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# Social capital and cattle marketing chains in Bali and Lombok, Indonesia

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# **Social capital and cattle marketing chains in Bali and Lombok, Indonesia**

Ian W. Patrick, Graham R. Marshall, I.G.A.A. Ambarawati and Muktasam Abdurrahman



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# Foreword

Cattle are one of the most important assets owned or managed by rural smallholders in eastern Indonesia. The Government of Indonesia (GOI) recognises the role that cattle can play in alleviating poverty, and hence it is involved in cattle development programs designed to improve welfare and create national self-sufficiency in beef production. This report provides a better understanding of the importance of cattle to smallholders, and aims to assist in the development of more efficient support programs.

While cattle tend to be owned or managed by individual smallholders, farmers can only participate in GOI cattle distribution programs if they are members of cattle smallholder groups. Group membership is one necessary criterion that enables them to receive a cow from the government with the expectation that they will return an agreed number of calves in a specified time. When the smallholder has returned the required calves, the cow becomes theirs. Cattle are generally distributed to smallholders with little or no experience in cattle management; the group, therefore, may play an important role in assisting smallholders to improve production and access the cattle marketing chain.

The ability of agencies or groups to deliver extension, financial and other forms of support to group members may be influenced by the strength of the networks and the trust inherent in the particular group; that is, the group's 'social capital'. The quantity of social capital and the group's ability to use or mobilise it may in turn be influenced by many factors, such as the quality of the leadership and the importance of cattle to the individuals. In communities throughout eastern Indonesia, where other forms of capital (e.g. human and financial) may be limited, the importance of social capital and the ability to use it may well be an important key in assisting the development of smallholder communities.

Building on previous work funded by the Australian Centre for International Agricultural Research (ACIAR), which identified the characteristics of farmers who participated in production contracts with multinational companies, this report will be valuable for future research. It provides a further step towards identifying more clearly the role that social capital may play in improving smallholder welfare. The methodology used and the results may also form a basis for market development in other rural industries in Indonesia.

The results of this study will assist technology adoption in the Indonesian beef industry by providing a better understanding of the role that social institutions can play in the adoption process. It may assist in targeting government development programs for the livestock sector, and increasing opportunities for cattle producers to link with the beef market via improved access to technology and market information.

The study provides evidence of the importance of social capital in the process of alleviating poverty through rural development initiatives, particularly with respect to Indonesian smallholders accessing cattle market opportunities.

A handwritten signature in black ink, appearing to read 'Nick Austin', with a long horizontal stroke extending to the right.

Nick Austin  
Chief Executive Officer, ACIAR

# Contents

|  |    |
|--|----|
| <b>FOREWORD</b>  | 3  |
| <b>AUTHOR CONTACT ADDRESSES</b>                          | 8  |
| <b>SUMMARY</b>   | 9  |
| <b>BACKGROUND</b>  | 11 |
| <b>Rural development in a globalising world</b>          | 11 |
| The changing environment                                 | 11 |
| Social capital and poverty alleviation                   | 12 |
| Connecting the poor to markets                           | 13 |
| <b>How can social capital improve market access?</b>     | 14 |
| <b>CATTLE INDUSTRY AND MARKETING CHAINS IN INDONESIA</b> | 16 |
| <b>Introduction to the Indonesian cattle industry</b>    | 16 |
| <b>The cattle industry in Bali and Lombok</b>            | 16 |
| Size of the cattle industry                              | 16 |
| Role of cattle in culture                                | 16 |
| Government involvement                                   | 17 |
| Cattle markets in Bali                                   | 18 |
| Cattle markets in Lombok                                 | 19 |
| <b>Stakeholders in the cattle marketing chain</b>        | 19 |
| Farmers  | 21 |
| Brokers  | 22 |
| Collectors   | 22 |
| Butchers   | 22 |
| Traders (inter-island and export)                        | 22 |
| Meat retailers   | 23 |
| Meat packers   | 23 |
| Government   | 23 |
| Beef consumers   | 23 |
| <b>The marketing chain in Bali and Lombok</b>            | 23 |
| <b>THE SURVEY AND DESCRIPTIVE RESULTS</b>                | 25 |
| <b>Survey aims</b>                                       | 25 |
| <b>The survey process</b>                                | 25 |
| The survey form  | 25 |
| Group and group leader selection                         | 25 |
| Survey implementation                                    | 25 |
| <b>The cattle groups</b>                                 | 26 |
| Group member characteristics                             | 26 |
| Group characteristics                                    | 27 |
| Group social capital                                     | 29 |

|  |    |
|--|----|
| <b>The cattle group leaders</b>  | 31 |
| Group leader characteristics   | 31 |
| Group leader social capital  | 32 |
| Leadership style   | 34 |
| <b>Cattle marketing</b>  | 34 |
| Most favoured cattle selling method  | 34 |
| Marketing information  | 35 |
| Group assistance in cattle marketing   | 36 |
| <b>THE ROLE OF FARMER GROUPS IN CATTLE MARKETING: BALI AND LOMBOK</b>            | 38 |
| <b>Potential to pool Bali and Lombok data</b>                                    | 38 |
| <b>Factors affecting the level of marketing support provided by the group</b>    | 38 |
| Group member characteristics   | 38 |
| Group characteristics  | 39 |
| Group social capital and agency  | 40 |
| Leader characteristics   | 41 |
| Leader social capital  | 41 |
| Leadership style   | 41 |
| The most important factors influencing groups to provide marketing support       | 42 |
| <b>Factors affecting smallholders' choice of selling technique</b>               | 42 |
| Group member characteristics   | 43 |
| Group characteristics  | 43 |
| Group social capital and agency  | 43 |
| Leader characteristics   | 44 |
| Leader social capital and style  | 44 |
| The most important factors influencing group members' decisions of where to sell | 44 |
| <b>CATTLE MARKETING CHAINS: PERCEPTIONS AND ATTITUDES</b>                        | 47 |
| <b>SOCIAL CAPITAL, GROUP MARKETING SUPPORT AND CHOICE OF SALE METHOD</b>         | 48 |
| <b>RECOMMENDATIONS</b>   | 50 |
| <b>Industry efficiency</b>   | 50 |
| <b>Smallholder welfare</b>   | 50 |
| <b>Changes to the marketing chain</b>  | 50 |
| <b>REFERENCES</b>  | 52 |
| <b>APPENDIX 1: SURVEY FORM</b>   | 55 |
| <b>APPENDIX 2: SELLING OPTIONS IN NEW SOUTH WALES, AUSTRALIA</b>                 | 77 |

## Figures

|           |   |    |
|-----------|---|----|
| Figure 1. | Cattle populations in Bali and Lombok, 2001–06                  | 17 |
| Figure 2. | Total cattle exports from Bali and Lombok, 2001–06              | 17 |
| Figure 3. | The domestic, inter-island and export market in Bali and Lombok | 19 |

## Tables

|           |   |    |
|-----------|---|----|
| Table 1.  | Features and roles of stakeholders in the Bali and Lombok cattle supply chains  | 20 |
| Table 2.  | Farmers' motivation for managing cattle in Bali and Lombok, June 2007   | 26 |
| Table 3.  | Farmers' reasons for timing of cattle sales in Bali and Lombok, June 2007   | 27 |
| Table 4.  | Major reasons for establishing farmer groups in Bali and Lombok, June 2007  | 27 |
| Table 5.  | Average distance to institutional support for farmer group members in Bali and Lombok (km)  | 29 |
| Table 6.  | Perceived changes in farmer group characteristics and productivity in the last 2 years, Bali and Lombok, June 2007                            | 29 |
| Table 7.  | Farmer group formality measures in Bali and Lombok, June 2007   | 30 |
| Table 8.  | Number of farmer groups providing labour in-kind contributions to specific tasks in Bali and Lombok, June 2007                                | 30 |
| Table 9.  | Farmer group leaders' attitudes to community and farmer group 'connectedness', Bali and Lombok, June 2007                                     | 31 |
| Table 10. | Farmer group response to a cattle problem within the group, Bali and Lombok, June 2007  | 31 |
| Table 11. | Expected farmer group response to a disaster affecting one member, Bali and Lombok, June 2007   | 32 |
| Table 12. | Education levels of farmer group leaders in Bali and Lombok, June 2007  | 32 |
| Table 13. | Assets owned by the farmer group leaders in Bali and Lombok, June 2007  | 33 |
| Table 14. | Number of farmer group leaders who have met people of influence in the last 12 months, Bali and Lombok, June 2007                             | 33 |
| Table 15. | Scoring of farmer group leader responses to leadership styles   | 34 |
| Table 16. | Most used cattle selling methods by farmer groups in the last 12 months, Bali and Lombok, June 2007   | 35 |
| Table 17. | Farmer group reasons for adopting selling method, Bali and Lombok, June 2007  | 35 |
| Table 18. | Major sources of cattle market information for farmer groups in Bali and Lombok, June 2007  | 36 |
| Table 19. | Number of farmer groups providing marketing support to members, Bali and Lombok, June 2007  | 36 |
| Table 20. | Role of farmer groups in facilitating various selling methods, Bali and Lombok, June 2007   | 36 |
| Table 21. | Linear regression results for level of marketing support by farmer groups, Bali and Lombok, June 2007   | 40 |
| Table 22. | Logistic regression results for relative probability of selling cattle on-farm, Bali and Lombok, June 2007                                    | 44 |
| Table 23. | Farmer group leaders who believe that the group plays an important role in providing a range of marketing support, Bali and Lombok, June 2007 | 45 |
| Table 24. | Farmer group leaders' perceptions of group members' reasons for selection of selling method, Bali and Lombok, June 2007                       | 45 |
| Table 25. | Cross tabulation; sources of marketing information and selling method, Bali and Lombok, June 2007   | 46 |



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# Summary

The majority of cattle owners and managers in eastern Indonesia have multiple motivations for keeping cattle, of which profit maximisation is only one. The Government of Indonesia (GOI) also has multiple motivations for supporting the cattle industry. For the GOI, cattle provide both a means of improving smallholder welfare and an opportunity to develop an efficient industry producing a competitive local product for the domestic market. These multiple objectives of producers and government result in an industry where producers are as diverse as those who are keen to develop their cattle program into profit-maximising enterprises and those who are content to buy and sell cattle when required to meet personal and social needs.

A potential limitation restricting cattle industry development in the eastern islands of Indonesia is the inability of smallholders to access a marketing chain that rewards cost-effective production of a high-quality product. For smallholders to compete with imported products, both the ability to minimise transaction costs and the capability to buy and sell when appropriate need to be improved. Previous research has identified the potential role that social capital, as well as financial and human capital, may play in assisting smallholders to gain better access to marketing chains. Government rural development programs form and use community groups as the institutions through which they distribute cattle to the poor. This allows not only cost-effective distribution of cattle and extension support, but also encourages farmers to work together and support each other in regard to cattle marketing. The GOI provides the means through which individual cattle owners can take advantage of economies of scale, and hence form stronger links with the marketing chain.

This study defines the cattle marketing chain and describes the role of its various stakeholders. It also identifies the role that farmer groups may play in assisting smallholders to link to the market chain, and the characteristics of farmer groups and group leaders that lead to groups having greater market access.

The data collection and analysis was conducted in three stages. Stage 1 involved data collection and preliminary definition of the cattle marketing chains in Bali and Lombok, through desktop studies and a series of key informant interviews. Stage 2 involved focus groups with cattle marketing chain stakeholders to confirm the structure of the supply chain and identify the factors critical in determining the nature and limitations of the market.

In Stage 3, a face-to-face survey of cattle group leaders in Bali and Lombok was conducted based on the results of the market chain analysis. This stage enabled a more focused and quantitative evaluation of the role of social capital in assisting smallholders to access cattle marketing opportunities. The quantitative evaluation involved two multiple regression analyses.

The first regression model examined the relationship between the level of marketing support provided by a farmer group and the characteristics of that group, including characteristics relating to the group itself, its members and its leader. The model identified a number of important farmer group and group leader characteristics that were associated with a higher level of marketing support. For these farmer groups and group leaders:

- cattle are the most important source of income to the group members
- cattle are the major priority of the group
- the group participates in a range of government assistance programs
- the group has a formal structure and rules
- there is a high level of internal trust (group trust), a strong sense of community and a preparedness to assist group members as required with personal and economic difficulties (group agency)
- the group leader has a higher level of education, more land and regards farming as an important part of household income
- the group leader has a limited ability to network and influence people
- the group leader is responsible for other, higher level group activities

- the group leader is confident, trusted and possesses a desire for success (leadership style).

Further analysis of the strength of this association indicated that if policymakers wish to improve a group's emphasis on providing market support for its members, the most important factors to develop would be group trust, group agency and leadership style. These social capital variables will accrue the greatest gross pay-off. The conclusion is that government, in attempting to improve farmer groups' level of marketing support to their members, needs to focus on developing group social capital with particular regard to levels of trust within the group, developing ways to use this internal trust (group agency), and developing leaders who are confident and have the support of group members.

The second regression model explored the relationship between the decision by members of a farmer group regarding where to sell their cattle (on-farm or at the cattle market) and the same set of group, group member and leader characteristics mentioned above. The model identified which types of farmers were more likely to sell at the cattle market as opposed to on-farm. Farmer group members are more likely to sell at the market if:

- cattle are their main source of income
- they have higher numbers of cattle
- cattle are the main focus of the group
- they live closer to the market
- the group is characterised by a high level of internal trust, a strong sense of community and a preparedness to assist group members as required with personal and economic difficulties
- the group leader is not predominantly a farmer.

This result is significant. Smallholders with larger herds, who rely on cattle for a higher proportion of

household income, choose to sell their cattle directly at the market, and source their own price data. They are less reliant on the group for marketing support and less reliant on the social capital available to the group leader. While they do belong to groups that have a strong and active sense of community, in terms of cattle marketing they may rely more on their own networks and market linkages. These farmers are more likely to organise their own transport (with or without the group's assistance) and minimise transport costs. When farmers make selling decisions based on non-profit-maximising criteria (e.g. ease of selling, need for cash), they are more likely to sell on-farm. If the GOI is keen for smallholders to improve their access to and involvement in the marketing chain (i.e. sell at the market), they may need to encourage smallholders to have larger herds, reduce dependence on welfare-oriented farmer groups, improve access to market information, and assist smallholders target their production for specific market segments.

This study has provided significant new information concerning cattle marketing chains in Bali and Lombok, the factors that influence a group's ability to support smallholders in linking with the market, and the factors that influence smallholders' choices of where to sell their cattle. The results of this study have important implications for the way in which private and public investors form and manage smallholder cattle groups. Policymakers are faced with a choice. If they are distributing cattle via groups to improve cattle productivity and industry efficiency, then they will need to form and foster groups and group leaders in a different way than if they are distributing cattle to improve short-term smallholder welfare.

# Background

## Rural development in a globalising world

### The changing environment

Integration of markets around the world has been underway since at least the early 19th century. However, it has accelerated to such an extent in recent decades that it has become known widely as ‘globalisation’ (Borghesi and Vercelli 2003). This process has been—and continues to be—driven by agents striving to enhance their competitiveness by reducing production costs through economies of scale, division of labour and specialisation.

While market integration has been driven by rewards resulting from division of labour and specialisation, thereby increasing the need for market exchange, it has also been constrained by the transaction costs incurred in this exchange (North 2005). The dramatic acceleration of integration in recent decades can be attributed to reductions in transaction costs brought about by new information and communication technologies, including television, communication satellites and the internet (Borghesi and Vercelli 2003), and by policy reforms over the last two decades seeking to liberate international trade from government restrictions (Meseguer 2006).

Johnson and Berdegué (2004) identified market liberalisation as one of two fundamental global tendencies fuelling a process of agro-industrialisation that is profoundly changing agriculture in the developing world. This process is bringing markets increasingly within the reach of remote rural areas. At the same time, market liberalisation is increasing the pressure on agro-industrial enterprises in developing countries—and on the farmers supplying them—to compete internationally, rather than just locally or nationally. The second tendency involves growing demand for high-value and processed food products, as a consequence of rising income levels and demographic changes (e.g. urbanisation and increased female participation in the labour force). Consequently, agro-industries in the developing

world must increasingly compete on the basis of product **quality**, as well as **price**, particularly with a growing share of their sales going to ‘fussy developed country consumers’ (Winters et al. 2005, p. 65). Furthermore, exports of food products not traditionally produced in developing countries account for a growing share of their total agricultural income.

Johnson and Berdegué (2004) identified three main characteristics of the agro-industrialisation process. The first involves division of labour and specialisation, and the consequent growth in off-farm activities linked to agriculture, including supply of farming inputs, and processing, distribution and sale of food products. The result has been the emergence of ‘supply or market chains’. Each such chain is a system within which a product proceeds from the farmer (‘upstream’ in the chain) through processing, distribution and retailing to the consumer (‘downstream’). The second characteristic is identified as pressures to coordinate the timing and quality of purchases and deliveries throughout the market chain. Early pressures came from the need to manage perishability, though these have since been supplemented by others, including those arising from economies of scale in managing market information. The outcome has been growing levels of integration among actors in the market chain. The third characteristic involves the change in products, technologies and market structures that accompanies the growing number and integration of participants in the market chain.

The second characteristic, the pressures associated with the timing and quality of product delivery, is illustrated dramatically by the estimates of Reardon and Berdegué (2002) that supermarkets in Latin America increased their share of food retailing from 10–20% in 1990 to 50–60% in 2000. Such shifts increase the power of supermarkets and food manufacturers (typically national or multinational in scale) in relation to upstream participants, including first-stage processors (typically local in scale) and farmers, such that first-stage processors are increas-

ingly able to 'set the rules' by which market chains develop and integrate. However, despite any gain in their relative power compared with upstream participants, downstream participants must still compete for market share by reducing their costs, increasing the quality and diversity of their product lines, and maintaining consistent supplies. Increasingly in developing countries, their competitive strategy has entailed contractual relationships with farmers, first-stage processors and other upstream participants. Such relationships are expected to multiply as market liberalisation proceeds.

However, there is still a possibility that the smallest and poorest landholders will miss out on the market opportunities opening up as a result of contracting. Agribusiness companies face potentially high transaction costs associated with contracting to multiple smallholders rather than to fewer, larger landholders.

Johnson and Berdegúe (2004) argued that governments and organisations concerned with rural development must be proactive to ensure that the benefits of agro-industrialisation occurring in a globalising world remain positive in aggregate and are distributed equitably. In addition, the increasingly rapid transformation of agro-food systems in the developing world means that small farmers and agro-enterprises will become further marginalised unless governments and rural development organisations manage to provide them with sufficient and timely assistance to exploit emerging market opportunities (Reardon and Berdegúe 2002). These arguments form the basis of the growing call for 'pro-poor growth' strategies (Kakwani and Pernia 2000). However, a major problem in developing such strategies arises from a continuing lack of knowledge about why some poor communities and households benefit from national economic growth, while others remain poverty stricken. As Krishna (2004, p. 132) observed:

... growth is the only abiding antidote to poverty. But the long-term may often be too long in coming ... What we need to know better in the meanwhile is the nature of mechanisms that enable growth at the national level to translate into poverty reduction at the household and individual level.

### **Social capital and poverty alleviation**

Much recent scholarship on this issue has focused on the importance of understanding 'social capital'. Perhaps most influentially, Putnam (1993) identi-

fied social capital as features of social organisations, such as trust, norms and interpersonal networks that improve the efficiency of the social organisation by facilitating coordinated actions. Since the mid 1990s, the concept has found rapid and widespread acceptance in the social sciences, among both practitioners and academics. Within development policy circles, its popularity largely comes from the apparent identification of a previously overlooked resource that may be harnessed to alleviate poverty. In addition, framing the concept in economic terms has allowed social scientists to turn the attention of traditionally economic-focused policymakers towards social issues that had previously been sidelined as being non-economic.

Despite the continuing lack of consensus on a definition of social capital, Uphoff (2005) concluded that it would make a useful addition to social science theory, provided it was applied more rigorously. He suggested that a more rigorous approach might begin with recognising social capital—as we do with physical, financial, human and natural capital—as a particular category of assets rather than as something 'real' in itself. The particular assets comprising social capital must then be distinguished from the benefit stream flowing from them, which he specified as mutually beneficial collective action. For analytical purposes, he argued it was useful to distinguish the assets comprising social capital into two subcategories: **cognitive** and **structural**. The assets comprising cognitive social capital are mental states and representations, including norms, values, attitudes and beliefs, which **predispose people** towards collective action. The assets comprising structural social capital are those derived from social structure and organisation, such as roles, rules, precedents and procedures, and which **facilitate** collective action. Uphoff (2004) emphasised that the two subcategories were complementary, and that most real-world manifestations of social capital contained both. Indeed, he agreed with Robison et al. (2002a,b) and Schmid (2002) that structural forms of social capital originated in emotional and other cognitive forms.

Considerable effort has already been made by social scientists to determine empirically whether and how the social capital of rural communities influences their economic and social performance. An early study by Narayan (1997) focused on Tanzanian rural households and found that household expenditure was associated positively with access to social

capital. Grootaert (1999) examined ways in which the social capital of rural households, particularly as expressed by their memberships of local associations, affected household welfare and poverty in Indonesia. For low-income households, he found that returns to social capital were higher than returns to human capital. The reverse was true for higher income households. Winters et al. (2002) undertook an econometric analysis of the way in which the asset positions of rural households in the Mexican *ejido* sector affected their participation in, and returns from, income-earning opportunities. They found that household social capital played a critical role in these respects, but that its role could vary according to the type of income opportunity and the type of social capital.

### Connecting the poor to markets

Given the difficulties faced by individual smallholders in accessing new markets, some scholars have turned their attention to the potential for smallholders to act as a group to achieve the economies of scale needed to reduce transaction and production costs to competitive levels. Thorp et al. (2005, p. 907) concluded that ‘group formation has great potential to empower and raise the incomes of poor people’. Since the early 1990s, policymakers have been increasingly accepting such institutional arrangements, as a complement to conventional options involving individual and state property rights, as supporting literature has steadily gained influence (McCay and Acheson 1987; Ostrom 1990; Bromley 1992; Gibson et al. 2000; Marshall 2005).

Governments and other organisations concerned with poverty alleviation need to take an active role in fostering such relationships, in line with the conclusion of Narayan and Cassidy (2001) that the influence of social capital was most profound in terms of the relationships it facilitated between heterogeneous social units. Their study was based on the findings of several projects conducted as part of the World Bank’s Local Level Institutions Study. They concluded that, without external allies, the social capital of poor communities typically remained a poor substitute for the resources and services provided by the state.

Cleaver (2005) also highlighted the need for policymakers to adopt a proactive stance in fostering relationships between small farmers and rural enterprises, and the wider world. Undertaking ethnographic research in rural Tanzania, she found that

social relationships could constrain as often as they enabled, and that norms and other institutions embedded in social relationships often reproduced relationships of inequality and marginalisation. Thus, ‘the poorest people are both more dependent on their ability to exercise agency than others and less able to do so effectively’ (Cleaver 2005, p. 904). Blair (2005) also found in rural Bangladesh that the poorest individuals relied on patron–client ties to mitigate their poverty from day to day, but that these ties served only to reinforce their disadvantage and dependency in the longer term.

Similarly, Thorp et al. (2005) accepted that the social capital underpinning group formation and maintenance was important for poverty alleviation, but hypothesised that the chronically poor can be disadvantaged in group formation due to their relatively low access to agents capable of pushing their interests politically. Thus, groups formed successfully among the poor tend to exclude those who are even poorer, a trend particularly relevant to groups associated with market functions.

These arguments regarding the importance of external agents in making it easier for rural communities to reap economic advantages—in terms of livelihood stability, employment generation, poverty reduction and quality of basic services—have been supported by econometric research into Rajasthani villages by Krishna (2002, 2003). He found that economic development performance was associated most strongly with a combination of high intra-village social capital, and ready access to agents capable of targeting this capital towards incentives arising from the external environment. The agents found to be most important in this respect were a set of relatively young village leaders who had emerged over the previous two decades. These agents were relatively more educated and experienced in dealing with government and market operations. Such agency was considered to be critical in situations where institutions that enable villagers to connect with the state and the market were lacking. In such situations, the use of a given stock of intra-village social capital can be strengthened significantly by investing in the development of agents and other mediating institutions that are aware of the opportunities available in the market and relevant government programs, and that are able to connect villagers with these opportunities.

Accordingly, Krishna (2003) identified the importance of rural development programs in

helping to foster mediating institutions, including village leaders, with the ability and potential to help rural people overcome economic and cultural constraints in their effort to escape poverty. He was optimistic in this regard, observing that ‘experience shows that agency strength can grow rapidly even within relatively short periods of time’ (Krishna 2003, p. 26). This observation echoes an earlier empirical finding of Krishna and Uphoff (1999) that a household or community’s history influences the stock of social capital. Krishna (2003, p. 26) cautioned against one-size-fits-all models for such mediating institutions, arguing that such institutions ‘are more likely to succeed if they are folded in with what villagers already have and what they can hold accountable in terms of local knowledge and everyday understandings of right and wrong’.

### **How can social capital improve market access?**

Earlier work has provided some evidence to suggest that social capital may play an important role in improving smallholder access to agricultural product markets in Indonesia. Patrick (2004) highlighted important smallholder characteristics that influenced their ability to link with agribusiness through contracts. The study, however, did not address the question as to why one community was selected over another seemingly similar community. Muktasam (2001, 2002, 2005) sought to develop community microfinance delivery systems appropriate for Lombok. It was concluded, however, that implementation of improved delivery systems would be slow. Banks appeared to be reticent to work with community groups, which often lacked the institutional or community structures and incentives to ensure repayment. Muktasam (2001, 2002, 2005) concluded that social capital may potentially play a part in convincing banks that communities could guarantee repayment of loans.

Discussions with the relevant provincial government agencies and universities involved in rural development highlighted that similar difficulties have arisen when trying to implement livestock development programs in Indonesia. Lack of understanding of the supply chain and the role of communities in improving livestock productivity was identified as a major issue.

Based on these findings, this study was initiated to evaluate the role that social capital might play in

assisting smallholders in eastern Indonesia to link into—and benefit from—the cattle marketing chain. Cattle form a vital part of smallholder farming systems across this region. Cattle are used as a source of income, draught power, status and asset value. The GOI has played an important role in the development of the cattle industry in eastern Indonesia, and has placed a significant emphasis on the use of farmer groups to encourage smallholders both to enter the cattle industry and improve cattle productivity. The GOI’s (and provincial governments’) emphasis on working with farmer groups is based on the perceived ability of groups to lower transaction costs, and to use social strengths to assist in the monitoring and implementation of equitable and efficient cattle-raising systems. The government provides physical capital (e.g. communal cattle yards, markets and cattle), finance (e.g. grants and in-kind repayment processes) and human resources (e.g. extension staff and education programs). However, even with this support, smallholders and smallholder groups often fail to become fully integrated into the cattle marketing chain.

To continue the development of the cattle industry in eastern Indonesia, it is necessary to understand how community and smallholder group characteristics relate to smallholders’ ability to access cattle marketing opportunities. Understanding this may assist in better targeting of government livestock sector development programs, and increasing opportunities for cattle producers to link with the beef market via improved access to technology and market information. The study sought to provide evidence of the importance of social capital in the process of alleviating poverty through rural development initiatives, particularly with respect to Indonesian smallholders accessing cattle market opportunities.

Initial information was collected via desktop studies and key informant interviews in order to define the supply chain, identify the roles of stakeholders in the chain, and make preliminary assessments of the ability of smallholder cattle producers to participate in the domestic and export beef markets. Focus groups were then conducted to confirm the structure of the supply chain and identify the factors critical in determining the nature and limitations of the market. Participants in each focus group included producers, input suppliers, industry and community leaders, traders, government agencies and other relevant stakeholders identified in the initial industry definition. The

results of the focus groups not only confirmed the nature of the market but also provided the background for a survey of cattle group leaders. Furthermore, the focus groups identified the potential differences in market function and access for producers in Bali and Lombok.

Finally, cattle group leaders in Bali and Lombok were interviewed to determine the importance of group and leader characteristics in influencing market participation. Collecting these data enabled a more focused and quantitative evaluation of the role of social capital in assisting smallholders' access to cattle marketing opportunities. The quantitative

evaluation involved two multiple regression analyses concerned with different aspects of smallholders' access to cattle marketing opportunities. The first regression model examined the relationship between the level of marketing support provided by a cattle group and the characteristics of that group, including characteristics relating to the group itself, its members and its leader. The second regression model explored the relationship between the decision by members of a cattle group regarding where to sell their cattle (on-farm or at the cattle market) and the same set of group, group member and leader characteristics mentioned above.



# Cattle industry and marketing chains in Indonesia

## Introduction to the Indonesian cattle industry

The livestock sector in Indonesia has gained more attention from the GOI during the last decade. This is due to significant changes in income and consumption patterns, which has led to a decreased reliance on staple foods such as rice, and increased consumption of higher value livestock products. Population growth, increasing income, urbanisation and changes in consumer preferences are expected to drive increased demand for beef. Live cattle and beef imports have increased to satisfy the growing demand for beef, since domestic supply has not yet been able to match the increases in demand.

Smallholder farms dominate beef production, as for the majority of Indonesian agriculture. Productivity in the smallholder meat sector is typically low due to a lack of animal husbandry skills, which results in inadequate animal nutrition, greater rates of disease and low use of production technology. Furthermore, beef production is generally carried out as a supplementary activity to grain production.

Beef cattle numbers in Indonesia declined from 11.3 million in 2002 to 10.8 million in 2006. During this time, however, annual Indonesian beef production increased from 1,770 tonnes to 2,070 tonnes, an average growth rate of 3.6% per annum (DGLS 2006). Although data on the contribution of the beef industry to agricultural gross domestic product (GDP) are not available, the industry does play an important role in the Indonesian economy. Cattle are not only a source of income but are also a valuable asset, used in both crop production and as collateral for obtaining loans. Cattle also play a role in social and cultural activities, and provide significant employment opportunities along the supply chain.

The beef industry in Indonesia has been discussed by a number of authors with emphasis on the opportunities for foreign suppliers, such as Australia, to export beef to Indonesia. For example, Trewin (1996) and Kaus et al. (1997) highlighted large potential export opportunities for Australia

throughout the agribusiness sector, including feed, livestock and meat products, arising from changing consumption patterns in Indonesia. More recent studies by Hadi et al. (1999, 2002) stressed the challenges and opportunities within the Indonesian beef industry in the aftermath of the Asian financial crisis. Now that economic growth in Indonesia has resumed, demand for beef is increasing again. The challenge for policymakers is to put in place a policy framework that encourages efficient production and marketing of beef in Indonesia to meet its growing demand.

## The cattle industry in Bali and Lombok

### Size of the cattle industry

The island of Bali covers an area of 5,633 km<sup>2</sup> and is divided into nine regencies, while Lombok covers 4,739 km<sup>2</sup> and comprises four regencies. The cattle population in 2006 in Bali was 596,000, and in Lombok it was 461,000 (Figure 1). The cattle population of these islands accounts for approximately 10% of the national cattle population (DGLS 2006). Over the last 5 years, the cattle population in these islands has grown at an average of 3% per annum. Only Bali cattle (*Bos sondaicus*) are allowed to be bred in Bali. In Lombok, crossbreeding and alternative breeds are permitted.

Inter-regional export of cattle takes place in both Bali and Lombok (Figure 2). Because of the presence of Jembrana disease in Bali, it is only legal to export cattle that will be delivered directly to an abattoir. It is illegal to export any cattle for fattening or breeding purposes. In Lombok this is not the case, and the number of breeding cattle exported from the island increased steadily from 11,000 head in 2001 to 19,000 head in 2006.

### Role of cattle in culture

Cattle play an important role in farms in both Bali and Lombok. Farmers use cattle not only for land

preparation, but also as a source of income, a source of fertiliser and for social activities. Renting cattle to other farmers for land preparation is an important source of income for which farmers receive either cash or in-kind benefits. Manure is used as fertiliser, saving input costs for farmers who use it on their cropping land. Excess manure is a source of cash when sold to other farmers.

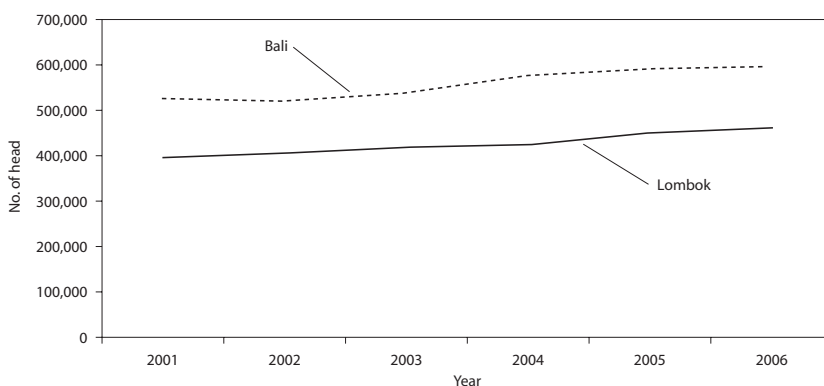
In a society where smallholders still have difficulty accessing banking and financing facilities, cattle remain a liquid asset that farmers can use when they need cash for particular religious requirements, such as cremation ceremonies in Bali and the *Haji* pilgrimage in Islamic communities. To the Balinese and Lombok communities, owning more cattle also reflects a higher social status. Cattle rearing can also enhance community cohesion. Raising cattle encourages farmers to work together in a group (a collective shed), to prevent their cattle

from being stolen, and to address issues of environmental pollution.

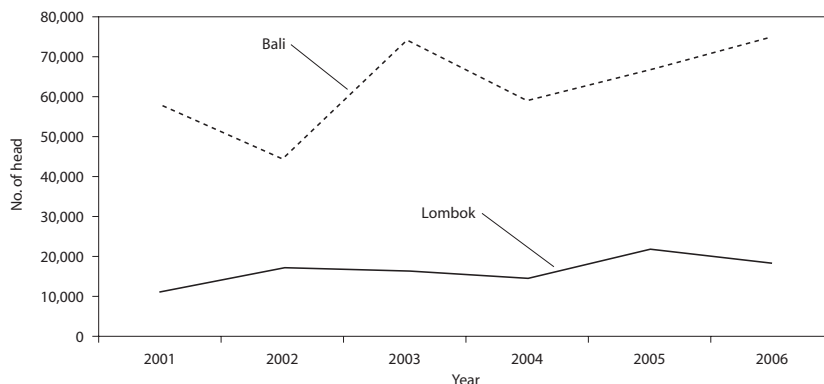
### Government involvement

The GOI provides significant assistance to smallholders through cattle development and distribution programs. These are used both to improve cattle production and productivity, and to improve community and smallholder welfare. The GOI has focused on developing the beef cattle industry with the following objectives in mind.

1. To produce, for sale to the local community, sufficient beef that meets appropriate quality requirements (healthy, halal).
2. To develop a more productive agricultural sector capable of producing a competitive agricultural product available for local and international markets, and to increase the contribution of the agricultural sector to regional income.



**Figure 1.** Cattle populations in Bali and Lombok, 2001–06



**Figure 2.** Total cattle exports from Bali and Lombok, 2001–06

3. Through community empowerment, to improve farmer access to all resources, including institutional development and resource security.

The GOI has deployed various development schemes to support cattle development and distribution programs. The most notable program in the beef industry was the Beef Nucleus Estate and Smallholder (Beef NES) scheme, introduced in the 1980s. Its key feature was a contract between a company and smallholders. Other recent beef cattle development schemes developed by the GOI include:

- Food Security Project (*Proyek Ketahanan Pangan*, PKP): aims to encourage the development of a cattle-breeding industry through farmer groups. It is expected that under better cattle management, the groups will be able to provide high-quality breeding cattle on a continuous basis. Moreover, the PKP aims to strengthen social capital within the groups.
- Food Security Credit (*Kredit Ketahanan Pangan*, KKP): a subsidised credit scheme, aimed at helping smallholder producers to generate greater income through cattle fattening.
- Community Direct Assistance (Badan Keswadayaan Masyarakat, BLM): in place since 2002, it is provided directly to farmer groups, aimed at strengthening access to capital.

Since 2003 in Lombok, 17 government and non-government organisation (NGO) programs working in 39 subdistricts (*kecamatan*) have collectively distributed approximately 3,300 cattle.

The GOI has also facilitated improvement of slaughtering infrastructure. Most slaughterhouses are publicly owned by local or municipal governments. Establishment of a national standard for slaughterhouses has led to some abattoirs being closed or renovated due to substandard sanitary conditions. Additionally, some feedlot companies have their own slaughterhouses through which they process their own cattle. They also lease these facilities to local butchers.

With regard to trade policy, the GOI selectively regulates both inter-regional and international trade. Until 1998, for inter-regional marketing, a quota system was applied to the number of cattle traded. This policy was established to prevent cattle depletion and to sustain cattle population growth in beef-producing areas, such as Bali, West Nusa Tenggara and East Nusa Tenggara. The quota restriction was removed in March 1998 as part of the policy reforms required by the World Trade Organization in the aftermath of the 1997 Asian financial crisis (Erwidodo et al. 1999).

Import tariffs are now the most notable policy tool applied to the beef trade. No quotas are applied for imported cattle and beef, although cattle imports have been subject to tariffs to protect the domestic beef cattle industry. Before the Asian financial crisis, there was no tariff for breeder cattle and a 15% tariff for feeder cattle. By comparison, imports of fresh, chilled and frozen meat were subject to tariffs of 30%, while more processed meats faced tariffs of up to 70% (Trewin 1996). The government has undertaken policy reform, including reductions in tariffs, to address the impact of the Asian financial crisis. Since the crisis, there have been no tariffs on imported breeder cattle, a 10% tariff on imported live feeder cattle and a 35% tariff on frozen beef (Erwidodo et al. 1999). All importation activity is subject to licensing, quarantine and health regulations. Beef imports are also subject to the slaughtering requirements of Islamic law.

### Cattle markets in Bali

Bali has seven cattle markets spread throughout the island. The largest is at Beringkit, about 20 km west of Denpasar, and other cattle markets are at Melaya (*Kabupaten* [regency] Jembrana), Pesinggahan (*Kabupaten* Klungkung), Kayuamba (*Kabupaten* Bangli), Kubutambahan (*Kabupaten* Buleleng), Rubaya and Bebandem (*Kabupaten* Karangasem). The markets mostly open twice a week. Beringkit acts as a central cattle market, where over 800 cattle are sold every Wednesday and Sunday morning. About 60% of the cattle sold are intended for inter-island markets. The Bali government, through the Office of Animal Husbandry, permits inter-island trading of about 70,000 head of cattle every year.

Cattle prices are negotiated between buyer and seller (by brokers on behalf of the cattle owner), one head at a time. No price benchmark is provided by the local authority. Price signals and other market information are provided by the collectors and inter-island traders. For the inter-island trade, cattle (minimum of 375 kg) are sold per kilogram live weight, with cattle often weighed at the saleyards. Other cattle, however, are sold on visual assessment and agreement between buyer and seller.

Demand for cattle from Jakarta tends to be high during *Ramadan* and *Idul Fitri* (Islamic holy month of fasting and Muslim holiday). Increased demand, and hence higher prices, occurs over the Christmas and New Year period. Cattle prices tend to be lower

in June or July when farmers sell their cattle to pay their family's new school year education costs.

### Cattle markets in Lombok

There are four cattle markets in Lombok. They are at Salagalas (Mataram Selat), Tanjung (West Lombok), Praya (Central Lombok) and Masbagik (East Lombok). The biggest market at Salagalas opens twice a week; the other four open once a week. As they are all open on different days, stock sold at each market come from all parts of the island. Transport costs can be up to Rp25,000 per head (the exchange rate as at April 2010 was A\$1 = Rp8,400).

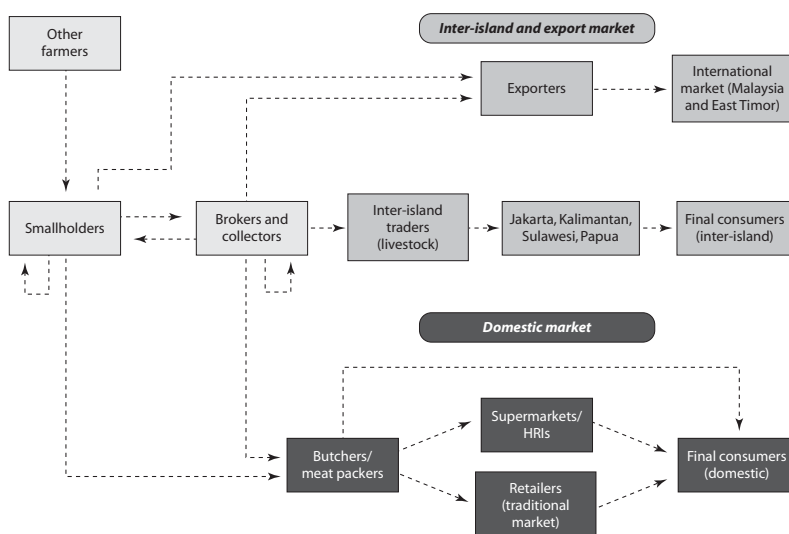
Cattle prices at these markets are mostly determined by the collectors. The actual buyers and sellers do not have the scale or resources to negotiate price from a position of strength. Cattle prices fluctuate during the year. As in Bali, prices are higher during months when the Muslim community celebrates *Hari Raya Korban* (the festival of sacrifice). Prices are lower during the dry season when more farmers sell their cattle due to scarcity of cattle feed.

In Lombok during 2006 and 2007, there was no price incentive to sell cattle to inter-island markets and customers, such as Jakarta and other provinces. The price of live cattle in Jakarta (Rp19,000/kg, September 2007) was almost the same as the price in the local markets. Another disincentive for inter-island trade is high transportation costs. In

October 2007, the price of live cattle in Lombok was about Rp15,000/kg for cattle weighing over 300 kg. With a high transportation cost (shipping), the live-weight price of Rp18,000/kg in the Jakarta market was too low to entice inter-island traders into the market. This situation was different some years ago. In 2005, the total quota for the inter-island markets was about 5,000 head, with about 90% being shipped during *Idul Fitri*. Rather than selling live cattle, Lombok exporters prefer to sell frozen cattle tail, brain and tongue to Javanese markets. In addition to beef cattle, West Nusa Tenggara cattle exporters shipped 9,708 breeding cows to West Kalimantan, Maluku and Papua in 2006.

### Stakeholders in the cattle marketing chain

Stakeholders in the cattle marketing chain in both Bali and Lombok include farmers, collectors and brokers, butchers, inter-island traders and exporters, meat retailers, meat packers and government departments. A summary of the marketing chains for the inter-island and export market, and the domestic market, is provided in Figure 3. The sale of stock that occurs at the physical marketplace or on-farm is represented by the arrows, and is discussed below. A summary of the roles of each stakeholder in the cattle marketing chain is provided in Table 1.



**Figure 3.** The domestic, inter-island and export market in Bali and Lombok. HRIs = hotels, restaurants and institutions

**Table 1.** Features and roles of stakeholders in the Bali and Lombok cattle supply chains

| Stakeholders   | Features  | Roles in the supply chains   |
|----------------|---|--|
| Smallholders   | <ul style="list-style-type: none"> <li>• Small herd size (e.g. 2 adults)</li> <li>• Use cattle also as animal draught power</li> <li>• Also grow crops (either dryland or wetland)</li> <li>• In Lombok, mostly locate cattle together as group (either in collective pens or individual pens in a common area)</li> <li>• In Bali, mostly locate in individual pens near farms or houses)</li> <li>• Some smallholders are also brokers or collectors</li> <li>• Use traditional cattle rearing methods with low commercial inputs. Selling and buying to those who offer a good price; no commitment with brokers and collectors</li> <li>• Dissatisfied with the existing marketing environment</li> </ul> | <ul style="list-style-type: none"> <li>• Rear cattle for fattening or breeding</li> <li>• Sell cattle at the cattle market or in the village</li> <li>• Buy cattle from local markets, other smallholders or collectors</li> </ul>   |
| Brokers        | <ul style="list-style-type: none"> <li>• No ownership of the cattle being sold</li> <li>• Approach both sides for one transaction (seller and buyer); negotiate a lower price for sellers and higher price for buyers</li> <li>• Some farmers also work as brokers and are part of a cattle group</li> <li>• Share the margin among the brokers involved in a single transaction</li> <li>• Need strong relationships in order to work together for a successful transaction</li> <li>• Have no capital involved</li> <li>• Work in large numbers within a market, making it crowded</li> <li>• Self-employed, although sometimes work for collectors or regular buyers</li> </ul>                            | <ul style="list-style-type: none"> <li>• Play a facilitating, intermediary role in cattle transactions</li> <li>• Find the cattle sellers</li> <li>• Make an agreement with sellers</li> <li>• Find buyers</li> <li>• Negotiate price</li> <li>• Hold the 'rope' of cattle to be sold</li> </ul> |
| Collectors     | <ul style="list-style-type: none"> <li>• Have considerable liquid capital</li> <li>• Self-employed (sometimes employed by inter-island traders)</li> <li>• High social status</li> <li>• Relatively few in number</li> <li>• Work with inter-island buyers from places such as Jakarta and Madura</li> </ul>  | <ul style="list-style-type: none"> <li>• Buy cattle from smallholders or other collectors at the local market</li> <li>• Sell cattle to local butchers, local consumers or exporters</li> <li>• Husband cattle until they are re-sold</li> </ul>   |
| Butchers       | <ul style="list-style-type: none"> <li>• Lease facilities at government slaughterhouses</li> <li>• Self-employed</li> <li>• Relatively few in number</li> <li>• Slaughter 1–16 head/day</li> </ul>  | <ul style="list-style-type: none"> <li>• Buy cattle from smallholders or collectors at the local markets</li> <li>• Produce beef from cattle</li> <li>• Sell beef to local consumers, meat packers or local meat retailers</li> </ul>  |
| Meat retailers | <ul style="list-style-type: none"> <li>• Female-dominated job</li> <li>• Self-employed</li> <li>• Relatively few in number</li> <li>• Develop partnerships with inter-island buyers (e.g. in Jakarta and Madura)</li> </ul>   | <ul style="list-style-type: none"> <li>• Buy meat from butchers or slaughterhouses</li> <li>• Sell beef to local consumers at the local (wet) market</li> </ul>  |
| Meat packers   | <ul style="list-style-type: none"> <li>• Self-employed</li> <li>• Few in number</li> </ul>  | <ul style="list-style-type: none"> <li>• Buy meat from butchers or slaughterhouses</li> <li>• Transport meat to other islands</li> <li>• Sell beef to hotels and restaurants</li> </ul>  |

**Table 1.** (Cont'd) Features and roles of stakeholders in the Bali and Lombok cattle supply chains

| Stakeholders                                    | Features   | Roles in the supply chains   |
|---|--|--|
| Traders   | <ul style="list-style-type: none"> <li>• Self-employed</li> <li>• Relatively few in number</li> <li>• A family has often been involved in this activity for several generations</li> <li>• Represented by the professional association PPHANI (<i>Perhimpunan Pedagang Hewan Indonesia</i>)</li> </ul> | <ul style="list-style-type: none"> <li>• Buy cattle from collectors and smallholders at local markets</li> <li>• Transport cattle to other islands or provinces such as Jakarta, East Java, Kalimantan and Sumatra, and to other countries such as Malaysia and East Timor</li> <li>• Sell beef cattle in Java or Jakarta</li> </ul>   |
| Government department (Animal Husbandry Office) | <ul style="list-style-type: none"> <li>• District and provincial offices of animal husbandry</li> </ul>  | <ul style="list-style-type: none"> <li>• Provide production inputs such as funds for collective pen construction, breeding and beef cattle, cooled sperm for artificial insemination and credit</li> <li>• Provide policy support</li> <li>• Technical assistance, e.g. training for smallholders in artificial insemination, and other areas</li> <li>• Promote and administer cattle development programs and activities</li> <li>• Issue licenses to exporters</li> </ul> |
| Final consumers                                 | <ul style="list-style-type: none"> <li>• Can include individuals, firms and other organisations</li> </ul>   | <ul style="list-style-type: none"> <li>• Buy beef and other cattle products from retailers</li> </ul>  |

## Farmers

In Bali and Lombok, smallholders usually rear two or three head of cattle, either for breeding or fattening purposes. They tend to keep cattle in individual cattle sheds (*kandans*), although some are kept in community sheds, where group members undertake feeding and monitoring (a more prevalent practice in Lombok). For most farmers, cattle are not the main source of income. Consequently, they tend not to be managed and marketed in ways that maximise income. Smallholders have three major roles in the marketing chain:

- buying cattle directly from other farmers or at the market via collectors
- selling cattle to other farmers, other buyers through direct sale at the local market or via collectors to final consumers (households), butchers and exporters
- looking after the cattle for breeding or fattening purposes.

Farmers mostly buy cattle from the local cattle market as they believe that there is more choice and they may have access to a larger range of better quality cattle. When buying directly from other farmers, farmers have said, 'We only have limited options, the time also doesn't suit. When we need to buy, the other farmers do not have the stock or it is not

the right time for them to sell'. However, stakeholder discussions identified that buying from other farmers had two significant advantages: 'knowing the family history of the cattle' and 'avoiding the brokers'.

Most farmers prefer selling their cattle to collectors either on-farm, or at the local market, rather than directly to butchers. Farmers sell straight to butchers only when the cattle are sick or have a broken leg. It is a method of ensuring a return from a damaged product.

Farmers in the region where the focus groups were held cited a number of reasons why it was better to sell their cattle at the farm gate rather than at the cattle market, including avoiding deals with brokers, receiving a better price, lowering transaction costs, and lowering the risks of broken legs, robbery and receiving counterfeit notes. One farmer was aware of three instances where purchasers tried to buy cattle at a cattle market with counterfeit currency. This is more likely when the cattle have failed to sell and it is getting dark. Another farmer (focus group participant) received only Rp800,000 in real notes and Rp2 million in forgeries. This finding is consistent with previous research by Rutherford (2004) that focused on Lombok, where it was found that most farmers on this island sell their cattle on-farm:

Bulu et al. (2003) reported that for Lombok, the majority of farmers (87.5%) sell cattle from the farmgate to

middlemen (brokers and collectors). The middlemen then take the cattle to cattle markets for selling, or sell the cattle to butchers (in government or private slaughterhouses), abattoir operators, inter-island traders, or exporters directly or via other middlemen and/or other markets if necessary to obtain the desired price. A smaller proportion of farmers (10%) take their own cattle to markets but they still sell their cattle through a middleman as they are 'unofficially' refused entry to the market. Bulu et al. (2003) confirmed this as an issue as the majority of farmers they surveyed wanted the government to help ensure competitive pricing and the provision of correct market information. A very small proportion (2.5%) sell direct to inter-island traders (IIT) or exporters.

In regard to the marketing decision-making process, smallholders at the focus groups perceived that it was easier to make a decision on selling bulls and steers compared to other cattle. The decision to sell cows is the most time consuming and difficult. Selling cows is an important household decision as it means a loss of reproductive capacity, and hence future income and asset value.

### **Brokers**

Brokers are an important group of stakeholders involved in the cattle marketing chain. Although they do not buy or sell cattle, their role in cattle transactions is critical. According to smallholders, the existence of brokers makes it difficult for smallholders to enter the transaction process. Brokers usually work in groups to find and persuade the sellers and buyers to enter a transaction. They receive a fee for playing this intermediary role and facilitating the transaction.

### **Collectors**

Collectors have similar roles in both Bali and Lombok. In Bali, they are called *blantik*, while in Lombok they are called *pedagang pengumpul* or *saudagar*. In contrast with brokers, collectors are small in number and are personally involved in purchasing and selling stock. Brokers and smallholders usually know the collectors well. Collectors have three main roles in the cattle supply chain: buying cattle from smallholders at the local market and on-farm (with assistance of brokers); selling cattle to local butchers, local consumers or exporters; and managing cattle before on-selling them.

### **Butchers**

Butchers buy cattle directly from smallholders or through brokers at the local markets. They slaughter cattle and sell the beef to local consumers, meat packers, local meat retailers and others. They generally buy cattle every day from local cattle markets.

Butchers operate in four types of abattoirs or slaughterhouses: government owned, share owned (joint government and private sector), privately owned, and illegal or backyard slaughterhouses. Unlike Bali, there are no private abattoirs in Lombok as no large private companies producing beef-related products are presently operating. Illegal or backyard abattoirs are difficult to identify given their unregulated nature, but they play a significant role in cattle processing. Shared abattoirs (e.g. Banyumulek in Lombok, Temesi in Gianyar, Bali) were, for a range of reasons, not in operation at the time of the study.

Butchers in Mataram abattoir sell meat to retailers, and even to final consumers who come to the abattoir. According to butchers, only the small local restaurants and retailers buy directly from them. Most hotels, big restaurants and supermarkets prefer to buy imported meat from meat distributors. There is a perception that local butchers are unable to meet the quality and grading standards demanded by the operators and customers of these higher-end establishments.

Butchers also claim that they do not buy large numbers of cattle in advance. This is because they do not have a shed big enough to keep the cattle, and they do not have sufficient labour to look after the cattle. They also claim that it is becoming more expensive to keep the cattle, since the price of grass for feeding is expensive, at Rp5,000 per plastic bag. Butchers participating in the focus groups mentioned that, since there is an accessible market every day, they are able to buy sufficient cattle to meet their daily slaughtering requirements.

### **Traders (inter-island and export)**

The role of traders cannot be neglected in the cattle marketing chain. In general, Bali and Lombok traders have a similar role, buying cattle either directly from farmers or through collectors (at the farm gate or the market), and transporting these cattle live to other islands. Cattle are transported from Lombok to other provinces, in particular East

Java, Jakarta, Kalimantan and Sumatra, and internationally to Malaysia and East Timor. Cattle from Bali are sold direct to slaughterhouses in Jakarta. Traders usually develop good relationships with the local collectors from whom they obtain cattle. Traders may work individually or as part of a company, as long as they have a licence to trade cattle outside Bali and Lombok.

### **Meat retailers**

The cattle and beef supply chain includes meat retailers who sell beef and other meat to final consumers. Most retailers are women who run individual businesses servicing local consumers. They buy meat directly from the slaughterhouse or from butchers, and sell to the final consumers (households, meatball retailers and up to three-star-rated hotels and restaurants) in the wet market.

### **Meat packers**

Meat packers are individuals or agencies packing meat and delivering it to final consumers, such as hotels and restaurants. Meat packers usually obtain meat from butchers or slaughterhouses, and occasionally from local retail markets.

### **Government**

Government agencies are significant players in the cattle supply chain, at local, provincial and national levels. The role of government in the supply chain includes policy development (including rules and regulations), provision of facilities and services (e.g. market grounds), certificates and technical assistance (e.g. animal health checks), and issuing licences to traders. The Department of Animal Husbandry (*Dinas Peternakan*) inspects and controls exported and slaughtered cattle. The department also regulates the number of cattle sent outside the region every year, based on cattle population dynamics (including number of heifers) and calving rate.

### **Beef consumers**

Beef consumers are the last identified stakeholders in the cattle marketing chain. Beef consumers in Bali can be distinguished by the type and quality of beef that they require. Local people are generally satisfied with fresh beef, and purchase it from the wet market. Middle-income consumers and tourists demand high-quality beef, which is

fulfilled mainly by imported beef but also by selected domestic slaughtering.

## **The marketing chain in Bali and Lombok**

Apart from identifying the market chain and its participants, the descriptive analysis (based on key informant interviews and focus groups) highlighted a number of issues relevant to the cattle industries in Bali and Lombok with regard to the activities and attitudes of stakeholders. The impressions gained from a range of stakeholders have provided a basis for further research and analysis. Some of the issues have direct relevance to the aims of this study, which sought to analyse the role of social capital in the cattle marketing chain in Bali and Lombok. These qualitative findings are discussed below.

- Smallholders' decisions to sell cattle are based on a need for cash at a particular time, rather than based primarily on price. Other factors that influence the timing of sale (and purchase) include the availability of feed and cash, and social responsibilities. Smallholders do not tend to respond to price signals.
- Smallholders prefer to buy at the market because of the greater choice available, but they like to sell on-farm for a number of reasons, including better price, less chance of being cheated, lower risk of injury to cattle, and lower transport costs.
- Smallholders' main involvement with the cattle marketing chain occurs through brokers and collectors. These participants play an important role in buying and selling decisions, providing price information, and transport and linkage with buyers and sellers. Basically, they provide the easiest method of sale and, for smallholders who are not necessarily seeking to maximise returns, it is a convenient option. Cattle prices are set through negotiation between farmers and collectors at the farm gate. Smallholders perceived that collectors have the power in this relationship.
- Collectors prefer to buy at the market for a number of reasons, including more competition, difficulty of negotiating price on-farm (smallholders do not know the market value), and ease of meeting requirements of traders and butchers, given the greater selection of cattle available at the market.



- Traders find it easier to buy at the market (i.e. to fill a truck holding approximately 14 head), but would prefer to purchase on-farm if numbers could be guaranteed.
- Collectors, meat packers and butchers are satisfied with current arrangements.
- Smallholders, collectors, traders and government support agencies see benefits in working with farmer groups. All stakeholders believed the role of farmer groups would become more important in the future. At present, however, farmer groups do not appear to play a major role in cattle marketing. Marketing of cattle tends to be done on an individual basis.
- Regency (*kabupaten*) governments provide assistance to cattle owners only through existing groups. This assistance is provided in the form of loans or cattle. The group controls monitoring, repayments and so on through local customary rules (*awig-awig*) and peer-group pressure.
- Private companies (e.g. PT Sarana Bali Ventura) are involved in business arrangements with cattle fattening groups. It was thought that commercial linkages of this kind would increase in the future.
- The current marketing system is adequate for satisfying domestic demand for beef in places like Bali and Lombok, but cannot deliver beef to compete with imported product due to the system's lack of quality control.

The motivations of smallholders will play an important role in their desire and ability to link into the marketing chain. While there may be many farmers who are quite satisfied with the present marketing arrangements, others wish to maximise productivity and provide high-quality products for growing inter-island or tourist markets. It is important for the GOI and provincial governments to determine how they can better deliver support and encouragement to these entrepreneurial smallholders.

# The survey and descriptive results

## Survey aims

The qualitative data identified the relationships between stakeholders. The next step was to analyse the nature of these relationships, and determine whether particular types of smallholders or smallholder groups had differing desires or abilities to link with the market.

The primary aim of the group leader surveys in Bali and Lombok was to determine the factors that influence cattle owners' ability and desire to link with the marketing chain. Particular emphasis was given to the role that group and leader characteristics have on this linkage. The second aim was to evaluate the ways in which group structure and social capital contributed to a cattle owner's ability to achieve their goals from managing cattle.

This section provides the general survey results and an overview of the farmer group and group leader characteristics. It also summarises farmer attitudes to—and perceptions of—the marketing chain, and how farmers participate in the market.

## The survey process

We asked cattle group leaders a series of questions (see Appendix 1) to obtain information on each of the categories listed below.

### The survey form

**General group data:** age, location and size of group, aims and activities of individuals and group, reasons for group formation, membership criteria and types of assistance received by members.

**Group structure:** presence of office-bearers and committees, rules (both formal and informal) and responsibilities (fees and in-kind support), structure and frequency of meetings.

**Group connectedness:** attitudes to group members and community, social interactions between members, openness of communication, trust between members and homogeneity of members.

**Group's cattle marketing activities:** selling methods, role of group in assisting marketing, sources of information, reasons for cattle selling and changes in cattle production over time.

**Group leader characteristics:** access to market and general information, access to institutional support, standing in community, age, education, experience, occupation, and links with the group and the community.

## Group and group leader selection

We selected 60 cattle group leaders from Bali and Lombok using the following process:

- Only groups that were located in the irrigated cropping districts (five of nine *kabupaten* in Bali, three of four *kabupaten* in Lombok) were selected. It was thought that groups in these more intensive grazing areas would have stronger group structures.
- Group selection was limited to farmer groups that had existed formally for at least 2 years and consisted of at least 20 cattle. This was intended to ensure that records would be available, that the group would have existed long enough to have some members who had marketed cattle, and that the group comprised a significant number of farmers to allow group interaction and dynamics.
- We randomly selected six groups from each appropriate *kabupaten* in Bali. This ensured a total of 30 groups were selected. In Lombok, to also ensure that 30 groups were identified, 10 groups were selected from each *kabupaten*.

During the fieldwork, it became clear that some of the selected groups no longer existed. We replaced those groups with other randomly selected groups using the above selection criteria.

## Survey implementation

The survey was designed by staff of the University of New England (UNE), New South Wales, and tested and refined in both Bali and Lombok with assistance from Udayana University (Bali) and

Mataram University (Lombok). The survey form was then finalised and the data entry sheet constructed. Partners translated the survey form and participated in on-farm trialling and further refinement of the form. These universities were also responsible for the training of enumerators, survey completion and data entry. Surveys in Bali and Lombok were undertaken in June 2007. Each group leader was interviewed at a place of their choosing, usually at their house or village meeting place.

## The cattle groups

### Group member characteristics

Most (81%) of the group members in the two survey areas were more than 30 years old. There was anecdotal evidence, however, that some group members delegated their group responsibilities to other, younger members of the household. Age, therefore, may not reflect the true ages of **active** group members.

The majority of groups were male only; 14 of the 60 groups had female members. Apart from one women's group (with 30 members in Bali), the only women involved tended to be those whose husbands had died, and hence they had become the 'household head'. In total, 93% of group members were male.

As suggested previously, cattle (and livestock generally) are not the group members' major source of income. In Bali, 78% of the group leaders believed the members' major source of income was cropping. In Lombok, this figure was 66%. The survey indicated that more households in Lombok were more dependent on livestock than in Bali, and that off-farm income was important in both islands

but more so in Bali. In Bali, off-farm income was as important as livestock as a source of income.

The survey also elicited information concerning the individual group member motivations for keeping cattle. Farmers were asked to select or rank the two most important reasons for managing cattle. The most important reason was to 'increase household welfare' (Table 2). The second most important reason for keeping cattle was more of a social concern. The desire was for cattle to be available for sale, not when the price or weight was appropriate, but rather when funds were needed for community events or family emergencies (e.g. weddings or funerals). In Bali, where some groups are more focused on cropping activities, there were some other non-profit maximising motivations. These generally value-added or complemented the cropping activities rather than maximised cattle profitability. In Lombok, the use of cattle specifically to fund children's education and pay transport costs to Malaysia (where they work for a period of years and remit income) also indicated the use of stock as an asset rather than considering them only from the point of view of profit maximisation.

Cattle are widely regarded as a relatively non-liquid asset. Individuals who need to borrow money from other family members do not expect their relatives to sell cattle to provide financial assistance. However, if the cattle were converted to cash, there would be an expectation that assistance should be given. This is an important point. Attempting to improve the efficiency and equity of the marketing process generally assumes that farmers want to become more efficient. For many smallholders, cattle are sold not to maximise profit but for other social or management reasons. While they may be motivated by 'increasing household welfare', this may not be the same as profit maximisation.

**Table 2.** Farmers' motivation for managing cattle in Bali and Lombok, June 2007

|  | Bali      |           | Lombok    |           | Region    |           |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
|  | Ranking 1 | Ranking 2 | Ranking 1 | Ranking 2 | Ranking 1 | Ranking 2 |
| Increase household welfare                 | 22        | 4         | 23        | 1         | 45        | 5         |
| Lockup wealth for events or emergencies    | 3         | 12        | 5         | 12        | 8         | 24        |
| Source of funds for travelling to Malaysia | 0         | 1         | 1         | 2         | 1         | 3         |
| Education fund                             | 0         | 1         | 1         | 10        | 1         | 11        |
| Education fund                             | 2         | 2         | 0         | 0         | 2         | 2         |
| Make use of crop wastes                    | 2         | 1         | 0         | 0         | 2         | 1         |
| Enjoy working with cattle                  | 1         | 3         | 0         | 1         | 1         | 4         |
| Use cattle waste as fertiliser             |           |           |           |           |           |           |

This observation appears to be confirmed through the response to a question concerning when farmers were likely to sell cattle (Table 3). ‘Recent cattle price’ does not play a major role in influencing when a smallholder sells cattle. The most common time to sell an animal was when the farmer needed cash. This is particularly the case in Lombok, where 80% of group leaders stated the need for cash as the main influence on group members’ timing of cattle sales.

In Bali, the age of the animal is also important. It is not clear from the survey whether this is the same for old animals (adults and culls) as it is for fattening stock. Certainly the pricing system, which is based mainly on weight (i.e. the heavier the animal per kilogram live weight, the higher its value), favours the sale of heavy, older animals. ‘Predicted cattle price’ and ‘feed availability’ have minimal influence on the timing of cattle sales.

Over half the groups surveyed included at least one member who worked in the cattle marketing chain (in addition to being a producer). This appeared to be more common in Lombok, where 19 groups had members working as brokers or collectors. Groups in Bali, while not having the same number of brokers within groups, did have more contact with the service sector, the hotel, restaurant and institution (HRI)

industry. The importance of the tourism industry in Bali would have some influence on this.

### Group characteristics

The groups in Lombok had been established, on average, for twice as long as those in Bali. The average age of the groups in Lombok was 14 years, compared to 7 years in Bali. The oldest group in Lombok had been established for 28 years.

The focus of the group appears to be an important determinant of its motivation to improve livestock marketing. In Lombok, all but one of the groups were focused on cattle. In Bali, 9 out of the 30 groups did not regard cattle as the major focus of the group, and 8 of these 9 regarded cropping as the group’s main driver or activity. Less focus on cattle may lead to reduced emphasis on cattle production and marketing efficiency.

Related to this are the reasons why groups were established in the first place. In Bali, nine of the groups were not actually established for the purpose of improving cattle production. Consequently, their response to the next question, ‘Why was the group formed?’, resulted in a response of ‘other’ (Table 4). The dominant reason for group formation in Lombok was ‘cattle security’. Cattle theft is

**Table 3.** Farmers’ reasons for timing of cattle sales in Bali and Lombok, June 2007

|  | Bali      |           | Lombok    |           | Region    |           |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
|  | Ranking 1 | Ranking 2 | Ranking 1 | Ranking 2 | Ranking 1 | Ranking 2 |
| Need for cash (e.g. ceremony, medical) | 14        | 8         | 24        | 3         | 38        | 11        |
| Cattle age                             | 11        | 2         | 0         | 4         | 11        | 6         |
| Recent cattle price                    | 2         | 8         | 3         | 3         | 5         | 11        |
| Cattle live weight                     | 2         | 9         | 0         | 2         | 2         | 11        |
| Other                                  | 1         | 1         | 2         | 7         | 3         | 8         |
| Predicted cattle price                 | 0         | 0         | 1         | 4         | 1         | 4         |
| Feed availability                      | 0         | 0         | 0         | 2         | 0         | 2         |

**Table 4.** Major reasons for establishing farmer groups in Bali and Lombok, June 2007

|   | Bali | Lombok | Region |
|---|------|--------|--------|
| Improve security of cattle                      | 1    | 18     | 19     |
| Reduce workload and/or cost of raising cattle   | 0    | 1      | 1      |
| Improve access to extension services            | 6    | 0      | 6      |
| Improve access to subsidised credit             | 3    | 1      | 4      |
| Access to cattle from government or NGO schemes | 7    | 7      | 14     |
| Facilitate collective on-farm selling of cattle | 2    | 0      | 2      |
| Facilitate collective marketing in other ways   | 1    | 1      | 2      |
| Other   | 10   | 2      | 12     |

regarded as a major problem, so farmers have been getting together to build either group or individual shelters (*kandang*s) in a central location in the village, and to assist each other with stock monitoring. On each island, 7 of the 30 groups were formed to access cattle through specific government programs. To be eligible for such programs, farmers must be members of a cattle group. Sometimes groups are formed for this sole reason and do not take collective action for any other purpose. Only one group on each island was formed to 'facilitate collective marketing'. Non-cattle motivations for group establishment may lead to reduced group or leader emphasis on cattle marketing.

Group membership differs slightly between the two islands. In Lombok, the majority of groups (57%) restrict membership to cattle owners, with a further 20% restricting membership to original members only. In Bali, group membership is more often open to all community members, with 53% of groups open to anyone who wishes to join. This may be related to the 'reasons for group formation'. In Lombok, as mentioned above, group formation is often motivated by cattle security, while in Bali groups are often formed for non-cattle reasons.

In 12 of the 60 groups, the focus has changed since group inception. For some of the groups who have received cattle through distribution programs, the group now focuses on accessing better extension advice. In contrast, groups set up for 'other' reasons have since shifted their focus to becoming involved in cattle distribution programs. This trend was identified in both Bali and Lombok.

Groups in Bali had a higher level of participation in government development programs. We only identified 2 groups in Bali that had no links with government programs, while there were 11 in Lombok. This may well be a consequence of the reasons for group establishment, since the priority in Lombok is more on security than accessing government programs. No groups interviewed were working with NGOs. In Bali, three groups were working with private industry, although we did not identify in what capacity or area.

Group growth may be measured in a number of ways. It may involve an increase in member numbers or cattle population, or an increase in average herd sizes. However it is measured, a growing group may reflect a belief or perception that group membership can provide a range of benefits to the individual.

On both islands, the average size of the groups (number of members) has increased over time. The increase in size has been greater in Bali, even though the groups on this island tend to be newer than those in Lombok. Group membership has grown by approximately 40% in Bali compared to 20% in Lombok. The fact that groups in Lombok often have tighter membership criteria, as mentioned above, may influence this lower group growth. As with group membership, the number of cattle managed by individual group members has increased markedly in Bali, while remaining relatively static in Lombok. Cattle numbers within groups have increased by 150% in Bali, and by only 6% in Lombok.

Using these variables to measure average herd size indicates that smallholder herds have increased in Bali and decreased in Lombok. In Lombok, members owned, on average, 1.7 head when the group was formed, a figure that has since reduced to 1.5. In contrast, farmers in Bali owned 1.2 head on average when their groups were formed, a figure that has increased to 2.2 head. The reasons for, and implications of, this are unclear. However, the increase in herd size may indicate growing importance of cattle in the farming system and, therefore, a demand for improved access to cattle markets and market information.

In general, group members in Lombok have slightly longer distances to travel to obtain support in the areas of banking, government veterinarian and farm inputs (Table 5). However, the Lombok groups have much closer access to the physical cattle market. This access may have a significant impact on a group member's preferences regarding cattle selling technique.

Group leader perceptions of the changes in group characteristics and cattle production are presented in Table 6. Although groups in Bali did not focus on cattle to the same extent as groups in Lombok, all measures for Bali group leaders indicated some improvement in cattle productivity and production (i.e. scores above 2.0). In Lombok, however, cattle security (an important reason for group formation) has improved, but the number of cattle sold from groups has declined overall, as has the adoption of newer cattle technology. However, there does not appear to be a commensurate increase in herd numbers.

## Group social capital

All groups had a formal group structure. As well as a group head, every group in Bali had a secretary and a treasurer. In Lombok, eight groups did not have a secretary, and seven did not have a treasurer. The primary method used to select office-bearers and committee members was nomination by members, followed by a ballot. Only three groups (two in Bali, one in Lombok) did not use this method. In these groups, office-bearers were selected by the government. Groups in Bali were more likely to have formal and informal rules that determined who would be elected to positions of responsibility (Table 7). In all, 83% of groups in Bali had formal rules concerning how the group would be managed, compared to only 57% in Lombok. On both islands, where groups used formal rules, the most important criterion for selection was 'competency', which included education (ability to read and write), experience and leadership ability.

Group structures appear to be stronger in Bali, where all but one of the groups had held a formal group meeting in the previous 12 months. These 29 groups in Bali averaged nine meetings during the year, compared to only four meetings for groups in

Lombok. Likewise, group meetings were much more formal in Bali, with most groups setting an agenda and keeping minutes. This was less prevalent in Lombok, where only 37% of the groups that met set agendas and kept minutes. Attendance at meetings was higher in Bali with, on average, 81% of group members attending compared to 74% in Lombok.

In Bali, 21 groups (70%) had subcommittees responsible for particular aspects of group activities. The major reasons for establishing these subcommittees were to take responsibility for livestock health issues and marketing. In Lombok, where 53% of groups had subcommittees, the dominant role of subcommittees was to be responsible for managing cattle security. The development of subcommittees reflects the issues that groups consider most important to them.

The importance of cattle security to groups in Lombok led to a growing requirement for members to provide time to monitor the cattle. In the large communal *kandang*s, members are also required to help with cleaning (Table 8). Farmers in Lombok are often rostered to sleep at the *kandang*s in order to ensure cattle are not stolen. The need for this type of in-kind support was not as great in Bali. Small-

**Table 5.** Average distance to institutional support for farmer group members in Bali and Lombok (km)

| Type of institutional support            | Bali | Lombok | Region |
|--|------|--------|--------|
| Provincial capital (Denpasar or Mataram) | 34   | 39     | 36     |
| Livestock extension office               | 5    | 4      | 5      |
| Government veterinarian                  | 3    | 5      | 4      |
| Cattle market                            | 28   | 9      | 18     |
| Fresh food market                        | 2    | 3      | 3      |
| Bank                                     | 5    | 6      | 5      |
| Farmer cooperative                       | 2    | 3      | 3      |
| Shop farm inputs                         | 1    | 3      | 2      |
| Village health centre                    | 1    | 2      | 2      |
| Abattoir/slaughterhouse                  | 18   | 7      | 13     |

**Table 6.** Perceived changes in farmer group characteristics and productivity in the last 2 years, Bali and Lombok, June 2007

|   | Bali | Lombok | Region |
|---|------|--------|--------|
| Number of members                             | 2.3  | 2.2    | 2.3    |
| Number of cattle in group                     | 2.5  | 2.2    | 2.4    |
| Number of cattle sold from group              | 2.6  | 1.4    | 2.0    |
| Average live weight of cattle sold from group | 2.4  | 2.5    | 2.4    |
| Cattle health                                 | 2.8  | 2.5    | 2.7    |
| Cattle security                               | 2.3  | 2.7    | 2.5    |
| Adoption of technology                        | 2.7  | 1.8    | 2.2    |

1 = declined, 2 = stayed the same, 3 = increased

holders also tend to be wealthier in Bali, and place more emphasis on cash fees rather than labour donations. On both islands, the group members' responsibility to the community was shown through the requirement or expectation that they contributed to, and participated in, community activities.

There appears to be greater use of sanctions for non-payment of fees in Lombok than in Bali. If fees are not paid as required, they tend to accumulate in Bali, or no sanction is imposed. In Lombok, more groups are prepared to exclude non-compliant members. While groups in Bali often expect some in-kind support, no groups will actually sanction members who do not contribute. Group strength and peer group pressure within Bali groups, and within Balinese culture generally, may make non-contribution unlikely. In contrast, while most groups in Lombok will not sanction members who do not provide in-kind support, some groups are prepared to exclude members if required. As cattle security is an important reason for the existence of groups in Lombok, if members do not supply their in-kind support (e.g. overnight monitoring of group cattle in

the communal *kandang*s), then there may be significant consequences for the group as a whole, such as cattle theft. Sanctions have therefore been required to a greater extent in Lombok than in Bali.

Group leaders were asked a series of questions concerning group interaction and group member interaction with the broader community (Table 9). They were also asked attitudinal questions concerning the level of homogeneity within the group with respect to wealth and power. Group leaders were asked to state whether or not they agreed with a range of statements. These were compiled into measures of agreement that ranged from 'disagree strongly' (scored as 1) to 'agree strongly' (scored as 5). Some of the general results are listed below.

- In both Bali and Lombok, there was a higher level of trust within the group than within the general community.
- Group and community culture was very strong; members were loathe to question or contradict group decisions, community tradition and custom.

**Table 7.** Farmer group formality measures in Bali and Lombok, June 2007

|  | Bali | Lombok | Region |
|--|------|--------|--------|
| Groups that have formal group management rules         | 25   | 17     | 42     |
| Groups that have informal group management rules       | 10   | 3      | 13     |
| Groups that require in-kind (non-labour) contributions | 23   | 14     | 37     |
| Groups that require payment of membership fees         | 21   | 27     | 48     |
| Groups that have met during the year                   | 29   | 25     | 54     |
| Average no. of times group met (over past 12 months)   | 9    | 4      | 6      |
| Groups that set an agenda for each meeting             | 23   | 11     | 34     |
| Groups that have kept minutes for each meeting         | 27   | 11     | 38     |
| Member attendance (%)                                  | 81   | 74     | 77     |
| Groups that have subcommittees                         | 21   | 16     | 37     |
| Groups that have a livestock health subcommittee       | 17   | 11     | 28     |
| Groups that have a marketing subcommittee              | 17   | 9      | 26     |
| Groups that have a breeding subcommittee               | 14   | 7      | 21     |
| Groups that have a cattle security subcommittee        | 3    | 16     | 19     |
| Groups that have an information subcommittee           | 14   | 1      | 15     |
| Groups that have a feed subcommittee                   | 5    | 8      | 13     |
| Groups that have a credit subcommittee                 | 3    | 4      | 7      |

**Table 8.** Number of farmer groups providing labour in-kind contributions to specific tasks in Bali and Lombok, June 2007

|                                       | Bali | Lombok | Region |
|---------------------------------------|------|--------|--------|
| Labour for watching cattle            | 5    | 27     | 32     |
| Labour for cut and carry feed         | 5    | 11     | 16     |
| Labour for cleaning stalls            | 8    | 26     | 34     |
| Labour for cultural/social activities | 14   | 13     | 27     |

- Within groups, members were generally loathe to openly show disappointment towards other group members. This may be out of respect for individuals, fear of consequences or simply an acceptance of the situation.
- Group members were homogeneous in terms of perceived ‘power’ within the group, even though there may be differences (particularly in Bali) between individuals in terms of wealth.
- In all but two of the attitudinal statements, leaders of the Bali groups showed stronger agreement overall than Lombok group leaders. An overall impression emerged that, while group structures were stronger in Bali, group members may be less likely to voice their opinion and more likely to go along with group decisions.

While a sense of group ‘connectedness’ or trust may be important, it is also important to understand whether or not this trust can be turned into action (i.e. whether or not there is a high level of ‘agency’ within the group). This group agency variable was determined from an understanding of how groups would respond to issues or difficulties facing the group (Table 10) and individuals (Table 11). In Bali, if there was an issue facing the group (e.g. cattle disease or theft), groups would be more

likely to face it as a group (21 groups selected this option) rather than as a problem to be shared with the broader community. In Lombok, 14 of the groups (47%) would deal with the problem within the group. Most of the others would prefer to deal with the problem at the community level.

If an individual group member was to suffer, in most cases the groups would come together to assist (Table 11). In Lombok, this would predominantly be a response initiated by individual members. In Bali, responses organised or initiated by the group leader were also relatively common. In seven groups in Lombok, members would not respond directly but wait to be part of the general community response. In Bali, four groups believed that group members would not offer any assistance to other members.

## The cattle group leaders

### Group leader characteristics

There were no marked differences in ages of leaders between the two islands. The average age was 47 years in Bali and 50 years in Lombok. Only one group leader in Bali was female, and she was the leader of the women’s group. In Lombok, all the

**Table 9.** Farmer group leaders’ attitudes to community and farmer group ‘connectedness’, Bali and Lombok, June 2007

|   | Bali | Lombok | Region |
|---|------|--------|--------|
| Trust people outside the group  | 4.0  | 3.1    | 3.6    |
| Trust other members of the group  | 4.6  | 4.1    | 4.4    |
| Rely on others in community to provide help when needed                 | 4.1  | 3.5    | 3.8    |
| Rely on other group members to provide help when needed                 | 4.4  | 3.9    | 4.1    |
| Cooperate with what the group decides                                   | 4.2  | 3.7    | 3.9    |
| Will make disappointment known if other group member fails to cooperate | 2.7  | 3.5    | 3.1    |
| Respect each other’s opinions even when different from their own        | 4.3  | 3.8    | 4.1    |
| Avoid saying anything that goes against custom and tradition            | 4.4  | 4.0    | 4.2    |
| Respect one another as equals   | 4.0  | 3.7    | 3.9    |
| Have approximately the same level of wealth                             | 2.6  | 3.5    | 3.1    |
| Have approximately the same level of power                              | 4.1  | 4.1    | 4.1    |
| Meet each other in many non-group local activities                      | 4.4  | 3.8    | 4.1    |

1 = disagree strongly, 5 = agree strongly

**Table 10.** Farmer group response to a cattle problem within the group, Bali and Lombok, June 2007

|  | Bali | Lombok | Region |
|--|------|--------|--------|
| Group members would help each other                  | 21   | 14     | 35     |
| Group would seek help from wider community           | 6    | 14     | 20     |
| Everyone would deal with the situation by themselves | 3    | 1      | 4      |
| Group would ask for help from government             | 0    | 1      | 1      |



leaders interviewed were Muslim and Sasak (originally from Lombok), and in Bali, all the leaders interviewed were Hindu and Balinese.

There are differences between the islands in terms of group leader education (Table 12). In Bali, 33% of leaders had university degrees, compared to none in Lombok. In Lombok, almost half the leaders had only received primary school education or lower, compared to 20% in Bali.

In both Bali and Lombok, the majority (60%) of group leaders' main occupations were in agribusiness, as opposed to being dependent on farming income. Agribusiness includes buying and selling cattle, selling feed and other inputs, providing transport etc. In Lombok, some group leaders were also government employees (13%). In Bali, seven leaders (23%) had major occupations that were not linked to the agriculture sector.

Table 13 provides a summary of the group leaders' asset ownership. Group leaders in Bali were more likely to have chickens and pigs. (Lombok leaders were all Muslim, and therefore not permitted to consume pigs.) Six cattle group leaders in Lombok did not own cattle at the time of their interview.

In terms of other assets, group leaders in Bali appear more likely to own cars, motorbikes, computers, televisions, mobile phones and landlines. In fact, 17 group leaders in Lombok (57%) could not be contacted directly by telephone. We needed to use other communication techniques, such as direct visits. If this asset ownership is repli-

cated within the groups, then it may have significant implications on the ability of farmers in Lombok to access market information and make effective cattle marketing decisions.

Group leadership in Bali was based predominantly on having the appropriate knowledge and skills to do the job. Being a respected elder and having a sufficient level of education were also important criteria. In Lombok, the emphasis was slightly different, with the majority of groups basing their selection on being a 'respected elder'. Some 'other' reasons were also mentioned, largely involving trustworthiness and honesty.

### Group leader social capital

The survey elicited information on the linkages and networks that the group leader had developed, and the role that these might play in assisting groups in their cattle marketing decisions. This included understanding the sources of leader information and the extent to which leaders are in touch with news and information outside the community. The most important source of general information was television; 46 leaders (77%) identified this as their most common news source. Newspapers were considered important in Bali, while neighbours were an important information source in Lombok. In Bali, radio played a very minor role, but it was more important in Lombok, where seven leaders nominated it as their second news preference.

Leaders in Bali tended to make more visits to their provincial centre (Denpasar) than leaders in

**Table 11.** Expected farmer group response to a disaster affecting one member, Bali and Lombok, June 2007

|  | Bali | Lombok | Region |
|--|------|--------|--------|
| Group members would come together to help        | 17   | 22     | 39     |
| Group members would join wider community to help | 2    | 7      | 9      |
| Group leaders would organise members to help     | 7    | 1      | 8      |
| Group members would do nothing                   | 4    | 0      | 4      |

**Table 12.** Education levels of farmer group leaders in Bali and Lombok, June 2007

|                     | Bali | Lombok | Region |
|---------------------|------|--------|--------|
| No formal schooling | 1    | 5      | 6      |
| Primary school      | 5    | 9      | 14     |
| Junior high school  | 4    | 4      | 8      |
| Senior high school  | 9    | 10     | 19     |
| College diploma     | 1    | 2      | 3      |
| University degree   | 10   | 0      | 10     |

Lombok (Mataram). Two leaders in Bali visited the city every day, while 11 leaders in Lombok had not visited Mataram in the last 12 months. Leaders in Bali also tended to have more contact with influential industry and government people within and outside of their community (Table 14). They were more likely to have met government technology and extension officers, as well as political and financial contacts, such as the *bupati* (head of *kabupaten*) and their local member of parliament.

The survey also examined the level of contact between groups. Only 13 of the 60 leaders believed their group had either weak or no linkages with other similar groups, and 9 of these were in Lombok.

Thirty-three group leaders believed that their group had strong links with other groups. Inter-group discussion and contact may assist in the flow of price information, marketing options and product quality requirements etc.

A leader's individual social characteristics may also play an important role in market linkages for smallholders. One of these characteristics is the level of leadership that the group leader has attained. Almost half the leaders in Lombok regarded leadership of the cattle group as their highest level of leadership. In Bali, 11 of the 30 leaders surveyed were also leaders of a larger agricultural group, and a proportion also had local government leadership

**Table 13.** Assets owned by the farmer group leaders in Bali and Lombok, June 2007

|   | Bali | Lombok | Region |
|---|------|--------|--------|
| Average land area (ha)                        | 0.65 | 0.41   | 0.53   |
| <i>Leaders who have no land</i>               | 1    | 5      | 6      |
| Average number of cattle                      | 9    | 2      | 5      |
| <i>Leaders who have no cattle</i>             | 1    | 6      | 7      |
| Average number of chickens                    | 24   | 7      | 15     |
| <i>Leaders who have no chickens</i>           | 7    | 13     | 20     |
| Average number of goats                       | 0    | 0      | 0      |
| <i>Leaders who have no goats</i>              | 29   | 26     | 55     |
| Average number of pigs                        | 44   | 0      | 22     |
| <i>Leaders who have no pigs</i>               | 11   | 29     | 40     |
| Average number of cars owned                  | 0.5  | 0.0    | 0.3    |
| <i>Leaders who have no car</i>                | 17   | 29     | 46     |
| Average number of trucks owned                | 0.1  | 0.0    | 0.1    |
| <i>Leaders who have no truck</i>              | 29   | 29     | 58     |
| Average number of motorbikes owned            | 1.5  | 0.6    | 1.0    |
| <i>Leaders who have no motorbike</i>          | 5    | 14     | 19     |
| Average number of computers owned             | 0.3  | 0.0    | 0.2    |
| <i>Leaders who have no computer</i>           | 22   | 30     | 52     |
| Average number of televisions owned           | 1.6  | 0.8    | 1.2    |
| <i>Leaders who have no television</i>         | 0    | 6      | 6      |
| Average number of telephones (landline) owned | 0.4  | 0.0    | 0.2    |
| <i>Leaders who have no telephone</i>          | 17   | 30     | 47     |
| Average number of mobile phones owned         | 1.0  | 0.4    | 0.7    |
| <i>Leaders who have no mobile phone</i>       | 7    | 17     | 24     |

**Table 14.** Number of farmer group leaders who have met people of influence in the last 12 months, Bali and Lombok, June 2007

|                           | Bali | Lombok | Region |
|---------------------------|------|--------|--------|
| <i>Bupati/deputy</i>      | 16   | 7      | 23     |
| Member of parliament      | 21   | 7      | 28     |
| Veterinarian              | 27   | 17     | 44     |
| Bank manager              | 14   | 6      | 20     |
| Head of Dept of Livestock | 27   | 9      | 36     |
| Extension officer         | 29   | 22     | 51     |

roles at village through to provincial level (33%), a trend not observed in Lombok. However, a large proportion (28%) of the group leaders on both islands had leadership roles in the private sector or with a government agency.

Leaders were also a source of advice for smallholders. In Bali, 50% estimated that they provided advice and information to group members six or more times per month. In Lombok, 30% of leaders provided this level of service. In both regions 30% of leaders provide advice two or less times per month. This may well indicate the level of respect that leaders have in their communities, a respect which influences the level of impact they can have on community and group decision-making.

Group leaders in Bali were committed to attending community meetings. Almost all (93%) Bali group leaders attend most of the general community meetings. In Lombok, over half the group leaders attended no meetings at all.

### Leadership style

The survey attempted to obtain information concerning the leadership style of group leaders through a range of attitudinal questions. The response to these questions (Table 15) indicates that leaders in Bali tended to be more confident in their leadership of the group, and more prepared to listen to group will.

A practical measure of the importance of leadership style to group cattle marketing involves whether or not group leaders believed they could assist group members to access cattle price informa-

tion. In Bali, 70% of leaders believed that they could play a role in assisting members, an attribute shared by only 33% of leaders in Lombok. While other factors may account for this discrepancy (e.g. availability of phones), there is some indication that leaders in Bali believed they had an important role to play, not only in leading the group but also providing assistance and support.

## Cattle marketing

This study aimed to evaluate the importance of social capital (as measured by group and group leader characteristics) in cattle marketing decisions and efficiency. The final part of the survey identified the marketing strategies adopted by smallholders, and their perceptions of market strengths and weaknesses. The following section summarises the selling methods used, sources of information, and the role of the group and leader in influencing these decisions.

### Most favoured cattle selling method

The most common selling method on both islands was selling on-farm to brokers, collectors and butchers, who then on-sell at the market or directly to other buyers (Table 16). Nearly half the groups interviewed favoured this method, although it was more common in Lombok, where 17 group leaders (57%) considered it to be the most popular selling method over the previous 12 months. While still the most common method in Bali, it was favoured by only 11 group leaders (37%).

**Table 15.** Scoring of farmer group leader responses to leadership styles

|  | Bali | Lombok | Region |
|--|------|--------|--------|
| I can motivate people  | 4.3  | 3.9    | 4.1    |
| Group members trust me to do what is best for them   | 4.2  | 4.0    | 4.1    |
| I feel confident about my ability to lead this group   | 2.9  | 2.3    | 2.6    |
| I enjoy success and strive for group success   | 4.0  | 3.7    | 3.9    |
| I find it easy to accept that other people's feelings and goals are valid if they differ from my own | 3.2  | 2.5    | 2.8    |
| I am a person who is original in my ideas and activities   | 2.7  | 2.8    | 2.8    |
| People confide in me because they consider me to be trustworthy                                      | 3.9  | 3.9    | 3.9    |
| I would rather ignore conflict than try to find a solution   | 1.5  | 1.9    | 1.7    |
| I speak in a manner not to be questioned   | 1.8  | 2.2    | 2.0    |
| I decide in detail what group members shall do, and how it should be done                            | 3.3  | 2.9    | 3.1    |
| I get the approval of group members on important matters before going ahead                          | 4.6  | 4.0    | 4.3    |
| Group discussion generally results in better decisions than I would make alone                       | 4.7  | 4.1    | 4.4    |

1 = strongly disagree, 5 = strongly agree

As discussed earlier, maximising profits was not necessarily the most important reason for selecting a selling technique. Small-scale producers for whom cattle are not their major source of income were more likely to select their selling method based on simplicity rather than price (Table 17). When cross-tabulated with the type of selling method used, there was an indication that farmers tended to sell via brokers on-farm, not because it provided the best price but because it was the easiest method. Of the 16 farmers who selected their selling method based on obtaining the best price, 6 (37%) organised their own transport and sold at the market, while only 4 (25%) sold to collectors on-farm. However, of those who chose to sell based on the simplest method rather than price, 12 (57%) sold to collectors on-farm, while only 3 (14%) organised their own transport and sold at the market. On-farm sale was also preferred as it minimised transport costs and the risks involved with not selling at the market.

The implications from this analysis are that cattle selling techniques were selected for a variety of reasons, actual market price being only one. Farmers' attitudes to risk, cultural issues and high transaction costs and, perhaps, lack of market information influenced their desire or ability to maximise sale price.

## Marketing information

According to the leaders interviewed, the method used most frequently by groups in Lombok to access price data was to have their members attend a market before the sale (Table 18). The other major source of market information was collectors and brokers, who may or may not be group members. This practice may reflect reduced access to communication infrastructure and price reporting in Lombok. The sources of information in Bali for the sampled groups appeared to be broader. They relied on visiting the market and on (non-member) brokers, but also on their group marketing sections. There may, in fact, be members who are brokers within this marketing section. Some groups also relied predominantly on government information sources.

There appeared to be a difference in the perceived equality of access to market information between groups in Bali and Lombok. In Bali, over half the groups were convinced that brokers had better access to price information than they did, while only eight (27%) believed they had equal access. This perception was reversed in Lombok, where 21 groups (70%) believed that they had equal access to price information. This is evidenced by the

**Table 16.** Most used cattle selling methods by farmer groups in the last 12 months, Bali and Lombok, June 2007

|  | Bali <sup>a</sup> | Lombok <sup>b</sup> | Region |
|--|-------------------|---------------------|--------|
| On-farm to brokers, collectors, butchers etc.                | 11                | 17                  | 28     |
| At market: transport organised by individual                 | 6                 | 5                   | 11     |
| On-farm to other farmers                                     | 3                 | 4                   | 7      |
| On-farm to non-farmers through <i>bursa ternak</i> (auction) | 5                 | 1                   | 6      |
| At market: transport organised by community (not group)      | 1                 | 1                   | 2      |
| At market: transport organised by broker                     | 1                 | 1                   | 2      |

<sup>a</sup> Three groups in Bali have not sold cattle in the last 12 months

<sup>b</sup> One group in Lombok has not sold cattle in the last 12 months

**Table 17.** Farmer group reasons for adopting selling method, Bali and Lombok, June 2007

|   | Bali | Lombok | Region |
|---|------|--------|--------|
| Easiest method                          | 14   | 7      | 21     |
| Best price                              | 8    | 8      | 16     |
| Minimise transport cost                 | 4    | 3      | 7      |
| Risk of not selling at market           | 3    | 1      | 4      |
| Have good contacts with collectors etc. | 0    | 3      | 3      |
| Risk of cattle injury                   | 1    | 0      | 1      |
| Risk of receiving counterfeit money     | 0    | 1      | 1      |
| Close to market                         | 0    | 0      | 0      |

perception among Lombok group leaders that using brokers gave the best cattle price; in Bali, this perception was not evident.

### Group assistance in cattle marketing

We asked group leaders to assess the type and level of cattle marketing support that the group provided to its members. They were asked to specify whether or not the group played an important role, a less important role or no role in providing the following types of support:

- access to market price information
- increase in bargaining strength with cattle buyers or collectors
- identification of buyers

- increase in bargaining strength with collectors, brokers and others involved in the transaction process (e.g. truck drivers)
- access to information about market demand for quality and quantity
- organisation of transport to market.

When summarised, these data indicated that there was greater cattle marketing support from the groups for smallholders in Bali than in Lombok. The most prevalent role that the group played in Bali was in the provision of price information. Respondents also believed on average that the group was able to improve the bargaining strength of individual producers. In Lombok, the major role of groups in the marketing of cattle was the identification of buyers.

**Table 18.** Major sources of cattle market information for farmer groups in Bali and Lombok, June 2007

|  | Bali | Lombok | Region |
|--|------|--------|--------|
| Prior visits to market by member               | 6    | 12     | 18     |
| Non-members acting as brokers, collectors etc. | 7    | 10     | 17     |
| Members acting as brokers, collectors etc.     | 1    | 5      | 6      |
| Group marketing section                        | 6    | 0      | 6      |
| Government                                     | 4    | 1      | 5      |
| Other group members                            | 2    | 1      | 3      |
| Group head                                     | 2    | 0      | 2      |
| Radio or internet                              | 0    | 1      | 1      |

**Table 19.** Number of farmer groups providing marketing support to members, Bali and Lombok, June 2007

|                               | Bali | Lombok | Region |
|-------------------------------|------|--------|--------|
| Minimum                       | 0    | 0      | 0      |
| Average                       | 6    | 2      | 4      |
| Maximum                       | 12   | 12     | 12     |
| No marketing support provided | 5    | 15     | 20     |

0 = no support, 12 = high-level support in six major areas

**Table 20.** Role of farmer groups in facilitating various selling methods, Bali and Lombok, June 2007

|  | Bali           |                                    | Lombok         |                                    |
|--|----------------|------------------------------------|----------------|------------------------------------|
|  | No. of farmers | % of these farmers helped by group | No. of farmers | % of these farmers helped by group |
| On-farm to brokers, collectors, butchers etc.                | 11             | 91                                 | 17             | 29                                 |
| At market: transport organised by individual                 | 6              | 100                                | 5              | 0                                  |
| On-farm to other farmers                                     | 3              | 33                                 | 4              | 50                                 |
| On-farm to non-farmers through <i>bursa ternak</i> (auction) | 5              | 100                                | 1              | 100                                |
| At market: transport organised by community                  | 1              | 0                                  | 1              | 0                                  |
| At market: transport organised by broker                     | 1              | 100                                | 1              | 100                                |

From these data, a group marketing support variable was constructed that gave equal weighting to all these differing types of support. Each response to the six types of support was allocated a score. A 0 score indicated that the group played no role in providing that type of support, 1 indicated that the group played some role, and 2 meant that the group played an important role. The maximum possible score was 12 (i.e.  $2 \times 6$ ), which implied that the group gave a high level of marketing support. A score of 0 (i.e.  $0 \times 6$ ) implied no provision of any of these types of marketing support. A summary of rankings is provided in Table 19. According to the leaders interviewed, one-third of the groups did not provide any marketing support at all. This was

particularly evident in Lombok, where half the groups did not provide any form of support. In Bali, support was provided by 25 groups (83%).

This result was supported by the results provided in Table 20. Of the 11 group leaders in Bali who stated that their group members mainly sold on-farm to brokers, 10 (91%) indicated that their group assisted in the selling process. However, in Lombok, only 29% of the leaders who indicated that their members sold this way believed that the members were assisted by the group. According to group leaders, all members in Bali who sold directly at the market were assisted by the group. In Lombok, no group assistance was provided to group members using this selling method.

# The role of farmer groups in cattle marketing: Bali and Lombok

The focus groups and descriptive analysis of the survey data provided some useful perceptions concerning cattle marketing decisions within Bali and Lombok. The following section summarises multiple regression models to identify the:

- characteristics of farmer groups that provide marketing support to group members
- characteristics of farmer groups that influence the choice of cattle selling method.

The results of these models have important implications for the Indonesian cattle industry. As the GOI and provincial governments continue to use groups to facilitate implementation of production and welfare development programs, it is necessary for them to be able to foster the appropriate characteristics in groups that will maximise the chance of success.

## Potential to pool Bali and Lombok data

It was first necessary to test whether or not the data from Bali and Lombok could be pooled, or whether it was necessary to run individual analyses. The descriptive analysis indicated that there may be significant differences between islands. We use a Wald test to determine whether there was a statistically significant difference between the islands in the nature of the relationships and variables that influenced the level of marketing support provided by the group. If a significant difference was found, it would be necessary to estimate separate models for each island. If there was not a significant difference, then the relationships could be estimated through a single model.

Similarly, separate multiple regression models for group choice of selling method were estimated with observations from Bali and Lombok, respectively. The null hypothesis of equality of coefficients between the two models could not be tested with a

Wald test, since these models were under-identified given the reduced numbers of observations available to estimate these models separately. Given the evidence discussed above in support of pooling the observations for Bali and Lombok to estimate a model for group level of marketing support, it was also judged as reasonable to follow the same course of action when undertaking regression analysis for group choice of selling method. Separate multiple regression models for group level of marketing support were estimated with observations from Bali and Lombok, respectively. The null hypothesis of equality of coefficients between the two models could not be rejected by a Wald test at the 90% level of significance. Accordingly, the two sets of observations were pooled to estimate a single model for both Bali and Lombok. This important result implies that, even though the two islands appear to be culturally and economically different, the variables that influence the market support provided by the group are similar, and have a similar strength of influence on the level of marketing support. While this analysis is not conclusive (as only two islands have been compared), the result does lend some weight to the suggestion that the same model may also apply to other regions in Indonesia. This would have implications for national-level government programs. While different strategies for effective development of cattle groups may be required in particular regions, the development of certain group characteristics by support agencies throughout Indonesia may have a similar impact on all smallholders.

## Factors affecting the level of marketing support provided by the group

The first multiple regression analysis identified the characteristics of groups and group leaders that helped to predict the level of cattle marketing

support provided by the group. Six categories of explanatory variables were included in these regression models.

1. **Group member characteristics.** It was expected that three variables would have a positive influence on support provided by the group. Firstly, the greater the importance of cattle as a source of income to group members, the more cattle owned by group members. Second, the greater the importance of price in influencing the timing of cattle sales, the more support would be offered by the group. Household head age was also considered potentially to be important, but the influence could either be positive or negative.
2. **Group characteristics.** At a group level, it was expected that the greater the focus on cattle within group activities, the larger the number of cattle within the group, and the more external networks and linkages of the group, the more support would be provided by the group to assist in marketing.
3. **Group social capital and agency.** Three variables were used as estimates or identifiers of social capital within groups. They included the level of structure within the group, the level of trust between group members, and the ability of the group to transform latent or existing social capital into a useful resource. It was expected that the greater the formality, trust and ability of a group to take action, the higher the level of group support in cattle marketing.
4. **Leader characteristics.** Similar to group characteristics, these revolve around the importance of cattle to the group leader, and their age and education level.
5. **Leader social capital.** These variables account for the level and nature of the leader's external linkages with other rural groups, and the level and nature of the leader's more general community links. It was expected that the more contact that the leader has with the community, the greater the support provided by the group. It may represent a more outward-focused group.
6. **Leader self-belief.** This category included one variable that represents the leader's confidence and drive to attain benefits for the group.

The relationships between, and the influence of, these variables on the level of market support provided by the group were analysed using linear

regression analysis, the results of which are presented in Table 21 and discussed in the following sections. We estimated the linear regression model for the level of marketing support provided by cattle groups using Stata version 10 with robust estimates of standard errors.

### **Group member characteristics**

We found that if cattle are the most important source of income to the group members (variable 01 in Table 21), then the group is significantly more likely to provide cattle marketing support to its members. This is because smallholders raising cattle with profit-making as a priority may be expected to place greater importance on obtaining price information, assistance with transport and group selling to minimise costs. However, groups that based their timing of sale on price (02) were not found to be more likely to provide marketing support to their members than those groups that based their selling decisions on other factors. Nor was there any link between the actual number of cattle owned per group member (03) and group member age (04) with the level of marketing support.

### **Group characteristics**

While cattle as the main source of income was important, so cattle as the main priority for the group was an important characteristic (05). If the group was established to increase cattle production and productivity, the group is more likely to provide market support. Groups that participate in more government assistance programs (06) are more likely to provide support for cattle marketing. There may be a number of reasons for this. A dynamic group looking for ways to maximise financial benefits to group members may consider provision of marketing support for cattle and applying for government assistance as similar entrepreneurial activities. At the same time, to gain access to government programs (in particular, livestock distribution programs) groups must be able to show or prove to the agencies that they provide market-oriented support.

The size of the group (07) in terms of number of cattle (similar to the number of cattle owned per group member) was not significantly related to the level of market support provided by a group. It may be that larger-scale farmers rely less on the group to sell cattle, and more on their own contacts and links.



**Table 21.** Linear regression results for level of marketing support by farmer groups in Bali and Lombok, June 2007

|                                |  | Coefficient | T-test             | Elasticity |
|--------------------------------|--|-------------|--------------------|------------|
| Group member characteristics   | (01) % members with cattle main income source      | 0.021       | 2.62 <sup>c</sup>  | 0.106      |
|                                | (02) Price main reason to sell                     | -0.298      | -0.25              |            |
|                                | (03) No. of cattle per member                      | -0.052      | -0.15              |            |
|                                | (04) % members aged < 30 years                     | 0.010       | 0.89               |            |
| Group characteristics          | (05) Cattle main group activity                    | 1.746       | 2.15 <sup>b</sup>  | 0.075      |
|                                | (06) No. of government programs accessed per annum | 3.628       | 5.42 <sup>c</sup>  | 0.247      |
|                                | (07) No. of cattle in group                        | 0.011       | 1.58               |            |
| Group social capital or agency | (08) Institutional formality                       | 0.374       | 2.78 <sup>c</sup>  | 0.697      |
|                                | (09) Group trust                                   | 1.634       | 2.44 <sup>b</sup>  | 1.703      |
|                                | (10) Group agency                                  | 1.183       | 3.97 <sup>c</sup>  | 1.223      |
| Leader characteristics         | (11) Leader's age (years)                          | 0.000       | 0.01               |            |
|                                | (12) Leader's education                            | 0.535       | 2.27 <sup>b</sup>  | 0.478      |
|                                | (13) Leader's main occupation—farming              | -0.165      | -0.25              |            |
|                                | (14) Leader's land owned (ha)                      | 1.390       | 4.00 <sup>c</sup>  | 0.190      |
|                                | (15) Leader's cattle owned (head)                  | 0.057       | 1.64               | 0.077      |
| Leader social capital          | (16) Leader's professional links                   | -0.640      | -2.53 <sup>b</sup> | -0.552     |
|                                | (17) Leader's links with other cattle groups       | 0.363       | 1.41               | 0.301      |
|                                | (18) Leader's highest level of leadership          | 0.242       | 2.09 <sup>b</sup>  | 0.236      |
| Leadership style               | (19) Leaders' self-belief                          | 1.512       | 1.94 <sup>a</sup>  | 1.590      |
| Constant                       |  | -21.803     | -4.85 <sup>c</sup> |            |

$n = 60$ ,  $R^2 = 0.81$ , a = significant at 90%, b = significant at 95%, c = significant at 99%

### Group social capital and agency

A group's social capital and its agency (ability to use social capital) were also important in influencing the level of marketing support provided by the group. One measure of social capital is the ability of a group to function as measured by its formality (08). This variable is taken from responses to a number of polar (yes–no) questions that were added together to give an indication of the formality of the group. These questions were: does the group have a head (C0101), a secretary (C0102), a treasurer (C0103), have formal (C03) and informal (C04) rules, a set agenda (C08), minutes taken (C09), expected behaviour (C11), specialised functions (C12), a membership fee (C14) and an in-kind contribution from members (C18) (see Appendix 1). The minimum value for this variable is 0 and the maximum is 11.

Groups may need to have formal structures and formal rules in order to participate in assistance programs. They may also be given formal rules to abide by. However, it may also be that groups that

meet more often, have good meeting attendance rates, have committees (including a marketing committee) and functioning public officers are more likely to assist their members to market their cattle more efficiently.

There is a significant positive relationship between marketing support and group trust<sup>1</sup> (09). Trust encourages people to work together for the common good, and this can flow through to group members working together to improve their access to the cattle market. This is an important result and,

<sup>1</sup> Eight items from Question D1 concerning group trust were identified by principal components analysis as correlated both positively and substantially (loadings of 0.422 and greater) with the component accounting for the highest share of total variance. The Cronbach's alpha statistic was used to identify the reliability of a scale constructed from these items. The statistic calculated was 0.701, which exceeds the general minimum acceptable level of 0.600. The scale score for each observation was calculated as the mean of the relevant item scores. The eight items from which the scale was derived are items 01–05, 07, 09 and 12 in Question D1 (see Appendix 1).

while not unexpected, further supports the GOI's desire to foster functioning groups in order to improve cattle productivity.

Group agency (10) reflects the group's ability to use social capital. It is the practical demonstration of social capital in action. It was found that a group with a strong sense of community that is prepared to assist group members as required with personal and economic difficulties was more likely to provide market support. It may be that a group embodying a strong sense of community, and hence the ability to work collectively, may also develop more power in the cattle selling process. High agency levels may also mean that smallholders are better able to take advantage of economies of scale when buying and selling stock. For example, if collectors can be assured that specific groups will deliver the required quantity and quality of cattle when demanded, they may find it simpler to buy from one group rather than many individual sellers. This will reduce transaction costs for both buyers and sellers and provide greater motivation for producers to participate in the market.

### **Leader characteristics**

We also analysed the importance of the characteristics of leaders in influencing the level of support provided by the group. It was hypothesised that older, more educated leaders would be more likely to encourage the group to develop institutional support within the group and make better use of the market. It was also hypothesised that leaders with greater agricultural assets (i.e. wealthier farmers and leaders who regarded themselves as predominantly farmers) may have a positive influence on the level of market support provided by the group. The analysis showed that leader age (11) was not significant but the leader's level of education (12) was. The higher the group leader's level of education, the more market support the group provided. Also, while the number of cattle owned by the leader (15) was found not to have a significant association with group's level of marketing support, the area of land owned (14) and the importance of farming to the group leader (13) did have significant associations. Larger land area ownership was linked to high market support. Groups with more educated and wealthier leaders were found to be more likely to provide market support to their members.

### **Leader social capital**

The analysis also evaluated whether the leader's ability to network with other cattle groups and other external stakeholders influenced the level of marketing support provided by the group. In environments where there is weak formal institutional support, the ability of a leader to use contacts and networks developed over time (social capital) was expected to be an important feature of successful groups. Hence, this study hypothesised that groups that had leaders with stronger external networks and a higher level of responsibilities in other community forums would provide higher levels of market support. Of the three variables used to measure this aspect of social capital, both the leader's ability to network and influence people (16) and the highest level of community leadership attained by the leader (18) proved to be significant. The leader's links with other cattle groups (17) was not a significant influence. The higher the level of the leader's networks, as defined by the level of government, political and industry stakeholders that they met with, the less cattle marketing support was provided by the group. It may be that the more the leader is in contact with external stakeholders, the less time spent developing the group's interests. Or it may be that a leader's more developed networks lessen the need for the group to develop its own internal marketing support, since the leader's networks serve as the marketing channels. It may also be that the leader has been selected more for the networks to which they have access than for any particular leadership capacity.

In terms of level of leadership (18), the groups that provided the most market support for members were those whose leaders regarded the group as their lowest level of leadership. Leaders who are also in charge of higher-level groups (e.g. larger farmer groups at village, regional or provincial level, government agencies and NGOs) may provide the cattle groups with access to a broader range of resources and networks.

### **Leadership style**

The leader's leadership style<sup>2</sup> (19) was also found to have a positive influence on the market support provided to group members. The analysis found that leaders who had confidence in their ability to lead, confidence that the group trusted them, a desire for success and a desire to find solutions for problems, tended to lead groups that provided greater cattle

marketing support to members. These leaders also did not appear to desire to dominate the group, but rather to lead the group in the direction its members wished to go.

### The most important factors influencing groups to provide market support

If policymakers wish to improve a group's emphasis on providing market support for its members, the elasticities provided in Table 21 for variables found to be significant suggest that the most important factors to develop would be group trust, group agency and leadership style. These social capital variables will accrue the greatest gross pay-off. What is required is to maximise net pay-off, which equals gross pay-off less transaction, implementation and other opportunity costs incurred in changing these factors. Every 1% change in group trust (from the mean value) will have a 1.7% flow-on in improved group assistance in marketing.<sup>3</sup> The conclusion is that government, in attempting to improve groups' level of marketing support to their members, needs to focus on developing group social capital with particular regard to levels of trust within the group, developing ways to use this internal trust (group agency), and developing leaders who are confident and have the support of group members. This analysis confirms the importance of social capital in assisting smallholders to link with the marketing chain.

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<sup>2</sup> Seven items from Question F8 concerning the group leader's style of leadership were identified by principal components analysis as correlated positively and substantially (loadings of 0.416 and greater) with the component accounting for the highest share of total variance. However, reliability analysis on the basis of Cronbach's alpha indicated that scale reliability would be increased by dropping three of these items. Cronbach's alpha for the remaining four items is an acceptable 0.704. The scale score for each observation was calculated as the mean of the relevant item scores. The four items from which the scale was derived are 01, 02, 04 and 08 in Question F8 (see Appendix 1).

<sup>3</sup> Elasticities calculated at mean values for each continuous explanatory variable, and for discrete changes of dummy variable values from 0 to 1, are also reported for significant variables in Table 21. They provide an indication of the relative sensitivities of the level of marketing support to 1% changes in each of the explanatory variables from their mean values.

### Factors affecting smallholders' choice of selling technique

The second analysis sought to identify the factors related to the groups' preferred cattle selling technique. If efficient and equitable marketing systems are to be further developed, it will be important for policymakers to know what group characteristics are required to facilitate development of these marketing systems. Leaders of cattle groups in Bali and Lombok were asked to identify which of the following seven selling methods were the main methods that their group members had used to sell their cattle over the previous 12 months:

- i. sell on-farm to other farmers
- ii. sell on-farm to non-farmers through *bursa ternak* (livestock auction)
- iii. sell on-farm to brokers, collectors, butchers, etc.
- iv. sell on-farm to government
- v. sell at the market (transport organised by the individual)
- vi. sell at the market (transport organised by people from the same village but outside the group)
- vii. sell at the market (transport organised by broker).

The responses obtained from the survey (see Table 16) and other data management issues<sup>4</sup> led ultimately to the specification of a logistic regression model (Greene 2000) designed to predict a binary dependent variable. This binary choice was either to sell on-farm (methods *i*, *ii* and *iii*; 41 observations) or sell at the market (methods *v*, *vi* and *vii*; 15 observations). This dependent variable takes the value 1 with probability of 'success' ( $\theta$ ) when the alternative chosen is 'sell on-farm', and the value 0 with probability of 'failure' ( $1 - \theta$ ) when the alternative chosen is 'sell at market'. Specification of the 'sell at market' alternative as 'failure' in this case follows from general agreement among farmer participants at the Bali and Lombok focus groups that selling cattle on-farm was their preferred option.

The logistic model was specified at the outset with the same explanatory variables included in the linear regression model for level of group marketing support, although some changes were required to deal with problems of under-identification. A positive coefficient for an explanatory variable indicates that the relative probability of selling on-farm (i.e. relative to selling at market) increases as

that variable takes higher values. A negative coefficient suggests the reverse. The results are presented in Table 22.<sup>5</sup>

### Group member characteristics

Group members were found to be significantly more likely to sell at the market if cattle were their main source of income (variable 02 from Table 22) and they had higher numbers of cattle (03). This implies that the larger and more business-oriented the smallholder in terms of their cattle operation, the more likely they are to sell at market. The tendency of smallholders with more cattle to sell at the market

may also reflect their ability to minimise transport costs by selling multiple animals at one time. Smaller-scale farmers may not have this opportunity. They need to work together with other farmers or collectors to minimise transport costs per head. This minimisation of transport costs may be supported by the result that smallholders were not driven by higher prices in their selling decision, as shown by the result that the variable ‘price main reason to sell’ was not significant. There is no significant relationship between price (01), as a driver of the sale decision, and the choice of selling method. Other factors, apart from price, influence the decision on where to sell.

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<sup>4</sup> Since more than two selling choices exist, and the choices are unordered, the most suitable regression model is multinomial logit (Greene 2000). Due to the relatively small number of usable observations (56, since responses regarding choice of main selling method were not obtained from 4 of the 60 groups surveyed), the selling-method categories were reduced from 7 to 3 so that the number of observations in each was sufficient for model estimation. Given that selling on-farm to government was not identified as the main method for any group, the three categories were:

- a. sell on-farm not through a broker (methods *i* and *ii* as listed above, with 13 observations in total)
- b. sell on-farm through a broker (method *iii*, 28 observations)
- c. sell at the market (methods *v*, *vi* and *vii*, 15 observations).

The multinomial logit model was specified at the outset with the same explanatory variables included in the linear regression model previously reported for level of group marketing support. Some re-specification was necessary due to problems with collinearity. Critical to multinomial logit estimation is the assumption of independence of irrelevant alternatives (IIA), requiring that the probability of any given alternative being chosen does not depend on what other alternatives are available. Results from the standard Hausman test of the IIA assumption suggested statistical violation of this assumption, particularly because (as we might expect) alternatives *a* and *b* appear to be closer substitutes for one another than for alternative *c*. The binary dependent variable specified for the logistic regression model was created by combining the alternatives *a* and *b* defined for the multinomial logit model into a single alternative.

<sup>5</sup> The estimated model correctly predicted 38 of the 41 actual choices (92.6%) to sell on-farm, and 10 of the 15 actual choices (66.7%) to sell at the market. Overall, the model correctly predicted 48 of the 56 actual choices (85.7%). The results generated from Stata version 10 in Table 22 are presented with coefficient estimates rather than odds ratios, and with robust estimates of standard errors.

### Group characteristics

In terms of group characteristics influencing the choice of selling method, two variables were found to be significant. The first of these was whether cattle were the main group activity (04). This variable had a significant negative coefficient, which indicated that the groups established predominantly to improve cattle production were more likely to sell at the market. The second significant variable was distance to the cattle market (06).

This result indicates that groups whose main focus is on cattle were more likely to sell at the market and that the greater the distance from the farm to the market, the more likely members were to sell on-farm. This result reflects the high transport costs incurred getting individual stock to market. Sale on-farm also allows collectors to minimise transport costs by transporting a larger number of cattle collected from different farms.

### Group social capital and agency

The formality of the group (07) was found not to significantly influence where group members sell their cattle. The same result was found for group trust (08). Group agency (09), however, was found to have a positive influence on the probability of group members selling their cattle on-farm. That is, groups better able to transform trust between group members into community cooperative action were more likely to sell at the market. Once again, this may reflect the importance of transport costs. A group more able to work together may be more able to organise itself better to take advantage of economies of scale in transport to market. This important finding highlights the necessity of being

able to transfer social capital into action. Unused social capital is like any asset that is available but not being used productively.

### Leader characteristics

The age (10), education level (11) and area of land owned (13) by group leaders were found not to significantly influence the smallholder's decision on where to sell cattle. The only leader characteristic found to be significant was whether or not the group leader was a farmer (12). If the leader was a farmer, the group was more likely to sell on-farm. The majority of farmers involved in the focus groups indicated that they would prefer to sell on-farm. If the group leader's main occupation was farming, then their preference as a farmer for selling on-farm may have influenced other group members.

### Leader social capital and style

The leader's networks (14), level (15, 16) and type of leadership (17) were found to have no significant influence on the predominant cattle selling preference of group members. It may be that the decision of where to sell cattle is a more independent decision made when the social, environmental and

economic situation is appropriate for the individual. Whether or not a group leader has good networks or an inclusive style of leadership seems not to influence decisions of how to sell. Rather than the leader's networks, these decisions may be influenced more by the smallholder's or the collector's networks.

### The most important factors influencing group members' decisions of where to sell

Table 23 provides some indication of the role cattle groups play in assisting members' market their cattle, as perceived by group leaders. Leaders of groups that were selling on-farm generally didn't believe that the group played an important role in providing a range of marketing services. For example, only 7 of the 41 groups (17%) that were selling mainly at the market believed that the group played an important role in providing price information. For those groups that sold mainly at the market, however, the figure was higher at 47% (7 out of 15 groups). While community cohesiveness, an ability to work together and the influence of a leader who is predominantly a farmer are all important influences on group members' decisions on where to

**Table 22.** Logistic regression results for relative probability of selling cattle on-farm, Bali and Lombok, June 2007

|                                |   | Coefficient | Z test             | Elasticity |
|--------------------------------|---|-------------|--------------------|------------|
| Group member characteristics   | (01) Price main reason to sell                  | 1.861       | 1.16               |            |
|                                | (02) Members with cattle main income source (%) | -0.062      | -3.40 <sup>c</sup> | -0.08      |
|                                | (03) No. of cattle per member                   | -2.203      | -1.85 <sup>a</sup> | -0.28      |
| Group characteristics          | (04) Cattle main group activity                 | -9.002      | -3.00 <sup>c</sup> | -0.10      |
|                                | (05) No. of cattle in group                     | 0.060       | 1.63               |            |
|                                | (06) Distance to cattle market (km)             | 0.145       | 2.51 <sup>b</sup>  | 0.17       |
| Group social capital or agency | (07) Institutional formality                    | -0.164      | -0.57              | -0.34      |
|                                | (08) Group trust                                | -0.550      | -0.52              |            |
|                                | (09) Group agency                               | -1.279      | -1.99 <sup>b</sup> |            |
| Leader characteristics         | (10) Leader's age (years)                       | -0.023      | -0.39              |            |
|                                | (11) Leader's education                         | -0.742      | -1.38              |            |
|                                | (12) Leader's main occupation—farming           | 3.941       | 2.74 <sup>c</sup>  | 0.05       |
|                                | (13) Leader's land owned (ha)                   | -0.014      | -0.02              |            |
| Leader social capital          | (14) Leader's professional links                | 0.372       | 0.61               |            |
|                                | (15) Leader's links with other cattle groups    | 0.685       | 1.18               |            |
|                                | (16) Leader's highest level leadership          | -0.268      | -1.39              |            |
| Leadership style               | (17) Leader's leadership style                  | -2.202      | -1.27              |            |
| Constant                       |   | 20.141      | 1.79 <sup>a</sup>  |            |

Pseudo R<sup>2</sup> = 0.58, a = significant at 90%, b = significant at 95%, c = significant at 99%

sell their cattle, other variables such as cattle price, and group and leader social capital, education and age, were not found to have a significant influence. The significant variables, such as importance of cattle as a source of income, number of cattle per member, cattle as the main activity of the group and group agency, all highlight potential economies of scale and the importance of working as a group if group members wish to minimise transaction costs and sell at the market.

The results indicate that larger-scale farmers for whom cattle are the major source of income tend to make individual decisions about where to sell their cattle (maybe using their own or collectors' social capital, not the group's or leader's). These farmers prefer to sell at the market. Table 24 provides a summary of the reasons given by group leaders for their members selecting particular selling methods. The most important reason for selling on-farm was that it was regarded as the 'easiest method', with 14 group leaders (34%) whose members sell on-farm nominating this reason. Of these 14 leaders,

12 cited selling directly to a collector. Other reasons given for selling on-farm, as stated by the group leaders, were an expected higher price and lower transport costs. There may well be some overlap in the 'low transport cost' and 'easiest' responses, as accessing transport is probably the most difficult marketing issue for smallholders. In order to minimise cost, collectors need to fill trucks (a large truck can hold 14 head of cattle) on the way to market. This is sometimes difficult to organise for individual farmers. Some of the 'other' reasons for selecting on-farm selling include the risk of receiving counterfeit money at the market and the risk of injury to cattle during transport to the market.

The most frequent reason given by group leaders for their members choosing to sell at the market was the expectation of a higher price. Over 50% of the groups selling mainly at the cattle market identified price as the main reason for using this selling technique. Four of these group leaders (27%) regarded selling at the market as the easiest option.

**Table 23.** Farmer group leaders who believe that the group plays an important role in providing a range of marketing support, Bali and Lombok, June 2007

| Type of market support provided by group  | Groups that sell mainly at market ( <i>n</i> = 15) | Groups that sell mainly on-farm ( <i>n</i> = 41) |
|---|--|--|
| Access to market price information (%)  | 47   | 17   |
| Access to information about quality and quantity demanded by the market (%)       | 33   | 5  |
| Increased bargaining strength with cattle buyers and collectors (%)               | 33   | 12   |
| Increased bargaining strength with collectors, brokers and truck drivers etc. (%) | 27   | 5  |
| Organised transport to market (%)   | 33   | 7  |
| Look for and identify buyers (%)  | 33   | 10   |

**Table 24.** Farmer group leaders' perceptions of group members' reasons for selection of selling method, Bali and Lombok, June 2007

|                               | High price | Low transport cost | Risk of not selling | Easiest | Other, missing | Total |
|-------------------------------|------------|--------------------|---------------------|---------|----------------|-------|
| On-farm                       | 7          | 7                  | 3                   | 14      | 10             | 41    |
| Other farmer                  | 1          | 1                  | 1                   | 2       | 2              | 7     |
| <i>Bursa ternak</i> (auction) | 2          | 4                  | 0                   | 0       | 0              | 6     |
| Collector                     | 4          | 2                  | 2                   | 12      | 8              | 28    |
| At market                     | 8          | 0                  | 1                   | 4       | 2              | 15    |
| Organised by farmer           | 6          | 0                  | 1                   | 3       | 1              | 11    |
| Organised by broker           | 2          | 0                  | 0                   | 1       | 1              | 4     |
| Total                         | 15         | 7                  | 4                   | 18      | 12             | 56    |

**Table 25.** Cross tabulation; sources of marketing information and selling method, Bali and Lombok, June 2007

|                               | Local government agencies | Group members/ marketing section | Non-group members | Prior visits to market | Other, missing | Total |
|-------------------------------|---------------------------|----------------------------------|-------------------|------------------------|----------------|-------|
| On-farm                       | 4                         | 12                               | 15                | 7                      | 3              | 41    |
| Other farmer                  | 1                         | 4                                | 2                 | 0                      | 0              | 7     |
| <i>Bursa ternak</i> (auction) | 2                         | 0                                | 2                 | 1                      | 1              | 6     |
| Collector                     | 1                         | 8                                | 11                | 6                      | 2              | 28    |
| At market                     | 1                         | 3                                | 1                 | 10                     | 0              | 15    |
| Organised by farmer           | 1                         | 2                                | 1                 | 7                      | 0              | 11    |
| Organised by broker           | 0                         | 1                                | 0                 | 3                      | 0              | 4     |
| Total                         | 5                         | 15                               | 16                | 17                     | 3              | 56    |

The above results confirm some of the perceptions elicited from the focus group. They also provide more detail on some of these perceptions, and highlight factors not clearly understood from the focus group discussion. The focus group identified that the majority of farmers prefer to sell on-farm. The survey, however, discovered that some groups actually prefer to sell at the market. Results of the survey highlight the potential differences between members of cattle groups that sell on-farm and those that sell directly at the market. The results indicate that smallholders who have only a few cattle and consider them an add-on to their farming system will tend to take the easy option, rather than the profit-maximising sale option. While the majority of smallholders are content to work with brokers and collectors, some adopt a

more hands-on approach and accept responsibility for their own marketing.

This finding is supported when considering the attitude of smallholders to collecting price information (Table 25). For those selling on-farm, non-group members (which includes collectors who may not be group members) are the main sources of price information, with 37% of members relying on them. Group members and group marketing sections are important sources of information, given that group leaders indicated that members in 29% of the groups relied on their groups for such information. Members of groups that sell mainly at the market tend to be more independent in respect of obtaining such information. For two-thirds of these groups, their members tend to visit the market before sale to get a better understanding of cattle prices.

# Cattle marketing chains: perceptions and attitudes

A complicated mix of economic, social and environmental factors drives the cattle marketing chain in Bali and Lombok. This report has defined the marketing chain and described the roles and responsibilities of the different stakeholders. The key stakeholders in the cattle marketing chain include farmers or smallholders, collectors, butchers, brokers, retailers, local or domestic traders, inter-island traders, hotels, restaurants and institutions (HRIs), meat packers, exporters and final consumers. An important aim of this study was to identify the factors that influence a smallholder's ability or desire to link with the marketing chain. To do this, it was important to develop an understanding of who smallholders deal with (in regard to buying and selling cattle and obtaining market information), their perceptions regarding the strengths and weaknesses of the present marketing system and, most importantly, the types of smallholders or characteristics of smallholders and their cattle groups that lead them to take a more active or profit-driven approach to cattle marketing. Such characteristics have important implications for policymakers, and for the effectiveness and efficiency of livestock distribution programs.

The focus group discussions and key informant interviews highlighted a number of important smallholder perceptions of the cattle marketing chain:

- Most smallholders sell their cattle on-farm. They perceive that the benefits of selling on-farm are: not having to deal with brokers, potentially higher prices, reduced transaction costs (predominantly transport costs) and a reduced risk of injury, robbery and receiving counterfeit money.
- When buying cattle, smallholders prefer to buy from the local market as they believe greater choice is available and prices are lower.
- Smallholders believe that they are in a weak marketing position due to the strong roles played by brokers and collectors. However, they use collectors and brokers to assist them to sell stock, as they believe it is the simplest selling method.
- Smallholders find it difficult to get a good price when selling cattle by themselves at the local market.
- There is limited assistance from government and other stakeholders for providing information to smallholders on cattle price.
- Smallholders predominantly regard cattle as an add-on to their main sources of income or labour use.
- Smallholders tend not to focus on price as the major factor in their decision to buy or sell. Factors such as feed availability, available cash (buy) and need for cash (sell) also influence decision-making.
- The majority of smallholders do not understand the market as well as the more commercial farmers, and tend not to target particular markets with their production system.

The nature of the relationships and the institutional and cost structures within which smallholders operate have resulted in a marketing chain that does not encourage them to develop a consistent quality of product targeted at a specific market. The analysis in this study has highlighted the importance of relationships between the broker, collector and the smallholder, and the unique characteristics of the market that emanate from these relationships.



# Social capital, group marketing support and choice of sale method

If policymakers seek to improve welfare and cattle productivity through the distribution of cattle to individual smallholders within groups, it is important for them to be able to develop group structures and processes that will encourage smallholders to market their cattle effectively. Policymakers need to be able to identify the characteristics of smallholders and groups that result in development of a group that provides assistance to its members to actively participate in the marketing process.

The study analysed a range of farmer and group characteristics that were considered *a priori* to be important in influencing the group's ability to help smallholders. It was concluded that a group that provides significant support to its members is likely to consist of members for whom cattle are the main source of income, and where cattle are the main activity or focus of the group. It will also tend to be a group with a formal structure that is able to access funding from a number of government programs. Significantly, group social capital also plays an important role in market-oriented groups. Groups with higher levels of trust and an ability to put this trust into action (group agency) are more likely to provide marketing support. These groups tend to have leaders with higher levels of education and more land. These leaders also tend to have low levels of professional contact with external agencies, and regard another group or institution that they lead as their highest level of leadership responsibility. They also tend to possess a confidence and self-belief in their ability to lead. Group and leader social capital has a significant effect on a group's willingness to provide assistance to its members in marketing cattle.

If policymakers wish to improve a group's emphasis on providing market support to its members, the most important factors to develop would include group trust, group agency and leadership style. It is these social capital variables where the greatest gross pay-off will accrue. This analysis

supports the argument that social capital plays a significant role in a group's ability to assist smallholders to link with the market.

The study also analysed the types of groups and member characteristics associated with preferences for different marketing techniques. While selling cattle on-farm was the most common and easiest selling method for smallholders in Bali and Lombok, it was not the method preferred by all groups. While the majority of group leaders believed that smallholders in their group had a preference for selling on-farm, some group leaders believed that their members were more likely to sell at the market (15 out of 56 leaders). These groups have a high percentage of members for whom cattle are the main source of income, and who have larger herds. They tend to be located closer to the market, and cattle are the major activity of the group. The ability to turn group trust into action was also an important characteristic of groups that preferred selling at the market to selling on-farm. These groups also tended to have leaders who relied predominantly on farming and livestock as their major sources of income.

The significance of this result is that smallholders with larger herds who rely on their cattle for a higher proportion of their household income choose to sell their cattle directly at the market and source their own price data. They are less reliant on the group for marketing support and less reliant on the social capital inherent in the group. They may rely more on their own networks and market linkages. These farmers are more likely to organise their own transport (with or without the group's assistance) and minimise transport costs. When farmers make selling decisions based on non-profit-maximising criteria (e.g. ease of selling, need for cash), they are more likely to sell on-farm.

For most smallholders, timing of sale seems not to be based on price. It may be that price is not the highest priority for smallholders. The importance of

cattle as a form of savings (not necessarily a capital asset) may lead farmers to sell when they need money to satisfy household or community responsibilities. If cattle are to be provided predominantly to improve income, then either smallholder perceptions need to change or governments need to target groups of smallholders more focused on cattle

productivity and increasing income. If a market is to be formed that allows price differentiation based on quality and timing of sale (i.e. price signals that a smallholder can respond to), then the consumer needs to become more discriminating when purchasing local product. The producer will then be rewarded for producing a high-quality product.

# Recommendations

This study has provided significant new information concerning cattle marketing chains in Bali and Lombok, the factors that influence a group's ability to support smallholders in linking with the market, and the factors that influence smallholders' choices of where to sell their cattle. The results of this study have important implications for the way in which private and public investors form and manage smallholder cattle groups. Policymakers are faced with a choice. If they are distributing cattle via groups to improve cattle productivity and industry efficiency, then they will need to form and foster groups and group leaders in a different way than if they are distributing cattle to improve short-term smallholder welfare.

## Industry efficiency

If an efficiency motivation is paramount, then policymakers should target smallholders who are keen to manage cattle for profit, and are prepared to develop a larger-scale production system. They should also consider providing assistance to develop alternative selling systems that allow smallholders to target particular markets and access markets directly, without the assistance of brokers or even collectors. While using groups may be an important transitional phase to provide training and institutional support, smallholders who wish to manage their herds primarily to maximise profit must be encouraged to take more individual responsibility for decisions regarding the timing and method of sale.

There may well be lessons to be learned from Australian livestock marketing systems, which provide a range of alternatives suited to different types of producers who are supplying different types of markets (see Appendix 2). Policymakers should aim to develop and encourage a more vertically integrated cattle industry, producing quality and quantity that not only suit the domestic market, but can also compete with imported beef.

## Smallholder welfare

If cattle are provided predominantly as a means of improving rural household welfare, where smallholders are satisfied to remain small-scale producers and profit maximising may not be the primary smallholder aim, then the programs should continue to encourage groups to play a role in assisting smallholders link with brokers and collectors in a way that minimises their transaction costs and assists them in meeting their household objectives. Programs should place special emphasis on the selection and training of group leaders. Leaders should be educated and be significant landowners, well respected and with other, higher level group leadership experience. If cattle are managed for other reasons (e.g. asset value, draught) or smallholders do not have the resources to develop a larger herd, then the group and its leader can continue to play an important supporting role. It is important that smallholders are given the opportunity to develop a larger, profit-maximising herd if they have the desire and the resources.

## Changes to the marketing chain

To improve the existing cattle marketing chain for those smallholders who are keen to develop marketing expertise and run their cattle enterprise as a business, we recommend the following changes:

- Institutional support in the form of price information, cold-chain infrastructure and access to alternative selling methods should be improved. Ideally, this could be through a cattle industry body with support from provincial governments.
- While institutions (e.g. government agencies, legal support, information services and infrastructure) are developing, smallholders should use groups to assist in gaining an equitable say in the marketing of their cattle. Smallholders need to have the opportunity to develop economies of scale and market power in order to

- be in a position to choose their method and timing of sale. These groups could either be government or community initiated. Certainly in Bali, and to a lesser extent Lombok, the strength of local community institutions (*banjar*) could play a vital role in assisting their members participate more directly in the cattle market.
- The industry should continue to develop product differentiation and grading systems in order to improve the quality of product on the domestic market and compete with imports.
  - Smallholders need to become more professional cattle managers who can respond to price signals. It is important that the marketing chain provides incentives for smallholders to introduce new technology and upgrade their knowledge and technical skills.

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## **Appendix 1: Survey form**



## B. General data on cattle group

- B1. What is the name of the group you lead?
- B2. In what year was your group established? B02
- B3. How many members were there in your group when it was formed? (including yourself)? B03
- B4. How many members are there in your group now? B04
- B5. From how many of the following institutions do members of your group come from:
- |   |                            |
|---|----------------------------|
| <span style="border: 1px solid black; padding: 2px;">B0501</span> | subak <i>(if relevant)</i> |
| <span style="border: 1px solid black; padding: 2px;">B0502</span> | village                    |
| <span style="border: 1px solid black; padding: 2px;">B0503</span> | hamlet                     |
- B6. How many of the following types of cattle were owned by members of your group when the group was formed?
- |            |   |      |
|------------|---|------|
| Breeding   | <span style="border: 1px solid black; padding: 2px;">B0601</span> | head |
| Fattening  | <span style="border: 1px solid black; padding: 2px;">B0602</span> | head |
| Don't know | <span style="border: 1px solid black; padding: 2px;">B0603</span> |      |
- B7. How many of the following types of cattle are owned by members of your group now?
- |            |   |      |
|------------|---|------|
| Breeding   | <span style="border: 1px solid black; padding: 2px;">B0701</span> | head |
| Fattening  | <span style="border: 1px solid black; padding: 2px;">B0702</span> | head |
| Don't know | <span style="border: 1px solid black; padding: 2px;">B0703</span> |      |
- B8. What does the main activity of your group? *(Not individual member activity)*
- |                            |                   |                     |                        |
|----------------------------|-------------------|---------------------|------------------------|
| <i>1 = cattle</i>          | <i>2 = pig</i>    | <i>3 = chicken</i>  | <i>4 = microcredit</i> |
| <i>5 = arts and crafts</i> | <i>6 = social</i> | <i>7 = cropping</i> | <i>8 = other</i>       |

**B9.** Please complete the following table in respect of members of your group, *INCLUDING YOURSELF*.

1 = information from book      2 = information from memory

|   |                   |                    |                              |                     |
|---|-------------------|--------------------|------------------------------|---------------------|
| <b>A.</b> No. of members by age group (years)   | < 30 yrs<br>B09A1 | > 30 yrs<br>B09A2  | Don't know<br>B09A3          | Information<br>B09A |
| <b>B.</b> No. of members by gender  | Male<br>B09B1     | Female<br>B09B2    | Don't know<br>B09B3          | Information<br>B09B |
| <b>C.</b> No. of members by scale of cattle operation (count only breeding cows and steers for fattening) | 0 head<br>B09C1   | 1-3 head<br>B09C2  | > 3 head<br>B09C3            | Information<br>B09C |
| <b>D.</b> No. of members by main household income   | Cropping<br>B09D1 | Livestock<br>B09D2 | Off-farm<br>B09D3            | Information<br>B09D |
| <b>E.</b> No. of members who also worked over last 12 months as/in ...                                    | Broker<br>B09E1   | Collector<br>B09E2 | Inter-island trader<br>B09E3 | Information<br>B09E |
|   |                   |                    | Don't know<br>B09C4          | Information<br>B09C |
|   |                   |                    | Don't know<br>B09D4          | Information<br>B09D |
|   |                   |                    | Local HRI<br>B09E4           | Information<br>B09E |

Note: HRI = hotel, restaurant and institution

- B10.** Why was this group formed? (**Give ranking: 1 = very important, 2 = important, etc from the list below**).
- |   |  |                     |
|---|--|---------------------|
| Rank 1 <b>B10R1</b>                               | Rank 2 <b>B10R2</b>  | Rank 3 <b>B10R3</b> |
| 1 = Improved security of cattle                   | 2 = Reduce workload and/ or cost of raising cattle                 |                     |
| 3 = Improved access to extension services         | 4 = Improved access to subsidised credit                           |                     |
| 5 = Access cattle from government or NGO schemes  | 6 = Facilitate collective on-farm selling of cattle (e.g. auction) |                     |
| 7 = Facilitate collective marketing in other ways | 8 = Other: explain: _____  |                     |
- B11.** Are these still the reasons or have they changed? **B11**
- 1 = Yes                      2 = No                      3 = Don't know                      **If Yes, go to B13; if No or Don't know, go to B12.**
- B12.** What are the present reasons for your groups' existence? (**Give ranking: 1 = very important, 2 = important, etc from the list below**).
- |   |  |                     |
|---|--|---------------------|
| Rank 1 <b>B12R1</b>                               | Rank 2 <b>B12R2</b>  | Rank 3 <b>B12R3</b> |
| 1 = Improved security of cattle                   | 2 = Reduce workload and/ or cost of raising cattle                 |                     |
| 3 = Improved access to extension services         | 4 = Improved access to subsidised credit                           |                     |
| 5 = Access cattle from government or NGO schemes  | 6 = Facilitate collective on-farm selling of cattle (e.g. auction) |                     |
| 7 = Facilitate collective marketing in other ways | 8 = Other: explain: _____  |                     |
- B13.** Which of the following parties was most responsible for establishing your group? (Enter code number from list below) **B13**
- |                   |                                  |                |
|-------------------|----------------------------------|----------------|
| 1 = group members | 2 = another local group          | 3 = government |
| 4 = NGO           | 5 = other (please specify) _____ |                |
- B14.** Who can be a member of your group? (enter code number from list below) **B14**
- |  |   |
|--|---|
| 1 = any local person who owns or manages cattle, | 2 = any local person involving in farming and/ or raising livestock |
| 3 = any person who wants to be a member          | 4 = every local farmer who owns cattle + original members           |
| 5 = any person who has a cattle stall            |   |

**B15.** How far by road is it from where your group normally meets to each of the following?

| Code no. |                             | Distance (km) | Code no. | Distance (km) |
|----------|-----------------------------|---------------|----------|---------------|
| 01       | Denpasar/Mataram            | B1501         | 06       | B1506         |
| 02       | Livestock extension service | B1502         | 07       | B1507         |
| 03       | Govt-provided veterinarian  | B1503         | 08       | B1508         |
| 04       | Cattle market               | B1504         | 09       | B1509         |
| 05       | Fresh food market           | B1505         | 10       | B1510         |

**B16.** How many development programs has you group been involved with? *If 0, go to B17.*

| Code no. | Total |
|----------|-------|
| 01       | B1601 |
| 02       | B1602 |
| 03       | B1603 |

*For example: Bantuan Langsung Masyarakat, Pola PIR, Kredit Ketahanan Pangan (KKP), Proyek Ketahanan Pangan (PKP), KUBE (Kelompok Usaha Bersama), Program Agribisnis Terpadu, Nusa Tenggara Agricultural Area Development Project (NT-AADP), NT-ASP Province, NT-ASP Kabupaten, Bantpres (Bantuan Presiden) – Program Cattle Brangus, PPIW Province, PPIW Kabupaten, TKP2B-A, PDWT, CESS/PSSPP, APBD II*

**B17.** Which of the following kinds of external assistance do group members receive because they are members of your group? (i.e. assistance not normally available to non-members) **Enter Yes = 1, No = 2, Don't know = 3**

| Code no. | Type of assistance                 | What type of assistance has been provided to your group? |
|----------|------------------------------------|--|
| 01       | Cash to buy cattle (grant)         | <input type="checkbox"/> B1701                           |
| 02       | Donation of cattle                 | <input type="checkbox"/> B1702                           |
| 03       | Livestock extension advice         | <input type="checkbox"/> B1703                           |
| 04       | Veterinary advice                  | <input type="checkbox"/> B1704                           |
| 05       | Artificial insemination assistance | <input type="checkbox"/> B1705                           |
| 06       | Market information                 | <input type="checkbox"/> B1706                           |
| 07       | Credit                             | <input type="checkbox"/> B1707                           |
| 08       | Other.....                         | <input type="checkbox"/> B1708                           |

**B18.** What are the main reasons for farmers in your group to keep cattle? **Choose the three most important reasons.**

|                                |              |  |              |                                  |              |
|--------------------------------|--------------|--|--------------|----------------------------------|--------------|
| Rank 1                         | <b>B18R1</b> | Rank 2   | <b>B18R2</b> | Rank 3                           | <b>B18R3</b> |
| 1 = increase household welfare |              | 2 = 'lock up' wealth for important events or emergencies |              | 3 = source of funds for Malaysia |              |
| 4 = use for education          |              | 5 = make use of crop wastes                              |              | 6 = enjoy working with cattle    |              |
| 7 = cattle waste as fertiliser |              | 8 = other: explain _____                                 |              |                                  |              |

**B19.** How much has your group's existence helped members to achieve their goals from raising cattle?

| Code no.         | How much has your group's existence helped members to achieve their goals from raising cattle? |             |              |              |
|------------------|--|-------------|--------------|--------------|
| 01               | Groups help to attain ranking 1 (from B18) <b>B1901</b>  |             |              |              |
| 02               | Groups help to attain ranking 2 (from B18) <b>B1902</b>  |             |              |              |
| 03               | Groups help to attain ranking 3 (from B18) <b>B1903</b>  |             |              |              |
| 1 = helped a lot | 2 = helped a little  | 3 = no help | 4 = hindered | 5 = not sure |

### C. Group structure

C1. Which of the following office-bearer positions exist in your group? *Insert name of incumbent if position exists. If no office-bearer positions exist, go to C5.*

| Code no. | Position exists?<br>1 = Yes, 2 = No   | Name of the person presently in this position |
|----------|---|---|
| 01       | Head <span style="border: 1px solid black; padding: 2px;">C0101</span>      | _____   |
| 02       | Secretary <span style="border: 1px solid black; padding: 2px;">C0102</span> | _____   |
| 03       | Treasurer <span style="border: 1px solid black; padding: 2px;">C0103</span> | _____   |

C2. How are office-bearers and committee members appointed? *(Enter code number from list below)* C02

- 1 = nomination and vote by member      2 = by a local non-government body      3 = by government  
4 = other: please specify \_\_\_\_\_

C3. Are there 'formal' rules about who may be appointed as office-bearers or committee members? C03

- 1 = Yes      2 = No      3 = Don't know      **If Yes, go to C4; if No, go to C5.**

*(Formal rules are those that are agreed to, rather than just presumed as with customs, and also written down. They may be imposed by government or agreed to within the group)*

C4. Specify the characteristics on which these formal rules focus.

- Rank 1 C04R1      Rank 2 C04R2      Rank 3 C04R3  
 1 = no. of cattle owned or managed      2 = character      3 = years of membership  
 4 = gender      5 = age      6 = education, literacy  
 7 = political contacts      8 = other: explain \_\_\_\_\_

- C5. In practice, are there 'informal' restrictions on who may be appointed as office-bearers or committee members? C05  
*1 = Yes*      *2 = No*      *3 = Don't know*      **If Yes, go to C6; if No, go to C7.**  
*Informal' here means not explicitly agreed to, and not written down)*
- C6. Specify these characteristics. Rank 3 C06R3  
Rank 1 C06R1      Rank 2 C06R2      Rank 3 C06R3  
*1 = no. of cattle owned or managed*      *2 = character*      *3 = years of membership*  
*4 = gender*      *5 = age*      *6 = education, literacy*  
*7 = political contacts*      *8 = other: explain \_\_\_\_\_*
- C7. How many times did your group meet to discuss group business during the last 12 months? C07
- C8. Was an agenda normally set for each meeting? C08  
*1 = Yes*      *2 = Sometimes*      *3 = No*      *4 = Don't know*
- C9. Were minutes normally recorded for each meeting? C09  
*1 = Yes*      *2 = Sometimes*      *3 = No*      *4 = Don't know*
- C10. On average, how many members attended each meeting during the last 12 months? C10
- C11. Are there clear rules in your group regarding how members should behave and what should happen if this behaviour is not followed? C11  
*1 = Yes*      *2 = No*
- C12. Is your group divided into sections to deal with specialised functions (e.g. livestock security, credit, marketing)? C12  
*1 = Yes*      *2 = No*      *3 = Don't know*      **If Yes, go to C13; if No or Don't know, go to C14.**

**C13.** Please indicate which of the following sections your group contains. For sections that do exist within your group, please indicate how many times each met during the last 12 months?

| Code no. | Sections             | A.                   |        | B.     |
|----------|----------------------|----------------------|--------|--------|
|          |                      | Exists in the group? |        |        |
|          |                      | 1 = Yes,             | 2 = No |        |
| 01       | Credit               | C1301A               |        | C1301B |
| 02       | Cattle security      | C1302A               |        | C1302B |
| 03       | Marketing            | C1303A               |        | C1303B |
| 04       | Feed                 | C1304A               |        | C1304B |
| 05       | Information          | C1305A               |        | C1305B |
| 06       | Livestock health     | C1306A               |        | C1306B |
| 07       | Breeding             | C1307A               |        | C1307B |
| 08       | Other: explain _____ | C1308A               |        | C1308B |

**C14.** Are group members expected to pay an annual membership fee? C14

1 = Yes      2 = No      **If Yes, go to C15; if No, go to C18.**

**C15.** How were these annual membership fees calculated for each member? (enter code number from list below) C15

1 = all stakeholders      2 = management

3 = other: explain \_\_\_\_\_

**C16.** What happens if a member does not pay the required fee? (enter code number from list below) C16

1 = excluded immediately from group      2 = fee accumulates until payment can occur  
 3 = fee reduced if there are extenuating circumstances      4 = exempted from fee if there are extenuating circumstances  
 5 = nothing

**C17.** To how many members was this 'enforcement strategy' for membership fees applied over the last 12 months? C17



C18

C18. Are group members expected to make in-kind contributions each year to the running of the group?

1 = Yes      2 = No      3 = Don't know

**If Yes, go to C19; if No or Don't know, go to D1**

C19. Which of the following in-kind contributions are normally expected from group members?

1 = Yes      2 = No

**Code No.    In-kind support**

|    |                                       |       |
|----|---------------------------------------|-------|
| 01 | Labour for watching over cattle       | C1901 |
| 02 | Labour for cut-and-carry of feed      | C1902 |
| 03 | Labour for cleaning cattle stalls     | C1903 |
| 04 | Labour for cultural/social activities | C1904 |
| 05 | Other: specify _____                  | C1905 |

C20

C20. How are required in-kind contributions from each member calculated? (Enter code number from list below)

1 = same for all members      2 = number of cattle  
3 = no particular method

C21

C21. What happens if a member does not make the required in-kind contributions? (Enter code number from list below)

1 = excluded immediately from group      2 = in-kind contribution accumulates until it can be made  
3 = contribution reduced if there are extenuating circumstances      4 = exempted from contributing if there are extenuating circumstances  
5 = no sanction      6 = other: specify \_\_\_\_\_

C22

C22. To how many members was this 'enforcement strategy' for in-kind contributions applied over the last 12 months?

## D. Group connectedness and effectiveness

D1. How much do you agree or disagree with the following statements? *(Please tick)*  
**ENTER THE RESPONSE 1 TO 5 IN THE COLUMNS D0101 TO D0112**

| Code no. |   | 1                        | 2                        | 3                        | 4                        | 5                        |
|----------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|          |   | Strongly agree           | Agree                    | Not sure                 | Disagree                 | Strongly disagree        |
| 01       | Group members do not trust people outside the group   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 02       | Members of this group trust others in the group   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 03       | Members of this group cannot rely on others in their local community to provide help  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 04       | Members of this group can rely on others in the group to provide help when they need it                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 05       | Members of this group normally cooperate with what the group has agreed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 06       | If a group member fails to cooperate with what the group has agreed, other group members will make their disappointment known | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07       | Group members do not respect each other's opinions when different from their own  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 08       | Group members avoid saying anything that goes against custom or tradition   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 09       | Group members do not respect one another as equals  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10       | Group members have roughly the same level of wealth   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11       | Some members of the group are more powerful than other members  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12       | Aside from group activities, members of this group meet each other in many other local activities                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**D2.** If some disaster (e.g. disease, robbery) was to occur among cattle in your group, what do you think the members of this group would do?

**D02**

(Enter code number from list below)

- 1 = everyone would deal with the situation separately by themselves
- 2 = group members would help each other
- 3 = the group would seek help from the wider local community
- 4 = the group would seek help from government
- 5 = not sure

**D3.** If some disaster affected only one member of your cattle group, what do you think the other group members would do?

**D03**

(Enter code number from list below)

- 1 = group members would come together spontaneously to render assistance
- 2 = group leaders would organise members to help the afflicted family
- 3 = group members would join assistance efforts initiated by the wider community
- 4 = group members would do nothing to help
- 5 = not sure

**D4.** There are differences in a group that exist between people. To what extent do the following kinds of differences in your group tend to divide your group? (Please tick) **ENTER THE RESPONSE 1 TO 4 IN THE COLUMNS D0401 TO D0408**

| Type of difference                                     | Doesn't cause division   | Causes some division     | Causes strong division   | Not applicable           |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| Differences in education                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences in wealth                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences in caste                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences in religion                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences between older and younger generations      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences between 'old' inhabitants and new settlers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences in political party affiliations            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Differences in gender                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## E. Group's cattle marketing activities

**E1.** Select the three major cattle selling methods used in the last 12 months.

Rank 1 **E01R1** Rank 2 **E01R2** Rank 3 **E01R3**

- 1 = Cattle sold on-farm to other farmers
- 2 = Cattle sold on-farm to non-farmers through bursa ternak (auction)
- 3 = Cattle sold on-farm to brokers, collectors, butchers etc
- 4 = Cattle sold on-farm to government
- 5 = Cattle sold at the market: transport to the market organised by individual
- 6 = Cattle sold at the market: transport to the market organised by people from the village but outside the group
- 7 = Cattle sold at the market: transport to the market organised by broker

**E2.** Did the group play a role in the three cattle selling methods mentioned above?

- 1 = group played a role      2 = group played no role

**Code no.**

|    |   |              |
|----|---|--------------|
| 01 | Group help with selling method ranked 1 (from E1) | <b>E0201</b> |
| 02 | Group help with selling method ranked 2 (from E1) | <b>E0202</b> |
| 03 | Group help with selling method ranked 3 (from E1) | <b>E0203</b> |

**If for all rankings the answer was 'group played no role', go to E6.**

**E3.** Now rank the cattle selling methods again, this time imagining that your group had not existed.

Rank 1 **E03R1** Rank 2 **E03R2** Rank 3 **E03R3**

- 1 = Cattle sold on-farm to other farmers
- 2 = Cattle sold on-farm to non-farmers through bursa ternak (auction)
- 3 = Cattle sold on-farm to brokers, collectors, butchers etc
- 4 = Cattle sold on-farm to government
- 5 = Cattle sold at the market: transport to the market organised by individual
- 6 = Cattle sold at the market: transport to the market organised by people from the village
- 7 = Cattle sold at the market: transport to the market organised by broker

**E4.** What are the main reasons for the ranking in E1?

Factor 1 **E04F1**

1 = close to market

4 = best price

7 = risk of not selling at market

10 = risk of receiving counterfeit money

Factor 2 **E04F2**

2 = facilities provided by government

5 = government rules

8 = risk of broken leg/injury

11 = other: specify \_\_\_\_\_

Factor 3 **E04F3**

3 = have good contacts with collectors etc

6 = minimise transport costs

9 = easiest method

**E5.** What types and level of cattle marketing support has the group provided in the last 12 months?

1 = important role

2 = a role

3 = no role

| Code no. | Potential group roles  | Level of support |
|----------|--|------------------|
| 01       | Access to market price information   | <b>E0501</b>     |
| 02       | Access to information about quality and quantity demanded by the market    | <b>E0502</b>     |
| 03       | Increased bargaining strength with cattle buyers/collectors                | <b>E0503</b>     |
| 04       | Increased bargaining strength with middlemen (e.g. truck drivers, brokers) | <b>E0504</b>     |
| 05       | Organised transport to market  | <b>E0505</b>     |
| 06       | Look for and identify buyers   | <b>E0506</b>     |
| 07       | Other: specify _____   | <b>E0507</b>     |

- E6.** Rank the top 3 sources of cattle/beef price information to members of your group.
- |                     |   |                          |
|---------------------|---|--------------------------|
| Rank 1 <b>E06R1</b> | Rank 2 <b>E06R2</b>   | Rank 3 <b>E06R3</b>      |
| 1 = radio           | 2 = internet  | 3 = livestock department |
|                     | 3 = members involved in the marketing chain beyond the farm-gate (e.g. acting as collectors or brokers) | 4 = newspaper            |
|                     | 6 = non-members involved in the marketing chain beyond the farm-gate (e.g. collectors, brokers)         |                          |
|                     | 7 = prior visits to cattle market by the member themselves  | 8 = group members        |
|                     |   | 9 = marketing section    |
|                     |   | 10 = head of group       |
- E7.** Do farmers and brokers have equal access to cattle price information?
- |         |        |                |
|---------|--------|----------------|
| 1 = yes | 2 = no | 3 = don't know |
|---------|--------|----------------|
- E8.** Rank the top 3 reasons for farmers to sell cattle.
- |   |                           |                         |
|---|---------------------------|-------------------------|
| Rank 1 <b>E08R1</b>                           | Rank 2 <b>E08R2</b>       | Rank 3 <b>E08R3</b>     |
| 1 = need for cash (e.g. ceremony, ill-health) | 2 = feed availability     |                         |
| 3 = cattle live weight                        | 4 = cattle age            | 5 = recent cattle price |
| 6 = predicted cattle price                    | 7 = other – specify _____ |                         |
- E9.** To what extent is the farm-gate price received by members of your group for their cattle usually higher due to the group's existence?
- (Enter code number from list below)
- (Farm-gate price is the net price received per kilogram live weight by the cattle owner after deduction of broker fees, transport and other selling costs.)
- |  |                     |                       |                |
|--|---------------------|-----------------------|----------------|
| 1 = much higher than without the group | 2 = somewhat higher | 3 = not higher at all | 4 = don't know |
|--|---------------------|-----------------------|----------------|

**E10.** How have each of the following measures for your group changed over the last 2 years? Please use one of the four following options:

1 = *increased/improved*      2 = *stayed the same*      3 = *declined/worsened*      4 = *don't know*

| Code no. | Changes                                       |       |
|----------|---|-------|
| 01       | Number of members                             | E1001 |
| 02       | Number of cattle in the group                 | E1002 |
| 03       | Number of cattle sold from the group          | E1003 |
| 04       | Average live weight of cattle sold from group | E1004 |
| 05       | Cattle health                                 | E1005 |
| 06       | Cattle security                               | E1006 |
| 07       | Adoption of technology                        | E1007 |

## F. Leader characteristics

- F1.** Which of the following do you consult regularly for news and information? Rank the top three.
- Rank 1  Rank 2  Rank 3
- 1 = neighbours  
5 = newspaper  
2 = village head  
6 = internet  
3 = radio  
7 = government official  
4 = television
- F2.** How many times in the past 12 months did you visit Denpasar/Mataram? (whichever is relevant)
- F3.** Which of the following persons do you know personally or have met at least once in the previous 12 months?
- 1 = have met  
2 = have not met

| Code no. |                                 |                                    |
|----------|---------------------------------|------------------------------------|
| 01       | Bupati/Wakil bupati             | <input type="text" value="F0301"/> |
| 02       | Member of parliament            | <input type="text" value="F0302"/> |
| 03       | Veterinarian                    | <input type="text" value="F0303"/> |
| 04       | Bank manager                    | <input type="text" value="F0304"/> |
| 05       | Head of Department of Livestock | <input type="text" value="F0305"/> |
| 06       | Extension officer               | <input type="text" value="F0306"/> |

- F4.** How many years have you been leader of your group?
- F5.** How would you describe your relationship with other cattle groups in your district? (Enter code number from list below)
- 1 = no relationship  
2 = weak relationship  
3 = moderately strong relationship  
4 = strong relationship  
5 = other; please specify \_\_\_\_\_



F06

F6. What is the highest level of leadership you are now involved in? (enter code number from list below)

- 1 = this group, 2 = another larger farm/ livestock-related group, 3 = village, 4 = district, 5 = region,  
 6 = province, 7 = national, 8 = corporation / NGO / government agency 8 = other – please specify \_\_\_\_\_

F07

F7. How many different people from outside your household might approach you each month to ask for some kind of help (e.g. resolving disputes, securing employment, dealing with police or other officials, applying for government assistance, helping sick people get medicine or travel to hospital, etc)?

- 1 = 0 people 2 = 1-2 people 3 = 3-5 people 4 = 6-10 people 5 = more than 10 people

F8. How much do you agree or disagree with the following statements? (please tick)

Code No.

|    | 1                        | 2                        | 3                        | 4                        | 5                        |
|----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|    | Strongly disagree        | Disagree                 | Not sure                 | Agree                    | Strongly agree           |
| 01 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 02 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 03 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 04 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 05 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 06 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 08 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 09 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

F9. How much do you agree or disagree with the following statements? (Please tick)

| Statement   | 1 2 3 4 5                |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|   | Strongly disagree        | Disagree                 | Not sure                 | Agree                    | Strongly agree           |
| The cattle marketing system already works fairly and efficiently for members of our group | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| My networks help group members to market their cattle profitably                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I know more about cattle marketing than other group members                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Members of our group are satisfied with the present system of cattle marketing            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

F10

Are you a member of any political party, or consider yourself close to any particular party? (Enter code number from list below)

1 = close to no political party      2 = close to some political party (any)      3 = don't know

F11

How often in the last 12 months have you attended public meetings called in your village? (Enter code number from list below)

1 = never      2 = about half      3 = most or all meetings that were called      4 = don't know

F12. Why do you think you were appointed as leader of your group?

| Code no.                           |   |
|------------------------------------|---|
| 01                                 | Major reason <span style="float: right;">F1201</span>         |
| 02                                 | Second reason <span style="float: right;">F1202</span>        |
| 1 = respected elder                | 2 = has knowledge and skills that the group needs in a leader |
| 4 = more educated                  | 5 = wealthy   |
| 8 = political position/ connection | 6 = caste   |
|                                    | 9 = no one else would do it                                   |

3 = young  
7 = religion

F13

How much have you, as group leader, helped group members to access cattle price information that they can use to decide when

and how to sell their cattle?

1 = very helpful      2 = a little help      3 = no help      4 = don't know

- F14.** How much priority do you place on ensuring that group members fulfil their membership obligations; for instance, membership fees, in-kind contributions and repayment of cattle? F14  
 1 = *high priority*      2 = *priority*      3 = *low priority*      4 = *no priority*
- F15.** What year were you born? F15
- F16.** Gender:      1 = *male*      2 = *female* F16
- F17.** What is the highest education level you completed? *(Enter code number from list below)* F17  
 1 = *no formal schooling*      2 = *primary school*      3 = *junior high school*      4 = *senior high school*  
 5 = *college diploma*      6 = *university degree*      7 = *post-graduate degree*
- F18.** What is your religion? *(Enter code number from list below)* F18  
 1 = *Islam*      2 = *Hindu*      3 = *Christian*      4 = *Other: please specify* \_\_\_\_\_
- F19.** What is ethnic group? *(Enter code number from list below)* F19  
 1 = *Bali*      2 = *Sasak*      3 = *Java*      4 = *Bima*      5 = *other*
- F20.** What is your main occupation? *(Enter code number from list below)* F20  
 1 = *farming/raising livestock,*      2 = *commercial activity associated with farming/ livestock*      3 = *other commercial activity*  
 4 = *government employee*      5 = *other: specify* \_\_\_\_\_

**F21.** How much land and livestock do you own?

| Code no. | Asset  |
|----------|--|
| 01       | Land <input type="text" value="F2101"/> ha       |
| 02       | Cattle <input type="text" value="F2102"/> head   |
| 03       | Chickens <input type="text" value="F2103"/> head |
| 04       | Goats <input type="text" value="F2104"/> head    |
| 05       | Pigs <input type="text" value="F2105"/> head     |

**F22.** How many of the assets listed below are owned by you and your household?

| Code no. | Item      | Total owned                        | Code no. | Item         | Total owned                        |
|----------|-----------|------------------------------------|----------|--------------|------------------------------------|
| 01       | Car       | <input type="text" value="F2201"/> | 05       | Television   | <input type="text" value="F2205"/> |
| 02       | Truck     | <input type="text" value="F2202"/> | 06       | Telephone    | <input type="text" value="F2206"/> |
| 03       | Motorbike | <input type="text" value="F2203"/> | 07       | Mobile phone | <input type="text" value="F2207"/> |
| 04       | Computer  | <input type="text" value="F2204"/> |          |              |                                    |

**F23.** According to you, are there any other things that could be done to improve the cattle marketing process?



## Appendix 2: Selling options in New South Wales, Australia

**Paddock sales:** Individual buyers and sellers negotiate and sell on-farm. This requires the buyer, sometimes represented by an agent, to inspect the cattle on-farm and negotiate a price. The buyer is usually responsible for organising transport. Price is often based on the current market price, taking into account the reduction in transaction costs incurred through this process. Feedlotters will often negotiate with producers and fatteners directly, as they can have more control of the product purchased than they would if purchasing only through the saleyard auction process. This method is also favoured for producer-to-producer sales of store breeding stock. The advantages of this system are low selling costs, reduced transport and handling, and advance notice of the number and type of stock to be delivered to the buyer. The disadvantages include limited competition and carcass feedback, an inefficient process for buyers if small numbers are to be sold, and potential negotiation difficulties (e.g. unregistered scales, non-defined time frames).

**Over the hook:** ‘Over the hook’ is an arrangement between finishers and processors on the basis of negotiated prices and the terms of sale. Finishers can either trade direct or work with agents, who can assist in the price negotiation process. Price is negotiated on the basis of cents per kilogram carcass weight, with ownership transferring at the point of slaughter. A benefit of this method is that producers can receive clear price signals with regard to carcass quality (ABARE 2004) rather than a subjective valuation based on appearance.

**Saleyard auction:** The most common form of cattle sale is an auction through regional saleyards. Sellers, through agents, present their stock to be purchased by processors, abattoirs, feedlots, supermarkets and other producers. Auctions account for over 55% of cattle sales, and are regarded as the indicator for cattle values at any particular time. The benefit of this system is significant interaction between

multiple buyers and sellers, which provides a sound basis for allocating an equitable price. Significant issues are that buyers are price takers, a higher level of cattle handling is required, and stock can lose condition during the marketing process. Stock are usually sold on a per head basis, however some younger stock (e.g. weaners) can also be sold on a cents per kilogram live-weight basis. Stock are usually required to be at the saleyard at least 12 hours before sale, which can lead to stress and loss. This is the simplest form of sale for buyers and sellers, but not necessarily the most efficient. Saleyard selling charges include transport costs, agents’ fees (usually around 5%), yard dues, transit insurance and weighing fees. This can represent 7–8% of gross receipts (QDPI 2006). There is the possibility of buyer collusion, no negotiation between buyers and vendors, and limited carcass feedback for the seller. Although sellers have the option to put a reserve price on sale animals, they generally have to accept whatever the price is on the day. The need to pen the stock the day before has the potential to reduce quality before sale.

**Computer selling:** Computer selling is an increasingly popular method of selling cattle that has the potential to reduce transaction costs, maximising returns to buyers and sellers. Computer-aided livestock marketing systems give producers national access to buyers with a range of selling measures. Stock do not have to leave the property until sold, and producers can set a minimum price. This usually requires additional on-farm yarding in order to assess and accurately list cattle on the computerised selling network. Costs and fees of this selling method usually come to 6% of gross receipts (QDPI 2006).

**Forward contract:** Forward contracts are being increasingly used to reduce price fluctuations and uncertainty. Producers can nominate the time they wish to sell and then negotiate the price on delivery.

Sellers can reduce their risk through a guaranteed price for a specified quality of cattle. This demands a higher degree of control over the production system, as the producer must supply the required quality of stock as agreed. If the producer cannot do so, they must source alternative animals within 7 days.

### **Other forms of marketing**

**Over the scales (excluding auction):** This is the most common form of sale for cattle destined for the live-export trade. Buyers inspect stock on the seller's property and negotiate a price on a cents per kilogram live-weight basis.

**Cattle futures:** The MLA/ASX Cattle Futures contract operated from 2002 until 2010 and

provided producers and processors with the opportunity to manage price risk and 'lock in' future returns. However, this risk management option has been delisted due to slow uptake. A range of alternative price and supply risk management tools have been developed as a direct result of the Cattle Futures contract, including the Australian Cattle Trading Standard, which provides a trading framework to assist in forward contracting.

**Tender sales:** Marketing firms run tender sales that allow feedlots access to genetic stock to which they may not otherwise have access. Listings are made available on websites and bidders have 7 days to make an offer. Buyers then have the choice to receive cattle either from the nearest weighbridge or directly to the feedlot.