phase (November 2015 - December 2015)

Act 1.1 and 1.2 will be conducted by the project team members from the University of Adelaide. These activities aim to ensure the project design process is well-informed and to provide support for in-country researchers to complete their task within a reasonable time frame. Semi-structured interview questionnaires and interview guidelines will be distributed to in-country researchers by February 2016.

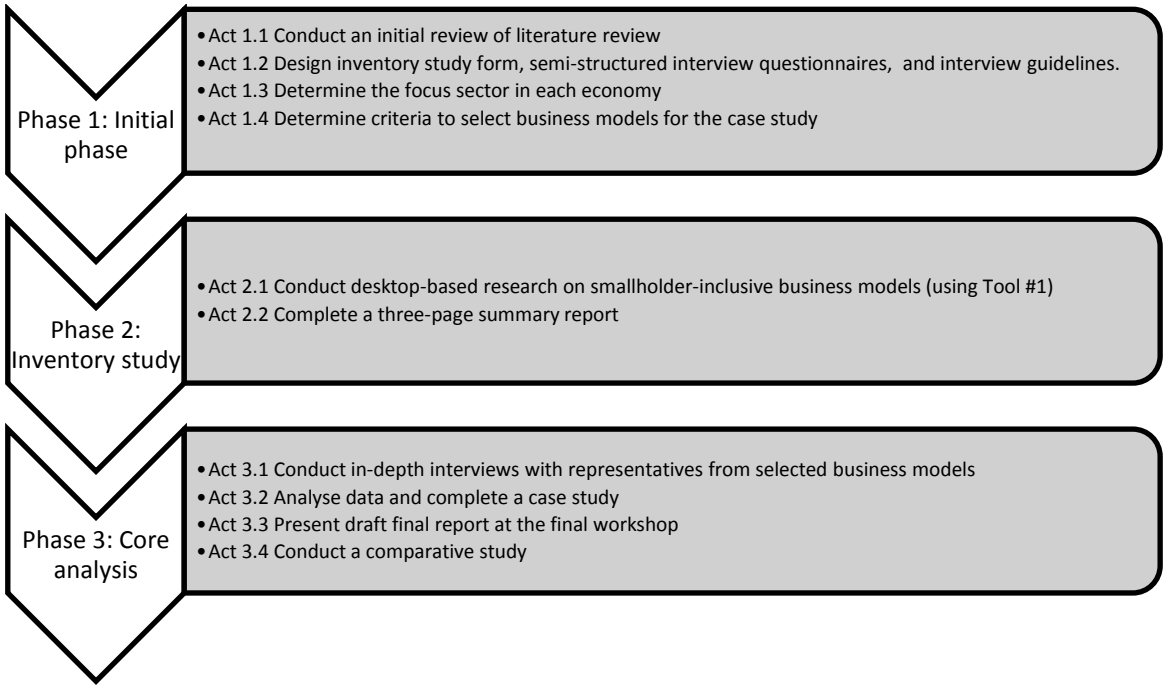
In-country researchers will be asked to provide initial feedback on the study design at the launch workshop in December 2015. They should address the following questions at their presentations:

1. The country context - How has the development of smallholder-inclusive business models in your home country been? Has there been much research on this topic?
2. The literature review - Has the initial literature review covered key aspects relating to the characteristics of smallholder-inclusive business models? Any key references that are missing from the review?

The following questions will be discussed at the panel session at the launch workshop:

1. Methods - Given your expertise and past research experience, do you have suggestions on how to improve the proposed methods? What are the planned outputs and risks of your proposed methods (if they are different from the ones reviewed in this paper)?
2. Focus sector - What sector would you focus on your case studies? Why? Please present some general background of this sector at your presentation.

Figure 1. Research Flow



Source: Authors' compilation

The launch workshop will be intensive and aimed at discussing the project design as well as Act 1.3 and Act 1.4. Criteria for selecting focus sectors can be further discussed during the launch workshop. Some recommended aspects are as follows:

i. The focus sector has significant contribution to the economy;
ii. There is a widening gap between domestic consumption and local supply and there is a concern from the government to lessen reliance on imported products;
iii. The focus sector shows some new development in the ways it develops vertical coordination that better involves smallholder participation;
iv. Business models in the focus sector are under-researched; *or*
v. There have been expressions of interests by governments, donor agencies, agribusiness companies and other stakeholders to invest in smallholder-inclusive business models.

Key features of each of the four sectors in different economies are presented in Table 5 for considerations. The summary is by no means comprehensive.

[INSERT TABLE 5 HERE]

Act 1.4 focuses on determining criteria to select business models from each focus sector. Factors to be considered when choosing business models include:

i. Business models that represent a significant proportion of the existing models; *or*
ii. Business models that have potential for development e.g. models that are gender-inclusive, practical, efficient, and enhance the inclusiveness of smallholders in local as well as global modern food value chains.

Phase 2: Inventory study (December 2015 – February 2016)

In Act 2.1, in-country researchers will conduct desktop research to review several business models. In-country researchers will be asked to use 'Tool #1: Inventory study form' to compile their findings. It is expected that each country will provide information from at least five business models in this phase.

Each in-country researcher is expected to submit a three-page summary of their inventory study. The summary should address the following questions:

1. What are the characteristics of business models that seem to strengthen their development? Are there any similarities between successful cases in different sectors?
2. What are challenges facing the reviewed business models to grow?

Phase 3: Core analysis (March 2016 – June 2016)

Between February 2016 and May 2016, in-country researchers will conduct in-depth interviews with representatives from selected business models using a semi-structured questionnaire. Interviews should be done with at least representatives of smallholder farmers and an agribusiness firm's manager or owner for each of the business models.

Results from the interviews will be analysed and presented in a case study. In-country researchers are expected to address the following questions in the case study:

1. What are the structure, conduct and performance of the focus sector?
2. What are factors explaining variations in the socio-economic performance of business models?
3. How can we strengthen smallholder farmer's linkages with agribusiness firms and other market players? What are the roles of the government, NGOs and private sector to strengthen the linkages?

A presentation at the final workshop in June 2016 will be made by each in-country researcher before a final report is compiled by the project leader.

4. Concluding remarks

The development of smallholder-inclusive business models is becoming of increasing importance at both local and global levels. While this study is not a comprehensive overview, it attempts to explore as much variations in factors strengthening smallholder-inclusive business models as possible. Given the importance of sectoral and regional contexts, such an attempt is important as an initial step to conduct a more comprehensive and systematic study. Despite its importance, more work should be done on smallholder-inclusive business model research especially to systematically review the association between sectoral characteristics, the nature of successful business models and the role of stakeholders. This will be addressed by the planned study.

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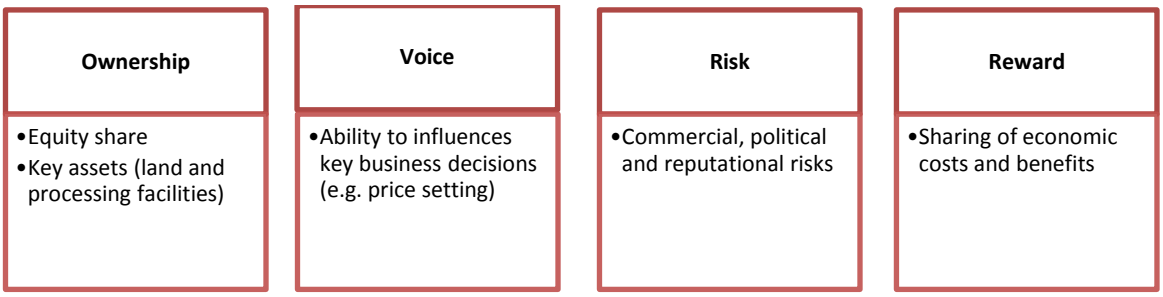
Table 1. Advantages and disadvantages of various business models

Types of business models	Advantage	Disadvantage
Management contracts *"The arrangements under which a famer or a farm management company works and manages agricultural land on behalf of the owner in return for a lease fee or share in profits e.g. tenant farming, sharecropping."*	• Opens up new opportunities to smallholders and community landholders • Depending on the contract type, may enable sharing of production risks • Overcomes land access constraints, particularly women • May provide better returns >	• Landholder is only recipient of payment in cash or in kind • Landholder does not make decisions concerning farm management • Small-scale subsistence farmer is often excluded • Landholder is bound to long-term contract at a fixed-lease fee that does not reflect the market price • In tenant farming, tenant has weaker negotiating power. >
Joint venture *"A business agreement in which two independent market actors e.g. an agribusiness company and a farmers' organization, agree to develop a new business by contributing equity and, therefore sharing assets, ownership, revenues and expenditures."*	• Enables smallholders get access to greater resources (e.g. technical staff and technology) • Allows companies to enter new markets while sharing the risks with a venture partner • In farmers' coop, smallholders become part of the decision making process and the process is transparent • Enables co-ownership of assets	• Joint venture between agribusiness companies is difficult to implement as it takes time to build the 'right' partnership • There can be imbalances in terms of expertise, investment, assets contributed by different partners or members. • Can have poor integration and cooperation. • In farmers' coop, members may only receive small or no dividends.
Farmer-owned business *"Formal business structures in which farmers collectively enter into particular types of businesses eg processing or marketing to gain access to credit or to limit the liability of individual members."*	• Enables access to greater resources and stronger bargaining power for members • Simple registration regulations and operational procedures for cooperatives in many countries • A cooperative may be granted lower taxes or other special privileges.	• Complex governance structure • Slow decision-making • Limited entrepreneurial orientation • Membership heterogeneity (in terms of farm size, business objectives, expertise, etc) may lead to conflict of interests • In many countries, cooperatives' high reliance on government assistance may discourage their growth.
Contract faming *"Supply agreements (verbal or written) between farmers and agribusiness processing and/or marketing company/buyers for mutual gains".*	• Farmers are guaranteed reliable markets and fixed pricing structures which allow them to do medium and long-term planning. They get access to credits, inputs and technical assistance or may benefit from increased credit worthiness. • Companies can improve supply quantity and quality and transfer or shift sharing of production risks to farmers. They can overcome land constraints.	• Farmers may be subject to inequitable distribution of benefits and risks and subject to depressed producer prices and increased indebtedness due to late payments or defaults. They may lose autonomy and control over farm enterprises. • Companies may face high transaction costs in dealing with individual farmers and experience disloyalty of farmers (eg side selling). • Productivity may not be optimum due to a lack of technical skills of farmers.

Source: Adapted from various sources (Cotula and Leonard 2010; FAO 2012)

Table 2. Criteria for assessing inclusiveness



Source: Adapted from various sources (Cotula and Leonard 2010; FAO 2012)

Table 3. Smallholder's position in differing business models according to the four criteria for inclusiveness

Business model	Ownership	Voice	Risk	Reward
Management contracts	+++	+	+	++
Joint venture	+++	++	++	++
Farmer-owned organisation	+++	+++	+++	++
Contract farming	+++	++	+++	++

Source: Adapted from Table 8 in FAO (2012a, p.19); compiled from various sources (Cotula and Leonard 2010; FAO 2012)

Table 4. Factors strengthening smallholder-inclusive business models

Key aspects	Factors	Examples of case studies
Regulatory framework	• Favourable government policies oriented towards promoting contract farming with the private sector and intended to promote fairness in relationships • Transparent and affordable process of legal registration of a new business model • Reduction of government taxes and levies	The development of the joint venture model in the tea sector in Kenya and Rwanda is stimulated by the involvement of the state during the privatisation of the tea sector . In Argentina, policy supporting FECOAGRO is 'tax deferment' where fiscal resources are used to acquire lands for cooperatives. The Law of Industrial and Agricultural Promotion allows the possibility that added value and income tax be invested in agricultural programs e.g. land purchases (Santacoloma *et al.* 2005)
Institutional setting	• Well-organised collective actions	Kuapa Kokoo's experience in cocoa sector in Ghana highlights the importance of well-organised cocoa farmers and a cost-effective supply chain allowing this farmer union to contribute to community development projects (e.g. schools, sanitary facilities, corn mills); support other income generating activities e.g. livestock rearing; payment of annual bonuses to farmers; etc (Tagoe 2010).
Research and development	• Public research and extension services that support adoption of innovations • Investments in training • Increased focus on quality control	The National Institute of Agricultural Technology (INTA) in Argentina has played an important role in creating FECOAGRO, and in the skills-building, training and learning policies (Santacoloma *et al.* 2005). There has been progress in Latin America to develop laboratories for quality analysis and a system of incentives and sanctions for example in the case of FECOAGRO, Azules, etc (Santacoloma *et al.* 2005)
Access to resources	• Public infrastructure development • Provision of equipment to promote mechanisation among smallholders	In India, the state government's Punjab Agro Foodgrains Corporation (PFAC) collaborates with the brewer to grow malting barley under contract farming and provides equipment to promote mechanisation among smallholders; high-yielding varieties of seeds; technical assistance (Sharma 2007). Cuatros Pinos Cooperative in Guatemala exports fresh vegetables to the US and UK and provides services such as provision of inputs, technical assistance, training to its members (Santacoloma *et al.* 2005).
Linkages with private sector	• Competitive private sector • The government as a facilitator in a tripartite model • Private investors connected with the associate enterprise directly and/or with producers • Private sectors must have identified a market for the planned production and be sure that such a market can be supplied profitably in a long-term	In India, the contract farming arrangement is a tripartite structure including farmers, private agribusiness companies and the state government's Punjab Agro Foodgrains Corporation (PAFC) with PAFC as the facilitator (Sharma 2007). In Ghana, there is a shift from a typical two actors' model, farmer and company, to a tripartite contract farming model initiated by private companies, for example privately-owned fruit processing company Blue Skies that has successfully developed an outgrower scheme for pineapple that meet the quality standards of GLOBALG.A.P (FAO 2012). Provision of seeds and technical assistance made by Cuatros Pinos Cooperative in Guatemala is supported by a fund from a private Swiss company and the public institutions and its links to foreign organisations such as the Latin American Agribusiness Development Corporation (Santacoloma *et al.* 2005).

Marketing arrangements	• Formalisation of both production and marketing arrangements with smallholder producers • Certification that may help smallholders to get access to global markets • Solid and domestic markets and expanding markets that incentivise innovations • Export promotion programs	In Ghana, the formation of the Ghana National Tomato Traders and Transporters Association (GNTTTA) and the Ghana National Onion Traders and Transporters Association (GNOTTA) improve traders' trade and influence government policies (FAO 2012). In Ghana, farmer union Kuapa Kokoo's registration as a fair trade producer allows them to get a price guarantee from fair trade consumers. Their investment in an UK-based chocolate manufacturer extends their income generating activities (Tagoe 2010). In Colombia, the enterprises are connected with Proexport, an organisation that has export promotion programmes for small and medium enterprises and provides credit (Santacoloma *et al.* 2005).
Impact on beneficiaries	• Impacts on income levels and stability; educational level; employment generation, managerial ability, participation in decision making and farm competitiveness	In 8 of the 12 business models in Latin America analysed by Santacoloma *et al.* (2005), economic results are positive. In the cases with negative economic results are explained by difficult market situations and/or administrative problems.

Sources: Authors' compilations from various sources (Santacoloma *et al.* 2005; Sharma 2007; Tagoe 2010; FAO 2012)

Table 5. Overview of dairy, meat, fish and horticultural sectors in six focus countries

Country	Dairy	Meat	Fish	Horticulture
Indonesia	Important sector driven by increased demand for milk especially liquid milk. Low domestic production (Morey 2011; USDA 2013)	Very important sector due to government's target to achieve beef self-sufficiency. Demand for beef has generally been increasing but high beef prices have adversely impacted on domestic consumption (Permani 2013).	Fishery production growth reached 7% per year, placing Indonesia as the largest producer of fishery products in Southeast Asia (BKPM 2011).	Increased demand for fresh fruits and vegetables. Protectionist policy has been applied to protect domestic farmers (Kustiari 2014)
China	Increased demand for milk. Consumers' perception of domestic dairy products has been adversely impacted by melamine scandal in 2008 (Jia *et al.* 2012)	Per capita beef consumption is small compared to pork and poultry consumption but growing. Recent safety issues with other meat (pork and poultry) has also contributed to increases in beef consumption (ANZ 2014).	China is the biggest producer of fishery products, representing over one-third of the world's total fishery production and the biggest fish processor (Hongzhou 2015).	Significant increase in demand for horticultural products. Both formal tariff and non-tariff barriers have fallen dramatically (Rozelle *et al.* 2006)
Vietnam	Significant increase in demand for dairy products. Fresh milk production in Vietnam has tripled between 2003 and 2009, but it still meets only one-fifth of its domestic consumption (Saenger *et al.* 2014)	Significant increase in demand for beef is met by increased imports due to food safety concerns about local supply. Short term measures (eg. Tariff rate increases) in an attempt to control an explosion in meat imports (Stanton *et al.* 2011).	Since 2006, Vietnam has been ranked among the top 10 leading exporting countries in fisheries overall. The Bilateral Economic Agreement with the US (1996) opened the door for seafood access to three key markers: The US, the EU and Japan (Lai *et al.* 2009).	Fresh fruit and vegetable consumption has increased significantly; the share of FFV production being exported has also risen. Smallholder producers might be affected by food sector transformation (Mergenthaler 2008)
Philippines	Producing less than 1% of its growing demand, the Philippines is a major global importer of dairy products (USDA 2013).	Imports comprise 20% of beef supply. Beef is a secondary meat and the supply of pork is much larger at 1.8 million tonnes pa compared with beef supply of 240,000 tonnes pa (Stanton *et al.* 2010).	This sub-sector contributes significantly to the Philippine economy, supplies the bulk of the dietary fish requirement for over 90 million Filipinos who consume around 38 kg/capita/year, and provides direct employment to 1.4 million fishers (Perez *et al.* 2010).	Horticulture includes several important crops in which the country exhibits comparative advantage, as indicated by export trends (Briones and Galang 2012).
Cambodia	Between 1980 and 2000 milk production increased by a moderate factor of 1.5-2.0. There is a widening gap between domestic consumption and production (Knips 2004)	The beef sector is reliant on smallholder production (over 90%). Majority of these farmers are keepers rather than producers (ACIAR 2013).	In 2008, the fisheries sector contributed about 7% to the national GDP. Fish consumption on per capita basis is relatively high with 33.0 kg in 2007 (FAO 2011)	About 70% of fresh vegetables and fruit in Cambodia is imported. Domestic producers have maintained but not increased market share over time (Kula *et al.* 2015).

Sources: Authors' compilations using information from various sources

Attachment A: Project summary

Developing Smallholder Inclusive Food Value Chain Models for Local and Global Markets

Background

In many economies, market forces have resulted in the development of food value chains that directly connect food producers with modern retail outlets such as supermarkets, hypermarkets and food processors. The dilemma is that previous research has shown that these new business models often exclude smallholders. Yet, farmers who are able to participate are found to have significantly higher incomes.

Objective statement

To identify the constraints limiting smallholder participation and to identify policy responses; develop food value chain business models consistent with international market conditions that are gender-inclusive, practical, efficient, and enhance the inclusiveness of smallholders in local as well as global modern food value chains in partnership with other public and private stakeholders.

Scope

The project will focus on the dairy, meat, fish and horticulture sectors and draw on the experience of farmers in six economies, namely Indonesia, the Philippines, China, Cambodia, Vietnam and Laos.

Funding

The project is funded by the Australian Government Department of Agriculture as part of the Australian Government's Economic Diplomacy Fund.

Outputs

1. Two regional workshops facilitating knowledge exchange between participating economies, build the capacity of relevant bodies in participating economies and identify the implications of findings for the APEC programs.
2. A comparative analysis to be undertaken by researchers in each of the six economies and will involve interviews and forums and key stakeholders and small food producers investigating constraints liming smallholder participation and options for new food value chain business models.
3. Recommendations for next steps and an associated work plan involving the key stakeholders involved in the food value chain.

Project team

The project is conducted by a team of researchers from the University of Adelaide led by Associate Professor Wendy Umberger. Other team members include Professor Christopher Findlay and Dr Risti Permani.

Timeline

- Project start date, June 2015
- The launch workshop, December 2015
- Case studies, January-May 2016
- The final workshop, June 2016

Contact

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